

BUSINESS BROCHURE

PDC Bit & Tricone Bit
DRILL BIT MANUFACTURER



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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 & PDC Bit



Product & Tricone Bit

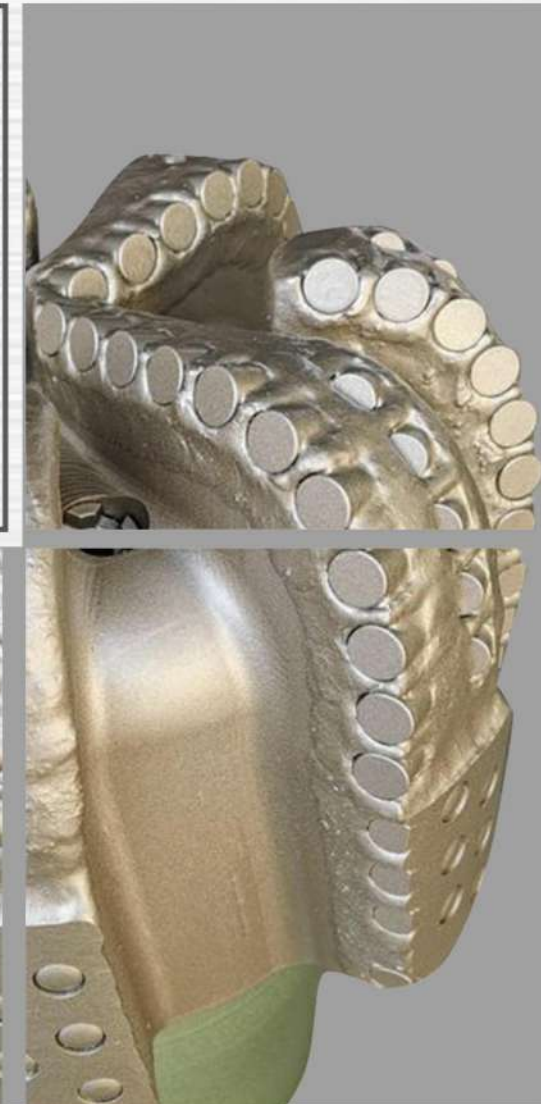


PDC BIT



High-quality products and customized services

PDC BIT



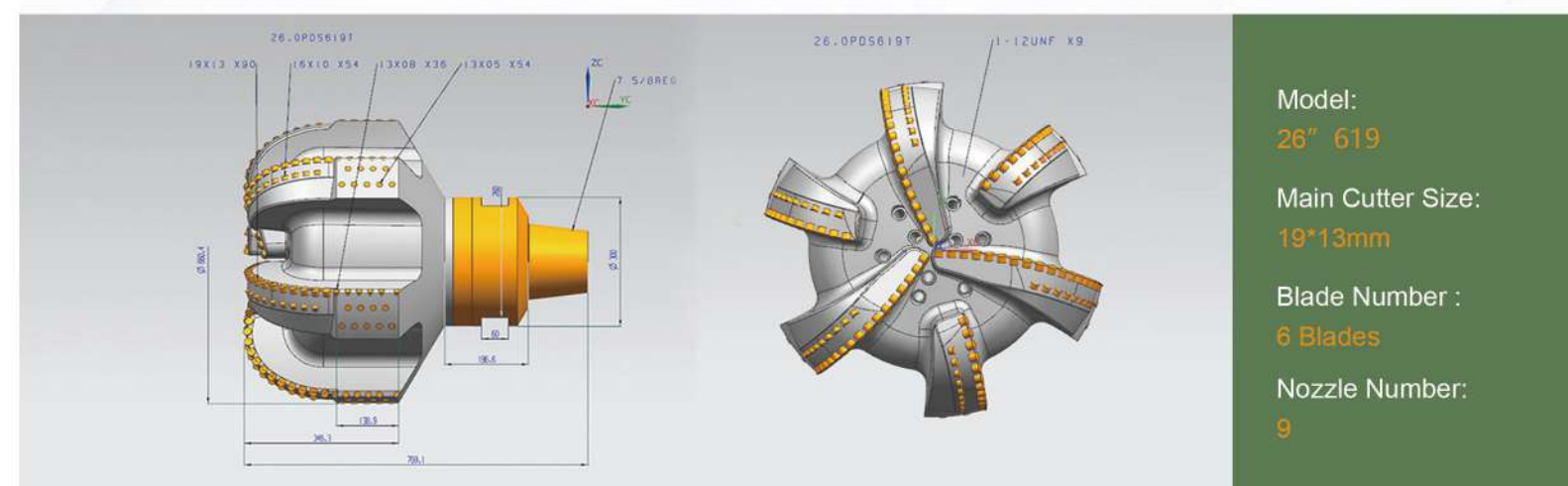
Guidance of Choosing PDC Bit

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

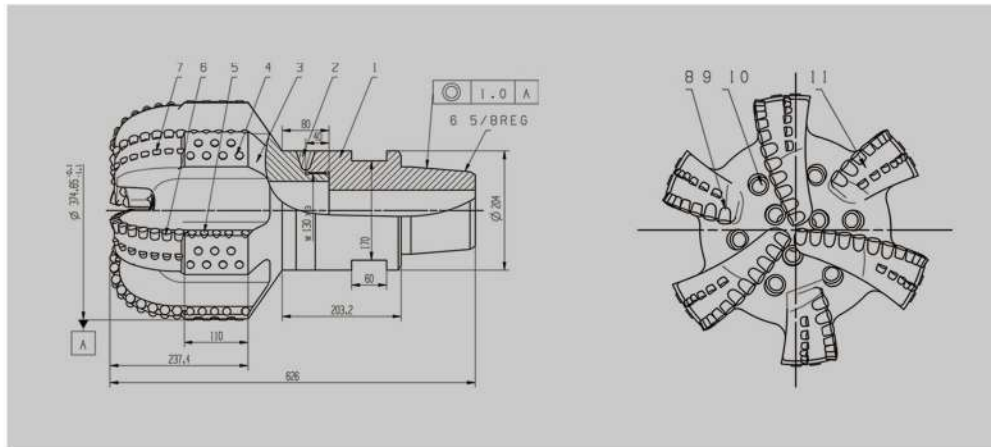
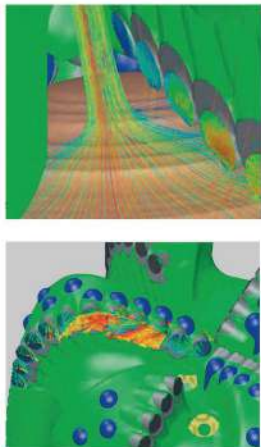


PDC BIT Technological Expertise

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.



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.

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.



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

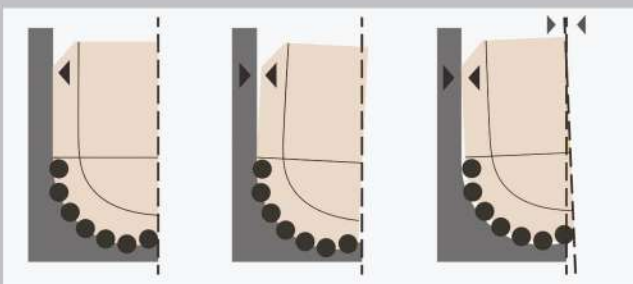
Gauge Pad Features:



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



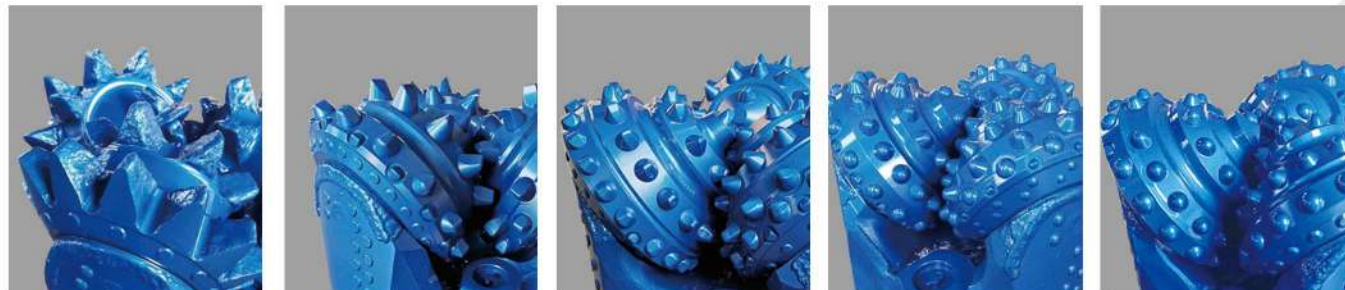
High-quality products and customized services

TRICONE BIT



Guidance of Choosing Tricone Bit

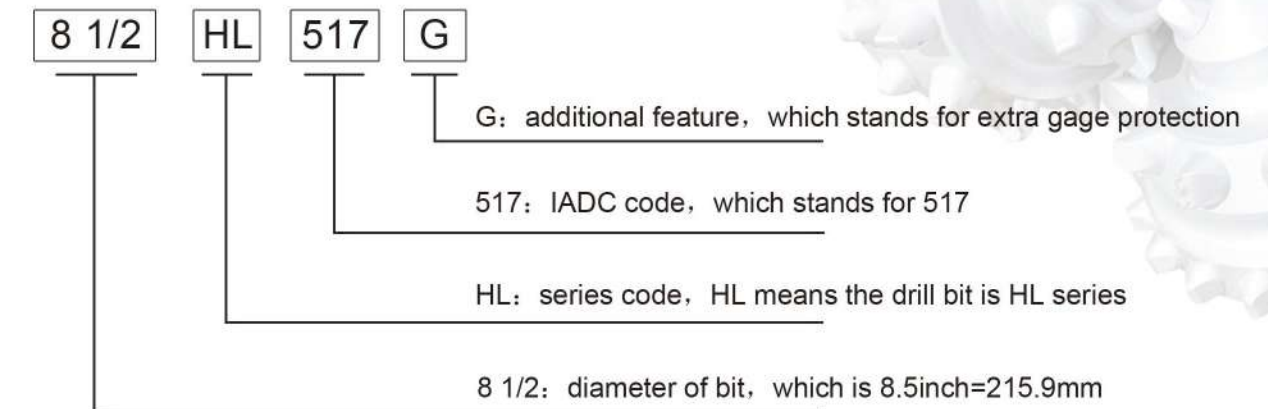
	IADC code	Formation	Rock Types
Steel Tooth	111-117	Soft formation with low compressive strength and high drillability.	very soft shale、 mudstone clay、 soil layer、 plaster
	121-127		mudstone、 soft shale、 soft sandstone unconsolidated rock、 tuff
	131-137		shale、 soft limestone
	214-225	High compressive 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、 grave hard sandstone、 limestone quartzite、 basalt、 hard shale taconite、 rhyplite、 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

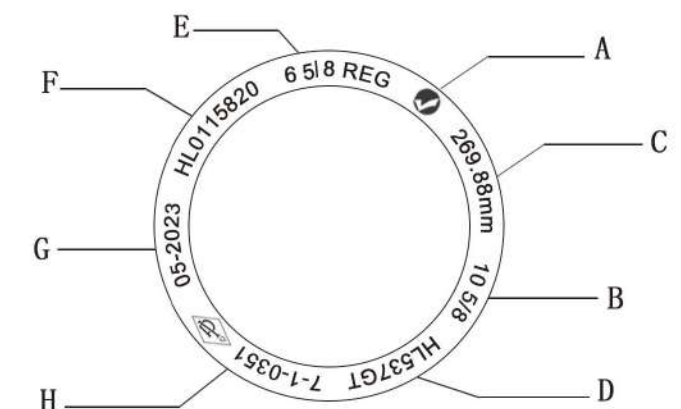


2. Additional Feature

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 seals 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 weldingmaterial 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 Size		API Thread	Bit Model
in	mm	in	
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

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



HK Series Tricone Bit



5 1/2" HK537GTL

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



6 3/4" HK637GYL

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



7 7/8" HK537GT

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



11 5/8" HK517GT

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



12 1/4" HK437GKT

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



12 1/4" HK537GKT

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



8 1/2" HK517GT

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



9 7/8" HK637GYT

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



10 5/8" HK617GYTL

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



12 1/4" HK117G

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



17 1/2" HK117GT

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



24" HK117G

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		API Thread	Bit Model
in	mm	in	
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

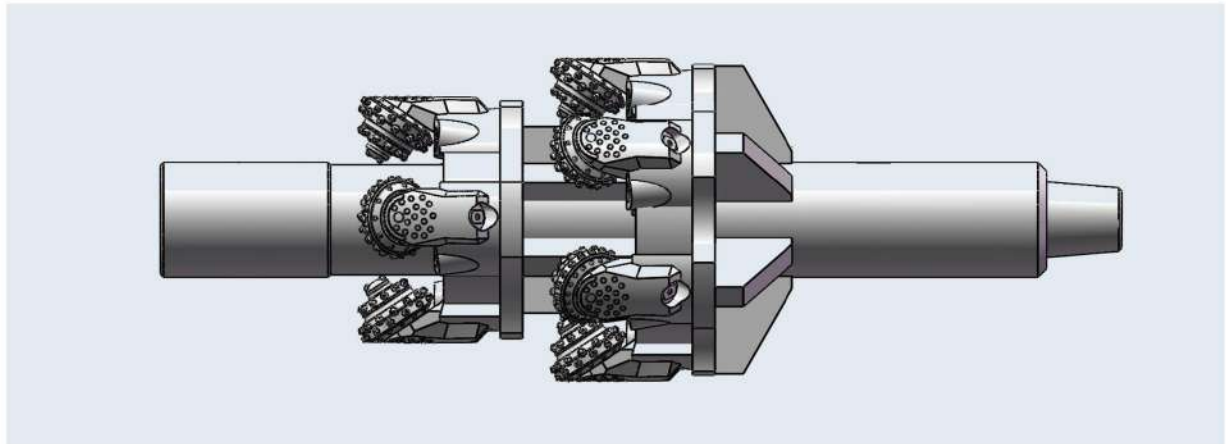


12 1/4" HL117GT

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

HDD 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.

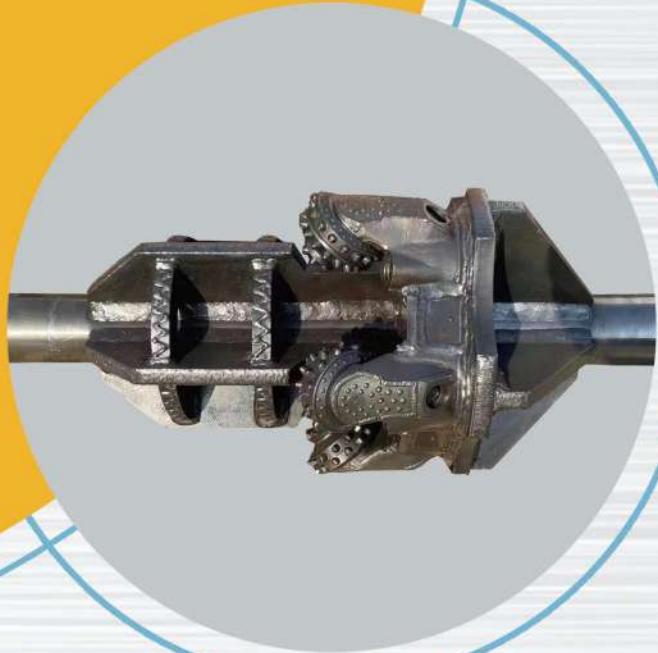


Trenchless bit configuration table

Items	Reamer	Segments			
	Diameter(mm)	8 1/2	9 7/8	12 1/4	13 5/8
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.

HDD Tools



Structural features

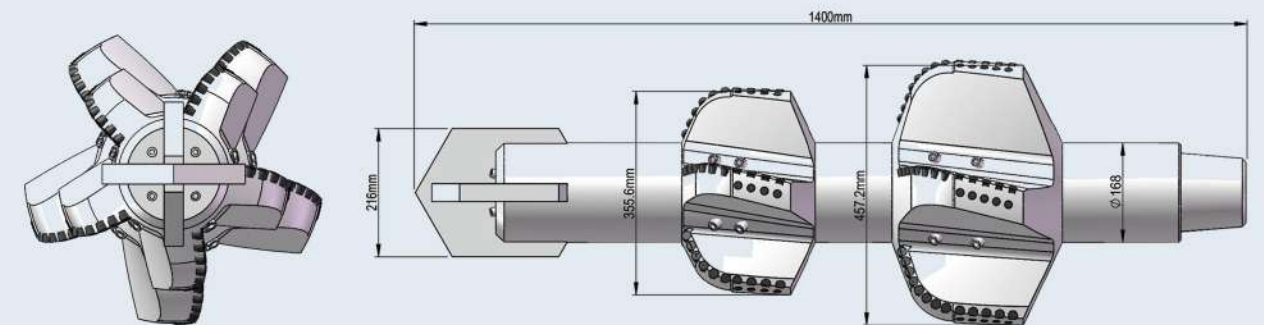
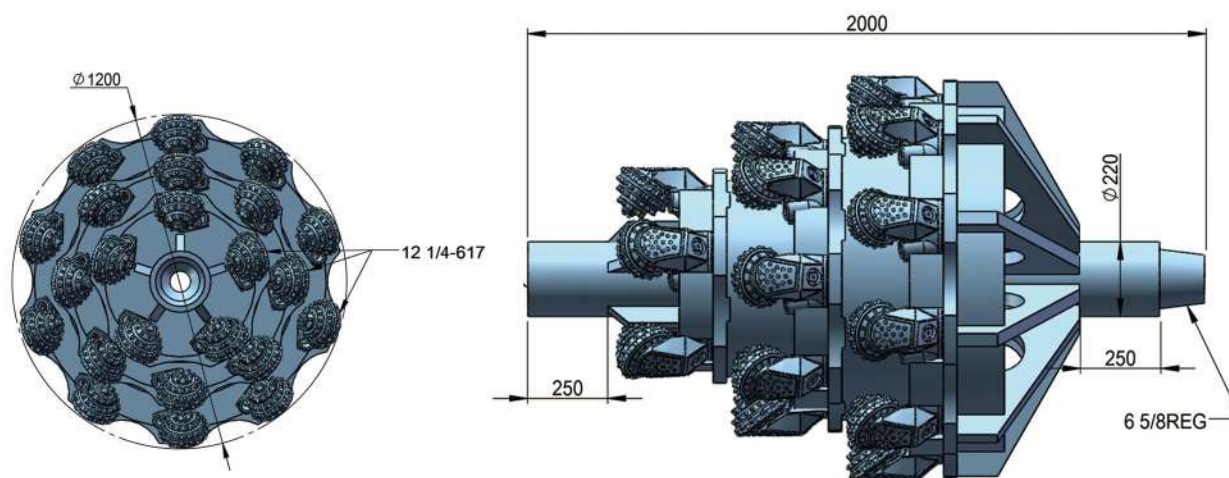
1. According to the different construction conditions on site, select the appropriate palm type and quantity ratio to ensure product life and construction efficiency.



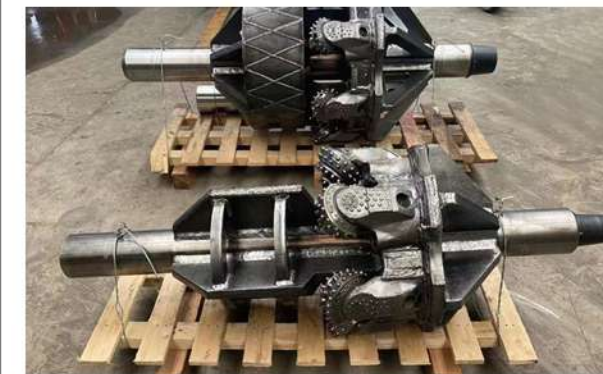
2. Using high-quality single roller cone, from accessories to finishing and assembly are completed in strict accordance with high standards, and the quality is controllable.



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



Reference picture



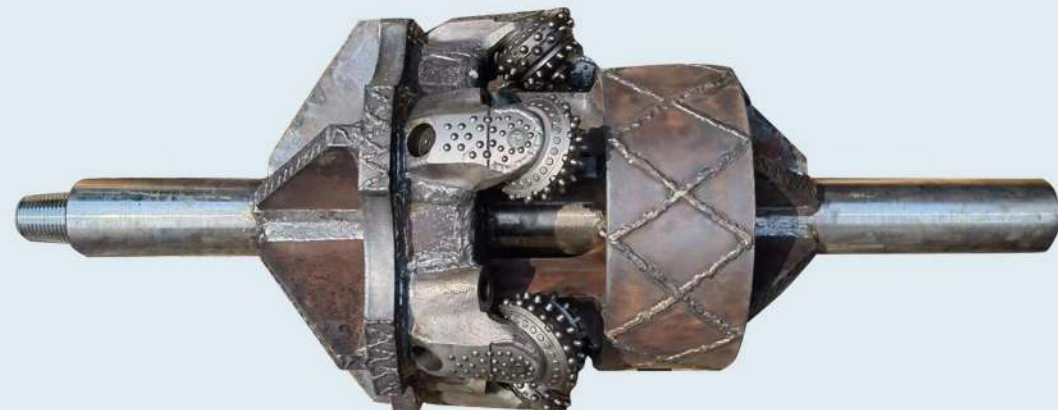
Reference picture 1

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



Reference picture 2

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



Reference picture 3

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

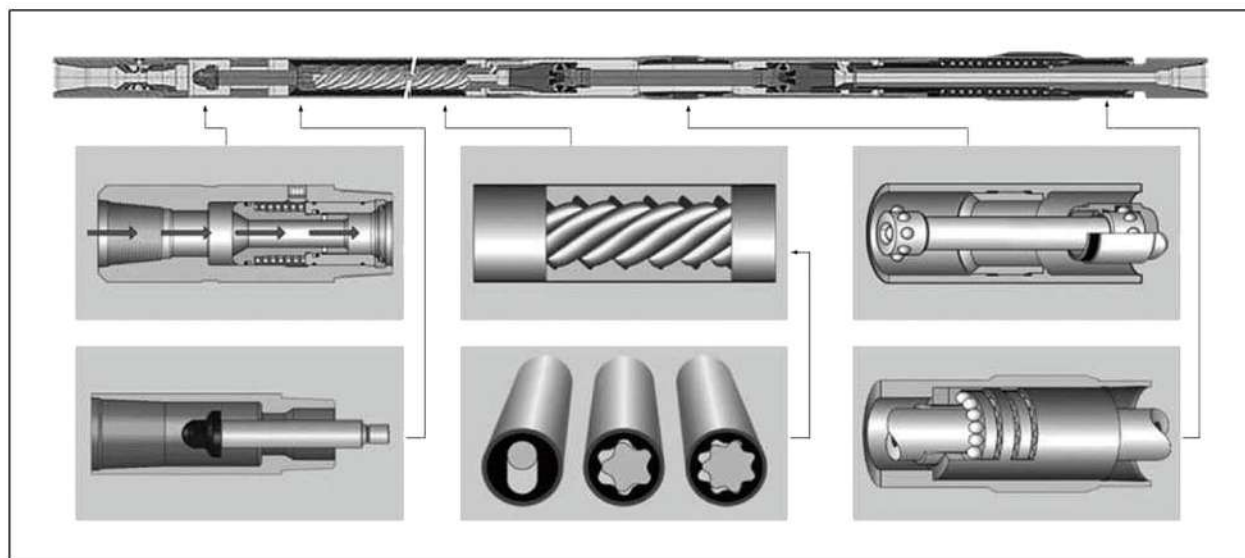
The screw drilling tool uses mud and clear water as the power medium, which is transported to the bottom of the hole through the center hole of the drill pipe. It is essentially an energy conversion device that converts liquid pressure into mechanical energy. When drilling, the screw drilling tool directly 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

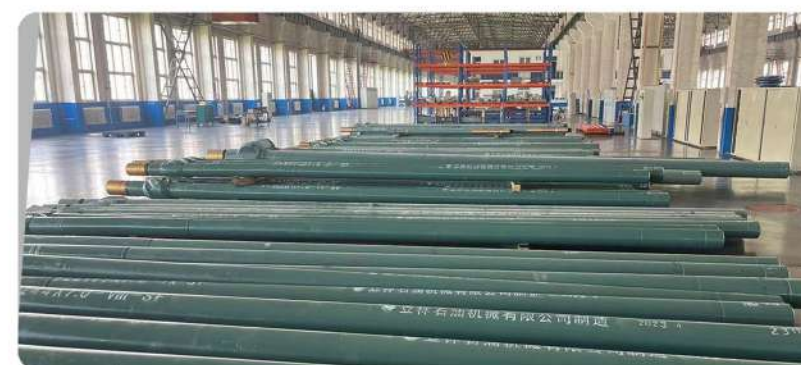
Downhole motor is composed of four assemblies of by-pass valve, motor, cardan shaft and drive shaft.



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





Mud Motor Technology Parameters

Model	mm	in	Bit size	Connection Thread	Flow Rate lpm gpm	Rotary Speed	Max Pressure Loss Mpa Psi	Max Torque N.m lb-ft	Max Pressure KN lb	Max Output Power KW hp
5LZ89-3.0	89	3 1/2	114-149 4 1/2-5 7/8	2 3/8REG 2 3/8REG	190-568 50-150	80-240	3.14 455	1016 750	35 7700	22 30
5LZ89-4.0	89	3 1/2	114-149 4 1/2-5 7/8	2 3/8REG 2 3/8REG	190-568 50-150	82-246	4.19 608	1315 970	35 7700	29 40
7LZ95-4.0	95	3 3/4	118-149 4 5/8-5 7/8	2 7/8REG 2 7/8REG	303-606 80-160	130-260	4.19 608	1325 977	55 12375	31 43
7LZ95-6.7	95	3 3/4	118-149 4 5/8-5 7/8	2 7/8REG 2 7/8REG	303-606 80-160	127-254	7.02 1018	2284 1685	55 12375	52 71
5LZ105-4.0	105	4 1/8	121-152 4 3/4-6	2 7/8REG 2 7/8REG	378-757 100-200	123-247	4.19 608	1745 1287	55 12375	39 53
6LZ105-6.0	105	4 1/8	121-152 4 3/4-6	2 7/8REG 2 7/8REG	454-946 120-250	142-297	6.28 910	2694 1987	55 12375	74 101
7LZ105-6.0	105	4 1/8	121-152 4 3/4-6	2 7/8REG 2 7/8REG	454-946 120-250	133-277	6.28 910	2884 2127	55 12375	73 99
9LZ105-4.0	105	4 1/8	121-152 4 3/4-6	2 7/8REG 2 7/8REG	454-946 120-250	120-251	4.19 608	2078 1532	55 12375	47 64
5LZ120-3.0	120	4 3/4	149-200 5 7/8-7 7/8	3 1/2REG 3 1/2REG	568-1136 150-300	116-232	3.14 455	2060 1519	100 22500	44 60
5LZ120-4.0	120	4 3/4	149-200 5 7/8-7 7/8	3 1/2REG 3 1/2REG	568-1324 150-350	118-276	4.19 608	2707 1997	100 22500	44 60
7LZ120-4.5	120	4 3/4	149-200 5 7/8-7 7/8	3 1/2REG 3 1/2REG	454-1040 120-275	80-182	4.71 684	3557 2624	100 22500	69 94
7LZ120-5.0	120	4 3/4	149-200 5 7/8-7 7/8	3 1/2REG 3 1/2REG	454-1040 120-275	80-182	5.24 760	3958 2920	100 22500	67 91
5LZ140-3.0	140	5 1/2	171-213 6 3/4-8 3/8	4 1/2REG 4 1/2REG	567-1325 150-350	94-219	3.14 455	2548 1879	100 22500	68 92
5LZ140-4.0	140	5 1/2	171-213 6 3/4-8 3/8	4 1/2REG 4 1/2REG	567-1325 150-350	94-219	4.19 608	3398 2506	100 22500	78 105
7LZ140-4.0	140	5 1/2	171-213 6 3/4-8 3/8	4 1/2REG 4 1/2REG	757-1514 200-400	86-172	4.19 608	4893 3609	100 22500	118 160
7LZ159-5.0	159	6 1/4	200-216 7 7/8-8 1/2	4 1/2REG 4 1/2REG	946-1892 250-500	102-204	5.24 760	6257 4616	160 36000	125 170
C7LZ159-5.0	159	6 1/4	200-216 7 7/8-8 1/2	4 1/2REG 4 1/2REG	946-1892 250-500	85-170	5.24 760	7913 5837	160 36000	72 98
LZ165-7.0	165	6 1/2	200-251 7 7/8-9 7/8	4 1/2REG 4 1/2REG	378-1325 100-350	160-563	4.19 608	1390 1026	100 22500	182 248
4LZ165-7.0	165	6 1/2	200-251 7 7/8-9 7/8	4 1/2REG 4 1/2REG	946-1892 250-500	134-268	7.32 1062	7382 5445	160 36000	69 94
5LZ165-3.5	165	6 1/2	200-251 7 7/8-9 7/8	4 1/2REG 4 1/2REG	757-1514 200-400	112-224	3.67 532	3390 2501	160 36000	209 285



Mud Motor Technology Parameters

Model	mm	in	Bit size	Connection Thread	Flow Rate lpm gpm	Rotary Speed	Max Pressure Loss Mpa Psi	Max Torque N.m lb-ft	Max Pressure KN lb	Max Output Power KW hp
3LZ172-6.0	172	6 3/4	213-251 8 3/8-9 7/8	4 1/2REG 4 1/2REG	1136-1893 300-500	160-266	6.28 910	6341 4677	170 38250	156 212
4LZ172-7.0	172	6 3/4	213-251 8 3/8-9 7/8	4 1/2REG 4 1/2REG	1136-2271 300-600	140-280	7.32 1062	8623 6360	170 38250	220 299
5LZ172-4.0	172	6 3/4	213-251 8 3/8-9 7/8	4 1/2REG 4 1/2REG	946-1893 250-500	93-186	4.19 608	5813 4287	170 38250	93 126
7LZ172-4.0	172	6 3/4	213-251 8 3/8-9 7/8	4 1/2REG 4 1/2REG	1136-2271 300-600	80-160	4.19 608	8097 5973	170 38250	117 158
7LZ172-5.3	178	7	213-251 8 3/8-9 7/8	4 1/2REG 4 1/2REG	1136-3028 300-800	62-164	5.55 805	13693 10100	170 38250	204 277
7LZ178-6.0	178	7	213-251 8 3/8-9 7/8	4 1/2REG 4 1/2REG	1136-2271 300-600	80-160	6.28 910	12136 8952	170 38250	175 238
3LZ197-7.0	197	7 3/4	251-311 9 7/8-12 1/4	6 5/8REG 6 5/8REG	1136-2271 300-600	116-232	7.33 1063	10218 7537	200 45000	218 297
4LZ197-6.0	197	7 3/4	251-311 9 7/8-12 1/4	6 5/8REG 6 5/8REG	1136-2650 300-700	94-220	6.28 910	10750 7929	200 45000	212 288
4LZ197-7.0	197	7 3/4	251-311 9 7/8-12 1/4	6 5/8REG 6 5/8REG	1136-2271 300-600	110-220	7.33 1063	10959 8083	200 45000	215 292
5LZ197-4.0	197	7 3/4	251-311 9 7/8-12 1/4	6 5/8REG 6 5/8REG	1136-2650 300-700	80-188	4.19 608	8138 6002	200 45000	144 196
7LZ203-5.0	203	8	251-311 9 7/8-12 1/4	6 5/8REG 6 5/8REG	1136-2650 300-700	70-164	5.24 760	11579 8541	200 45000	175 238
7LZ203-5.0HR	203	8	251-311 9 7/8-12 1/4	6 5/8REG 6 5/8REG	1136-2650 300-700	70-164	7.76 1125	17148 12648	200 45000	259 352
7LZ203-6.0	203	8	251-311 9 7/8-12 1/4	6 5/8REG 6 5/8REG	1136-2650 300-700	70-164	6.28 910	13877 10236	200 45000	210 285
5LZ210-5.0	210	8 1/4	251-375 9 7/8-14 3/4	6 5/8REG 6 5/8REG	1136-2650 350-700	81-162	5.24 760	11661 8601	300 67500	174 237
7LZ210-5.0	210	8 1/4	251-311 9 7/8-12 1/4	6 5/8REG 6 5/8REG	1514-3028 400-800	79-158	5.24 760	13538 9985	300 67500	198 269
5LZ216-6.0	216	8 1/2	251-311 9 7/8-12 1/4	6 5/8REG 6 5/8REG	1325-2650 350-700	81-162	6.28 910	13975 10308	320 72000	209 284
7LZ216-3.5	216	8 1/2	251-311 9 7/8-12 1/4	6 5/8REG 6 5/8REG	1893-4164 500-1100	62-137	3.67 530	14769 10894	320 72000	192 261
5LZ244-5.0	244	9 5/8	311-445 12 1/4-17 1/2	6 5/8REG 6 5/8REG	2271-4542 600-1200	89-178	5.24 760	18451 13609	360 81000	298 406
5LZ244-6.0	244	9 5/8	311-445 12 1/4-17 1/2	6 5/8REG 6 5/8REG	2271-4542 600-1200	89-178	6.28 910	22113 16310	360 81000	358 487
7LZ244-5.0	244	9 5/8	311-445 12 1/4-17 1/2	6 5/8REG 6 5/8REG	2271-4542 600-1200	66-132	5.24 760	23319 17200	360 81000	287 390