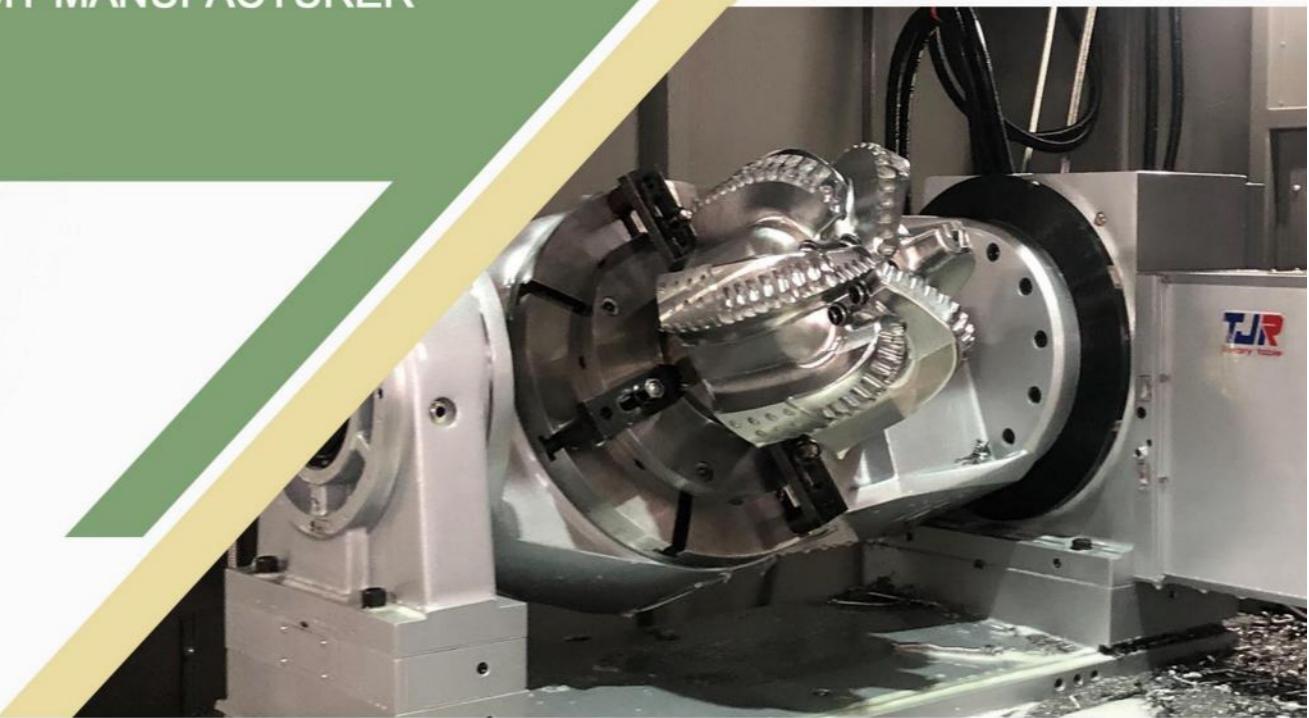




# BUSINESS BROCHURE

PDC Bit & Tricone Bit  
DRILL BIT MANUFACTURER



**Hebei Haoqi Drilling Equipment Co., Ltd.**

Address: Junziguang Village, Shijing Village,  
Hejian City, Cangzhou City, Hebei Province, China

Tel: 86-13803177810

Website: <https://www.pdcbit.com.cn/>



**15 YEARS OF PROFESSIONAL  
MANUFACTURING EXPERIENCE**

*Hebei Haoqi Drilling Equipment Co., Ltd.*



# COMPANY PROFILE

## About us

Hebei Haoqi drilling equipment Co.,Ltd was established in 2010 , engaged in the bit manufacturing industry for more than 10 years, specializing in the manufacture of PDC bit, tricone bit , mud motor and reamer which can be used in water wells , mining, coalbed methane geothermal field, oil and gas field, rotary excavation, trenchless fields and other fields. The annual production capacity of 10,000 drill bits and the inventory of more than 3,000 new drill bits can ensure the fastest delivery time.

The factory has always focused on quality by advanced technology and high-efficiency management. To make sure our bits quality stable, we produce as per "8S" and execute according to the ISO9001:2008 and ISO14001:2004, API Spec7-1. Now Haoqi has established strategic corporation relationship with all the oil-fields in China, also sold products to America, Russia, Mid-east, Indonesia and so on.



## Certificate



# Workshop & Equipment (Partial)



Production Equipment



Production Process



Product



Product

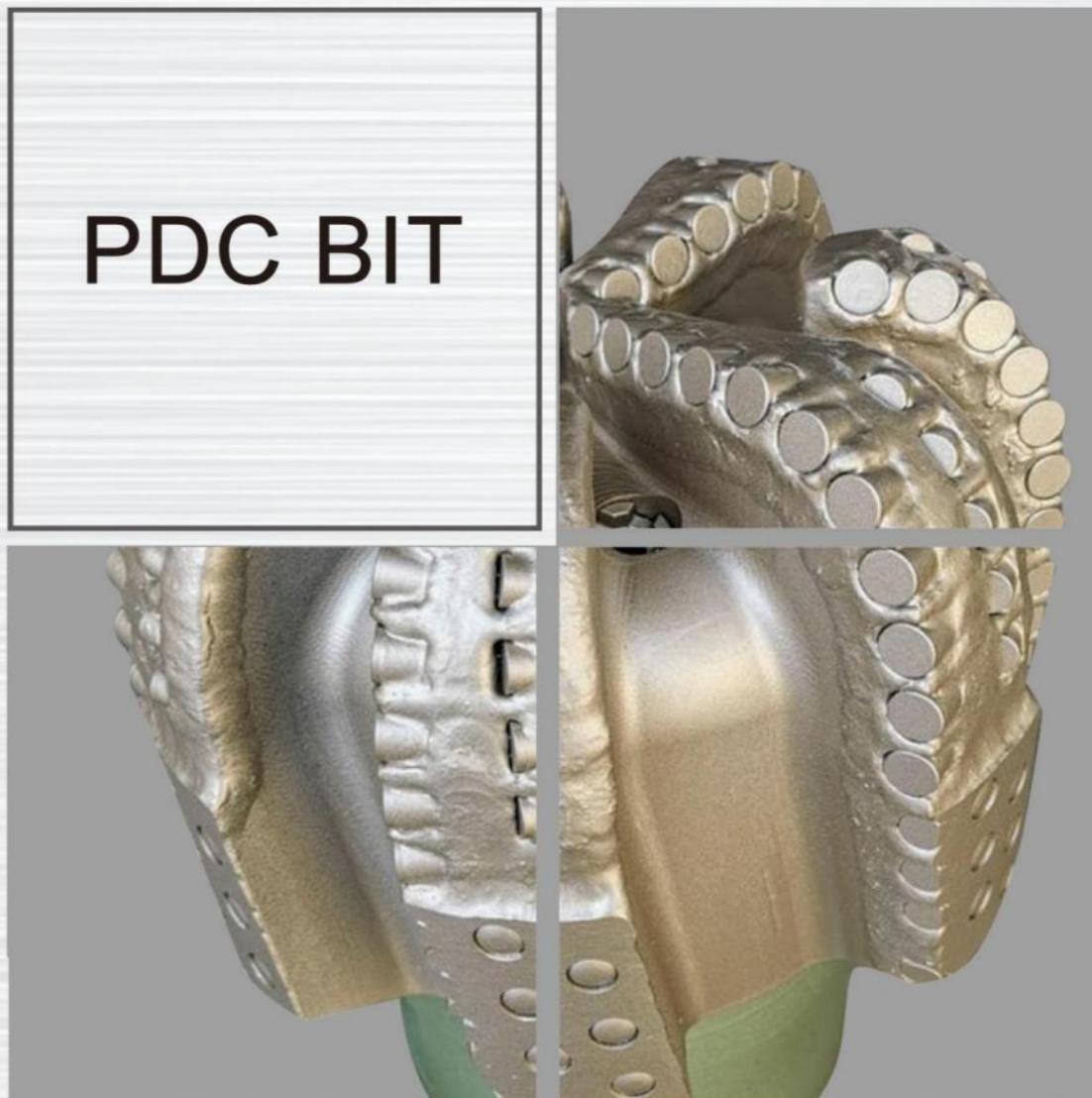


# **PDC BIT**



High-quality products and customized services

**PDC BIT**



## Guidance of Choosing PDC Bit

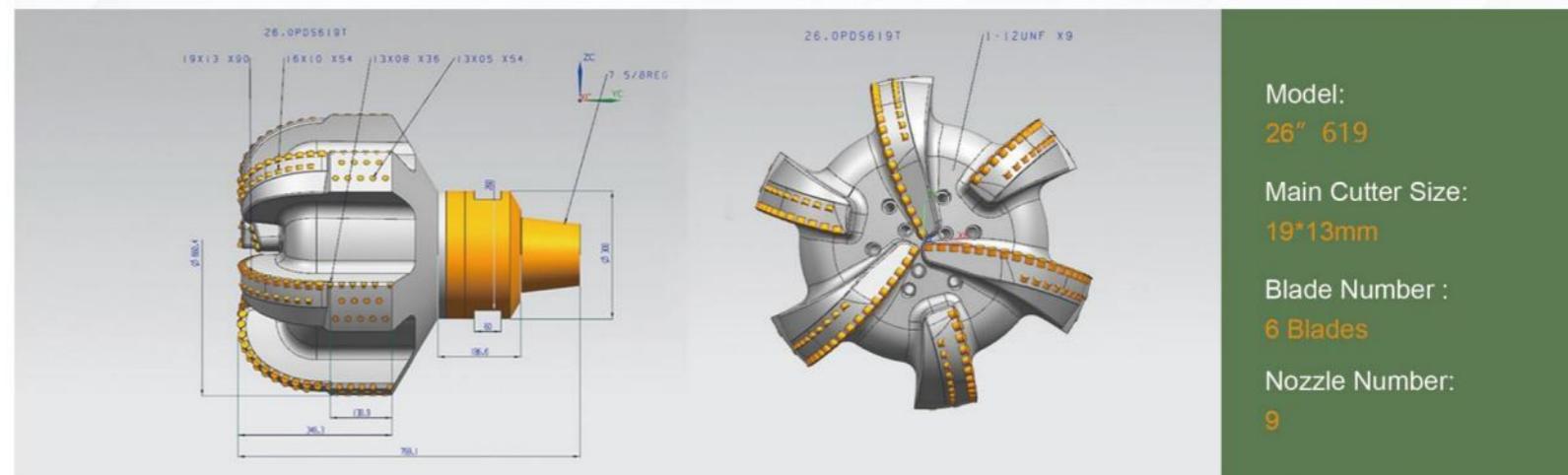
Formations Grading	Compressive Strength	Formation Description	Rock Types	IADC Code
1	<4000PSI	Viscous soft formations with low compressive strength	clay, siltstone sandstone	M/S112~M/S223
2	<8000PSI	Soft formations with low compressive strength and high drillability	silt rock, marl lignite, sandstone siltstone hard gypsum	M/S222~M/S333
3	<12000PSI	Viscous soft formations with low compressive strength	silt rock, marl lignite, siltstone hard gypsum, tuff	M323~M434
4	<16000PSI	Medium hard to hard formations with high compressive strength and abrasive thin interbeds	mudstone limestone hard gypsum	M333~M434
5	<24000PSI	Hard and tight formations with very high compressive strength	limstone hard gypsum dolomite	M434~M634
6	<32000PSI	Hard formations with very high compressive strength and some abrasive interbeds	calcareous shale siliceous sandstone siltstone	M613~M844
7	>32000PSI	Very hard and high abrasive strength formations	quartzite igneous rock	M713~M844



# 15 years PDC BIT Manufacturing experience

We design, customize and manufacture oil and gas tools with an objective to provide class leading technologies that reduce your cost of drilling.

Because PDC bits are increasingly required to drill through challenging sections in one run optimizing hydraulic efficiency is a major consideration in the design of the high-efficiency PDC bits from HAOQI. Every HAOQI PDC bit is the product of ongoing analysis and lab testing, designed to achieve the most efficient balance between open area and blade geometry—especially in low horsepower-per-square-inch (HSI) environments. Features such as fully mapped and optimized diverging junk slots, multiple nozzle orientations, and enhanced computational fluid dynamics modeling make these bits the most efficient PDC drill bits in the industry.



### Bit shank thread and recommended make up torque

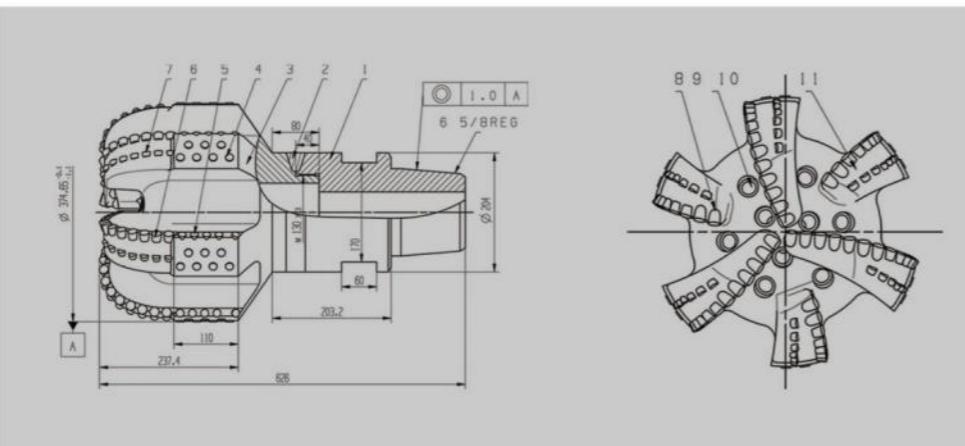
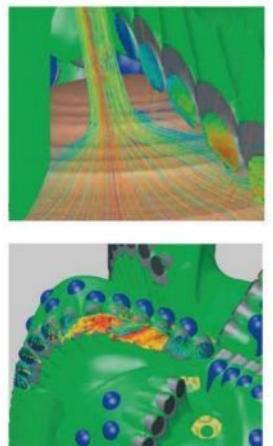
Bit size (in)	API regular pin (in)	Recommended make up torque (kN.m)
3 7/8~4 1/2	2 3/8	4~4.8
4 5/8~5	2 7/8	6~7.5
5 1/2~6 3/4	3 1/2	9.5~12
7 1/2~8 3/4	4 1/2	16~22
9 1/2~13 5/8	6 5/8	38~43
14 3/4~17 1/2	7 5/8	46~54

# PDC BIT Technological Expertise

## Engineering and Modeling

### Computational fluid dynamics (CFD) analysis

Efficient hydraulics for improved performance and lower drilling costs. HAOQI BIT design engineers use CFD to model the interaction of drilling fluids with the bit and the wellbore. Complex algorithms enable the simulation of a wide variety of downhole conditions, allowing engineers to evaluate various blade and nozzle configurations to optimize flow patterns for cuttings removal. Ensuring the cutting structure is always drilling virgin formation improves bit performance. Extensive use is made of this sophisticated technique to maximize the available hydraulic energy, providing bits that will drill at the lowest-possible cost per foot.



## Double Row High Abrasion Resistant Bits

Bits with double row cutters are custom designed for high impact or high abrasion areas where durability and ROP are the primary concerns. These bits are best utilized in sandstones and carbonate formations.

## High ROP Shale Optimized Bits

These bits are designed with bullet body, thin and tall blades and high junk slot area to prevent bit balling and hence deliver excellent ROP. These bits are always optimized for good hydraulics that maximizes cooling and cleaning of cutters.



### 1.Cutting Teeth

Combined with the sharp cutting characteristics of tungsten carbide material, the aggressiveness and wear resistance of the drill bit can be improved by rationally configuring high-quality small-size PDC cutters and maximizing the local cutters equivalent density.



### 2.Gauge Surface

Premium arc PDC cutter gauge can reduce the abrasion of rock on the bit's body and increase wear resistance and stability of the drill bit body.



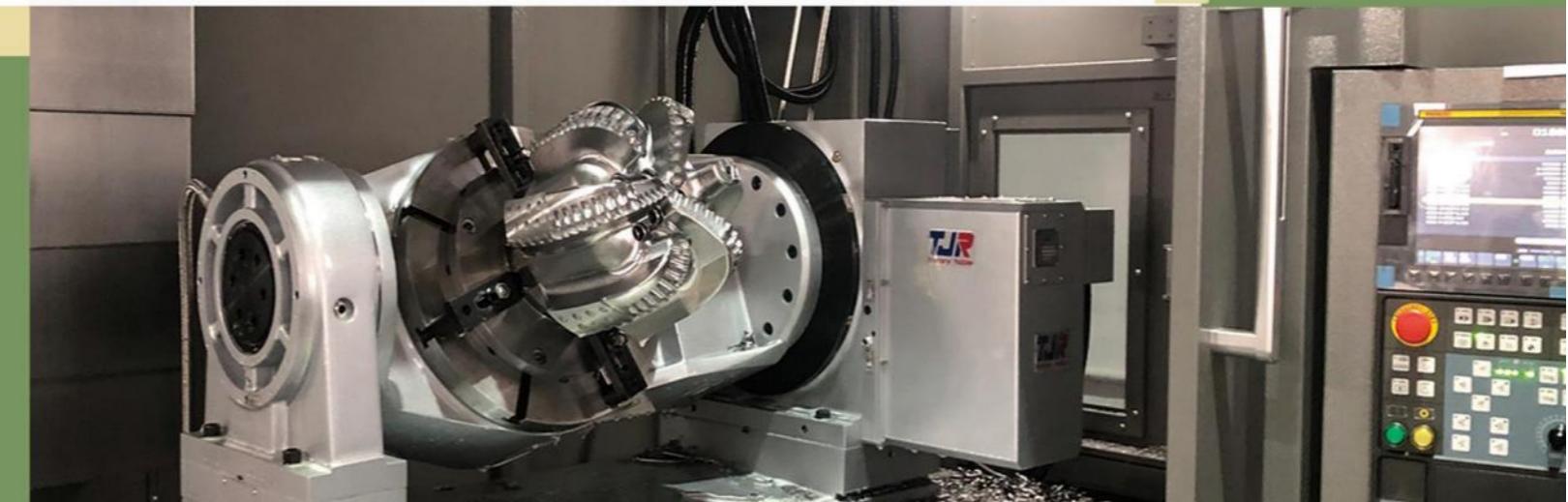
### 3.Nozzle

Interchangeable screw nozzles can effectively flush the impact cutting debris.



### 4.Gauge cutter

Gauge cutters can absorb high stress effectively and minimize cutter fracturing and wearing, thus enhance the wear resistance of cutters.



## Leading technology PDC BIT Reduce your drilling cost per meter



HAOQI BIT possesses state of the art manufacturing facilities supported with advanced designing and engineering, R&D and quality control processes to ensure consistent high standards of manufacturing.

**1.DART Drill Bit Design and Selection Process**  
Maximize performance with the right bit for the right application.

**2.Materials Research**  
Improve drill bit durability and longevity.

**3.Drilling Technology Laboratory**  
Shorten the lead time between concept and product introduction.

**4.HAOQI BIT Experimental Test Facility**  
Redefine drilling performance with an advanced knowledge of drilling environments.

**5.Product Evaluation Laboratory**  
Strengthen performance and reliability through diagnostics.

### Directional: Gauge Pad Design

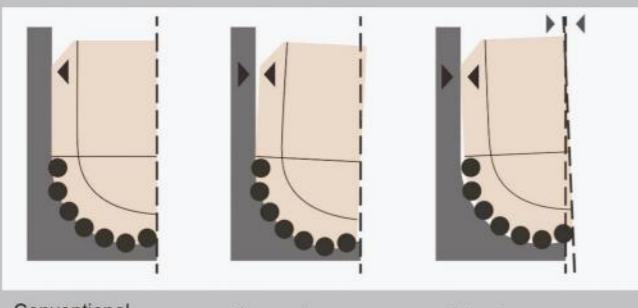
#### Gauge Pad Features:



Passive      Step      Active 1      Active 2      Active 3

HAOQI BIT offers a wide range of gauge configurations, depending on the requirements for: Dog leg and/or Gauge pad wear resistance.

### Step Gauge & Bit Tilt



Conventional Gauge

Tangent

Orient



#### RSS & Motor

Gauge pad relief allows the bit to tilt and change direction.



**Details determine quality**

**Quality comes from profession**



**5 1/2" HS413**

Blades: 4  
Connection Thread: 2 7/8 API REG  
Nozzle Qty : 13/32\*4 16/32\*1  
Cutter Size : 13\*13mm  
WOB (kN/mm) : 20-80  
RPM (r/min) : 60-300



**7 7/8" HS419**

Blades: 4  
Connection Thread : 4 1/2 API REG  
Nozzle Qty : 20/32\*7  
Cutter Size : 19\*19mm  
WOB (kN/mm) : 20-110  
RPM (r/min) : 60-300



**9 7/8" HS416**

Blades: 4  
Connection Thread : 6 5/8 API REG  
Nozzle Qty : 20/32\*6  
Cutter Size : 16\*13mm  
WOB (kN/mm) : 20-110  
RPM (r/min) : 60-260



**10 5/8" HS716**

Blades: 7  
Connection Thread : 6 5/8 API REG  
Nozzle Qty : 14/32\*6  
Cutter Size : 16\*13mm  
WOB (kN/mm) : 20-140  
RPM (r/min) : 60-260



**12 1/4" HS716**

Blades: 7  
Connection Thread : 6 5/8 API REG  
Nozzle Qty : 14/32\*8  
Cutter Size : 16\*13mm  
WOB (kN/mm) : 20-160  
RPM (r/min) : 60-260



# *Tricone Bit*



High-quality products and customized services

**TRICONE BIT**



# Guidance of Choosing Tricone Bit

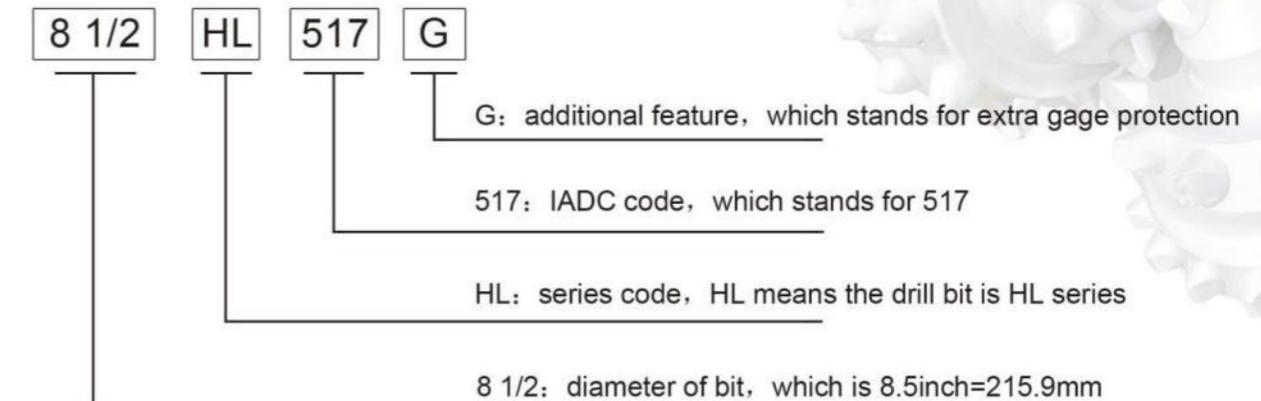
	IADC code	Formation	Rock Types
Steel Tooth	111-117	Soft formation with low compressive strength and high drillability.	very soft shale、mudstone clay、soil layer、plaster
	121-127		mudstone、soft shale、soft sandstone unconsolidated rock、tuff
	131-137		shale、soft limestone
	214-225	High compressive strength medium-hard formations.	shale、soft limestone
	315-317	Semi-abrasive or abrasive hard formations.	hard limestone
TCI	415-447	Soft formation with low compressive strength and high drillability.	soft shale、clay layer
	515-517	Soft to medium hard formation with low compressive strength and high drillability.	mudstone、soft shale loose sandstone
	525-527		medium shale、sandstone、shale
	535-547		sandstone、serpentine medium soft limestone
	615-617	Medium-hard formation with high compressive strength.	hard shale、limestone、sandstone Iron ore、shale、Mica schist marble、granite、dolomites、diabase
	625-637	Medium-hard formation with high compressive strength.	dolomite、hard limestone、gravel hard sandstone、limestone quartzite、basalt、hard shale taconite、rhyolite、pyrite、hematite



## 1. Tricone Bit Naming

The model number of tricone bit is consisted of four parts, namely diameter code, series code, IADC code and additional feature code.

Example: 8 1/2 HL 517G

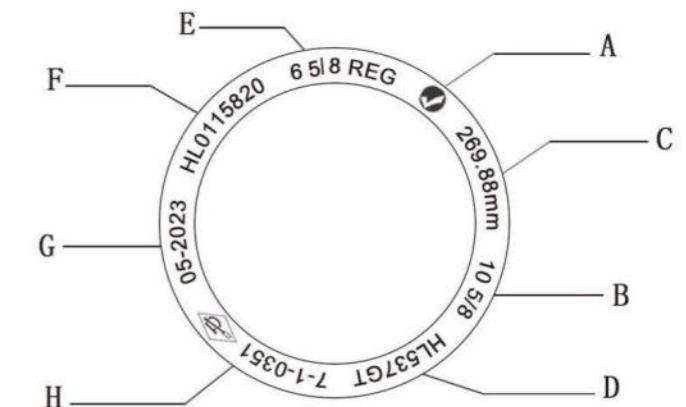


## 2. Additional Feature

Code	Additional feature	C	Center nozzle
G	Extra gage protection	L	Strengthening block
K	Wide-top tooth	X	Wedge-shaped tooth
T	Special gear gauge	Y	Conical-ended shape tooth

## 3. Bit Identification

A	Company Logo
B	Tricone Bit Specification
C	Diameter
D	IADC Code
E	Connection Thread
F	Serial Number
G	Assemble Date
H	Standard API 7-1-0351



# HK Series Tricone Bit



The HK series drill bit adopts sliding bearing rubber seal, which can withstand high drilling pressure at normal speed, and can be used in extremely soft to medium hard formations with different cutting structures.

## Product Description:

1. In the form of sliding bearing, B4 wear-resistant alloy layer is overlaid on the surface of the bearing, and silver is plated on the inner hole of the tooth wheel, so as to improve the bearing capacity and anti seizing capacity.
2. The bearing O-ring is made of high saturated fluorinated nitrile rubber, which has good wear resistance and high temperature resistance; the compression ratio and section diameter of the seal ring are optimized to improve the sealing performance of the seal ring; the lip seal is adopted to improve the reliability of the seal.
3. Vacuum pumping and oil filling are adopted, and the oil storage pressure balance system can balance the internal and external pressure difference of the bearing, provide good lubrication guarantee for the bearing system at the same time.
4. The bit is made of cemented carbide inserts with high strength and toughness for oil. According to the compressive strength and drillability of different formation, the specific cutting structure, inserts shape and inserts material are selected to ensure the wear resistance and toughness of inserts can reach the optimal matching and have a high ROP. The steel bit adopts the wear-resistant welding material independently developed and the wear-resistant material is fully wrapped on the tooth surface, which not only maintain the high mechanical drilling speed of the steel bit, but also improve the cutting tooth life of the bit.

Bit pressure and speed parameter table

Model	HK417	HK437	HK517	HK527	HK537	HK547	HK617
WOB(kN/mm)	0.35-0.90	0.35-0.95	0.35-1.05	0.35-1.05	0.35-1.05	0.35-1.05	0.35-1.05
RPM(r/min)	140-70	140-60	120-50	120-50	110-40	110-40	80-40
Model	HK627	HK637	HK647	HK737	HK117	HK127	HK217
WOB(kN/mm)	0.35-1.05	0.70-1.20	0.70-1.20	0.70-1.20	0.35-0.90	0.35-1.00	0.35-1.05
RPM(r/min)	80-40	70-40	70-40	70-40	150-80	150-70	150-60

Bit Size in mm	API Thread in	Bit Model
4 1/2 114.3	2 3/8	HK117、HK217、HK517、HK537
5 1/4 133.4	3 1/2	HK117、HK137、HK217、HK517、HK537
5 1/2 139.7	3 1/2	HK117、HK217、HK517、HK537
6 152.4	3 1/2	HK117、HK217、HK517、HK537、HK617、HK637
6 1/8 155.6	3 1/2	HK517、HK537、HK617、HK637
6 1/4 158.8	3 1/2	HK517、HK537、HK617、HK637
6 1/2 165.1	3 1/2	HK117、HK217、HK517、HK537、HK617、HK637
6 3/4 171.5	3 1/2	HK517、HK537、HK617、HK637
7 1/2 190.5	4 1/2	HK117、HK127、HK517、HK537、HK617、HK637
7 5/8 193.7	4 1/2	HK517、HK537、HK617、HK637
7 7/8 200	4 1/2	HK117、HK127、HK437、HK517、HK527、HK537、HK617、HK637
8 1/2 215.9	4 1/2	HK437、HK517、HK527、HK537、HK617、HK637
8 3/4 222.3	4 1/2	HK437、HK517、HK527、HK537、HK617、HK637
9 1/2 241.3	6 5/8	HK117、HK437、HK517、HK527、HK537、HK617、HK637
9 5/8 244.5	6 5/8	HK117、HK437、HK517、HK527、HK537、HK617、HK637
9 7/8 250.8	6 5/8	HK117、HK437、HK517、HK527、HK537、HK617、HK637
10 5/8 269.9	6 5/8	HK117、HK437、HK517、HK527、HK537、HK617、HK637
11 5/8 295.3	6 5/8	HK117、HK437、HK517、HK527、HK537、HK617、HK637
12 1/4 311.2	6 5/8	HK117、HK437、HK517、HK527、HK537、HK617、HK637
13 3/4 346.1	6 5/8	HK117、HK437、HK517、HK527、HK537、HK617、HK637
14 3/4 374.7	7 5/8	HK117、HK437、HK517、HK527、HK537、HK617、HK637

Note: Drill bit sizes and models not shown in the table can be designed and developed according to user needs



## HK Series Tricone Bit



**5 1/2" HK537GTL**



**6 3/4" HK637GYL**



**7 7/8" HK537GT**



**11 5/8" HK517GT**



**12 1/4" HK437GKT**



**12 1/4" HK537GKT**

CONNECTION THREAD: 2 7/8 REG  
WOB (kN/mm) : 0.35~1.04  
RPM (r/min) : 240~60

CONNECTION THREAD: 3 1/2 REG  
WOB (kN/mm) : 0.50~1.09  
RPM (r/min) : 200~40

CONNECTION THREAD: 4 1/2 REG  
WOB (kN/mm) : 0.50~1.09  
RPM (r/min) : 200~40

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~1.04  
RPM (r/min) : 240~60

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~1.01  
RPM (r/min) : 240~60

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~1.04  
RPM (r/min) : 240~60



**8 1/2" HK517GT**



**9 7/8" HK637GYT**



**10 5/8" HK617GYTL**



**12 1/4" HK117G**



**17 1/2" HK117GT**



**24" HK117G**

CONNECTION THREAD: 4 1/2 REG  
WOB (kN/mm) : 0.35~1.04  
RPM (r/min) : 240~60

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.50~1.09  
RPM (r/min) : 200~40

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.50~1.09  
RPM (r/min) : 200~40

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~0.90  
RPM (r/min) : 170~80

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~0.90  
RPM (r/min) : 170~80

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~0.90  
RPM (r/min) : 170~80

# HL Series Tricone Bit



HL series bit is a kind of rock breaking tool indispensable for geological exploration, oil drilling and various drilling industries. Its strong stability, high reliability, good hydraulic effects, high rock breaking efficiency and long service life make it for rotary drilling, motor drilling , high temp drilling ,deep drilling and other drilling conditions.

## Product Description:

### Steel Tooth

- 1) The optimized tooth structure makes the wearing-resistant alloy welded on the tooth surface and tooth top thicker and more offensive, effectively improving the wearing resistance of the teeth and greatly increasing the rate of penetration.
- 2) Through new welding technologies, new welding materials are welded on the surface of the inner row teeth and outer row teeth, thus making the teeth more wear-resistant.

### TCI

The technical engineers choose the tungsten carbide teeth with higher wearing resistance and stronger toughness for the poor working environment under high speed drilling conditions. Meanwhile, they use the computer simulation software to optimize the teeth structure and teeth placement to reduce repeated crushing, mitigate teeth wearing and lift the rate of penetration. Therefore, the drilling pressure can be spread over each tooth of the three cones in a more balanced way to ensure a balanced, stable and lasting state.

Bit pressure and speed parameter table

Model	HL417	HL437	HL517	HL527	HL537	HL547	HL617
WOB(kN/mm)	0.35-1.01	0.35-0.95	0.35-1.05	0.35-1.05	0.35-1.04	0.50-1.09	0.50-1.09
RPM(r/min)	240-60	240-60	240-60	240-60	240-60	200-40	200-40
Model	HL627	HL637	HL647	HL117	HL127	HL137	HL217
WOB(kN/mm)	0.50-1.09	0.50-1.09	0.50-1.17	0.35-0.90	0.35-1.00	0.35-1.05	0.50-1.20
RPM(r/min)	200-40	200-40	200-40	170-80	170-70	140-60	120-50

Bit Size in	Bit Size mm	API Thread in	Bit Model
4 1/2	114.3	2 3/8	HL117, HL217, HL517, HL537
5 1/4	133.4	3 1/2	HL117, HL137, HL217, HL517, HL537
5 1/2	139.7	3 1/2	HL117, HL217, HL517, HL537
6	152.4	3 1/2	HL117, HL217, HL517, HL537, HL617, HL637
6 1/8	155.6	3 1/2	HL517, HL537, HL617, HL637
6 1/4	158.8	3 1/2	HL517, HL537, HL617, HL637
6 1/2	165.1	3 1/2	HL117, HL217, HL517, HL537, HL617, HL637
6 3/4	171.5	3 1/2	HL517, HL537, HL617, HL637
7 1/2	190.5	4 1/2	HL117, HL127, HL517, HL537, HL617, HL637
7 5/8	193.7	4 1/2	HL517, HL537, HL617, HL637
7 7/8	200	4 1/2	HL117, HL127, HL437, HL517, HL527, HL537, HL617, HL637
8 1/2	215.9	4 1/2	HL437, HL517, HL527, HL537, HL617, HL637
8 3/4	222.3	4 1/2	HL437, HL517, HL527, HL537, HL617, HL637
9 1/2	241.3	6 5/8	HL117, HL437, HL517, HL527, HL537, HL617, HL637
9 7/8	250.8	6 5/8	HL117, HL437, HL517, HL527, HL537, HL617, HL637
10 5/8	269.9	6 5/8	HL117, HL437, HL517, HL527, HL537, HL617, HL637
11 5/8	295.3	6 5/8	HL117, HL437, HL517, HL527, HL537, HL617, HL637
12 1/4	311.2	6 5/8	HL117, HL437, HL517, HL527, HL537, HL617, HL637
13 3/4	346.1	6 5/8	HL117, HL437, HL517, HL527, HL537, HL617, HL637
14 3/4	374.7	7 5/8	HL117, HL437, HL517, HL527, HL537, HL617, HL637
15 1/2	393.7	7 5/8	HL117, HL437, HL517, HL527, HL537, HL617, HL637
17 1/2	444.5	7 5/8	HL117, HL515, HL517, HL535, HL537

Note: Drill bit sizes and models not shown in the table can be designed and developed according to user needs



## HL Series Tricone Bit



5 1/2" HL517GL

CONNECTION THREAD: 3 1/2 REG  
WOB (kN/mm) : 0.35~1.04  
RPM (r/min) : 240~60



7 7/8" HL517GKT

CONNECTION THREAD: 4 1/2 REG  
WOB (kN/mm) : 0.35~1.04  
RPM (r/min) : 240~60



8 1/2" HL527GXT

CONNECTION THREAD: 4 1/2 REG  
WOB (kN/mm) : 0.35~1.04  
RPM (r/min) : 240~60



12 1/4" HL617GYT

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.50~1.09  
RPM (r/min) : 200~40



13 3/4" HL517GT

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.50~1.09  
RPM (r/min) : 200~40



14 3/4" HL617GYTL

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.50~1.09  
RPM (r/min) : 200~40



9 7/8" HL437GTC

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~1.01  
RPM (r/min) : 240~60



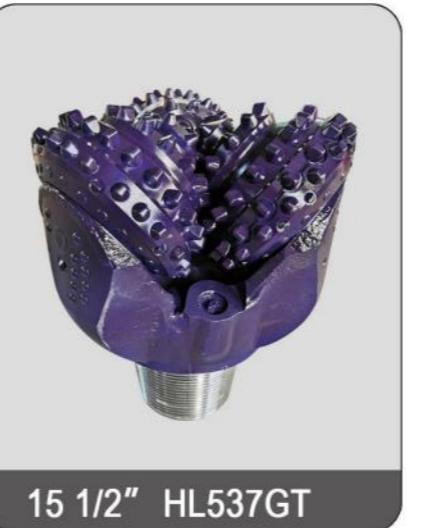
10 5/8" HL537GTL

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~1.04  
RPM (r/min) : 240~60



11 5/8" HL517GKT

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~1.04  
RPM (r/min) : 240~60



15 1/2" HL537GT

CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~1.04  
RPM (r/min) : 200~40



17 1/2" HL517G

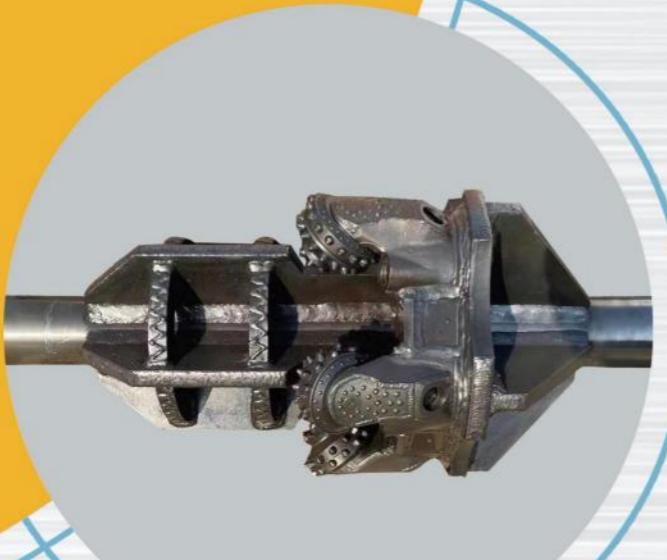
CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~0.90  
RPM (r/min) : 170~80



12 1/4" HL117GT

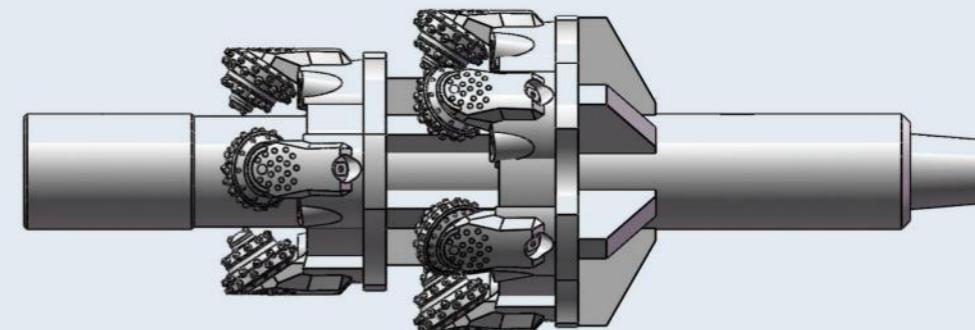
CONNECTION THREAD: 6 5/8 REG  
WOB (kN/mm) : 0.35~0.90  
RPM (r/min) : 170~80

# HDD Tools



## HDD ROCK REAMER

The roller cone rock reamer is a common rock reaming tool for non-excavation and crossing construction industries. Our company produces various types of roller reamers suitable for various types of non-excavation and crossing drilling rigs, suitable for various strata, and the size covers 220- 1600mm.



### Trenchless bit configuration table

Items	Reamer	Segments			
		Diameter(mm)	8 1/2	9 7/8	12 1/4
1	300	3	/	/	/
2	400	5	4	/	/
3	500	6	5	4	/
4	600	7	6~7	5~6	5
5	700	7	7~8	6~7	6
6	800	/	/	7~8	7
7	900	/	/	8~9	8~9
8	1000	/	/		9~10
9	1100	/	/		10~11
10	1200	/	/		12~13
11	1300	/	/		10~11
12	1400	/	/		12~13
13	1500	/	/		13~14

Note:1) The configuration of the trenchless bit can be adjusted according to customer requirements, formation, drilling rig model or any other construction requirements;

2) Different types of plate or barrel centralizing structures can be applied according to customer requirements.

## Structural features

1. According to the different construction conditions on site, select the appropriate palm type and quantity ratio to ensure product life and construction efficiency.



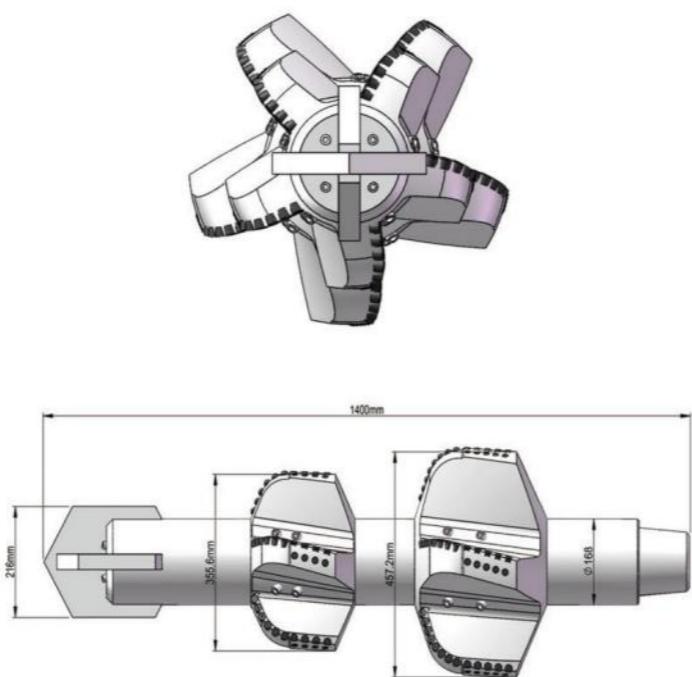
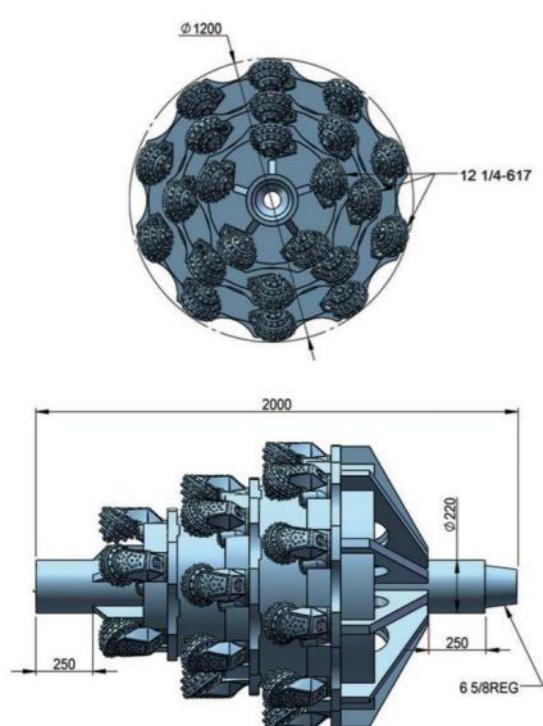
2. Using high-quality single roller cone, from accessories to finishing and assembly are completed in strict accordance with high standards, and the quality is controllable.



3. The multi-layer and multi-channel welding process reduces thermal damage and enhances the tensile strength of the reamer.



## Reference picture



**Reference picture 1**

Diameter	Trenchless bit type	Connection thread
18 1/2"	12 1/4" 617 Metal seal*4	3 1/2" IF



**Reference picture 3**

Diameter	Trenchless bit type	Connection thread
20"	12 1/4" 537 Metal seal*4	3 1/2" IF



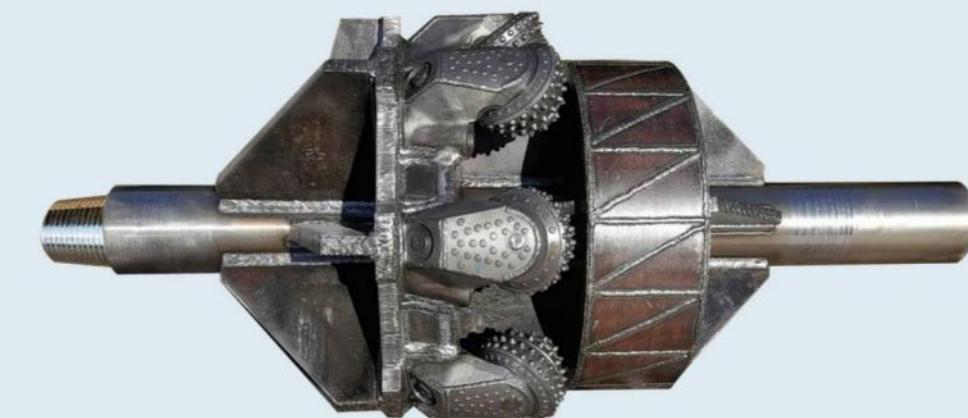
**Reference picture 2**

Diameter	Trenchless bit type	Connection thread
28"	13 5/8" 617 Metal seal*6	4" IF



**Reference picture 4**

Diameter	Trenchless bit type	Connection thread
31"	13 5/8" 617 Metal seal*8	4 1/2" IF



## Single Roller Cone

- Metal-sealed sliding bearing structure, hard alloy surfacing on the surface of the bearing tooth brush inner hole Silver plated to improve load carrying capacity anti-seize and bearing stability.
- Optimal design of tooth row, number of teeth, and main cutting teeth adopt conical teeth which are suitable for drilling in hard and brittle formations.
- The precision designed and processed new oil storage lubrication system applies new synthetic grease to improve the bearing internal. The external pressure balances the speed, better protects the bearing sealing system and improves reliability.
- In order to adapt to directional and horizontal drilling, the full palm back teeth with gradient changes in height and exposed tooth height are adopted.

### Structural features



As a component, the single roller bit is alternately installed on the thin-wal shaft to form a rotary drlling. Among them, the two and three toothed wheels need to be welded to achieve the full coverage of the broken ring.

The single roller bit is composed of a single cone and a lug matched by a bearing. According to different strata and construction requirements, different cutting structures can be selected: wear resistant carbide are welded and cemented carbide inserts are inserted on the back of the lug.

12 1/4" trenchless bit



8 1/2" trenchless bit



9 7/8" trenchless bit



13 5/8" trenchless bit



### Reference picture



## Mud Motor

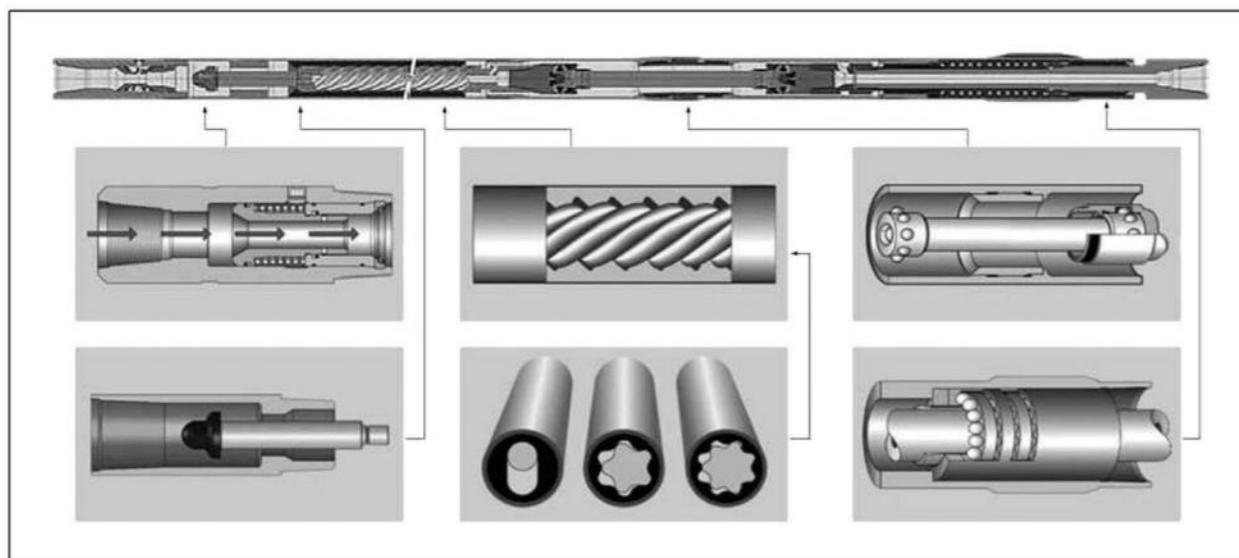
The screw drilling tool uses mud and clear water as the power medium, which is transported to the bottom of the hole through the center hole of the drill pipe. It is essentially an energy conversion device that converts liquid pressure into mechanical energy. When drilling, the screw drilling tool directly drives the core tube and the drill bit connected to the drive shaft at the bottom of the hole to rotate, and the entire drill string is only a channel for conveying high-pressure work and a rod for supporting the counter torque of the drill bit, without rotary motion.

Drilling with screw drilling tools has many advantages compared with conventional drilling, such as greatly reduced drill pipe wear and high drilling speed. It is the main tool for drilling directional holes, and it has played a role in drilling non-excavation fields.



## Constitution

Downhole motor is composed of four assemblies of by-pass valve, motor, cardan shaft and drive shaft.



## Working Principle

Downhole motor is a kind of downhole dynamic drilling tool upon the power of drilling mud. Mud stream from the outlet of mud pump flows through a by-pass valve into the motor. This stream produces pressure loss between inlet and outlet of the pump, to push the rotor into rotating, and to transmit the torque and speed to the bit. The downhole motor property mainly depends upon its property parameters.

## Reference picture



