Rotary drilling products

Epiroc Rock Drilling Tools – 2022

Content

Epiroc

With our guaranteed performance, we stand behind all our products to offer the latest innovative solution when it comes to rotary drilling equipment. Although we offer a comprehensive selection of bits with our superior drill string, we understand most applications are unique. We support every customer with targeted objectives to lower their Total Drilling Cost by offering “mine specific” solutions if needed. This allows our global customer service teams to better support the end users through proactive projects and performance feedback.

Our Epsilon premium product line promises the highest performance, reliability and availability. This effectively results in a lower drilling cost.

The Omega sealed bearing product line, takes the guess work out of drilling. Omega bits are designed to increase bit life even further where the application presents restrictions to drilling.

To further boost penetration rates, we offer PARD (Percussion Assisted Rotary Drilling); the latest science of drilling when time is of the essence.

With our Teamalloy drill string, customers truly understand value. This product line speaks for itself.

With Epsilon, Omega, PARD, and Teamalloy, we offer a total solution for any application. We back our products with decades of experience and support. We want to be your first choice for drilling consumables.

Ask us about rotary drilling tools, we have the expertise.

Catalog code key

Type of product	Thread		Bit type		Bit diameter/ mm		IADC cutting structure	Tricone product line		Major tooth shape, TCI or steel tooth		Lug protection features		Lug type features		Other features		Gage carbide feathers		IADC bearing type	
1	18	–	3		11	–	54	FB	–	C		A				H		W	–	02	
Rock bit 1	2⅜	10	Steel tooth	0	2⅞	073	1-1	Focus Blasthole	FB	Conical inserts	C	Armor	A	Center jet equipped	K	Hard nose on cones	H	"Standard" carbide has no code		Standard roller (fluid) bearing	01
	2⅞	12	TCI	3	2 15/16	075	1-2	Focus Waterwell	FW	Round top inserts if TCI	R	Backreaming	B	Streamlined lug, jet only	L	Combination AWS-BFV	J	Gage bevel on tooth bits	G	Air bearing	02
	3½	14			3⅛	079	1-3	Focus Workover	FO	Ogive inserts if TCI	O	Shirttail protection in steel T	ST	Regular circulation	R	Aggressive cutting structure	V	Tough carbide (breakage resistant)	T	Roller bearing gage protected (non air bearing)	03
	4¾	17			3¼	083	1-4	Focus Exploration	FE	Chisel inserts if TCI	F	Enhanced shirttail	Y					Wear resistant carbide (hard)	W	Sealed roller bearing	04
	5½	31			3⅞	098	2-1	Focus Petroleum	FP	Convl. gage tooth, steel tooth	1									Sealed roller bearing, gage protected	05
	6⅝	18			4	102	2-2	Focus Engineering	FE	Tapered gage tooth, steel tooth	2									Sealed journal bearing	06
	7⅝	32			4⅛	105	2-3	Focus Hole opener	FH	"T" Gage tooth, steel tooth	3									Sealed journal bearing, gage protected	07
	8⅝	63			4¼	108	2-4	Focus HDD	FD	"L" Gage tooth, steel tooth	4										
	4n-rod	61			4½	114	3-1	Epsilon	eP	"Web" gage tooth, steel tooth	5										
					4⅝	117	3-2	Epsilon 2 Features	E2												
					4¾	121	3-3	Omega Single sealed Bit	Os												
					4⅞	124	3-4	Omega double sealed Bit	OM												
					5⅛	130	4-1														
					5¼	133	4-2														
					5½	140	4-3														
					5⅝	143	4-4														
					5¾	146	5-1														
					5⅞	149	5-2														
					6	152	5-3														
					6⅛	156	5-4														
					6¼	159	6-1														
					6½	165	6-2														
					6¾	171	6-3														
					7	178	6-4														
					7⅜	187	7-1														
					7½	191	7-2														
					7⅞	200	7-3														
					8½	216	7-4														
					8¾	222	8-1														
					9	229	8-2														
					9⅞	251	8-3														
					10⅝	270	8-4														
					11	279															
					12¼	311															
					13¾	349															
					14¾	375															
					15	381															
					16	406															

The catalog code represented in this example, **118-311-54-FB-CA-HW-02** identifies the following about a Focus blasthole drill bit.

- Threading is 6⅝ 18
- 12¼" (311 mm) in diameter 311
- IADC of 5-4-2 ..... 54 + 02
- Conical inserts C
- Armor on shirttail ..... A
- Hardnose feature on cone ..... H
- Wear resistant carbide grades ..... W
- Air bearings 02

Blasthole drilling machine.

Key applications

Blasthole mining

Focus TCI bits have optimally designed bearing structures to withstand extreme pulldown loads typical of today's mining drill rigs. Controlled metallurgy and generous air passages for cooling ensure extended bearing hours. The robust bearing is matched with an aggressive cutting structure providing good penetration rates in a wide cross section of formations.

For overall wear protection, hard-facing is provided on shirttails and cones. Easily replaceable nozzles, with nail lock retention, enable drillers to select appropriate nozzle sizes ensuring correct back pressure.

Consistent manufacturing processes from raw material to final bit assembly ensures performance reliability bit after bit.

Water well

Drilling for water is a demanding activity on the driller, as well as the drill bit. No two water well bits are similar due to the variety of ground conditions. The key to a peaceful night, for a driller, is a consistent and reliable tool. Focus water well bits provide this.

Thanks to the same manufacturing procedures adopted for water well products, as for high performance mining products, Focus bits have delivered to the driller's content.

Bits are available in Milled Tooth and TCI versions from 2½" in diameter up to 5¾" in center flush and jet flush configurations. Larger diameter bits up to 12¼" are also available in the Focus range of Epiroc rotary drill bits.

Epiroc Tricones for the most challenging drilling conditions.

Product features

Miners want to drill uninterrupted and fast, nothing else. That's how you become profitable. It's also how your operation becomes as gentle as possible on people and the environment. At Epiroc, from long experience we know what bothers miners. Problems such as bits stuck deep down below ground, inserts wearing out prematurely and bearings corroding due to moisture. So we decided to do something about it. We went back to the drawing board and asked our engineers to fix these problems.

- **Fast penetration** – The cutting structures are designed to perform efficiently and increase the bit life with a variety of insert shapes.
- **Carbide** – Multiple grade selection for different rows of inserts based on function.
- **Optimized nozzle orientation** – Nozzle size and orientation are optimized for efficient evacuation of cuttings.

Epiroc tricone bits makes the performance unbeatable even in the most challenging drilling conditions

Cone nose protection – Nozzle size and orientation are optimized for efficient evacuation of cuttings.

Regular shirttail protection – for normal drilling.

Armor shirttail protection – for abrasive drilling.

Enhanced shirttail protection – Deeply set spherical inserts on the shirttail for effective grip during long runs in abrasive formation. Hard metal welding for superior wear resistance.

Lug – showing the structure with bearing races and the shirttail protection.

Cutting structures – TCI

Four basic classifications for Tungsten Carbide Insert (TCI) drill bits are divided into the F4, F5, F6, and F7 type series. The principal design differences are in tailoring the cutting structure of each type to most efficiently drill specific formations.

The F4 series bits are characterized by large diameter, widely spaced chisel or conical inserts. This configuration promotes maximum penetration rates in softer formations that have a tendency to stick and ball up the cutting structure.

Inserts become shorter and more closely spaced as you go through the F5 and F6 series. The F7 series has the most densely spaced and shortest projecting inserts. This configuration promotes maximum penetration rates in hard formations.

F4 types

IADC	4-1 to 4-4
Rock Strength/UCS	Very soft-soft, <10 000 psi/<83 mpa
Drilling RPM	50 to 150 RPM
Weight on Bit	1 000 to 4 000 (lbs/inch of bit diameter)
Applications	Super scoops, long conical inserts with sharp points are widely spaced for aggressive drilling and very high ROP at <100 m/hr. Typically used for coal overburden in formations like sandstone, siltstone, shale, limestone, alluvium, highly altered volcanics and schists.

F5 types

IADC	5-1 to 5-4
Rock Strength/UCS	Soft-medium hard rock, 6 000-10 000 psi/41-207 mpa
Drilling RPM	50 to 150 RPM
Weight on Bit	3 000 to 6 000 (lbs/inch of bit diameter)
Applications	Chisel, conical inserts with blunt points and medium projection are moderately spaced for aggressive drilling and good penetration. Typically used for hard coal overburden in formations like volcanic rocks (rhyolite, dacite, andesite, etc.), copper porphry, granite, diabase and "low grade" metamorphic rocks.

F6 types

IADC	6-1 to 6-4
Rock Strength/UCS	Medium hard rock, 24 000-44 000 psi/166-303 mpa
Drilling RPM	50 to 120 RPM
Weight on Bit	4 000 to 7 000 (lbs/inch of bit diameter)
Applications	Conical, ogive, some chisel inserts with blunter points and shorter projections are closely spaced on increased number of rows per cone. Typically used in formations like volcanic rocks (rhyolite, dacite, andesite, etc.), hard limestone, hard shale, quartzite, granodiorite, granite, diabase, diorite, skarn, tactite and medium grade metamorphic.

F7 types

IADC	7-1 to 7-4
Rock Strength/UCS	Hard rock, 38 000-60 000 psi/262-400 mpa
Drilling RPM	50 to 80 RPM
Weight on Bit	5 000 to 9 000 (lbs/inch of bit diameter)
Applications	Strong conical, ogive inserts with short projections are densely packed. Typically used in formations like taconite, quartzite, banded iron formations and high grade metamorphic rocks like skarns, tacite, hornfels, etc.

Cutting structures – Steel tooth

The three basic classifications of steel tooth bits are divided into the F1, F2 and F3 Series.

Type F1 steel tooth bits are designed for optimum performance in formations of low compressive strength. Soft formation bits are designed with long slim, strong teeth to permit deep penetration in the formation with comparatively light weight on bit. Type F2 steel tooth bits are designed for medium formations and have more closely spaced teeth with more gage surface to resist wear. Type F3 steel tooth bits are designed to drill hard formations. This bit has higher capacity bearings and more closely spaced teeth with increased tooth angles to allow the use of heavier weights required to effectively drill hard formations.

F1 types

IADC	1-1 to 1-4
Rock Strength/UCS	Less than 5 000 psi/<35 mpa
Weight on Bit	1 000 to 4 000 (lbs/inch of bit diameter)
Application	Large widely spaced teeth with interruptions, removals and deletions on gage. Full tooth hardfacing in both sealed and open bearing configurations. Primary application is water well drilling.

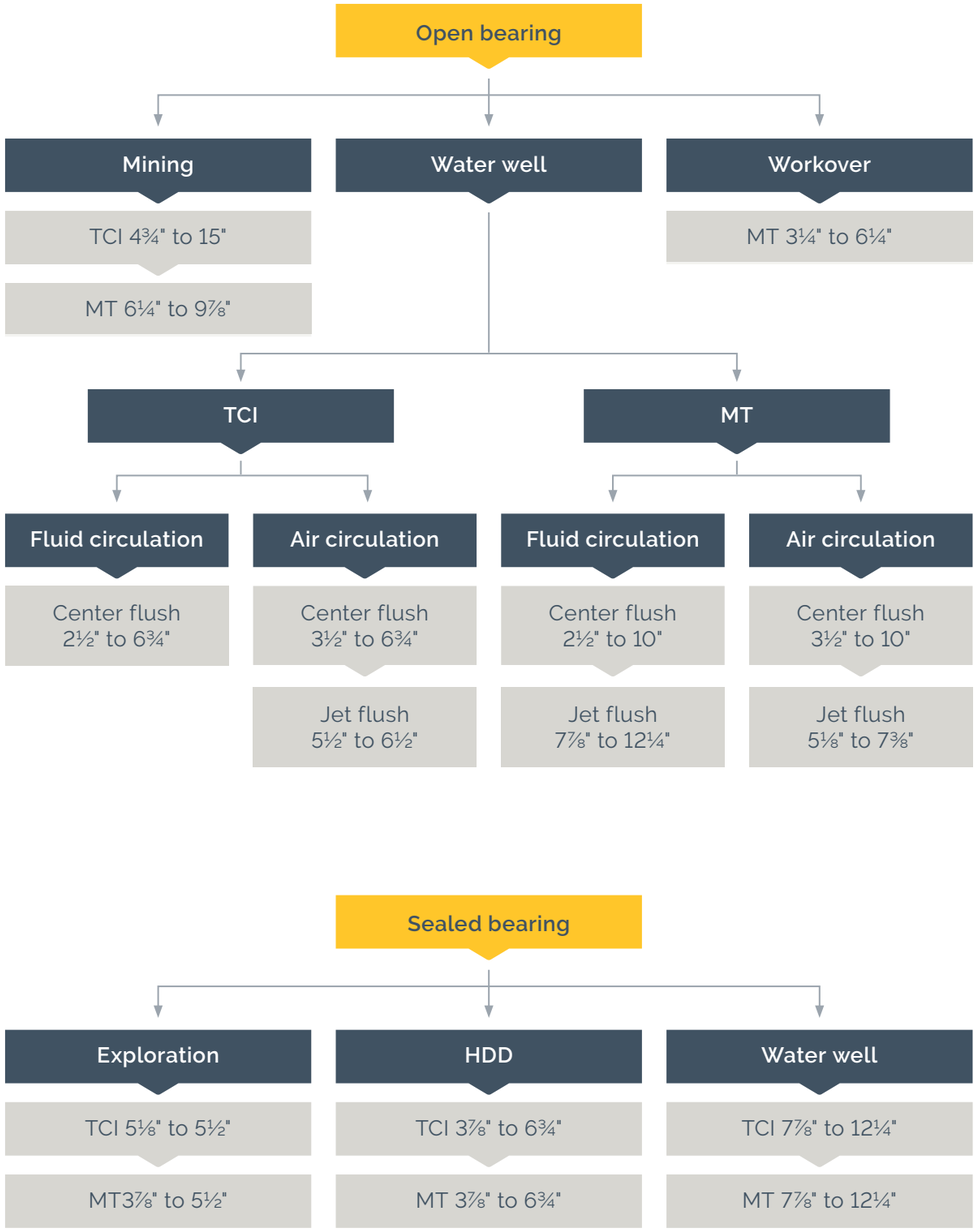
F2 types

IADC	2-1 to 2-4
Rock Strength/UCS	3 000-10 000 psi/20-79 mpa
Weight on Bit	3 000 to 6 000 (lbs/inch of bit diameter)
Application	More teeth and rows than F1 class bits. Teeth are smaller and shorter, with larger included angle for strength. Similar hardfacing to F1 class bits, except no hardfacing on lead side of teeth. Available in sealed and open bearing configuration. Primary application is water well drilling.

F3 types

IADC	3-1 to 3-4
Rock Strength/UCS	8 000-14 000 psi/55-100 mpa
Weight on Bit	4 000 to 7 000 (lbs/inch of bit diameter)
Applications	Short, small closely spaced teeth for maximum bottom hole coverage. Tooth hardfacing only on gage and spear point. Maximum gage protection with optional carbide inserts. Available in sealed and open bearing configurations. Primary applications are water well and oil field workover.

Product lines



Bit selection guide

Tricone carbide insert rock bit series vs. rock hardness

Rock UCS (psi)	Tungsten carbide insert tricone bit series						Rock type
Rock Strength		Bit Type					
UCS (psi)	UCS (mpa)	F4	F5	F6	F7		
Lower	Lower	IADC 4-1 to 4-4					Claystone, Mudstone
8 000	55						Soft Shale, Sandstone
10 000	69		IADC 5-1 to 5-4				Consolidates, Sandstone
12 000	83						Medium shale
14 000	97						Tuff, Soft schist
16 000	110						Andesite, Rhyolite
18 000	124						Quartzite, (Sand, Silt)
20 000	138						Limestone, Marble
22 000	152						Monzonite, Granite
24 000	165			IADC 6-1 to 6-4			Gneiss
26 000	179						Diorite, Diabase
28 000	193						Hard shale, Slate
30 000	207						Limestone, Dolomite
32 000	221						Basalt
34 000	234						Tactite, Skarn
36 000	248						Granodiorite
38 000	262				IADC 7-1 to 7-4		Taconite
40 000	276						Quartzite
42 000	290						Syenite
44 000	303						Gabbro
46 000	317						
48 000	331						Banded iron
50 000	345						Taconite
52 000	359						Chert
54 000	372						
56 000	386						Quartzite
58 000	400						
60 000	414						Amphibolite
Higher	Higher						Hornfels, Hematite ore

Rock UCS hardness (Unconfined Compressive Strength) is only one factor that contributes to the "drillability" of any rock. Hardness and elasticity will also effect bit selection.

Steel tooth tricone rock bit type vs. rock hardness

Rock UCS (psi)	Steel tooth tricone bit series			Rock type
	F1	F2	F3	
0	IADC 1-1 to 1-4			Unconsolidated sands
				Limestone, Siltstone
2 000				Clay stone, Mudstone
		IADC 2-1 to 2-4		
4 000				Marl, Chalky, Limestone
6 000				Soft shales
8 000			IADC 3-1 to 3-4	Consolidated sandstones
				Soft marble, Dolomite
10 000				
				Medium shales
12 000				
14 000				Tuff, Soft schist

Rock UCS hardness (Unconfined Compressive Strength) is only one factor contributing to the "drillability" of any rock. Other factors influencing drillability are fracture toughness, shear strength, Young's modulus of elasticity, Poisson's ratio of stress vs. strain & internal angle of friction. Any particular bit may be used in harder or softer rock than this chart indicates.

Tricone product line

Focus Blasthole	FB
Focus Waterwell	FW
Focus Workover	FO
Focus Exploration	FE
Focus Petroleum	FP
Focus Engineering	FE
Focus Hole opener	FH
Focus HDD	FD
Epsilon	eP
Epsilon 2 Features	E2
Omega Single sealed Bit	Os
Omega double sealed Bit	OM

Tricone bit selection criteria – surface mining drill bits

When to use standard air bearing bit

Air bearing bits are the most common tricone bits used in mining. This is used in various applications and formations. The advantage of an open bearing bit is that they are usually lower cost.

- Air bearing bits run in any formation
- Where cutting structure typically fails before bearing failure
- Use where cost plays a major role

When to use an Omega single seal bit

Omega single sealed bit is used where the operator is looking for that extra meters over an air bearing bit. Results show that a single sealed bit gives 10 to 15% more life when compared to a standard air bearing bit.

- Developed for contractors working on cost per meter (CPM) contracts
- Developed for mining companies in coal, gold, copper and iron ore mining
- Developed for use in locations with high water injection for dust suppression

When do you need sealed bearing bits?

- Not sufficient air for bailing cuttings and cooling the bearing, water intrusion, and water injection
- Use in air bearing application where bearing failure is the main mode of failure and at least 50% of the life of the cutting structure left.
- When a customer asks for more meters and to reduce bit changes and injuries. Also for logistic purposes on the remote areas.
- Typically, dual seal Omega bearing bits run better in soft to medium formations (40 to 60 type cutting structures), in hard to very hard formations cutting structure failure are the main failure mode. The extra cost of the seal bearing system is not warranted.

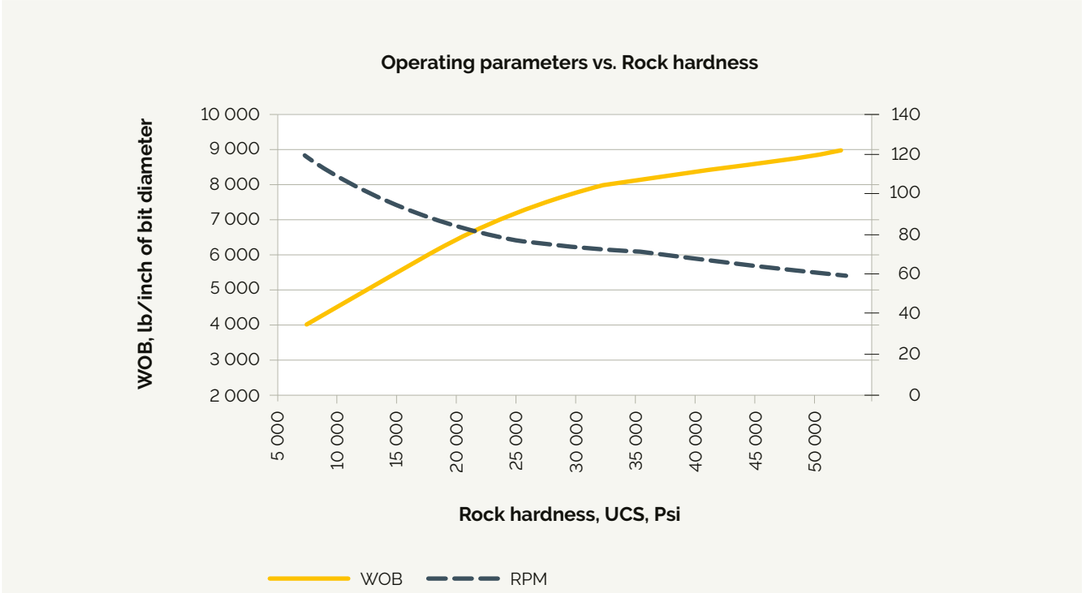


Chart showing relationship between Rock hardness WOB and RPM.

Epiroc rotary drill bits

The Epiroc product line includes bits designed to deliver competitive performance on current generation drill rigs. These bits are suited for a wide variety of drilling applications including Blasthole, Water well, HDD, Workover and Exploration drilling. The products are proven in varied formations including Very Hard Iron Ore, Hard to Medium formations of Gold / Copper mines and Soft overburden of Coal mines. The product line offers a broad range of sizes and designs for a professional driller to choose from for any application.

Epiroc rotary drill bits are available as Milled Tooth bits or as Tungsten Carbide Insert (TCI) bits.

Milled Tooth bits are ideal for very soft to medium hard rock. The teeth are hardfaced with tungsten carbide for good wear resistance.

TCI drill bits are available in various cutting structure designs, ranging from aggressive long conical inserts for soft Sandstones/Shales to moderately blunt conical inserts for compact sandstones / granordiorite / basalts to ogive shaped carbide inserts for very hard banded Iron ore formations.

Epiroc rotary drill bits come in open bearing and sealed bearing configurations depending upon whether the application is Air circulation drilling or Mud circulation drilling.

Additional features include:

- Hardfacing on cone to overcome cone shell erosion.
- Shirttail protection options to handle different abrasive formations.
- Regular protection for soft overburdens.
- Armor protection for wet and abrasive formations like sandstone.
- Enhanced protection for dense and fractured formations like iron ore.

Focus blast hole tricone bits

Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
5⅛	130	93001001	112-3130-52-FB-C-02	522	5⅛" F5
5⅞	149	93001002	114-3149-62-FB-F-02	622	5⅞" F6
6¼	159	93001051	114-0159-33-FB-5-02	332	6¼" F33
6¼	159	93001003	114-3159-52-FB-C-02	522	6¼" F5
6¼	159	5697001526	114-3159-62-FB-CVH-02	622	6¼" F62
6¼	159	5697000523	114-3171-62-FB-CH-02	622	6¼'' F6
6¼	159	93001005	114-3159-64-FB-F-02	642	6¼" F65
6¼	171	93001007	114-3171-52-FB-OA-02	522	6¾" F5
6¾	171	5697001622	114-3171-52-FB-OA-02	522	6¾" F5
6¾	171	5697001723	117-3171-52-FB-OA-02	522	6¾" F5
6¾	171	93001083	114-3171-62-FB-CVH-02	622	6¾" F62
6¾	171	93001008	114-3171-62-FB-FA-02	622	6¾" F6
6¾	171	93001009	114-3171-73-FB-CA-02	732	6¾" F7
6¾	171	93001090	114-3171-73-FB-CAH-02	732	6¾" F7
6¾	171	5697001619	114-3171-73-FB-CA-02	732	6¾" F7
6¾	171	5697001621	114-3171-73-FB-CAH-02	732	6¾" F7
7⅜	187	93002271	114-3187-43-FB-C-01	431	7⅜" F4
7⅞	200	93001010	117-3200-41-FB-CA-02	412	7⅞" F35
7⅞	200	93001011	117-3200-43-FB-CA-02	432	7⅞" F4
7⅞	200	93001014	117-3200-52-FB-CA-02	522	7⅞" F5
7⅞	200	93001016	117-3200-63-FB-CY-02	632	7⅞" F6
7⅞	200	93001017	117-3200-64-FB-CY-02	642	7⅞" F6
7⅞	200	93001018	117-3200-73-FB-CY-02	732	7⅞" F7
8½	216	93001093	117-3216-52-FB-CA-02	522	8½" F5
8½	216	93001092	117-3216-63-FB-CA-02	632	8½" F6
8½	216	93001095	117-3216-73-FB-CA-02	732	8½" F7
9	229	93001019	117-3229-41-FB-CA-02	412	9" F41
9	229	93001021	117-3229-42-FB-CA-02	422	9" F4
9	229	93001023	117-3229-52-FB-CA-02	522	9" F5
9	229	93001022	117-3229-53-FB-CA-02	532	9" F5
9	229	93001024	117-3229-54-FB-CA-02	542	9" F54
9	229	93001025	117-3229-63-FB-CY-02	632	9" F6
9	229	93001026	117-3229-73-FB-CY-02	732	9" F7
9⅞	251	93001028	118-3251-42-FB-CA-02	422	9⅞" F4
9⅞	251	93001053	118-0251-33-FB-5-02	332	9⅞" F33
9⅞	251	5697000541	118-3251-42-FB-CAH-02	422	9⅞" F42
9⅞	251	5697000527	118-3251-52-FB-CAH-02	522	9⅞" F5
9⅞	251	93001087	118-3251-62-FB-CV-02	622	9⅞" F62
9⅞	251	93001058	118-3251-63-FB-C-02	632	9⅞" F6
9⅞	251	93001031	118-3251-63-FB-CA-02	632	9⅞" F6
9⅞	251	93001032	118-3251-64-FB-CA-02	642	9⅞" F64
9⅞	251	88054154	118-3251-71-FB-CYHV-02	712	9⅞" F71
9⅞	251	93010234	117-3251-73-FB-CYH-02	732	9⅞" F73
9⅞	251	93001034	118-3251-73-FB-CY-02	732	9⅞" F7
9⅞	251	93001035	118-3251-73-FB-CYH-02	732	9⅞" F7
9⅞	251	93010219	117-3251-73-FB-CYH-02	732	9⅞" F73
9⅞	251	5697000529	118-3251-73-FB-CYH-02	732	9⅞" F73
9⅞	251	5697000524	117-3251-73-FB-CYH-02	732	9⅞" F73
9⅞	251	88057167	117-3251-73-FB-CYH-02	732	9⅞" F73
12¼	311	93001046	118-3311-53-FB-CA-02	532	12¼" F5
12¼	311	93001047	118-3311-63-FB-CY-02	632	12¼" F6
12¼	311	93001080	118-3311-64-FB-CYV-02	642	12¼" F66
12¼	311	5697000528	118-3311-64-FB-CYV-02	642	12¼" F64
12¼	311	93001079	118-3311-73-FB-CYW-02	732	12¼" F7
15	381	5697000532	132-3381-53-FB-C-02	532	15" F5

Focus HDD tricone drill bits

Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
3¾	95	93006033	110-0095-21-FD-1A-06	216	3¾" F21J
3⅞	98	93006009	110-3098-52-FD-FA-07	527	3⅞" F52J
4½	114	93006026	110-0114-11-FD-1AG-07	117	4½" F11J
4⅝	117	93006025	112-0117-11-FD-1AG-07	117	4⅝" F11J
4¾	121	93006002	112-0121-11-FD-1AG-07	117	4¾" F11J
4¾	121	93006011	112-3121-52-FD-FA-07	527	4¾" F52J
6½	165	88053366	114-3165-63-FD-CA-07	637	6½" F63J
6½	165	88053292	114-3165-53-FD-FA-07	537	6½" F53J
6½	165	5697001214	114-3165-53-FD-FA-07	537	6½" F53J
6¾	171	93006008	114-0171-11-FD-1AG-07	117	6¾" F11J
8½	216	88053293	117-3216-53-FD-FA-07	537	8½" F53J

Focus water well steel tooth tricone drill bits

Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
2⅞	73	93002007	161-0073-32-FW-1R-01	321	2⅞" F32
2 15⁄16	75	93002009	161-0075-21-FW-1R-01	211	2 15⁄16" F21
2 15⁄16	75	93002008	161-0075-32-FW-1R-01	321	2 15⁄16" F32
2 15⁄16	75	93002010	161-0075-33-FW-5R-01	331	2 15⁄16" F33
3⅛	79	93002013	161-0079-32-FW-1R-01	321	3⅛" F32
3¼	83	93002016	161-0083-23-FW-1R-01	231	3¼" F23
3¼	83	93002015	161-0083-33-FW-5R-01	331	3¼" F33
3½	89	93002221	110-0089-23-FW-1R-01	231	3½" F23
3½	89	93002074	110-0089-23-FW-1R-02	232	3½" F23
3½	89	5697000605	110-0089-33-FW-5R-01	331	3½" F33
3¾	95	93002078	110-0095-23-FW-1R-02	232	3¾" F23
3¾	95	93002222	110-0095-32-FW-2R-01	321	3¾" F32
3⅞	98	93002224	110-0098-23-FW-1R-01	231	3⅞" F23
3⅞	98	93002081	110-0098-23-FW-1R-02	232	3⅞" F23
3⅞	98	93002022	110-0098-32-FW-1R-01	321	3⅞" F32
3⅞	98	93002080	110-0098-32-FW-1R-02	322	3⅞" F32
3⅞	98	93002023	110-0098-33-FW-5R-01	331	3⅞" F33
3⅞	98	93002082	110-0098-33-FW-5R-02	332	3⅞" F33
4	102	93002024	110-0102-23-FW-1R-01	231	4" F23
4	102	93002084	110-0102-23-FW-1R-02	232	4" F23
4	102	93002025	110-0102-32-FW-1R-01	321	4" F32
4	102	93002085	110-0102-32-FW-1R-02	322	4" F32
4⅛	105	93002027	110-0105-23-FW-1R-01	231	4⅛" F23
4⅛	105	93002304	110-0105-32-FW-1R-01	321	4⅛" F32
4⅛	105	93002087	110-0105-32-FW-1R-02	322	4⅛" F32
4¼	108	93002226	110-0108-23-FW-1R-01	231	4¼" F23
4¼	108	93002093	110-0108-23-FW-1R-02	232	4¼" F23
4¼	108	93002305	110-0108-32-FW-2R-01	321	4¼" F32
4½	114	93002032	110-0114-11-FW-1R-01	111	4½" F11
4½	114	93002031	110-0114-23-FW-1R-01	231	4½" F23
4½	114	93002033	110-0114-32-FW-2R-01	321	4½" F32
4½	114	93002097	110-0114-32-FW-2R-02	322	4½" F32
4½	114	93002034	110-0114-33-FW-5R-01	331	4½" F33
4⅝	117	93002322	112-0117-23-FW-1R-02	232	4⅝" F23
4⅝	117	93002227	112-0117-32-FW-2R-01	321	4⅝" F32
4¾	121	93002037	112-0121-23-FW-1R-01	231	4¾" F23
4¾	121	93002100	112-0121-23-FW-1R-02	232	4¾" F23
4¾	121	93002228	112-0121-32-FW-2R-01	321	4¾" F32
4¾	121	93002038	112-0121-33-FW-5R-01	331	4¾" F33

Focus water well steel tooth tricone drill bits

Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
4⅞	124	93002229	112-0124-23-FW-1R-01	231	4⅞" F23
4⅞	124	93002104	112-0124-23-FW-1R-02	232	4⅞" F23
4⅞	124	93002288	112-0124-33-FW-5R-01	331	4⅞" F33
5	127	93002043	112-0127-11-FW-1R-01	111	5" F11
5	127	93002040	112-0127-23-FW-1R-01	231	5" F23
5	127	93002107	112-0127-23-FW-1R-02	232	5" F23
5⅛	130	93002291	112-0130-11-FW-1-02	112	5⅛" F11
5⅛	130	93002045	112-0130-23-FW-1R-01	231	5⅛" F23
5⅛	130	93002044	112-0130-33-FW-5R-01	331	5⅛" F33
5⅛	130	5697000606	112-0130-33-FW-5R-01	331	5⅛" F33
5¼	133	93002298	112-0133-32-FW-2R-01	321	5¼" F32
5¼	133	93002307	112-0133-32-FW-2R-02	322	5¼" F32
5⅜	137	93002216	112-0137-23-FW-1R-01	231	5⅜" F23
5½	140	93002054	112-0140-23-FW-1R-01	231	5½" F23
5½	140	93002120	112-0140-23-FW-1R-02	232	5½" F23
5½	140	93002051	112-0140-32-FW-2R-01	321	5½" F32
5½	140	93002117	112-0140-32-FW-2R-02	322	5½" F32
5½	140	93002052	112-0140-33-FW-5R-01	331	5½" F33
5⅝	143	93002122	114-0143-23-FW-1R-02	232	5⅝" F23
5⅝	143	93002286	114-0143-32-FW-2R-01	321	5⅝" F32
5⅝	143	93002231	114-0143-33-FW-5R-01	331	5⅝" F33
5¾	146	93002124	114-0146-23-FW-1R-02	232	5¾" F23
5¾	146	93002316	114-0146-33-FW-5R-01	331	5¾" F33
5⅞	149	93002126	114-0149-23-FW-1R-02	232	5⅞" F23
5⅞	149	93002308	114-0149-32-FW-2R-01	321	5⅞" F32
5⅞	149	93002127	114-0149-32-FW-2R-02	322	5⅞" F32
6	152	93002314	114-0152-23-FW-1R-01	231	6" F23
6	152	93002129	114-0152-23-FW-1R-02	232	6" F23
6	152	93002130	114-0152-32-FW-2R-02	322	6" F32
6	152	93002058	114-0152-33-FW-5R-01	331	6" F33
6⅛	156	93002309	114-0156-32-FW-2R-01	321	6⅛" F32
6¼	159	93002234	114-0159-11-FW-1R-01	111	6¼" F11
6¼	159	93002133	114-0159-11-FW-1R-02	112	6¼" F11
6¼	159	93002235	114-0159-23-FW-1R-01	231	6¼" F23
6¼	159	93002135	114-0159-23-FW-1R-02	232	6¼" F23
6¼	159	93002237	114-0159-33-FW-5R-01	331	6¼" F33
6½	165	93002238	114-0165-23-FW-1R-01	231	6½" F23
6½	165	93002137	114-0165-23-FW-1R-02	232	6½" F23
6½	165	93002239	114-0165-32-FW-2R-01	321	6½" F32
6⅝	168	93002062	114-0168-23-FW-1R-01	231	6⅝ F23
6¾	171	93002064	114-0171-11-FW-1R-01	111	6¾" F11
6¾	171	93002063	114-0171-23-FW-1R-01	231	6¾" F23
6¾	171	93002140	114-0171-23-FW-1R-02	232	6¾" F23
6¾	171	93002065	114-0171-33-FW-5R-01	331	6¾" F33
7⅝	194	93002143	117-0194-33-FW-5R-01	331	7⅝" F33
7⅞	200	93002242	117-0200-33-FW-5R-01	331	7⅞" F33
8	203	93002144	117-0203-33-FW-5R-02	332	8" F33
9⅞	251	93002313	118-0251-33-FW-5-01	331	9⅞" F33
10	254	93002067	118-0254-33-FW-5R-01	331	10" F33

Focus water well tungsten carbide tricone drill bits

Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
2½	64	93002149	161-3064-52-FW-FR-01	521	2½" F5
2½	64	5697001216	161-3067-52-FW-FR-01	521	2½" F5
2½	64	93002150	161-3064-71-FW-CR-01	711	2½" F7
2⅝	67	5697001217	161-3067-52-FW-FR-01	521	2⅝" F5
2⅝	67	93002151	161-3067-52-FW-FR-01	521	2⅝" F5
2⅝	67	93002152	161-3067-71-FW-CR-01	711	2⅝" F7
2⅞	73	93002153	161-3073-52-FW-FR-01	521	2⅞" F5
2 15/16	75	93002154	161-3075-52-FW-FR-01	521	2 15/16" F5
2 15/16	75	5697000558	161-3075-52-FW-FR-01	521	2 15/16" F5
3	76	93002156	161-3076-71-FW-CR-01	711	3" F7
3⅛	79	93002158	161-3079-52-FW-FR-01	521	3⅛" F5
3⅛	79	88057025	161-3079-52-FW-FR-01	521	3⅛" F5
3¼	83	93002159	161-3083-52-FW-FR-01	521	3¼" F5
3½	89	88056961	161-3089-52-FW-FR-01	521	3½" F5
3½	89	5697000559	110-3089-52-FW-FR-01	521	3½" F5
3½	89	93002255	161-3089-52-FW-FR-01	521	3½" F5
3½	89	93002160	110-3089-52-FW-FR-01	521	3½" F5
3½	89	93002185	110-3089-52-FW-FR-02	522	3½" F5
3½	89	93002186	110-3089-71-FW-CR-02	712	3½" F7
3 21/32	93	93002163	110-3093-71-FW-CR-01	711	3 21/32" F7
3⅞	98	5697001218	110-3098-52-FW-FR-01	521	3⅞" F5
3⅞	98	93002164	110-3098-52-FW-FR-01	521	3⅞" F5
3⅞	98	93002189	110-3098-52-FW-FR-02	522	3⅞" F5
3⅞	98	93002165	110-3098-71-FW-CR-01	711	3⅞" F7
3⅞	98	93002190	110-3098-71-FW-CR-02	712	3⅞" F7
4	102	93002166	110-3102-52-FW-FR-01	521	4" F5
4⅛	105	93002303	110-3105-52-FW-FR-01	521	4⅛" F5
4⅛	105	93002193	110-3105-52-FW-FR-02	522	4⅛" F5
4¼	108	5697000845	110-3108-52-FW-FR-01	521	4¼" F5
4¼	108	93002257	110-3108-52-FW-FR-01	521	4¼" F5
4½	114	93002168	110-3114-52-FW-FR-01	521	4½" F5
4½	114	93002195	110-3114-52-FW-FR-02	522	4½" F5
4½	114	93002169	110-3114-71-FW-CR-01	711	4½" F7
4½	114	93002196	110-3114-71-FW-CR-02	712	4½" F7
4¾	121	93002170	112-3121-52-FW-FR-01	521	4¾" F52
4¾	121	5697001219	112-3121-52-FW-FR-01	521	4¾" F52
4¾	121	93002197	112-3121-52-FW-FR-02	522	4¾" F5
4¾	121	93002198	112-3121-71-FW-CR-02	712	4¾" F7
4⅞	124	93002172	112-3124-52-FW-FR-01	521	4⅞" F5
4⅞	124	93002199	112-3124-52-FW-FR-02	522	4⅞" F52
5	127	93002173	112-3127-52-FW-FR-01	521	5" F5
5	127	93002259	112-3127-71-FW-CR-01	711	5" F7
5⅛	130	93002174	112-3130-52-FW-FR-01	521	5⅛" F5
5⅛	130	93002202	112-3130-52-FW-FR-02	522	5⅛" F5
5¼	133	93002175	112-3133-52-FW-FR-01	521	5¼" F5
5½	140	93002176	112-3140-52-FW-FR-01	521	5½" F5
5½	140	93002203	112-3140-52-FW-FR-02	522	5½" F5
5⅝	143	93002177	114-3143-52-FW-FR-01	521	5⅝" F5
5⅝	143	93002282	114-3143-62-FW-C-02	622	5⅝" F6
5¾	146	93002265	114-3146-52-FW-FR-01	521	5¾" F5
5⅞	149	93002178	114-3149-52-FW-FR-01	521	5⅞" F5
5⅞	149	93002205	114-3149-52-FW-FR-02	522	5⅞" F5
6	152	93002180	114-3152-52-FW-FR-01	521	6" F5
6	152	93002207	114-3152-52-FW-FR-02	522	6" F5

Focus water well tungsten carbide tricone drill bits

Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
6½	165	93002182	114-3165-52-FW-FR-01	521	6½" F52
6½	165	93002208	114-3165-52-FW-FR-02	522	6½" F52
6½	165	93002283	114-3165-71-FW-C-02	712	6½" F7

Focus workover tricone drill bits

Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
3⅛	79	91000584	161-0079-31-WO-1R-01	311	3⅛" OHR
3¼	83	91000585	161-0083-31-FO-1R-01	311	3¼" OHR
3⅜	86	93005001	110-0086-32-FO-2R-01	321	3⅜" F32
3½	89	93005009	110-0089-32-FO-2R-01	321	3½" F32
3⅝	92	93005002	110-0092-32-FO-2R-01	321	3⅝" F32
3¾	95	91000581	110-0095-31-FO-1R-01	311	3¾" OHR
3⅞	98	91000576	110-0098-31-FO-1R-01	311	3⅞" OHR
4	102	91001161	110-0102-31-FO-1R-01	311	4" OHR
4⅛	105	91000589	110-0105-31-FO-1STR-01	311	4⅛" OHR
4¼	108	91000588	110-0108-31-FO-1STR-01	311	4¼" OHR
4½	114	91000586	110-0114-31-FO-1STR-01	311	4½" OHR
4⅝	117	5697000531	112-0117-33-FO-1A-06	336	4⅝" F33J
4⅝	117	93010142	112-0117-33-FO-1A-06	336	4⅝" F33J
4⅝	117	91000587	112-0117-31-FO-1R-01	311	4⅝" OHR
4¾	121	91000575	112-0121-31-FO-1R-01	311	4¾" OHR
4¾	121	5697000533	112-0121-33-FO-1A-06	336	4¾" F33J
4⅞	124	91000577	112-0124-31-FO-1R-01	311	4⅞" OHR
4⅝	117	88055700	112-3117-52-FO-CAH-07	527	4⅝" F52J
5⅞	149	91000583	114-0149-31-FO-1R-01	311	5⅞" OHR
6	152	91000580	114-0152-31-FO-1STR-01	311	6" OHR
6⅛	156	91000578	114-0156-31-FO-1STR-01	311	6⅛" OHR
6¼	159	91000574	114-0159-31-FO-1R-01	311	6¼" OHR
7⅞	200	91000591	117-0200-31-FO-1STR-01	311	7⅞" OHR

Focus petroleum sealed tricone drill bits

Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
7⅞	200	93003015	117-0200-11-FP-1G-07	117	7⅞" F11
9⅞	251	93003016	118-0251-11-FP-1KG-07	117	9⅞" F11J
8½	216	93003023	117-3216-51-FP-FA-07	517	8½" F51J
7⅞	200	93003002	117-3200-52-FP-F-07	527	7⅞" F52J
12¼	311	93003021	118-0311-11-FP-1KG-05	115	12¼" F11J
12¼	311	93003020	118-0311-11-FP-1KG-07	117	12¼" F11J
12¼	311	93003012	118-3311-52-FP-C-07	527	12¼" F52J
9⅞	251	93003009	118-3251-53-FP-F-05	535	9⅞" F53R

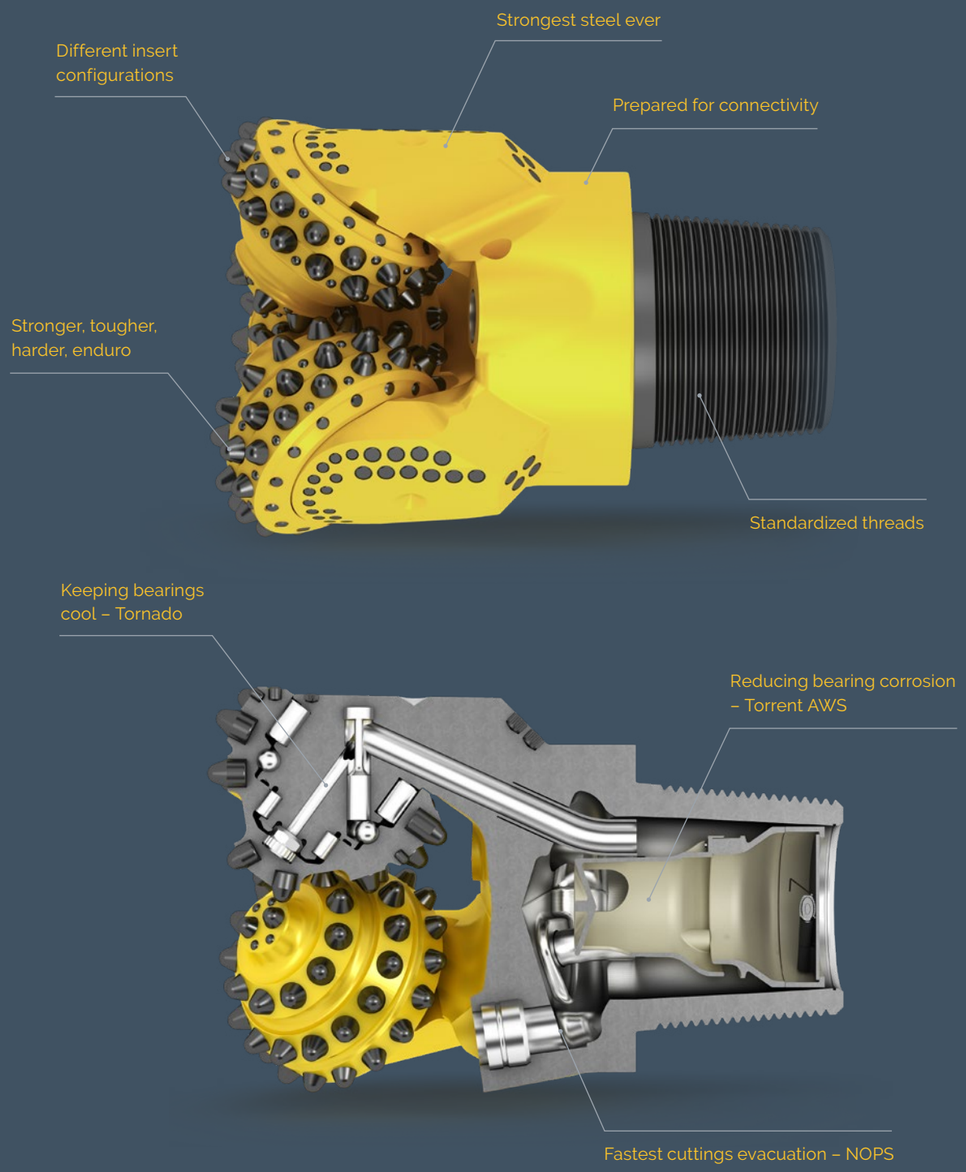
Focus HDD bit thirds

Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
6½	165	5697000261	1NT-3165-54-FD-CY-07	547	6½" FD54
8½	216	5697000363	CHH-OOSD-FJS62	627	8½" BIR62C

Epsilon² – Next level rotary drill bit

What first meets the eye is impressive...A quick glance at the exterior of Epsilon² is enough to spot several high-quality features. We re-designed our previous Epsilon bit with the most durable materials available in the market. We also added online capabilities, making Epsilon² the first air bearing bit prepared for tomorrow's connected mining operations.

More treasures are hidden inside. Opening up Epsilon² exposes some very special features, set to revolutionize air bearing bit technology. Patented Torrent AWS (air-water separator) and Tornado combine to eliminate a common cause of drilling stoppage – bearing failure – while NOPS helps to extend bit life and distance drilled before bit discard.



Proven performance

Epsilon² was tested in real operating conditions on independent customer sites around the world. Hundreds of bits were tested, drilling thousands of holes. The tests showed a dramatic improvement compared to previous bit designs. Up to 61 percent longer distance was drilled on average before discard compared to the reference bit.

Test – Canada, copper mine

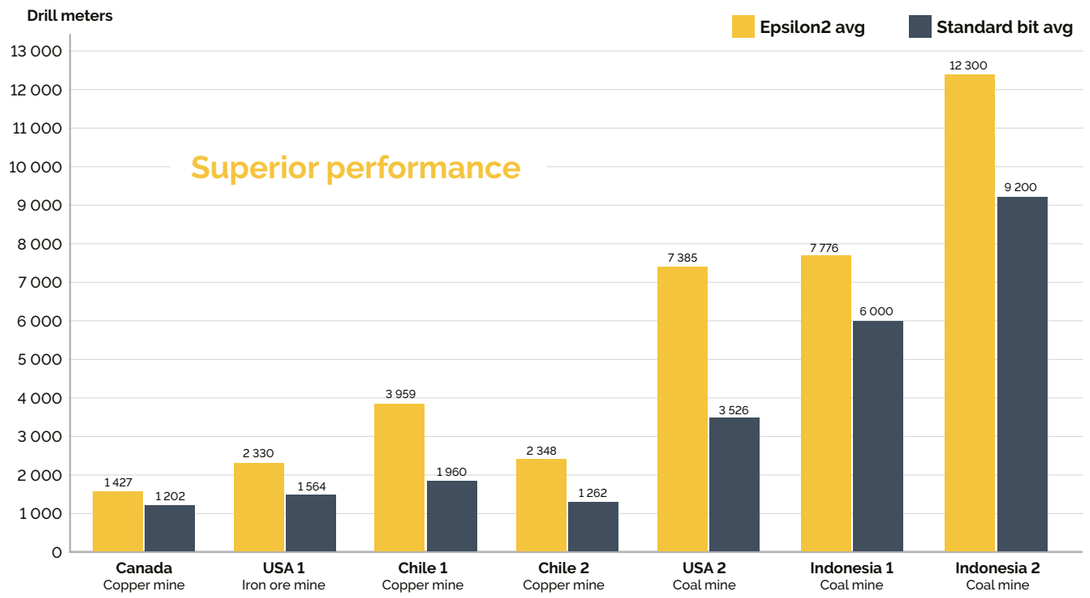
A conventional open pit, truck and shovel operation:

1. Six test sets were made to measure improvements of the distance drilled and the penetration rate.
2. The flushing pressure was 5 bar.
3. Epsilon² reached 1 427 meters under the same conditions as the reference bit that had an average reach of 1 202 meters (+19 percent), peaking at up to 42 percent longer in one test.

Test – USA, coal mine

Highly varied conditions in a mountainous region:

1. Many tests were made using mainly mid-range DML and DM-45 rigs.
2. Epsilon² reached 7 385 meters under the same conditions as the reference bit that had an average reach of 3 526 meters – up to 109 percent longer.



Easy selection – Soft, medium, hard or very hard rock. That's all you have to consider.

Type				
Rock type	Soft rock	Medium rock	Hard rock	Very hard rock
Rock strength	0-8 000 UCS	6 000-28 000 UCS	24 000-46 000 UCS	38 000+ UCS
IADC	41, 42, 43, 44	51, 52, 53, 54	61, 62, 63, 64	71, 72, 73, 74

Epsilon² blasthole tricone drill bits

Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
6¼	159	5697001584	114-3159-41-E2-CH-02	412	6¼" 41E2
6¾	171	5697001220	114-3171-41-E2-CA-HW-02	412	6¾" 41E2
6¾	171	5697000054	114-3171-53-E2-C-W-02	532	6¾" 53E2CW
6¾	171	5697001913	114-3171-62-E2-CVH-02	622	6¾" F62
6¾	171	5697000037	114-3171-63-E2-C-02	632	6¾" 63E2C
6¾	171	5697000037	114-3171-63-E2-C-02	632	6¾" 63E2C
7⅜	187	5697001525	114-3187-41-E2-CH-02	412	7⅜" 41E2
7⅞	200	5697000401	117-3200-41-eP-SA-H-02	412	7⅞" eP41
7⅞	200	5697000570	117-3200-41-E2-CA-H-02	412	7⅞" 41E2
7⅞	200	5697000038	117-3200-52-E2-CJ-W-02	522	7⅞" 52E2CJW
7⅞	200	5697000039	117-3200-53-E2-CJ-W-02	532	7⅞" 53E2CJW
7⅞	200	5697000040	117-3200-62-E2-CJH-02	622	7⅞" 62E2CJH
7⅞	200	5697001709	117-3200-64-E2-CY-02	642	7⅞" 64E2
7⅞	200	5697000041	117-3200-64-E2-CJ-HW-02	642	7⅞" 64E2CJHW
7⅞	200	5697002620	117-3200-52-E2-C-H-02	522	7⅞" 52E2
8¾	222	5697001080	117-3222-53-E2-CJ-H-02	532	8¾" 53E2CH
8¾	222	5697000102	117-3222-62-EN-CJ-H-02	622	8¾" E262CJH
9	229	5697000042	117-3229-41-E2-CJ-H-02	412	9" 41E2CJH
9	229	5697000521	117-3229-41-E2-CA-H-02	412	9" 41E2
9	229	5697001553	117-3229-41-E2-FA-H-02	412	9" 41E2
9	229	5697000043	117-3229-53-E2-CJ-HW-02	532	9" 53E2CJHW
9	229	5697002335	118-3229-41-E2-CA-H-02	412	9" 41E2
9	229	5697000254	117-3229-44-eP-CA-02	442	9" eP44
9	229	5697000539	117-3229-54-eP-CA-H-02	542	9" 54E2
9	229	5697000045	117-3229-64-E2-OJ-H-02	642	9" 64E2OJH
9	229	5697000044	117-3229-62-E2-CJ-H-02	622	9" 62E2CJH
9	229	5697001644	117-3229-72-E2-C-HW-02	722	9" 72 E2
9⅞	251	5697000046	118-3251-43-E2-CJ-H-02	432	9⅞" 43E2CJH
9⅞	251	5697000047	118-3251-54-E2-DJ-HW-02	542	9⅞" 54E2DJHW
9⅞	251	5697001365	1B6-3251-64-E2-CJ-H-02	642	9⅞" 64E2CJH
9⅞	251	5697000048	118-3251-62-E2-CJ-H-02	622	9⅞" 62E2CJH
9⅞	251	5697000049	118-3251-64-E2-OJ-HW-02	642	9⅞" 64E2OJHW
9⅞	251	5697002240	1B6-3251-72-E2-CA-HT-02	722	9⅞" 72E2
9⅞	251	5697002004	117-3251-73-E2-CY-H-02	732	9⅞" 73E2
9⅞	251	5697002621	118-3251-41-E2-C-H-02	412	9⅞" 41E2
10⅝	270	5697000028	118-3270-52-E2-CJ-HW-02	522	10⅝" 52E2CJHW
10⅝	270	5697000025	118-3270-62-E2-CJ-H-02	622	10⅝" 62E2CJH
10⅝	270	5697000026	118-3270-63-E2-CJ-H-02	632	10⅝" 63E2CJH
10⅝	270	5697002272	118-3270-41-E2-CH-02	412	10⅝" 41E2
10⅝	270	5697000010	118-3270-44-E2-CJ-H-02	442	10⅝" 44E2CJH
10⅝	270	5697001647	118-3270-54-E2-CH-02	542	10⅝" 54E2CH
10⅝	270	5697000628	118-3270-54-E2-CJ-H-02	542	10⅝" 54E2CJH

Epsilon² blasthole tricone drill bits

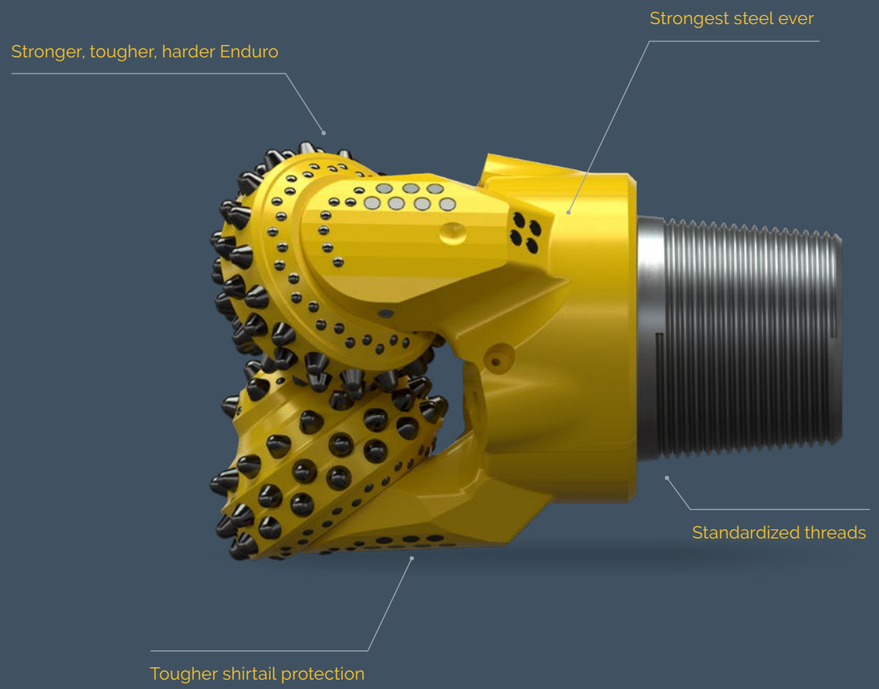
Diameter inch	Diameter mm	Part number	Catalog code	IADC	Description
10⅝	270	5697000013	118-3270-54-E2-CA-HW-02	542	10⅝" E254CAHW
10⅝	270	5697000946	118-3270-54-E2-CJ-H-02	542	10⅝" 54E2CJH
10⅝	270	5697000027	118-3270-64-E2-CJ-HW-02	642	10⅝" 64E2CJHW
12¼	311	5697000029	118-3311-53-E2-CJ-W-02	532	12¼" 53E2CJW
12¼	311	5697000031	118-3311-54-E2-CH-02	542	12 1/4" 54E2CH
12¼	311	5697000030	1B6-3311-54-E2-CJ-H-02	542	12 1/4" 54E2CJH BECO
12¼	311	88056877	118-3311-54-NV-CA-HT-02	542	121/4 NV54CAHT
12¼	311	5697000032	118-3311-62-E2-OJ-02	622	12 1/4" 62E2OJ
12¼	311	5697001750	118-3311-62-E2-OJ-02	622	12 1/4" 62E2
12¼	311	5697002474	1B6-3311-62-E2-OJ-02	622	12 1/4" 62E2
12¼	311	91003054	118-3311-64-E2-CA-HT-02	642	12 1/4'' 64E2CAHTX
12¼	311	5697000034	1B6-3311-64-E2-CJ-HT-02	642	12 1/4" 64E2CJHT
12¼	311	5697001697	118-3311-64-E2-C-HT-02	642	12 1/4" 64E2CHT
12¼	311	5697000564	118-3311-64-E2-OJ-02	642	121/4" 64E2OJ
12¼	311	91003054	118-3311-64-E2-CA-HT-02	642	12 1/4'' 64E2CAHTX
12¼	311	5697000033	118-3311-64-E2-CJ-HT-02	642	12 1/4" 64E2CJHT
12¼	311	5697000876	1B6-3311-64-eP-CYV-02	642	12 1/4" eP64
12¼	311	5697001757	1B6-3311-64-E2-CYV-02	642	12 1/4" 64E2
12¼	311	5697002195	118-3311-64-E2-CH-02	642	12 1/4" 64E2
12¼	311	5697002439	1B6-3311-64-E2-CYV-02	642	12 1/4" 64E2
12¼	311	5697000982	118-3311-72-E2-CJT-02	722	12 1/4" 72E2CJT API
12¼	311	5697000035	1B6-3311-72-E2-CJT-02	722	12 1/4" 72E2CJT BECO
12¼	311	93001075	118-3311-72-E2-CA-TX-02	722	12 1/4'' 72E2CATX
12¼	311	5697002608	1B6-3311-72-E2-CA-TX-02	722	12 1/4'' 72E2CATX
12¼	311	91002984	118-3311-72-E2-CA-TX-02	722	12 1/4'' 72E2CATX
12¼	311	5697001483	118-3311-72-E2-CA-TX-02	722	12 1/4'' 72E2CATX
13¾	349	5697000468	1B6-3349-53-E2-C-02	532	13 3/4" 53E2C
13¾	349	5697000935	118-3349-53-E2-C-02	532	13 3/4" 53E2C
13¾	349	5697000036	1B6-3349-62-E2-C-02	622	13 3/4" 62E2C
16	406	5697000532	1B7-3406-71-E2-OJ-02	712	16" 71E2OJ

*Please contact Epiroc marketing team for precise product selection

Epiroc high performance bits on the ABC, waiting for the turn.

Which is your favorite?

Omega S – Single-sealed bearing bit is available in 20 units from 7⅞ inches (200 mm) to 12¼ inches (311 mm). For every bit size, there are at least three models available – each with a specific cutting structure optimized for different rock strengths. Common to all units is their single-sealed design, protecting the bearings from wear.



The function

Each cone is equipped with a durable hydrogenated nitrile butadiene rubber (HNBR) seal, which enables vacuum lubrication of the bearings. Once the seal fails and vacuum is lost, cooling air begins to flow over the bearings. This automatically transforms Omega into an air-bearing bit – adding extra lifetime.

The benefit

Omega S has an outstanding longevity. The bit provides up to 30 percent more drill meters than a standard air-bearing bit. This gives Omega S an excellent price–performance ratio, perfectly positioned between standard air-bearing bits and premium-quality double-sealed bits such as Omega.

The users

Omega S is targeted at professional drilling specialists in the mining industry, mainly CPM (cost per meter) contractors with operations in coal, gold, copper and iron ore mines. It is particularly efficient in wet and fractured rock formations, in locations with high water injection for dust suppression.

Omega S – Single-sealed bearing bits

				
Size	12¼"	12¼"	12¼"	12¼"
Rock strength	>38 000 UCS	24 000-46 000 UCS	24 000-46 000 UCS	6 000-28 000 UCS
Cutting structure	Os72	Os64 (PIN connection: 6" BECO)	Os64 (PIN connection: 6⅝" API)	Os54

				
Size	10⅝"	10⅝"	10⅝"	9⅞"
Rock strength	>38 000 UCS	24 000-46 000 UCS	6 000-28 000 UCS	>38 000 UCS
Cutting structure	Os72	Os64	Os54	Os72

				
Size	9⅞"	9⅞"	9⅞"	9"
Rock strength	24 000-46 000 UCS	6 000-28 000 UCS	0-8 000 UCS	24 000-46 000 UCS
Cutting structure	Os72	Os54	Os44	Os64

				
Size	9"	9"	9"	9"
Rock strength	24 000-46 000 UCS	6 000-28 000 UCS	0-8 000 UCS	0-8 000 UCS
Cutting structure	Os61	Os54	Os44	Os41

				
Size	7⅞"	7⅞"	7⅞"	7⅞"
Rock strength	24 000-46 000 UCS	24 000-46 000 UCS	6 000-28 000 UCS	0-8 000 UCS
Cutting structure	Os64	Os61	Os54	Os44

Technical data

The range multiple bit sizes and IADC

Size	Pin connection	Os41	Os41	Os54	Os61	Os64	Os72
Rock strength		0-8 000 UCS		6 000-8 000 UCS	24 000-46 000 UCS		38 000 UCS
7⅞"	3½" API		5697000241	5697000243	5697000245	5697000240	
9"	4½" API	5697000252	5697001328	5697000250	5697000255	5697000251	
9⅞"	6⅝" API		5697000260	5697000259	5697000262	5697000256	5697000258
10⅝"	6⅝" API		56970002581	5697000263		5697000265/421	5697000264
12¼"	6⅝" API			5697000273		56970002725	5697000266
12¼"	6" BECO					56970002580	

*Please contact Epiroc marketing team for precise product selection

Which bit goes on which rig?

Epiroc rig	Bit size				
	7⅞"	9"	9⅞"	10⅝"	12¼"
IDM 30	•				
IDM 45	•				
DM 45/50	•	•			
DML SP	•	•	•		
DML	•	•	•		
PV231/235	•	•	•		
IDM 70		•	•		
PV271/275	•	•	•	•	
CDM 75		•	•		
DM-M3			•	•	•
PV 311/316		•	•	•	•
DM-H2				•	•
PV351				•	•
Competitor rigs			CAT MD6640		
				P&H 320 XPC, Sandvik DR416i	
			P&H 250XPC		
			P&H 285XPC, Sandvik 1190E, DR412i		

Omega S -"A bit with an extra life". The single sealed bit transforms into an air bearing after the seal wears out.

Proven performance

Before launch, we tested Omega S extensively in different rock conditions. A total of 19 independent tests – in 14 mine sites and 12 countries – were made in collaboration with selected customers. On the following pages we present the test results from four mines in South Africa, Zambia and China.

A closer look at our tests

So how did we test Omega S? Here we present our test cases including the location of the mine, site characteristics, test method and equipment used.

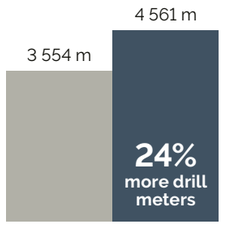
Site 1 – South Africa

Site characteristics
The test site is in Witbank Springs coal field in the southern region of central South Africa. This region has one of the hottest drilling holes and uses a lot of water for dust suppression and keeping the drill string cool. This caused all bits to have bearing failure.

Method
The test was conducted in a typical production blast pattern, where holes are drilled to a depth of 18 meters. Epiroc runs a CPM contract in this mine. The performance measure was average meters drilled per bit to bring the CPM down. Testing was made as a comparison between Omega S and standard air-bearings bits of the same size, 9⅞ inches (251 mm).

Equipment
1. **Drill rig:** Epiroc PV275 with 2 600 CFM (4 417 m³/h)
2. **Feed pressure:** 2 800 psi (26 tons)
3. **RPM:** 110
4. **Bit size:** 9⅞ inches (251 mm)

Results



Distance drilled
Omega S vs.
standard air-bearing bit

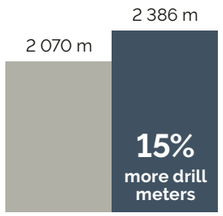
Site 2 – Zambia

Site characteristics
The test site is located near the city of Kalumbila in central Zambia. The site produces copper ore, and rock formations are typically medium to hard, in the 150-240 MPa UCS range.

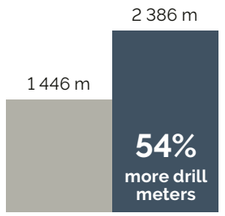
Method
The test was conducted in a typical production blast pattern. The blastholes are drilled to a depth of 16-18 meters. The performance measure was average meters drilled per bit. Testing was made as a comparison between Omega S and competitor sealed-bearing bits, and standard air-bearings bits of the same size, 10⅝ inches (270 mm).

Equipment
1. **Drill rig:** CAT 6640 with 3 000 CFM (5 097 m³/h)
2. **WOB:** 60 000-80 000 lb (27 000-36 000 kg)
3. **RPM:** 110
4. **Bit size:** 10⅝ inches (270 mm)

Results



Distance drilled
Omega S vs. competitor
sealed bit



Distance drilled
Omega S vs. standard
air-bearing bit

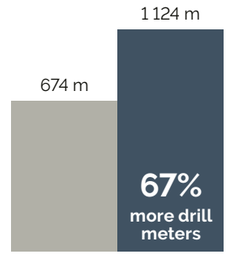
Site 3 – China

Site characteristics
The test site is near the city of Shenyang in north-eastern China. The site produces magnetite, and rock formations are typically medium to hard in the 150-240 MPa UCS range.

Method
The test was conducted in a typical production blast pattern drilled to a depth of 18 meters. The performance measure was average meters drilled per bit. Testing was made as a comparison between Omega S and standard air-bearing bits of the same size, 12¼ inches (311 mm).

Equipment
1. **Drill rig:** Epiroc PV351 with 3 000 CFM (5 097 m³/h)
2. **RPM:** 80
3. **Bit size:** 12¼ inches (311 mm)

Results



Distance drilled
Omega S vs. standard
air-bearing bit

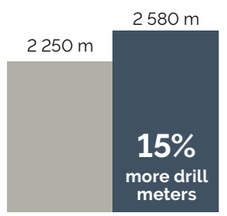
Site 4 – China

Site characteristics
The test site is near the city of Shenyang in north-eastern China. The site produces iron ore, and rock formations are typically medium to hard in the 150-240 MPa UCS range.

Method
The test was conducted in a typical production blast pattern drilled to a depth of 18–34 meters. The performance measure was average meters drilled per bit. Testing was made as a comparison between Omega S and competitor sealed-bearing bits of the same size, 9⅞ inches (251 mm).

Equipment
1. **Drill rig:** Epiroc CDM75E with 1 900 CFM (3 228 m³/h)
2. **Feed pressure:** 2 500-3 000 psi
3. **RPM:** 100
4. **Bit size:** 9⅞ inches (251 mm)

Results



Distance drilled
Omega S vs. competitor
sealed bit

Air requirements

In rotary blasthole drilling, there is always a concern with delivery of air in sufficient volume and at the proper pressure to assure optimum bit performance when drilling with recommended bit weight and RPM.

Sufficient air volume should be provided to produce an annular return velocity of 5 000-7 000 ft./min. for light, dry materials; and 7 000-9 000 ft./min. for materials that are wet and/or heavy, and when drilling at penetration rates of 35m per hour or higher.

To determine volumetric requirements, the simple flow equation Q = AV may be used. Since friction losses in the annulus of relatively shallow holes of blasthole drilling are negligible, this becomes:

$$Q = \frac{V}{183.35} (D2 - d2)$$

The table on this page shows volumetric requirements in cubic feet of free air per minute necessary to provide both 5 000 and 7 000 ft. per min. annular velocity for various possible combinations of hole size and drill pipe size.

The equation used is the simple flow equation: Q = AV.

With all constants combined and area expressed as difference between hole and pipe areas, this equation becomes: Q = 27.27 (D2-d2).

Q = cubic feet per minute free air necessary to obtain 5 000 feet per minute annular velocity
d = drill pipe outside diameter, inches
D = hole diameter, inches

Should Q be desired for some annular return velocity "V" other than 5 000 feet per minute, the result obtained above or from the table should be multiplied by the factor: V/5000.

Example: A 9⅞" hole being drilled with 7¾" drill pipe at a desired annular velocity of 5 000 ft. per minute.

Solution: Q = 27.27 [(9⅞)²]-(7¾)²]
= 27.27 [97.52-60.06]
= 1 022 cu. ft. per min. (shown in table)

Had 7 000 ft. per min. velocity been desired:

$$Q = (1\,022)\ \frac{7\,000}{5\,000} = 1\,431 \text{ cu. ft./min.}$$

The above equation may also be rewritten to solve for annular velocity "V" when available compressor capacity, hole size and pipe size are known.

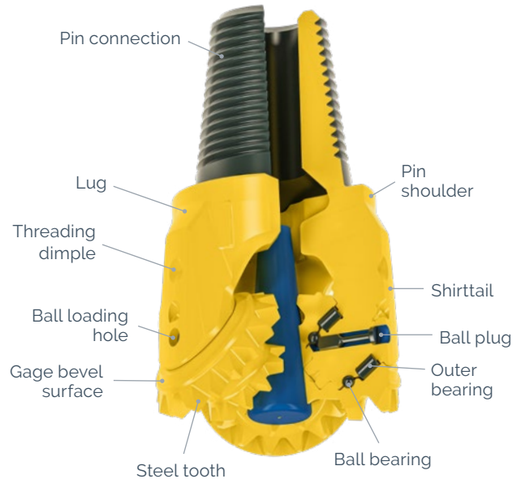
Air volume requirements for various hole diameter and drill pipe combinations - for 5 000 ft. and 7 000 ft. per min. annular velocity.

D Hole diameter (in)	d Drill pipe O.D. (in)	Q. - 5 000 CuFt/min free air	Q. - 7 000 CuFt/min free air
4½	2⅞	327	458
	3½	218	305
	4	116	162
4¾	2⅞	390	546
	3½	282	395
	4	178	249
5⅛	2⅞	491	687
	3½	382	535
	4	280	392
5⅝	2⅞	637	892
	3½	530	742
	4	426	596
6¼	3½	732	1 025
	4½	513	718
	5	382	535
6¾	3½	908	1 271
	4	805	1 127
	4½	690	966
	5	560	784
7⅞	3½	1 358	1 900
	4½	932	1 305
	5½	658	921
7⅞	3½	1 358	1 900
	4½	1 138	1 503
	5½	867	1 214
	6½	625	875
	6⅝	493	690
	7	355	497
9	4½	1 665	2 331
	5½	1 383	1 936
	6⅝	1 063	1 488
	7	873	1 222
	7¾	570	798
9⅞	7	1 323	1 852
	7¾	1 022	1 431
	8⅝	627	878
	9	450	630
11	7	1 964	2 749
	7¾	1 662	2 323
	8⅝	1 272	1 779
	9	1 090	1 526
12¼	8⅝	2 063	2 888
	9	1 882	2 635
	10	1 365	1 911
	10¾	941	1 317
13¾	10	2 429	3 400
	10¾	2 004	2 806
15	10	3 409	4 772
	10¾	2 985	4 179
	12	2 209	3 093
	13	1 527	2 138
17½	10	3 743	5 240
	14	3 007	4 210
	16	1 370	1 918

Air circulation

Air is the "life blood" of a rotary blasthole tricone bit. Air cleans and cools the bearings, keeping contaminants out. Air pressure should be maintained at the manufacturers recommended level for best performance.

Open bearing regular circulation



Rotary blasthole bit air system

Sealed bearing jet circulation

Rotary rock bit elements – Lugs

Using pressure drop tables

Procedure for using pressure drop tables

1. Establish maximum operating pressure and air volume delivered for the air compressor being used. Consideration should be given to altitude, volumetric efficiency, ambient temperature and mechanical condition of the compressor when establishing these values, if actual volume is not known.

2. **Note:** An air test is the best way to determine actual delivery of air volume and pressure. From the table, choose the "airvolume delivered" column nearest theactual volume established under item 1.

3. Proceed down the proper "air volume delivered" column to the "bit size range" for the bit being used.

4. Read the air pressure required for forcing air through the bit. The pressure required depends on the size of the air blast nozzles.

5. Select the smallest nozzle diameter available within the given bit size range that can be used without exceeding the maximum operating pressure of the compressor.

6. **Note:** 10-50 psi should be reserved for a safety buffer and other pressure losses in the system depending on drill type and manufacturer.

Example 1

a. **Bit size:** 7⅞"
b. **Air volume delivered:** 800 cfm
c. **Maximum operating pressure rig:** 65 psi

From the table, select 7/16" nozzle (49 psi), this allows 16 psi for safety buffer and system losses.

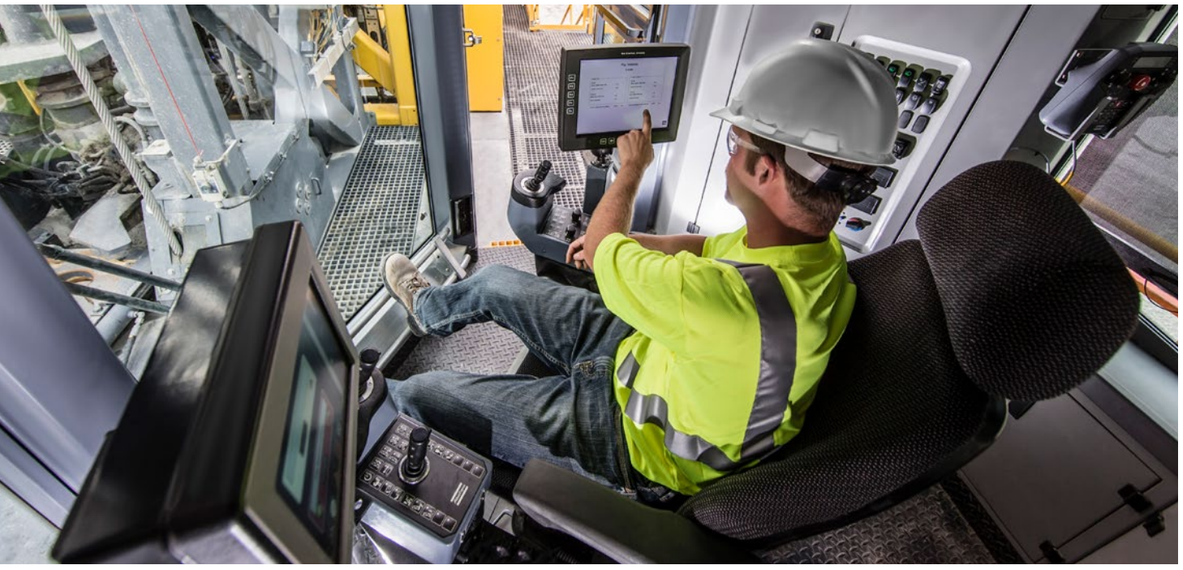
Example 2

a. **Bit size:** 9"
b. **Air volume delivered:** 1 200 cfm
c. **Maximum operating pressure rig:** 50 psi. From the table, select 11/16" nozzle (39 psi).

Bit size range	API Pin size	Air course size 3 each	Nozzle selection																										
			Air pressure drop across Epiroc blasthole bits with various nozzle size. Air volume delivered - cubic feet per minute																										
			200	300	400	500	600	700	800	900	1 000	1 100	1 200	1 300	1 400	1 500	1 600	1 700	1 800	1 900	2 000	2 100	2 200	2 300	2 400	2 600	2 800	3 000
5"-6"	2⅞" 3½"	5/16"	10	22	47	62	77																						
		3/8"		16	35	47	59	71																					
		1/2"		10	25	35	45	55	65	75																		
		9/16"			18	26	34	42	50	58	66	74																	
					11	18	24	31	38	44	58	58	64	71															
6½"-7⅜"	3½"	5/16"			42	52	62	72	81																				
		3/8"			33	43	51	61	69	78																			
		7/16"			27	34	41	48	57	65	73	79																	
		1/2"			23	29	33	41	48	54	61	67	73	79															
		5/16"			18	23	29	34	41	47	51	56	62	67	73	79													
7⅞"-9"	4½"	3/8"			27	36	45	55	66	75	83																		
		7/16"			21	28	35	42	49	55	63	69	75	81															
		1/2"				21	27	33	39	45	51	59	67	76	84														
		9/16"					20	26	32	37	43	49	55	61	67	73	80												
		5/8"						21	26	31	36	41	47	52	57	62	69	73	79										
		11/16"							20	25	29	34	39	44	50	55	60	65	71	77									
		3/4"								21	25	29	34	37	41	47	51	55	60	65	70	75	79						
9⅞"-11"	6⅝"	5/8"			26	36	46	54	62	70	77																		
		7/16"			19	27	35	42	50	58	65	72	79																
		1/2"				21	27	33	39	45	53	60	66	71	77														
		9/16"					20	26	32	38	43	49	54	59	64	68	73	78											
		5/8"						19	25	32	36	41	46	49	53	58	62	66	70	74	78								
		11/16"							20	24	29	34	39	43	47	51	54	58	62	66	70	74	78						
		3/4"								19	22	26	31	36	40	43	47	50	54	57	61	64	68	71	75	79			
		7/8"										20	24	26	30	32	35	38	41	44	46	49	52	55	59	63	69	75	
		1"													19	21	23	25	28	30	33	35	38	40	42	47	52	57	
12¼" to 15"	6⅝"-7⅝"	7/16"					19	25	30	35	41	46	53	58	63	69	75												
		1/2"						18	23	27	33	38	43	47	52	56	60	65	70	75									
		9/16"							19	23	27	31	34	38	42	46	50	55	59	63	67	72							
		5/8"								19	22	25	27	31	34	38	42	46	49	53	57	61	64	68	72				
		11/16"										20	23	26	29	32	35	39	42	45	48	52	55	58	62	66	70		
		3/4"											19	22	25	28	31	34	37	40	42	45	48	51	53	57	61	65	
		7/8"												17	19	21	23	25	27	28	30	33	35	37	40	42	44	47	
		1"																	17	19	21	23	25	27	29	33	37	41	
		1⅛"																				17	19	21	25	27	29	31	
		1¼"																							17	19	23	25	

Actual air volumes delivered to the bit is a key factor in preventing early bearing failure and providing proper cleaning of the tool. Pressure drops listed above are approximate for use as guidelines only. Actual pressures will depend on bit condition, bearing type, and air piping conditions.
Please contact your Epiroc representative for assistance in determining the best nozzle size for individual bits and mine site condition.

Nozzles



Nozzle size selection

Nozzles should be selected so that the pressure inside the bit is 40-45 psi. The cab operating pressure will be somewhat higher, depending on the type of drill and CFM of air circulated. Typically, on compressors rated at 65 psi, pressure inside the bit will be 8-15 psi lower than what the cab gauge shows. On drills with 80-100 psi rated compressors, bit pressures can be 25-50 psi lower than the cab gauge reading. The proper procedure for determining the correct nozzle size is as follows:

1. Remove the bit and perform an air test. Record all pressure readings. Be sure to use at least one orifice plate in the air test that will give 40-45 psi at the tool.
2. Determine what the cab pressure is when the tool pressure is 40-45 psi.
3. Re-install the bit with the original nozzles. Run the air compressor and record the cab air pressure.
4. If you do not get the cab air pressure that you saw with 40-45 psi tool air pressure during the air test, continue to install and check different sets of nozzles in the bit until you do get the cab pressure that corresponds to 40-45 psi at the tool.
5. Once you get the same cab air pressure with nozzles that you got during the air test with 40-45 psi tool pressure, you have found the correct size nozzles to use in the bit.

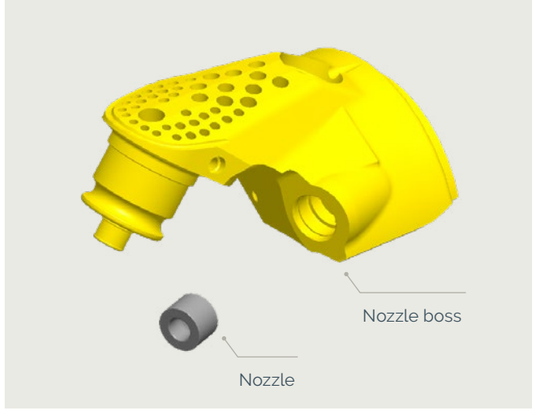
The table on the previous page shows approximate bit air pressure that can be expected with the listed nozzles and CFM. This can be used as a starting point for determining correct nozzle size.

Nozzle removal

1. Use a screwdriver to pry up the head of the nail locking the nozzle into place.
2. When the nail head is pried up, grab the nail with pliers and pull the nail completely out of the bit.
3. Remove the nozzle.

Nozzle installation

1. Put the nozzle into the nozzle boss, with the beveled edge to the inside, the flat end to the outside.
2. Place a nozzle nail into the nozzle hole.
3. With a hammer, pound this nozzle nail down until the nail head contacts the bit.
4. **Do not** flatten the head of the nozzle nail against the bit.



Guide for best bit performance

When a new bit is installed, drill at reduced weight for a short break-in period. Use the 1/3-2/3 rule: 1/3rd of normal weight and RPM for 1/3 first hole, 2/3rd of normal weight and RPM for next 1/3rd of hole. Use normal drilling parameters to finish the hole.

After the break-in period, bit cones should be checked to be sure that all are about the same temperature. One hot cone generally indicates that the air passage to that particular bearing has become obstructed.

Provide adequate air to the bit to insure trouble free bearing performance and reduced abrasion wear on cones and shirttails.

Turn the air on before lowering the bit to collar the hole. Keep the air on until the bit is finished drilling and is out of the hole. Always rotate the bit when moving in or out of the hole.

When hole is not being properly cleaned:

1. Increase in torque indication through higher hydraulic pressure or higher amp meter reading.
2. Increase in air pressure.
3. Excess cuttings in the bottom of the hole (more than one foot–after completion of hole and after making a cleaning pass).
4. Heavy wear and/or damage indications on shirttails.

Always rotate when coming out of the hole to:

1. Help in cleaning the cuttings from the hole.
2. Keeps cuttings from entering the bearings around the back face of the cone.

Never use the hydraulic down pressure on the bit to aid in leveling the machine.

Maintain as high a pressure drop across the bit as possible when in wet holes, or when water injection is used.

When adding extra drill steel in wet holes, always make three or four cleaning passes to get the bottom of the hole as clean as possible.

Never allow the bit to drop while on the end of the drill steel, even for distance of a few inches – dropping the bit can cause cracking of the welds, and/or indentations in the bearing races. Results will be premature bearing failure.

A partially dull bit should never be left down the hole when repairs require lowering the head assembly to the deck. This bit should be substituted by a dull bit to protect the drill steel threads.

Properly maintain the drill steel and its threaded connections. A bent steel will often cause early failure.

Blasthole bits drill most economically when sufficient weight is applied to cause spalling of the formation. Selecting correct rotary speed is usually a matter of trial-and-error, depending upon the formation being drilled or use the factory recommended weight and rotation speeds.

Always record footage drilled, time in the hole, RPM, WOB (weight on bit), psi, formation drilled and any unusual drilling conditions.

After the bit is discarded it is necessary to make a comparative analysis of each bit type dulling and causes. Evaluating those findings can increase drilling efficiency while reducing drilling cost and will precisely determine what bit design features are required for the application.

Total drilling cost (TDC)

A careful study of bit performance records can be of considerable help toward reducing operating costs. The goal is to determine the most economical bit types to use for each operating condition.

Rock drill bit performance has traditionally been evaluated by tracking meters drilled and penetration rates for an individual bit. Unfortunately, many erroneous conclusions can be drawn from looking at these two factors separately.

However, when these two measurements are combined, the resulting Total Drilling Cost per meter (TDC/meter) is a much more accurate performance measurement.

Total drilling cost is the cost of the bit plus the cost of operating the drill. The traditional and simplistic cost/meters drilled makes up one half of the TDC/meter equation. The speed at which the bit drills is included by dividing the cost of the drill/hour by the penetration rate of the bit. Hence total drilling cost expressed in dollar cost per meter drilled depends on bit life and productivity and can be expressed as:

$$\textbf{Meters drilled per hour} = \frac{\text{Cost of drill bit}}{\text{Meters drilled}} + \frac{\text{Drill cost per hour}}{\text{Meters drilled per hour}}$$

Dull bit grading

Examining and grading the condition of a dull rock bit when it comes out of the hole is an important field operation that is often overlooked.

These bits are too worn out to be effective anymore.

At many mines, the decision regarding when to change the bit is left up to the driller, with very little guidance given. This results in most bits being changed only after they have been completely worn out, and when they have been operating at low efficiency for a length of time. You can save a great deal of money by establishing a program of close examination and grading of your used bits, and by applying some simple rules based on this information.

At the end of a bit's life, penetration rate is significantly reduced as the cutting structure becomes ineffective either through breakage or wear. Bit grading provides an evaluation of the performance and dulling characteristics of the bit based on the drilling practices used. When done as a matter of routine, this simple procedure yields data that can significantly lower drilling costs and increase efficiency.

Dull bit valuations can be made quickly, but it is important that this data be gathered by someone with reasonable judgment and accuracy.

Examinations include consideration of both the cutting structure and the bearings. Bit life does not need to be totally exhausted before grading occurs. The purpose of grading is to both determine the condition of the dull bit and to assess what is happening to the bit while it is in use.

In grading a dull bit, its condition is best recorded using a simple but accurate code that has been developed by Epiroc engineers. The easy-to-use system measures the life of both the teeth and the bearings, permitting anyone to later visualize the dull bit with reasonable accuracy. Contact your Epiroc representative for information.

The bottom line: when properly collected and recorded, data gathered from dull rock drill bits yield exceptionally valuable information about what should be done to correct unprofitable practices, including helping to choose proper bits in the future.

Epiroc PARD system – a boost for rotary drilling

Epiroc has been in the mining and construction market for many years and is committed to innovative, productive, market leading solutions such as QL technology for DTH hammers. Thanks to that we now present our latest innovation for Rotary drilling - the Epiroc PARD system – designed to boost rotary drilling performance.

Combining the best of DTH and Rotary drilling technology

What is PARD (Percussion Assisted Roatry Drilling)? Simply defined, PARD is the next viable choice to drilling faster and more efficiently. Other benefits include straighter drill holes, easier hole collaring and increased productivity. This is achieved through increased penetration rates which lower the total cost of drilling (TDC).

Targeting mines seeking step-change technology which yields lower operating costs, the Epiroc PARD system opens new potential for rotary drillers. The PARD system was developed as a light weight, high frequency, low impact hammer with specially designed tricone drill bits.

The system can be adapted to standard blasthole drill rigs and drill strings. The result? A combination of percussive power and rotational force that increases ROP significantly.

The most cost efficient holes in the market

Thanks to Epiroc's percussive expertise, the Epiroc PARD hammer is fine tuned with the aid of a unique parallel airflow system. Drilling costs are reduced and kept down to a minimum by drilling more holes per shift than ever before. That means higher productivity, and lower total drilling costs!

Easy to install and operate

Installing the Epiroc PARD system is easily adaptable and reversable to existing drilling operations. The simple installation means adding an oiler and a starter drill pipe. Once the correct starter drill pipe, hammer and bit are in place, it's a matter of simply adjusting the airflow to set the frequency and you are ready to drill. It was also discovered that the PARD system makes collaring easier and drilling more stable!

Specially designed for productivity

Let's take a look at the technology behind the Epiroc PARD system.

High energy output hammer

The Epiroc PARD hammer has been developed to increase rotary drilling productivity. This low impact hammer has a special short stroke lightweight piston. A synergy combination is formed between this tuned hammer and the rotary forces which results in the Epiroc PARD system creating a higher level of energy than a DTH hammer or rotary power alone. And that means a lot more holes per shift.

Unique airflow system

The Epiroc PARD system has a unique parallel airflow system that directs the air down two paths. One path goes into the hammer and facilitates the percussion action. The other path channels the air, via the properly installed bit nozzles, through the Epiroc PARD tricone drill bits and cleans out the hole. This facilitates efficient cuttings removal, excellent hammer cooling and optimal efficiency. The Epiroc PARD system operates at similar pressures as conventional rotary drilling, with low pressure air of 50-110 psi+.

Special tricone drill bits

Epiroc PARD tricone bits are designed to retain the same service life as standard tricone bits while increasing ROP. This has been achieved by redesigning PARD tricone drill bits to withstand additional stresses and strains. All this adds up to greater productivity and lower cost per meter drilled.

Available in two models

The Epiroc PARD system is designed for drilling medium to hard rock blastholes from 9⅞" to 12¼" (250 mm-311 mm) in diameter.

The two models are:
1. Epiroc PARD 10 (for 9⅞" to 11")
2. Epiroc PARD 12 (for 12¼" to 13¾")
with a selection of Epiroc PARD tricone bits.

Service, support and training

Application and product expertise is something we have developed over the years, with relentless work and efforts in making the knowledge and expertise pass the test of time. We offer the same to our valued customers who bestow their trust in us and we always support them with our innovative and continiously improving solutions, support and services.

When it comes to products, service, and support, our goal at Epiroc is not just to meet your expectations, but to exceed them. Because as we see it, in the best of all business worlds, everybody wins. So, if you're in the market for the strongest rock drilling partner, you'll want to read this section very carefully.

Being in the rock drilling business, you know that drilling costs and productivity are influenced by a host of factors beyond the price and performance of the drill steel or bit. You've learned that rock characteristics and hole deviation significantly impact drilling efficiency. You know that operator experience or misuse and loss of drilling tools can have a significant impact.

You are aware of the tremendous amount of time spent on administration and inventory management that enables you to have the tools to do the job over the next few days. And to top it all off, you are faced with the constant care and maintenance required for a well-tuned drill string. Of course, your decision to choose world class rock drilling tools is a good place to begin the process of improving productivity and reducing costs.

But to get maximum productivity from a drilling operation, many of our customers have learned that it's also vitally important to have access to the value-added support and extensive worldwide practical know-how that is exclusively available through Epiroc.

Lowering your total drilling cost (TDC)

For dozens of years, Epiroc has been known for a consistent dedication in finding ways to reduce total drilling costs while maintaining the highest standards of quality. In fact, over the years, we have helped hundreds of customers realize that a more productive bit, though sometimes more expensive, will substantially reduce the cost of the drilled hole. When you take into account the total cost per hour of a drill's operation, we've proven beyond doubt that the simplest way to cut costs is to be able to make holes faster. For this reason refining the technology to make faster holes has been the constant focus of our product development. And we're proud to note that the industry recognizes that we maintain the lead in this area today.


Epiroc

United in performance.
Inspired by innovation.

Performance unites us, innovation inspires us, and commitment drives us to keep moving forward. Count on Epiroc to deliver the solutions you need to succeed today and the technology to lead tomorrow.
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