Drill Bits

MINERAL EXPLORATION

ENVIRONMENTAL

GEOTECHNICAL

GEOTHERMAL

ROTARY

SONIC

HDD

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DRILL BITS
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DRILL BITS

Hole Products offers a large selection of tricone and bicone roller bits, polycrystalline diamond compact (PDC) bits, drag bits, claw bits, and accessories for use in a wide range of drilling industries including construction, environmental/geotechnical, geothermal, HDD, mineral exploration, rotary, and more.

Tricone and bicone bits are available in steel tooth and tungsten carbide insert, sizes from 1 7/8" to 36", open bearing, sealed bearing and journal sealed bearing, jet or regular circulation, and with a number of additional custom features.

PDC bits are offered with steel or matrix bodies, sizes from 2 15/16" to 17 1/2"+, blade counts from 3 to 8, and with a variety of custom PDC cutter options.

Drag bits are offered in Chevron and Step types, with 3 or 4 wings and in sizes from 1 7/8" to 26".

Claw bits are available in sizes from 3 1/2" to 24" and with a variety of cutter quantity options.

All bits are available with a number of custom manufacturing options and any thread connection, to fit a wide range of drilling requirements.

Please contact your Hole Products representative for detailed bit specifications and assistance selecting the correct bit for your specific drilling application.

Products listed in the catalog are representative of the most common industry sizes and styles. Please contact your Hole Products representative for additional product offerings.

ROLLER CONE BITS

Roller cone bits have conical cutters or cones with steel teeth or tungsten carbide buttons around them. As the drill string is rotated, the bit cones roll along the bottom of the borehole in a circular motion. As they roll, new teeth come in contact with the bottom of the hole, chipping the formation below and around the bit tooth. Air or drilling fluid lift the crushed rock chips from the bottom of the hole and up the annulus. As rotation continues, another tooth makes contact with the bottom of the hole and creates new rock chips, thus, the process is continuous.

Hole Products offers a complete line of tricone and bicone bits. Tricone bits are available in new and used (re-tip and re-run) steel tooth and tungsten carbide insert, in sizes from 2 1/2" to 36", for use in all formations, with any bearing/seal type, and with a wide range of additional custom features.

Reverse Circulation tricones bits are available on request. Please refer to the Reverse Circulation section of this catalog or contact your Hole Products representative for details.

To make describing the type of tricone bit you are looking for easier, Hole Products follows the IADC bit classification system. The IADC Code describes a tricone bit; it tells you what the bit is, steel tooth or carbide insert, the formations the bit is meant for drilling, and the bearing/seal type. See the IADC Codes on page 4 for details.

Please contact your Hole Products representative for additional details and assistance selecting the tricone bit best suited for your specific drilling conditions.

IADC CODE - TRICONE BITS

First Digit - 1, 2, and 3 designate steel tooth bits and the formation being drilled, with 1 for soft, 2 for medium, and 3 for hard formations. 4, 5, 6, 7, and 8 designate tungsten carbide insert bits and the formation being drilled, with 4 being the softest and 8 the hardest formation.

Second Digit - 1, 2, 3 and 4 are further broken down by the formation, with 1 being the softest and 4 the hardest.

Third Digit - Classifies the bit according to bearing/seal type and special gauge/wear protection.

1. **Open Bearing** - On these bits the cones will spin freely. The bit has a front row of ball bearings and a back row of roller bearings.
2. **Open Bearing, Air-Cooled -** Cones are similar to #1, but have air injection directly to the cones to cool the bearings. Air flows into the cone through the passage ways inside the pin. (Not for use in mud applications.)
3. **Open Bearing with Gauge Protection -** Carbide inserts in the heel of the cone.
4. **Sealed Roller Bearing** - These bits have an o-ring seal with a grease reservoir for bearing cooling. The seal acts as a barrier against mud and cuttings to protect the bearings.
5. **Sealed Roller Bearing with Gauge Protection -** Carbide inserts in the heel of the cone.
6. **Sealed Journal Roller Bearing -** These bits are strictly oil/grease cooled with nose bearings, o-ring seal and a race for maximum performance.
7. **Sealed Journal Rolling Bearing with gauge protection -** Carbide inserts in the heel of the cone.

Fourth Digit – used to indicate additional features.

A.	Air Application	E.	Extended Jet	X .	Chisel Insert
C.	Center Jet	G.	Extra Gauge Protection	Y.	Conical Insert
S.	Standard Steel Tooth	J.	Jet Deflection	Z.	Other Insert Shape
D.	Deviation Control	R.	Reinforced Welds		

Example 1:

IADC Code: 321
Bit Description:
3 = Steel Tooth, Hard Formations
2 = Semi-Abrasive and Abrasive Formations.
1 = Open Bearing

Example 2:

IADC Code: 514
Bit Description:
5 = Tungsten Carbide Insert, Soft to Medium Formation
1 = Soft Formations
4 = Sealer Roller Bearing

New Tricone Bits

Hole Products offers new steel tooth and tungsten carbide insert (tci) tricone bits in sizes from 2 1/2" – 36", with open or sealed bearings, regular or jet circulation, and a wide range of additional custom features for ideal performance in any formation. Tricone bits can be customized to optimize penetration rates and bit life in particular formations and under specific operating weights and rotation speeds.

Steel teeth or carbide inserts come in a variety of shapes, sizes, and grades of tungsten carbides to address specific drilling conditions. TCI bits offer increased durability over steel tooth bits but also carry a higher cost.

Open bearing bits feature bearings without a seal that are open to outside debris. Open bearing bits are generally cheaper than sealed bearing bits, and recommended for shallower holes. Sealed bearing tricone bits are available for use in applications where, historically, bearing life has limited bit performance. Sealed roller bearing bits extend the bearing life, allowing for increased utilization of the cutting structure.

Refer to the IADC codes on page 4 for additional tricone bit ordering guidelines.

Please contact your Hole Products representative for additional details and assistance selecting the tricone bit designed to maximize performance and increase bit life under your specific drilling conditions.

Steel Tooth Tricones

Tungsten Carbide Insert Tricones

TRICONE BITS - STANDARD CONNECTION SIZES

TRICONE BITS - STANDARD CONNECTION SIZES *	
SIZE	STANDARD PIN CONNECTION
2 1/2" to 2 3/4" inclusive	A - AW Rod
2 7/8" to 3 3/8" inclusive	N4 Rod
3 1/2" to 4 1/2" inclusive	2 3/8" API
4 5/8" to 5" inclusive	2 7/8" API
5 1/8" to 7 3/8" inclusive	3 1/2" API
7 1/2" to 9 3/8" inclusive	4 1/2" API
9 1/2" to 14 3/8" inclusive	6 5/8" API
14 1/2" to 18 1/2" inclusive	6 5/8" API or 7 5/8" API
18 5/8" to 26" inclusive	7 5/8" API or 8 5/8" API
27" and larger	8 5/8" API

**Tricone bits are available with alternate connection sizes on request.*

RE-TIP STEEL TOOTH TRICONE BITS

Re-tip steel tooth tricone bits are gently used bits that usually come from the oil fields. They are refurbished for use in non-oilfield rotary applications, such as water wells, HDD, and construction type drilling. These bits offer significant cost savings over new bits.

Hole Products offers a wide range of premium, oil field quality re-tip steel tooth bits in sizes ranging from 2 1/2" to 36". Re-tip bits are available for use in soft, medium, and hard formations.

Contact your Hole Products representative for additional details and ordering assistance.

RE-RUN CARBIDE INSERT TRICONE BITS

Re-run carbide insert bits are used bits that have been re-worked, cleaned, and often times painted. Re-runs offer significant cost savings over new carbide insert bits.

Hole Products offers a variety of re-run carbide bits in sizes ranging from 2 1/2" to 36". All re-runs are premium quality and available for use in soft, medium, and hard formations.

Contact your Hole Products representative for additional details and ordering assistance.

BICONE BITS

Bicone bits are roller-cone type bits similar to tricones that have two cones mounted on bearings. Bicone bits are generally recommended for use in small diameter drill holes and soft formations when speed is more of a priority than hole accuracy.

Hole Products offers new and used (re-tip and re-run) steel tooth and tungsten carbide insert bicone bits in a wide range of sizes, with any thread connection and for use in a variety of formations.

Please contact your Hole Products representative for additional details and assistance ordering bicone bits.

BICONE BITS - STANDARD CONNECTION SIZES

BICONE BITS - STANDARD CONNECTION SIZES*	
BIT SIZE	**STANDARD PIN**
1 7/8" to 2 3/8" inclusive	A - AW Rod
2 1/2" to 2 3/4" inclusive	A-AW Rod & N4 Rod
2 7/8" to 3 1/4" inclusive	N4 Rod
3 1/2" to 4 1/2" inclusive	2 3/8" API
4 5/8" to 4 7/8" inclusive	2 7/8" API

**Bicone bits are available with alternate connection sizes on request.*

PDC BITS

Polycrystalline diamond compact (PDC) bits were first introduced into the oil industry in the mid 70's. Since then, numerous technological design changes have been implemented that have made them an extremely effective tool when drilling in certain formations, most typically homogenous sedimentary rock formations including sandstone, shale, dolomite, and limestone. PDC bits use a shearing or shaving action when encountering the formation. These bits are normally used at higher rotation speeds than typical rotary bits.

The hydraulics of PDC bits are designed to keep the hole clean and the bit cool, which in turn increases the ROP and longevity of the bit.

Hole Products offers a wide range of PDC bits in sizes up to 24". All PDC bits are fully customizable to meet specific drilling requirements, depending on the formation being drilled and the equipment being used. Refer to page 9 for PDC bit design options.

Reverse Circulation PDC bits are available on request. Please refer to the Reverse Circulation section of this catalog.

Please contact your Hole Products representative for additional PDC bit design details and assistance selecting the correct bit for your specific drilling application.

PDC BIT OPTIONS

Body:

Steel body PDC bits are a lower cost alternative, to matrix body bits. They are generally preferred in soft formations, such as sandstone.

Matrix body PDC bits provide excellent resistance to wear. They are commonly used in harder more abrasive formations such as limestone and dolomite.

Number of Blades:

The number of blades on a PDC bit is largely determined by the formation being drilled. Generally higher blade and cutter counts are used for harder formations, whereas in softer formations fewer blades can be used to increase ROP.

Gauge protections is applied to all bit blades to insure longevity and to sustain a straighter hole which increases ROP.

Cutter Characteristics (count and size):

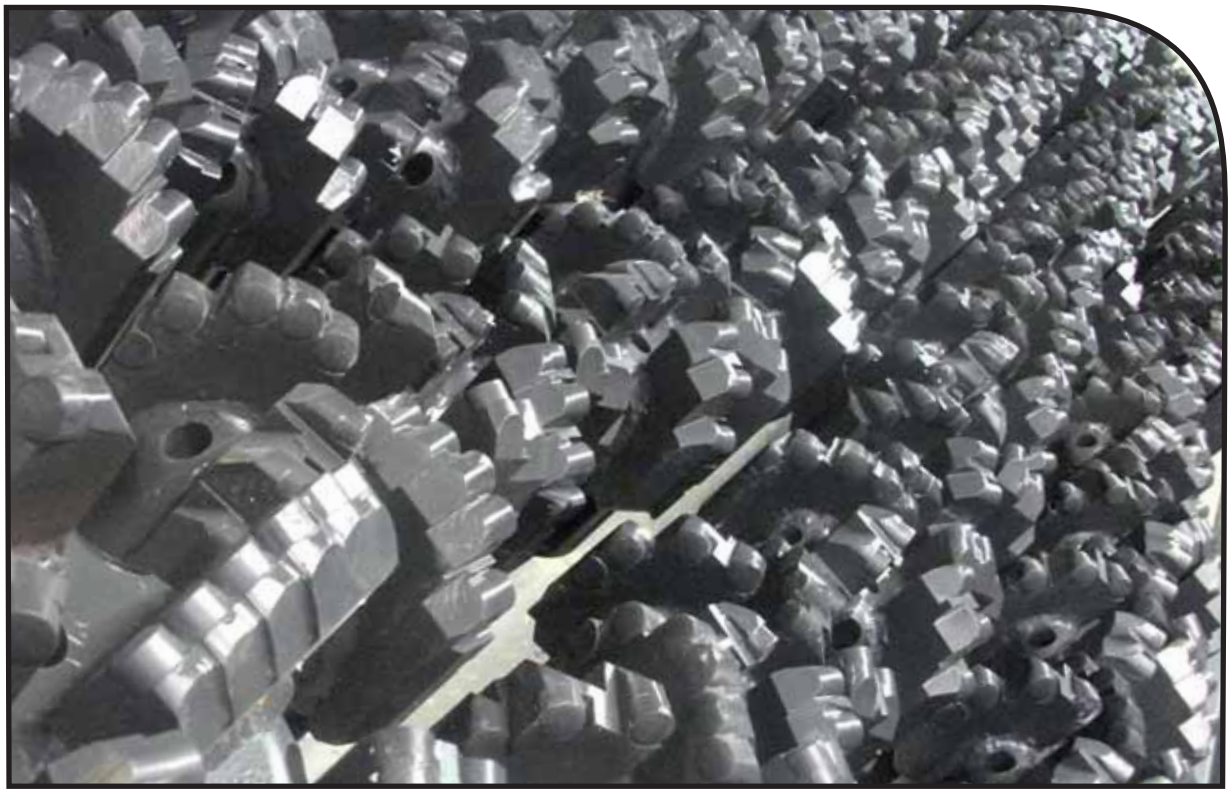
Cutter count and size can be adjusted for drilling in specific formations. Small cutters and high cutter count are chosen for hard and abrasive rock formations, whereas large cutters and a reduced cutter count are preferred for soft to medium formations.

Hydraulics:

PDC bits are available with flushing holes or open center and either fixed or adjustable nozzles. Options are available for all varieties of PDC bits and are designed specific to those PDC bits to maximize bit performance and longevity.

Ground Combat

Performance PDC bits.



Ground Combat

The Ground Combat line of PDC bits are designed for all aspects of PDC drilling. All Ground Combat bits are manufactured with premium, thermally stable PDC cutters. In addition bit cutters are force balanced reducing bit whirl and improving the accuracy of the hole being drilled.

Ground Combat PDC bits are separated into three series (Sniper, Invader, and Assassin) for use in various formation types and under specific drilling parameters. Whether drilling in sandstone, limestone, or shale formations, and with fluid or air, the Ground Combat line of PDC bits has what you need. All bits are fully customizable to meet the requirements of even the most demanding jobs.

Please refer to pages 11 - 13 for additional details, or contact your Hole Products representative for assistance.

Ground Combat

Performance PDC bits.

Sniper

These economical steel bodied bits are designed for sandstone and shale. These bits are specifically constructed to withstand higher impact force and are loaded with higher abrasion resistant cutters than competitors. Sniper bits can be designed with flushing holes or open center and include various blade and cutter size configuration options.

SNIPER SERIES BITS

BIT SIZE	BLADE COUNT	CUTTER SIZE	PIN SIZE	BODY	HYDRAULICS
3 3/4" - 3 7/8"	3	1304	2 3/8" REG	Steel	Flushing Holes/Open Center
4" - 4 1/2"	4	1304/1308	2 7/8" REG	Steel	Flushing Holes/Open Center
4 5/8" - 4 3/4"	4-5	1308	2 7/8" REG	Steel	Flushing Holes/Open Center
4 7/8" - 5"	4-5	1308/1613	2 7/8" REG	Steel	Flushing Holes/Open Center
5 1/8" - 5 1/4"	4-5	1308/1613	2 7/8" REG	Steel	Flushing Holes/Open Center
5 1/2"	4-5	1308/1613	2 7/8" REG	Steel	Flushing Holes/Open Center
5 5/8"	4-5	1308/1613	2 7/8" REG	Steel	Flushing Holes/Open Center
5 7/8"	4-5	1308/1613	3 1/2" REG	Steel	Flushing Holes/Open Center
6"	4-5	1308/1613	3 1/2" REG	Steel	Flushing Holes/Open Center
6 1/2"	4-5	1308/1613	3 1/2" REG	Steel	Flushing Holes/Open Center
6 3/4"	5	1308/1613	3 1/2" REG	Steel	Flushing Holes/Open Center
6 3/4"	6	1613	3 1/2" REG	Steel	Flushing Holes/Open Center
7"	5	1613	3 1/2" REG	Steel	Flushing Holes/Open Center
7"	6	1613	3 1/2" REG	Steel	Flushing Holes/Open Center
7 1/2"	5	1613	3 1/2" REG	Steel	Flushing Holes/Open Center
7 1/2"	6	1613	3 1/2" REG	Steel	Flushing Holes/Open Center
7 7/8"	5	1613	4 1/2" REG	Steel	Flushing Holes/Open Center
7 7/8"	6	1613	4 1/2" REG	Steel	Flushing Holes/Open Center
8 1/2"	5	1613	4 1/2" REG	Steel	Flushing Holes/Open Center
8 1/2"	6	1613	4 1/2" REG	Steel	Flushing Holes/Open Center
8 3/4"	5	1613	4 1/2" REG	Steel	Flushing Holes/Open Center
8 3/4"	6	1613	4 1/2" REG	Steel	Flushing Holes/Open Center
9 7/8"	5	1613	4 1/2" REG	Steel	Flushing Holes/Open Center
9 7/8"	6	1613	4 1/2" REG	Steel	Flushing Holes/Open Center
11"	5	1613	6 5/8" REG	Steel	Flushing Holes/Open Center
12 1/4"	5	1613	6 5/8" REG	Steel	Flushing Holes/Open Center
12 1/2" - 17 1/2" +	Call for Details				

Ground Combat

Performance PDC bits.

Invader

These steel bodied bits have advanced hydraulics and forward advanced blades that significantly increase ROP. Invader bits are specifically designed to increase productivity in sandstone and shale formations. They are customizable with flushing holes and fixed or adjustable nozzles, along with blade count and cutter size configuration options.

INVADER SERIES BITS

BIT SIZE	BLADE COUNT	CUTTER SIZE	PIN SIZE	BODY	HYDRAULICS
3 3/4" - 3 7/8"	3	1304	2 3/8" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
4" - 4 1/2"	4	1304/1308	2 7/8" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
4 5/8" - 4 3/4"	4-5	1308	2 7/8" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
4 7/8" - 5"	4-5	1308/1613	2 7/8" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
5 1/8" - 5 1/4"	4-5	1308/1613	2 7/8" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
5 1/2"	4-5	1308/1613	2 7/8" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
5 5/8"	4-5	1308/1613	2 7/8" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
5 7/8"	4-5	1308/1613	3 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
6"	4-5	1308/1613	3 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
6 1/2"	4-5	1308/1613	3 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
6 3/4"	5	1308/1613	3 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
6 3/4"	6	1613	3 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
7"	5	1613	3 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
7"	6	1613	3 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
7 1/2"	5	1613	3 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
7 1/2"	6	1613	3 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
7 7/8"	5	1613	4 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
7 7/8"	6	1613	4 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
8 1/2"	5	1613	4 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
8 1/2"	6	1613	4 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
8 3/4"	5	1613	4 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
8 3/4"	6	1613	4 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
9 7/8"	5	1613	4 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
9 7/8"	6	1613	4 1/2" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
11"	5	1613	6 5/8" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
12 1/4"	5	1613	6 5/8" REG	Steel	Flushing Holes/Fixed or Adjustable Nozzles
12 1/2" - 17 1/2" +	Call for Details				

Ground Combat

Performance PDC bits.

Assassin

The Assassin bit is a matrix body bit, which provides a stronger wear resistance due to the matrix powder that is applied to the body. The matrix body style is able to withstands harder compositions, such as dolomite and limestone. Bits are fully customizable with flushing holes and fixed or adjustable nozzles, along with blade count and cutter size configuration options.

ASSASSIN SERIES BITS

BIT SIZE	BLADE COUNT	CUTTER SIZE	PIN SIZE	BODY	HYDRAULICS
3 3/4" - 3 7/8"	3	1304	2 3/8" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
4" - 4 1/2"	4	1304/1308	2 7/8" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
4 5/8" - 4 3/4"	4-5	1308	2 7/8" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
4 7/8" - 5"	4-5	1308/1613	2 7/8" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
5 1/8" - 5 1/4"	4-5	1308/1613	2 7/8" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
5 1/2"	4-5	1308/1613	2 7/8" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
5 5/8"	4-5	1308/1613	2 7/8" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
5 7/8"	4-5	1308/1613	3 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
6"	4-5	1308/1613	3 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
6 1/2"	4-5	1308/1613	3 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
6 3/4"	5	1308/1613	3 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
6 3/4"	6	1613	3 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
7"	5	1613	3 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
7"	6	1613	3 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
7 1/2"	5	1613	3 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
7 1/2"	6	1613	3 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
7 7/8"	5	1613	4 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
7 7/8"	6	1613	4 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
8 1/2"	5	1613	4 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
8 1/2"	6	1613	4 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
8 3/4"	5	1613	4 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
8 3/4"	6	1613	4 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
9 7/8"	5	1613	4 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
9 7/8"	6	1613	4 1/2" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
11"	5	1613	6 5/8" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
12 1/4"	5	1613	6 5/8" REG	Matrix	Flushing Holes/Fixed or Adjustable Nozzles
12 1/2" - 17 1/2" +	Call for Details				

DRAG BITS

Hole Products offers a wide selection of Step and Chevron type drag bits for use in a variety of formations. Drag bits are offered with three or four wings in sizes ranging from 2 3/4" to 26".

Step Type:

Bits are primarily designed for rapid penetration in soft to medium formations such as clay, sand rock, or shale. Step bits are available with regular and heavy steps. Heavy steps are recommended for harder formations. They feature more cutting carbides and offer increased durability.

Chevron Type:

Bits are designed for harder, more consolidated formations such as hard shale or limestone, areas with rock, and for drilling out concrete casings and plugs. The Chevron type drag bit does not penetrate as fast as the Step type, but will cut harder formations.

As a general rule three wing bits offer faster penetration, whereas four wing bits offer increased durability.

Replaceable blade drag bits are available on request.

Please contact your Hole Products representative for additional details and drag bit ordering assistance.

DRAG BIT ORDERING GUIDE

Drag bits are offered with a variety of custom options to optimize penetration in a variety of formations.

Please refer to the guide below when ordering drag bits.

STEP TYPE* DRAG BIT ORDERING GUIDE	
Size:	
Number of Wings:	
Regular or Heavy Step:	
Connection:	

*See page 14 for additional details.

CHEVRON TYPE* DRAG BIT ORDERING GUIDE	
Size:	
Number of Wings:	
Connection:	

*See page 14 for additional details.

CLAW BITS

Claw bit are designed for drilling in soft to medium, unconsolidated formations including gravels, sandstone, and shales. They feature field replaceable bullet shaped cutters. Cutters are designed to rotate in their blocks to provide a self sharpening effect, thus extending the life of the bit.

Hole Products offers claw bits in a wide range of sizes, with a number of thread connections, and a variety of custom manufacturing options including:

- Sizes from 3 1/2" - 24"
- 4 or 5 cutters
- Any thread connection
- Button or Blade style pilot bits

Please contact your Hole Products representative for custom design details and availability of replacement blocks, cutters, and pilot bits.

CLAW BITS			
PART #	SIZE	# OF CUTTERS	CONNECTION
2550004	4 3/4"	4	2 3/8" API
2550008	4 3/4"	4	2 7/8" API
2550006	5 1/8"	4	2 3/8" API
2550007	5 1/4"	4	2 7/8" API
2550009	5 1/2"	4	3 1/2" API
2550010	5 7/8"	4	3 1/2" API
2550001	6"	5	3 1/2" API
2550003	6 1/4"	5	3 1/2" API

CORING BITS

Hole Products offers a large selection of diamond impregnated, surface set, carbide chip and PCD bits for use in the diamond core drilling industry.

Coring bits are specifically designed and manufactured to provide optimum performance and longevity in specific ground conditions.

For a full list of available coring bits, please refer to Coring section of this catalog.

SONIC BITS

Hole Products offers a complete line of quality sonic bits and accessories designed to provide excellent performance and wear resistance in the demanding applications unique to sonic drilling.

All sonic bits are manufactured from premium quality materials and field tested under a variety of conditions and specific ground formations.

For a full list of available sonic bits, please refer to the Sonic section of this catalog.

NOTES

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