

PRODUCT BROCHURE

# HDD ROCK TOOLS



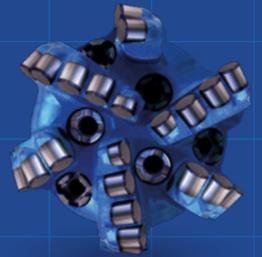
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TRICONE HOLE  
OPENERS



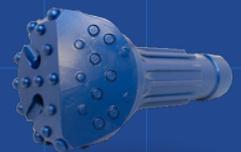
TRICONES



PDC BITS



PDC REAMERS



DIRECTIONAL  
HAMMER BITS



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## AMERICAN MADE



### TOUGH DIRECTIONAL DRILLING TOOLS

Infinity Tool Mfg manufactures an industry-leading line of PDC Bits, PDC Reamers, horizontal directional drilling consumables and drilling accessories.

With our facility utilizing state-of-the art machinery, along with a combined experience of over 100 years in the drilling industry, Infinity takes that extra step in providing a top quality product.

### QUALITY AT OUR HEART

Infinity is proud to be an ISO 9001:2015 accredited company. Achieving our ISO 9001:2015 certification means our customers have complete assurance that we manufacture to the highest quality standards. It also means that we continually strive to maintain and improve these standards that set us apart.

Our customers benefit by knowing they are working with an organization that follows an international standard, improving their service quality and making their clients a number one priority.

Infinity also continually improves our processes to ensure we identify all present customer needs and assess future requirements, as customer satisfaction has always been a fundamental part of our business.

We look forward to being of service to you and providing you with a premium quality product.



“THE  
CUSTOMER  
IS KING”

# COMPANY INTRODUCTION

Since 2009, the name Infinity Tool Manufacturing has been synonymous with manufacturing and supplying industry-leading rock tools including down the hole bits, horizontal directional drilling consumables and drilling accessories, all of which are manufactured to ISO 9001 international quality management standard.

## ABOUT US

The hub of our company is made up of a knowledgeable sales team both in-house and outside sales. They pride themselves on responding to all inquiries immediately and the team exceeds industry standards for service, utilizing the policy of 'the customer is king'.

Exceptional service and quality manufactured products made in the heart-land of America, we work closely with our customers to provide the best drilling solution to match their needs.

- **State-of-the-art engineering facility located in Benton, Illinois.**
- **High quality ISO 9001 manufactured product**
- **Premium quality sourcing and high volume supply of Tricone bits**
- **North American and International Sales and Technical Support**

# KEY HEADLINES

Customer Support and Satisfaction is our key focus, when it comes to our product range, service, facilities and responsibilities.

## MANUFACTURING FACILITY

Our state-of-the-art engineering facility is located in Benton, Illinois and can produce a high-performance product to any specification.

## SERVICE & SUPPORT

Infinity has an outstanding Customer Service Support team who can be reached 24 hours a day, seven days a week.

## QUALITY MANUFACTURING

Infinity is a registered ISO 9001 company ensuring products are manufactured to the highest quality standards.

## CUSTOM PRODUCTS

In-house design and Engineering team to ensure products drill efficiently in our customer's ground conditions.



State-of-the-art  
manufacturing facility



24 hours service  
and support

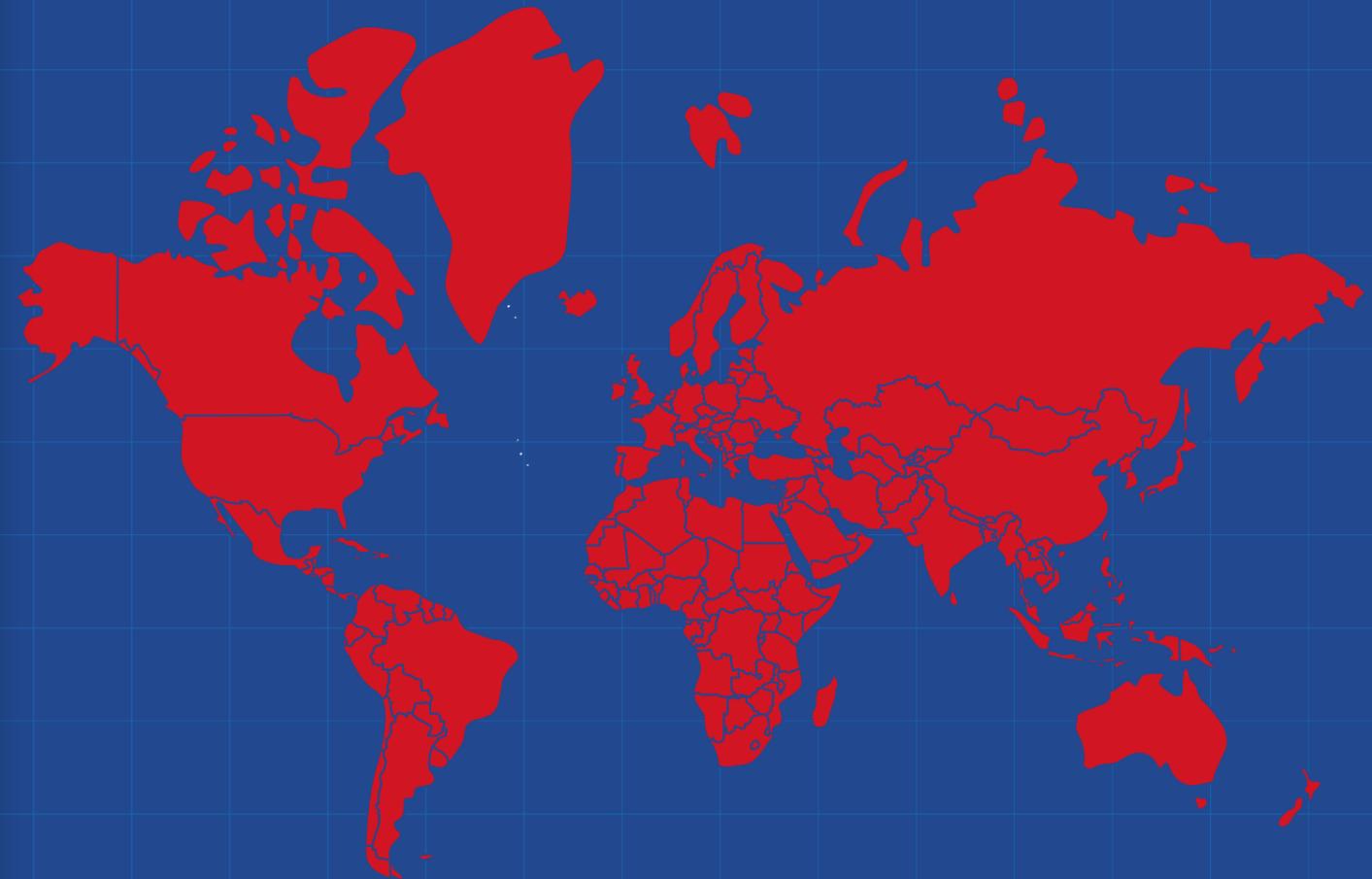


High quality product -  
ISO 9001:2015



Custom products available  
for your ground conditions

# WHERE WE OPERATE





## KNOWLEDGEABLE SALES TEAM

All of us here at Infinity pride ourselves on exceptional service and quality manufactured Bits. We work closely with our customers to provide the best drilling tool solution to match their needs.

The hub of our company is made up of a knowledgeable Sales team both in-house and outside sales. They pride themselves on responding to all inquiries immediately and the team exceeds industry standards for service, utilizing the policy of 'the customer is king'.



## IN-HOUSE ENGINEERING & DRAFTING TEAM

With our in house Engineering and Drafting team we are able to design and manufacture custom products and parts to our customers' exact specifications.

With the latest in machining technology we can make even the most complex designs a reality.

We are able to offer:

- CNC cut threads
- Long hole boring (up to 80")
- Custom engraving
- Turning (from 32" diameter to 120" long)
- Milling (from 32" diameter to 120" long)

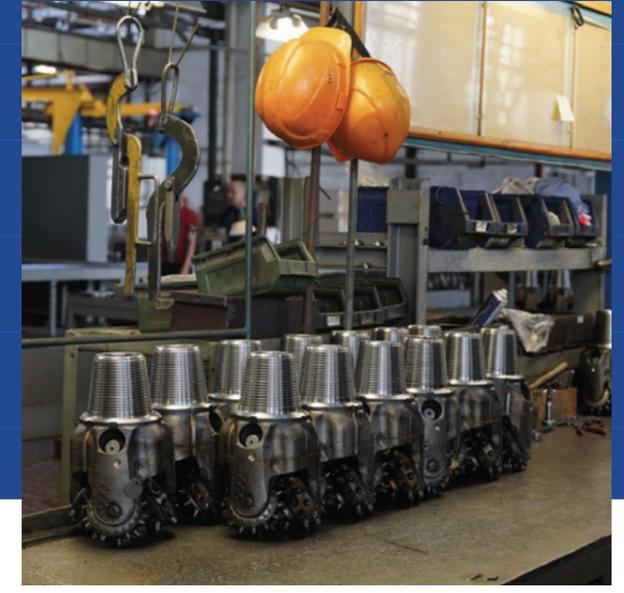


## STATE-OF-THE-ART ENGINEERING FACILITY

Our state-of-the-art engineering facility is located in Benton, Illinois and can produce a high performance product to any specification.

We have recently increased the footprint of our manufacturing plant. As a result of this we have been able to add several new machines to our facility, enabling us to double our manufacturing capacity. We are able to run most of our machines for 'lights out manufacturing', which enables us to keep manufacturing and energy costs low – a saving which we can then pass on to our customers – as well as meet tight deadlines.

The expansion and increased output of our manufacturing facility has allowed us to hire more professionals in a range of departments, from Sales all the way through to Upper Management, allowing an increased level of service to our clients.



## SOURCING AND SUPPLY OF PREMIUM QUALITY TRICONE BITS

Infinity supplies an industry leading range of tricone bits benefiting from high performance and consistent quality throughout our range.

Sourcing high quality tricone bits enables our customers to tackle a wide range of ground conditions with over 700 roller cone bit designs.

Product is available from 2-15/16" diameter up to 36" with Milled Tooth and TCI inserts for drilling bore holes in different geological conditions.

Tricones are manufactured with API-7-1 certification and supported with a full quality management system.



## CUSTOM PRODUCT DESIGN SERVICE

**Our custom design service is available in order to guarantee that we supply products that maximize our customer's ROI.**

This includes in-house Engineering and Drafting departments to ensure a fast turnaround from design to production.



## PRODUCT REPAIR & REFURBISHMENT

**To further maximize our customer's investment we also repair Rock Tools and Reamers, offering same-day estimates and one of the fastest turn-around times in the industry.**

Rebuilding, as opposed to replacing, rock tools and reamers is a cost effective solution that will not only prove far cheaper than replacement but will greatly increase the life and return on investment too.



## OUTSTANDING CUSTOMER SERVICE SUPPORT

**Infinity has an outstanding Customer Service Support team who can be reached 24 hours a day, seven days a week.**

Our customers can choose to speak to one of our team over the phone or, where required, we will not hesitate to send Technical Support Personnel to the drill site in order to overcome any issues. The Service team strive to enable our customers to resume their operations with as little time lost as possible.



## QUALITY FOCUS

**Infinity is proud to be an ISO 9001:2015 accredited company. Achieving ISO 9001:2015 certification means their customers have complete assurance that products are manufactured to the highest quality standards**

Customers benefit by knowing they are working with an organization that follows an international standard, improving their service quality and making their clients a number one priority.

Infinity also continually improves their processes to ensure they identify all present customer needs and assess future requirements, as customer satisfaction has always been a fundamental part of their business.

# RIG CLASS 24-49K

PDC Bits



# PILOT HOLE

TRICONES



Part Number	Tool	Diameter	Connection	Ports	Blades	Back out cutters
ITM260501	PDC Bit	4-1/4"	2-3/8" REG	5	5	N
ITM260663	PDC Bit	5-1/2"	2-7/8" REG	5	5	Y
ITM260644	PDC Bit	5-5/8"	3-1/2" REG	5	5	N
ITM260489	PDC Bit	5-7/8"	3-1/2" REG	5	5	N

Part Number	Tool	Diameter	Connection	Sealed Bearings	Type
36406	Tricone - Mill Tooth for Soft Rock	4-1/2"	2-3/8" REG	N	Milled Tooth
36408	Tricone - Mill Tooth for Soft Rock	4-7/8"	2-3/8" REG	N	Milled Tooth
36410	Tricone - Mill Tooth for Soft Rock	5-1/2"	2-3/8" REG	Y	Milled Tooth
36412	Tricone - Mill Tooth for Soft Rock	6"	2-3/8" REG	Y	Milled Tooth

## 24-49K EXAMPLE RIGS

DON'T FORGET TO SPEAK TO US ABOUT CROSS OVER SUBS

D23X30DR



JT30 AT



D24X40



AT40



## DIRECTIONAL HAMMER BITS

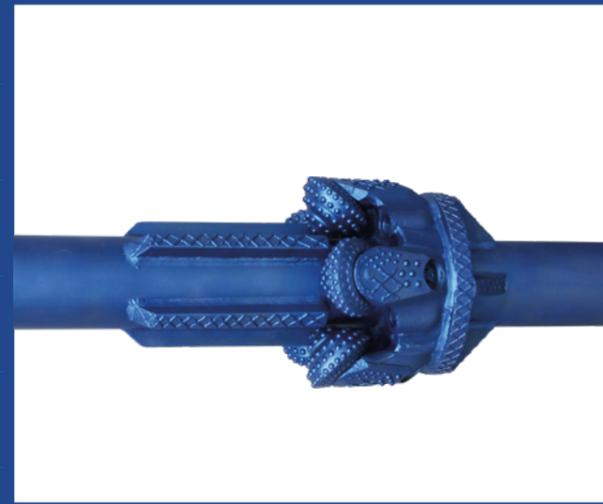


Part Number	Shank	Diameter	Face Design
ITM280001	HDD30	4-1/4"	Convex Slant

Part Number	Shank	Diameter	Face Design
ITM650001	HDD40	4-1/4"	Convex
ITM650002	HDD40	4-1/4"	Slant Face
ITM650008	HDD40	4-1/2"	Slant Face
ITM650007	HDD40	5"	Convex
ITM650005	HDD40	5-1/4"	Slant Face

# RIG CLASS 24-49K

## PDC REAMERS



# HOLE OPENING

## TRICONE HOLE OPENERS

Part Number	Tool	Diameter	Connection
ITM260104	PDC Pull Reamer (5" Min Pilot)	8"	2-3/8" REG Box-Box
ITM260103	PDC Pull Reamer (5" Min Pilot)	10"	2-7/8" IF Box-Box
ITM260105	PDC Pull Reamer (5" Min Pilot)	12"	2-7/8" IF Box-Box
ITM585003	PDC Pull Reamer (6" Min Pilot) with Replaceable Cutters	14"	3-1/2" IF Box-Box
ITM585004	PDC Shark Pull Reamer (5" Min Pilot) with Replaceable Cutters	16"	3-1/2" IF Box-Box

Part Number	Tool	Diameter	Connection
ITM582020	Tricone Hole Opener - TCI - with 5-1/2" stabilizer bars	8"	2-3/8" REG Box-Box
ITM582029	Tricone Hole Opener - TCI - with stabilizer bars	10"	3-1/2" REG Box-Box
ITM582030	Tricone Hole Opener - TCI - with stabilizer bars	12"	3-1/2" REG Box-Box
ITM582031	Tricone Hole Opener - TCI - with stabilizer bars	14"	3-1/2" REG Box-Box
ITM582032	Tricone Hole Opener - TCI - with stabilizer bars	16"	3-1/2" REG Box-Box

## 24-49K EXAMPLE RIGS

D23X30DR



JT30 AT



D24X40



AT40



DON'T FORGET TO  
SPEAK TO US  
ABOUT PULL TABS

# RIG CLASS 50-99K

PDC Bits



# PILOT HOLE

TRICONES

Part Number	Tool	Diameter	Connection	Ports	Blades	Back out cutters
<b>ITM260512</b>	PDC Bit	6-1/4"	3-1/2" REG	5	5	YES
<b>ITM260730</b>	PDC Bit	6-1/2"	3-1/2" REG	5	5	YES
<b>ITM260734</b>	PDC Bit	6-3/4"	3-1/2" REG	5	5	YES

Part Number	Tool	Diameter	Connection	Sealed Bearings	Type
<b>36431</b>	Tricone - Mill Tooth for Soft Rock	6"	3-1/2" REG	N	Milled Tooth
<b>36416</b>	Tricone - Mill Tooth for Soft Rock	6-1/2"	3-1/2" REG	Y	Milled Tooth
<b>36418</b>	Tricone - Mill Tooth for Soft Rock	7-1/2"	3-1/2" REG	Y	Milled Tooth
<b>36442</b>	Tricone - TCI for Hard Rock	6"	3-1/2" REG	Y	Tungsten Carbide Insert
<b>36417</b>	Tricone - TCI for Hard Rock	6-1/2"	3-1/2" REG	Y	Tungsten Carbide Insert
<b>36419</b>	Tricone - TCI for Hard Rock	7-1/2"	3-1/2" REG	Y	Tungsten Carbide Insert

## 50-99K EXAMPLE RIGS

**DON'T FORGET TO SPEAK TO US ABOUT CROSS OVER SUBS**

D40X55DR



JT60



D60X90S3



JT60 AT



## DIRECTIONAL HAMMER BITS



Part Number	Shank	Diameter	Face Design
<b>ITM360008</b>	HDD50	5"	Convex
<b>ITM360004</b>	HDD50	5-1/4"	Slant Face
<b>ITM360007</b>	HDD50	5-1/4"	Convex
<b>ITM360015</b>	HDD50	5-1/2"	Slant Face
<b>ITM360014</b>	HDD50	5-3/4"	Slant Face
<b>ITM360017</b>	HDD50	6-1/4"	Slant Face
<b>ITM360016</b>	HDD50	6-1/4"	Slant Face

Part Number	Shank	Diameter	Face Design
<b>ITM090968</b>	QL50/HDD60	6-1/8"	Convex
<b>ITM090042</b>	QL50/HDD60	6-1/8"	Slant Face
<b>ITM090074</b>	QL50/HDD60	6-1/4"	Convex
<b>ITM090024</b>	QL50/HDD60	6-1/4"	Slant Face
<b>ITM090061</b>	QL50/HDD60	6-1/2"	Slant Face
<b>ITM090076</b>	QL50/HDD60	6-3/4"	Slant Face
<b>ITM090077</b>	QL50/HDD60	6"	Slant Face
<b>ITM090086</b>	QL50/HDD60	6"	Slant Face
<b>ITM090088</b>	QL50/HDD60	7-1/2"	Convex
<b>ITM090089</b>	QL50/HDD60	7-1/2"	Convex

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# RIG CLASS 50-99K

## PDC REAMERS



# HOLE OPENING

## TRICONE HOLE OPENERS

Part Number	Tool	Diameter	Connection
ITM260103	PDC Pull Reamer (5" Min Pilot)	10"	2-7/8" IF Box-Box
ITM260105	PDC Pull Reamer (5" Min Pilot)	12"	2-7/8" IF Box-Box
ITM585003	PDC Pull Reamer (6" Min Pilot) with Replaceable Cutters	14"	3-1/2" IF Box-Box
ITM585004	PDC Shark Pull Reamer (5" Min Pilot) with Replaceable Cutters	16"	3-1/2" IF Box-Box
ITM585006	PDC Shark Pull Reamer (6" Min Pilot) with Replaceable Cutters	20"	3-1/2" IF Box-Box
ITM585009	PDC Shark Pull Reamer (8" Min Pilot) with Replaceable Cutters	24"	4-1/2" IF Box-Box

Part Number	Tool	Reaming Diameter	Connection
ITM582029	Tricone Hole Opener - TCI - with stabilizer bars	10"	3-1/2" REG Box-Box
ITM582030	Tricone Hole Opener - TCI - with stabilizer bars	12"	3-1/2" REG Box-Box
ITM582031	Tricone Hole Opener - TCI - with stabilizer bars	14"	3-1/2" REG Box-Box
ITM582032	Tricone Hole Opener - TCI - with stabilizer bars	16"	3-1/2" REG Box-Box
ITM582028	Tricone Hole Opener - TCI - with stabilizer bars	18"	3-1/2" REG Box-Box
ITM582033	Tricone Hole Opener - TCI - with stabilizer bars	20"	3-1/2" REG Box-Box
ITM582034	Tricone Hole Opener - TCI - with stabilizer bars	22"	3-1/2" REG Box-Box
ITM582027	Tricone Hole Opener - TCI - with stabilizer bars	24"	3-1/2" REG Box-Box

## 50-99K EXAMPLE RIGS

D40X55DR



JT60



D60X90S3



JT60 AT



**DON'T FORGET TO  
SPEAK TO US  
ABOUT PULL TABS**

# RIG CLASS 100-250K

## PDC BITS



Part Number	Tool	Diameter	Connection	Ports	Blades	Back out cutters
<b>ITM260512</b>	PDC Bit	6-1/4"	3-1/2" REG	5	5	Y
<b>ITM260730</b>	PDC Bit	6-1/2"	3-1/2" REG	5	5	Y
<b>ITM260595</b>	PDC Bit	7-1/8"	3-1/2" REG	5	5	N

**DON'T FORGET TO SPEAK  
TO US ABOUT CROSS  
OVER SUBS**

## 100-250K EXAMPLE RIGS

**D80X100**



**JT100**



**D100X140S3**



**JT60 AT**



# PILOT HOLE

## TRICONES

Part Number	Tool	Diameter	Connection	Sealed Bearings	Type
<b>36414</b>	Tricone - Mill Tooth for Soft Rock	6-1/4"	3-1/2" REG	Y	Milled Tooth
<b>36400</b>	Tricone - Mill Tooth for Soft Rock	6-1/2"	3-1/2" REG	Y	Milled Tooth
<b>36418</b>	Tricone - Mill Tooth for Soft Rock	7-1/2"	3-1/2" REG	Y	Milled Tooth
<b>36420</b>	Tricone - Mill Tooth for Soft Rock	7-7/8"	3-1/2" REG	Y	Milled Tooth

<b>36403</b>	Tricone - TCI for Hard Rock	6-1/4"	3-1/2" REG	Y	Tungsten Carbide Insert
<b>36384</b>	Tricone - TCI for Hard Rock	6-1/2"	3-1/2" REG	Y	Tungsten Carbide Insert
<b>36419</b>	Tricone - TCI for Hard Rock	7-1/2"	3-1/2" REG	Y	Tungsten Carbide Insert
<b>36421</b>	Tricone - TCI for Hard Rock	7-7/8"	3-1/2" REG	Y	Tungsten Carbide Insert
<b>36401</b>	Tricone - TCI for Hard Rock	7-7/8"	4-1/2" REG	Y	Tungsten Carbide Insert

## DIRECTIONAL HAMMER BITS



Part Number	Shank	Diameter	Face Design
<b>ITM550004</b>	HDD70	7-1/4"	Convex
<b>ITM550005</b>	HDD70	7-1/2"	Slant Face
<b>ITM550006</b>	HDD70	8-1/4"	Convex
<b>ITM550007</b>	HDD70	8-1/2"	Slant Face

# RIG CLASS 100-250K

## PDC REAMERS



# HOLE OPENING

## TRICONE HOLE OPENERS

Part Number	Tool	Diameter	Connection
<b>ITM260103</b>	PDC Pull Reamer (5" Min Pilot)	10"	2-7/8" IF Box-Box
<b>ITM260105</b>	PDC Pull Reamer (5" Min Pilot)	12"	2-7/8" IF Box-Box
<b>ITM585003</b>	PDC Pull Reamer (6" Min Pilot) with Replaceable Cutters	14"	3-1/2" IF Box-Box
<b>ITM585004</b>	PDC Shark Pull Reamer (5" Min Pilot) with Replaceable Cutters	16"	3-1/2" IF Box-Box
<b>ITM585006</b>	PDC Shark Pull Reamer (6" Min Pilot) with Replaceable Cutters	20"	3-1/2" IF Box-Box
<b>ITM585009</b>	PDC Shark Pull Reamer (8" Min Pilot) with Replaceable Cutters	24"	4-1/2" IF Box-Box
<b>ITM585011</b>	PDC Shark Pull Reamer (8" Min Pilot) with Replaceable Cutters	28"	4-1/2" IF Box-Box
<b>ITM585014</b>	PDC Shark Pull Reamer (8" Min Pilot) with Replaceable Cutters	32"	5-1/2" FH Box-Box
<b>ITM585016</b>	PDC Shark Pull Reamer (8-1/2" Min Pilot) with Replaceable Cutters	36"	5-1/2" FH Box-Box

Part Number	Tool	Reaming Diameter	Connection
<b>ITM582029</b>	Tricone Hole Opener - TCI - with stabilizer bars	10"	3-1/2" REG Box-Box
<b>ITM582030</b>	Tricone Hole Opener - TCI - with stabilizer bars	12"	3-1/2" REG Box-Box
<b>ITM582031</b>	Tricone Hole Opener - TCI - with stabilizer bars	14"	3-1/2" REG Box-Box
<b>ITM582032</b>	Tricone Hole Opener - TCI - with stabilizer bars	16"	3-1/2" REG Box-Box
<b>ITM582028</b>	Tricone Hole Opener - TCI - with stabilizer bars	18"	3-1/2" REG Box-Box
<b>ITM582033</b>	Tricone Hole Opener - TCI - with stabilizer bars	20"	3-1/2" REG Box-Box
<b>ITM582034</b>	Tricone Hole Opener - TCI - with stabilizer bars	22"	3-1/2" REG Box-Box
<b>ITM582027</b>	Tricone Hole Opener - TCI - with stabilizer bars	24"	3-1/2" REG Box-Box
<b>ITM582035</b>	Tricone Hole Opener - TCI - with stabilizer bars	26"	4-1/2" IF Box-Box
<b>ITM582036</b>	Tricone Hole Opener - TCI - with stabilizer bars	28"	4-1/2" IF Box-Box
<b>ITM582037</b>	Tricone Hole Opener - TCI - with stabilizer bars	30"	4-1/2" IF Box-Box
<b>ITM582038</b>	Tricone Hole Opener - TCI - with stabilizer bars	32"	4-1/2" IF Box-Box

## 100-250K EXAMPLE RIGS



D80X100



D100X140S3



JT100



JT100 AT

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**DON'T FORGET TO SPEAK TO US ABOUT PULL TABS**

**CUSTOM BUILDS INCLUDING DIFFERENT THREAD TYPES ARE AVAILABLE ON REQUEST**

Here are some of the other features of our new reamer:



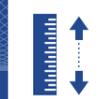
Replaceable cutter segments supplied in kit form with everything you need to replace a segment.



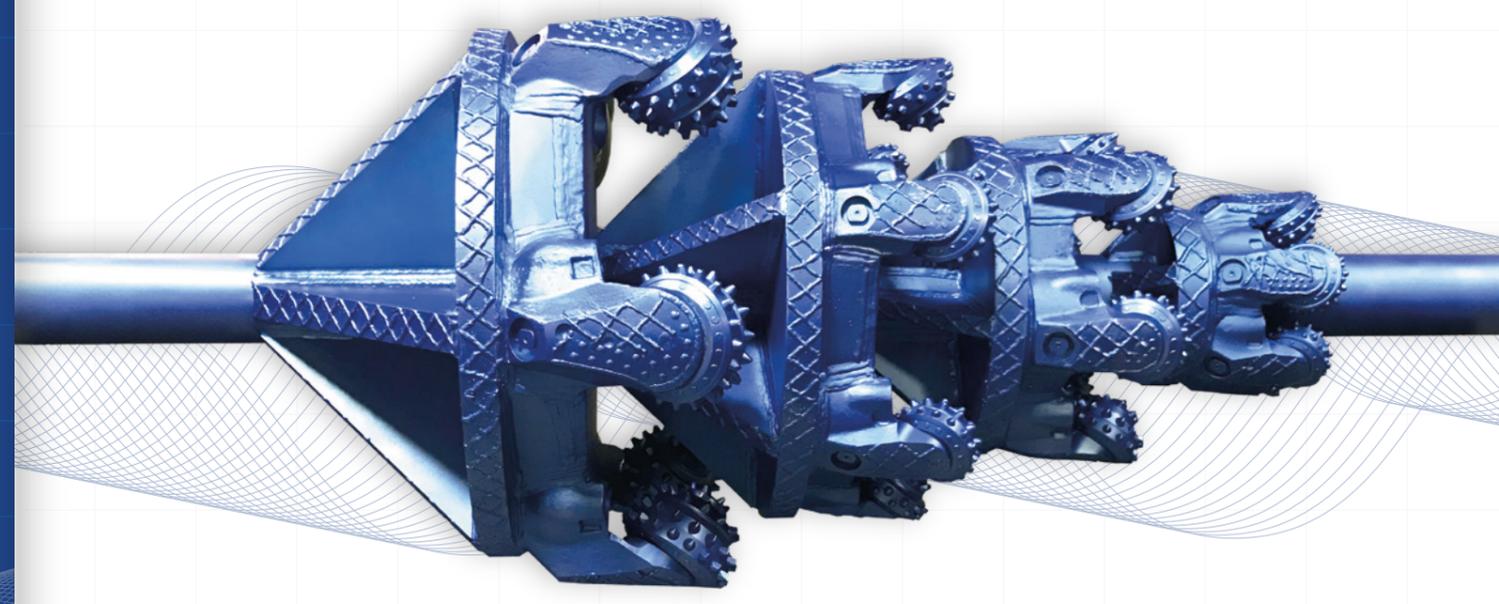
All cutter segments are interchangeable no matter which position they are required on the blade.



Cutters are designed to be changed onsite with hand tools



Cutter segments are the same no matter what size of reamer.



# CHRISTMAS TREE HOLE OPENERS

Designed to open a pilot bore to the final diameter in one pass.

Christmas Tree Reamers are designed and manufactured for large HDD rigs, tunnel boring and road crossing machines.

- Custom designed and manufactured to your requirements
- Final diameter in 1 pass – save time and money
- Push casing in directly behind the hole opener.

## Our Shark PDC Reamer also benefits from our unique design, covered by an international patent with the following benefits:

- Increased penetration rates for faster project completion - up to 5 times faster than conventional methods.
- Reaming up to 12" extra diameter in 1 pass (e.g. 6" pilot to 18")
- Less stress on the drill rig - lower torque required and less vibration on the rods
- No moving parts for increased reliability
- Clean holes with a consistent size.

Please call or email to discuss how this revolutionary product can help your drilling projects, **+44 1224 937188** or **uksales@stepoiltools.com**



# STABILIZERS

Stabilizers help keep the bore central and concentric by supporting your reamer or hole opener. Infinity Stabilizers come with hard facing and back out cutters as standard, and are manufactured in our Benton, Illinois facility.

Diameters are available from 12" to 32" with a wide range of thread connection.



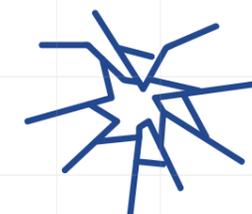
# BENEFITS OF INFINITY PDC TECHNOLOGY



5x faster than conventional methods



No moving parts



Less stress on the drill rig



Clean hole with consistent size

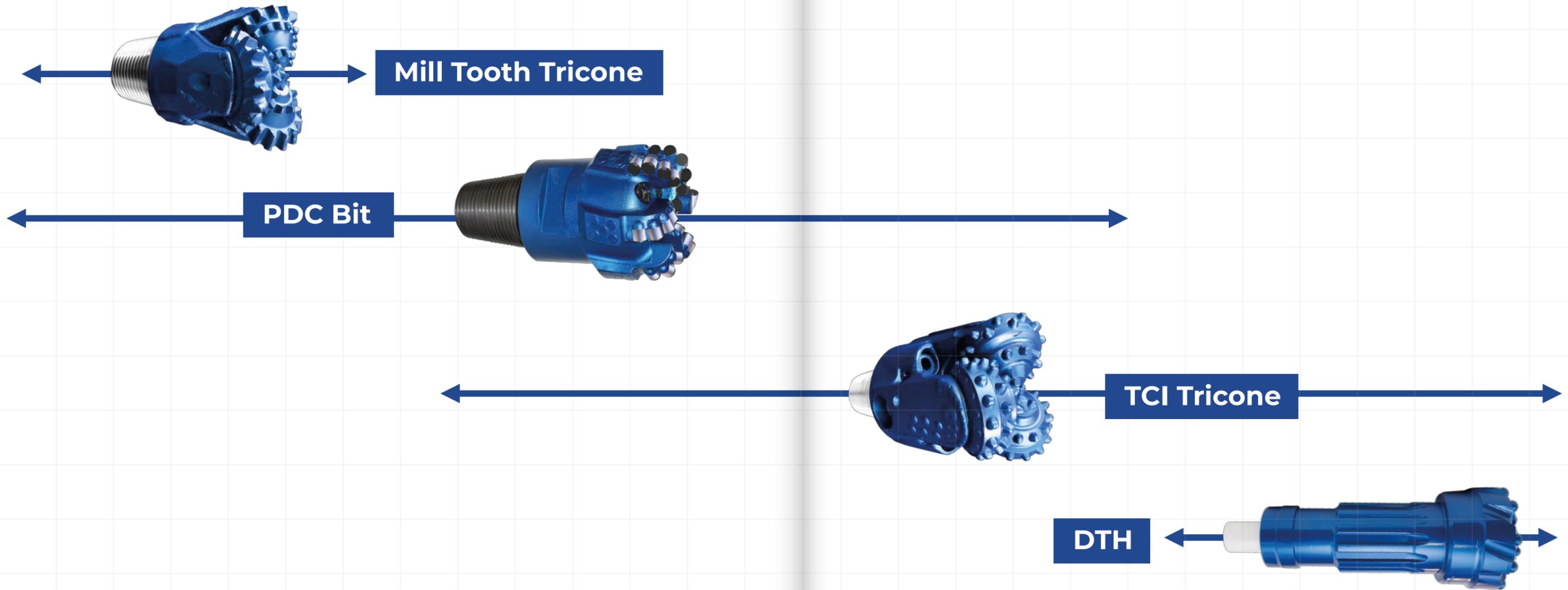


Repairable



Manufactured in the USA

# ROCK TOOL CHART





## HDD PDC OPERATIONAL SUMMARY

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- Minimum RPM should be 60 to 80 RPM
- Maximum weight on Bit (WOB) – 3,000 lb per Inch diameter. E.g. 6” bit is 18,000 lb.
- Drilling Fluid Flow Rate
  - 20 GPM up to 5”
  - 30 GPM from 5” up to 5 7/8”
  - 40GPM from 5 7/8” up to 7 7/8

### BIT PREPARATION

- Handling Fixed cutter PDC Bits
- Care needs to be taken with the Diamond cutting elements
- Always place bit on Softer surface for example wood, rubber mat, plastic

### INSTALLATION OF NOZZLES

- Nozzle holes should be inspected and free of debris before installation
- Install Seal into the bottom of nozzle port while insuring they remain flat on the sealing surface
- Thread lock should be applied to all threads of nozzles and tightened with Nozzle Wrench

### MAKE-UP TORQUE

- Visually inspect thread pin for any debris
- Apply anti seize thread compound
- Make up once in rig to recommended API torque spec

### PDC ENTRY INTO EXISTING HOLE

- Upon re-entry of an existing hole one should see an increase on torque as well as WOB which will indicate either contact with bottom of hole or pre-existing cuttings.
- PDC bits usually show an increase of torque before WOB appears
- NOTE: ALWAYS AVOID HIGH WOB WHEN IN OLD CUTTINGS AS THIS WILL CAUSE BIT BALLING.
- As soon as previous cuttings have been reached continue to rotate to the bottom of hole at full circulation until certain driller has reached the true bottom of the hole.
- WOB should not exceed 1,000 lbs per inch of bit at an rotational rate of 60-80 RPM.

### REAMING - TRIPPING IN THE HOLE

- Trip slowly any problem areas in the hole while washing plenty of drilling fluid and/ or reaming if necessary. If major hole issues are present a separate clean-up run to help straighten the hole may be necessary.
- Please remember while tripping the hole PDC bit are susceptible to damage especially cutter damage.
- Bits with smaller junk slots (groove between cutter blades) may produce surge pressures due to the restrictive space.
- Pumping drilling fluid downhole can help with hang ups as well as flushing the junk slots clean for ease of retraction of the bit.
- Recommendation is to ream 80-90ft. at reaming speed with full circulation.
- Trip back out.

Please note this document is intended as a summary for PDC Operational use, please always consult STEP Oiltools personnel before operating a PDC bit for the first time.



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