



专利号 : ZL201620007169.4 (钻机)

专利号 : ZL201620009951.X (钻具)



## :::: 引领非开挖装备及施工技术新突破

**Lead the HDD equipments and construction technology of a new breakthrough**

**Drill innovation: drilling machine power output driving devices**

**Drill pipe innovation: No-dig double-wall drill pipe**

**Drilling Tools innovation: double-wall drill rod drive the geosteering drill**

**National utility model patents ( Patent NO. : ZL201620007169.4 )**

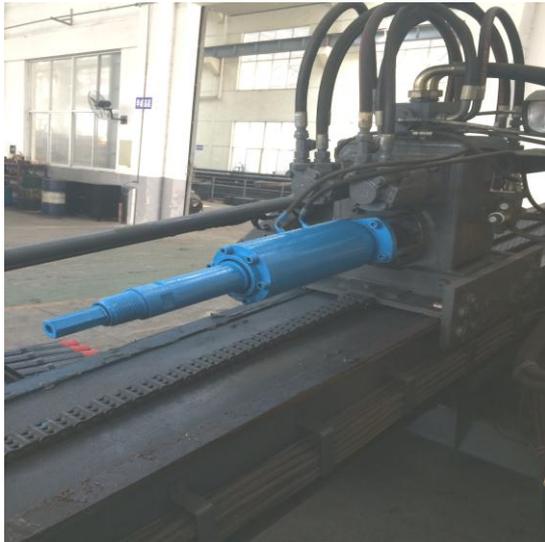
**Drilling tools innovation to obtain**

**National utility model patents ( Patent NO. : ZL201620009951.X )**

## CASTON DRILL TOOLS(GROUP) CO.,LTD

### **Drilling machine innovation: drill power output driven approach**

Additional power plant by means of horizontal directional drilling rig power output (as shown in figure blue), single shaft power output improvement, from uniaxial to biaxial power output, the power output driven approach. The output mode to manipulate controllable output block 1 , block 2. In one block mode, inner and outer pipe synchronous rotation, the second mode, turn in the inside drill pipe, the outside drill pipe static. Compared with traditional single shaft drill machine, it will be increased the dynamic choice mode of a set of more flexibility in the use of the actual site.



### **Power output time-sharing drive structure:**

Drilling rig power output time-sharing drive device, including hydraulic motor, power output device, hydraulic transmission mechanism;

Using hydraulic shift in power front mounted in hydraulic transmission mechanism to internal and external pipe time-sharing driver, save a lot of cost for drilling machine modification.

Inside and outside the drill rod drives the output torque is the same, improve construction efficiency, at the same time the structure is simple, low failure.

### **The traditional method of trenchless guide construction work:**

**Traditional operation mode: single shaft power + ordinary drill pipe+ drill guide bit and the soles of the feet.**

The traditional guide drill top with a slope foot plate drill bit, drill pipe uniform rotary drilling straight hole section, when it is not rotating drill pipe propulsion, and cant foot board 12 o'clock bit direction deviating hole section.

**Weakness:** the traditional deflection is only advance no rotary cutting, affected by geological and construction is difficult in the sand at the grass-roots level, drilling and difficult to control accuracy is poorer, meet underground more rigid obstacles, increase torque drill pipe, and guide hole, it is easy to result in failure.

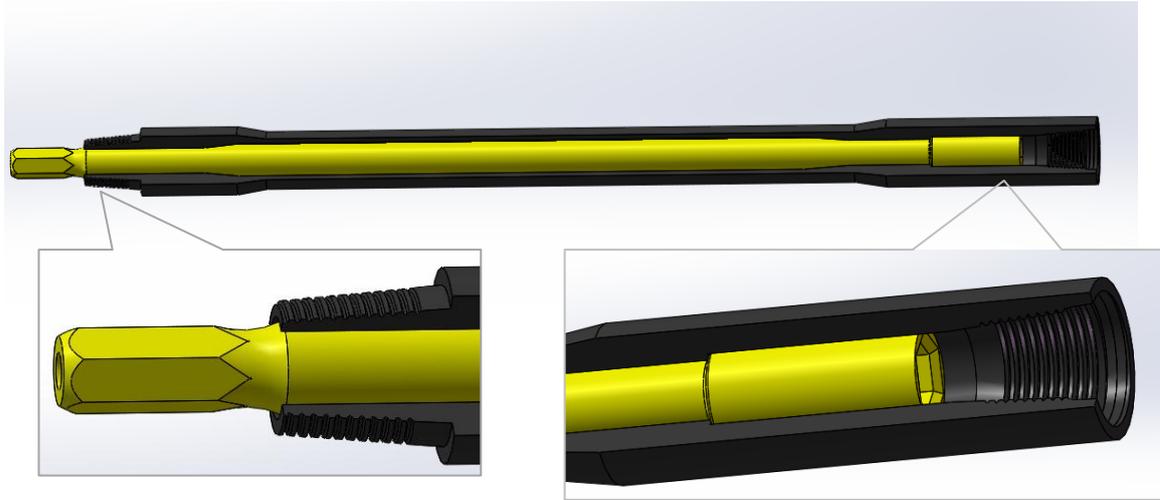
**The traditional operation mode 2: ordinary drill pipe + mud motor + roller bit**

Pushed by the drill pipe, sheet bending 1.75 degrees mud motor and roller bit, drill pipe outside rotation, deflecting hole line, mud drive motor when the mud drilling straight line segments.

**Disadvantages:** need another equipped with mud pump, and mud motor power is derived from the mud fluid, in order to achieve high speed need to waste a lot of mud.



**Drill pipe innovation: trenchless double-wall drill pipe**



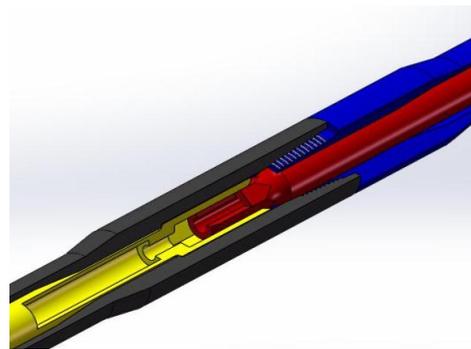
The pin joint of Double-wall drill pipe inside and outside

the box of Double-wall drill pipe inside and outside

no-dig double-wall drill pipe is by inner pipe and outer pipe (called a inner tube and outer tube). In drill pipe bore inner chamber is a job to the construction of water or mud pump input channel. Engineering operations outside the pipe with threaded connection each other, the drill pipe in the structure of the inside and outside the six-party male female connector plug connected manner. Inside and outside the drill pipe at power output driver, will use the shift pattern, can be independently rotating transmission torque.



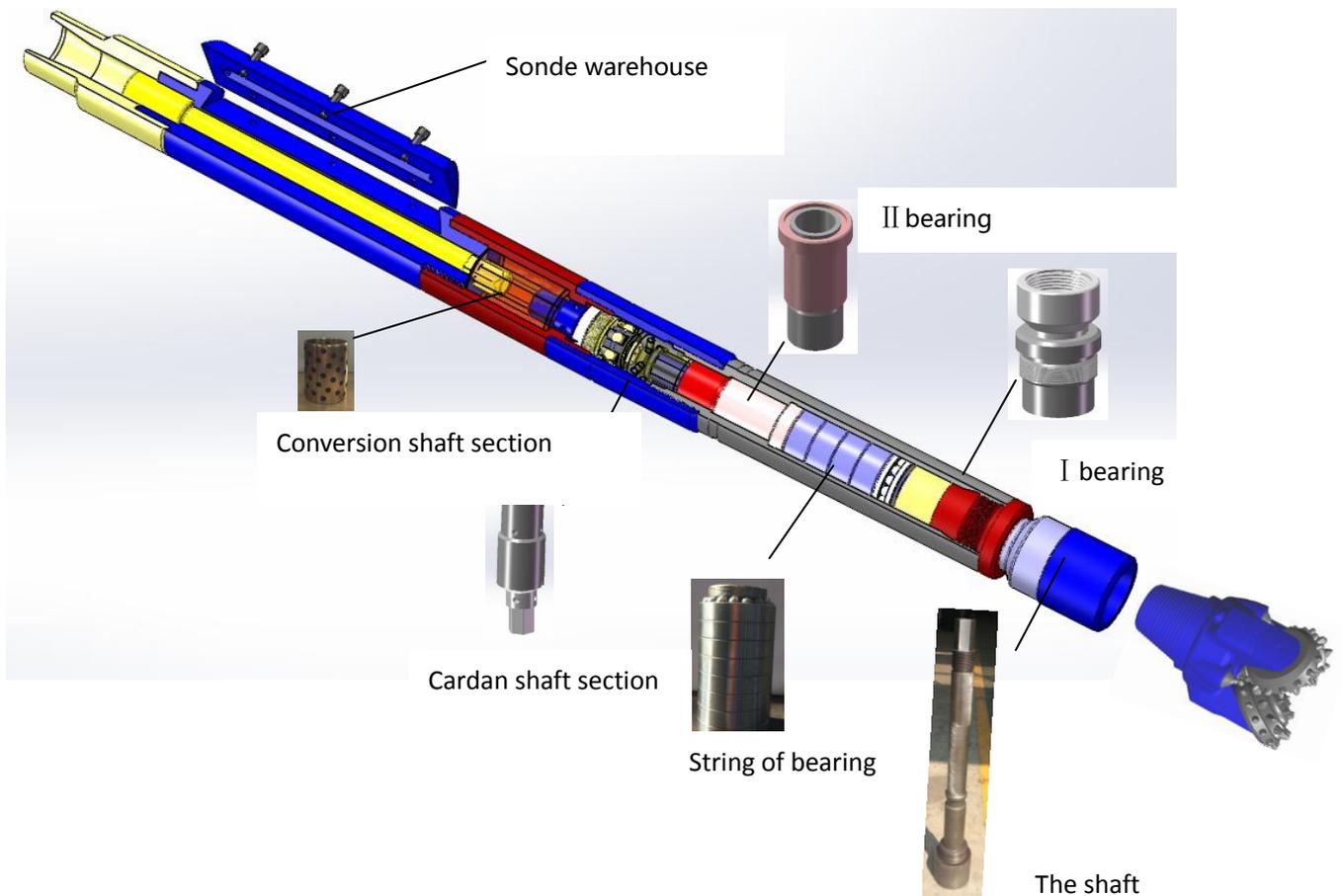
Double-wall drill



Double-wall drill pipe connection section

**non-dig Double-wall drill pipe :**

Type	KT-SZ073	KT-SZ076	KT-SZ083	KT-SZ089	KT-SZ114
specification	φ73x9.35	φ76x10	φ83x9	φ89x9.35	φ114x9.19
Button type	NC26	NC26	D80	NC31	NC46
According to customers' needs can be personalized					



● **Tool innovation: double-wall drill rod drive the geosteering drilling**

**Double-wall drill rod drive the geosteering drilling bit structure:**

Includes the first spindle, the first core shaft shell, the second core shaft, shell, steering gear, and tool parts; With steering Angle guide mechanism, replace the motor direction, reduce the dosage of mud, improve the guide drilling torque.

Bit the probe at the back of the warehouse, connected to the drill pipe and drill pipe main axis Angle is 1.75 ° installation.

Double drive guide bit and double-wall drill pipe connection, through the drill pipe inner cavity hole input in mud.

The geological rock drill guide bit and drill pipe connection.

**Guiding principle of operation:**

Within and is driven by double motor power head drill pipe and outer pipe rotation can be relatively independent movement.

Orientation in the process of operation, when the inside and outside pipe at the same time rotating drilling track in a straight line.

When the drill pipe rotation within and outside drill pipe according to probe the installation of seat tube

Angle position not rotating only stop at a fixed direction advance, borehole trajectory will turn in this direction, means supply drilling torque drill pipe, drill pipe outside supply bit thrust and direction control. Arriving at predetermined Angle in the inner and outer tube rotating at the same time make straight holes, so whether it's straight hole section, or turning hole section, stable high speed rotary drill are constantly, effectively overcome the hard rock layer of efficient construction.

**Power output improvement breakthrough the traditional construction methods**

**Compared with the mud motor operating drilling construction technology advantage:**

Double-wall drill pipe work within the power through the inner drill pipe directly, the equivalent mechanical motor. Under the condition of the same host power, mechanical transmission efficiency than mud motor hydraulic transmission efficiency of 30% to 50%, to ensure the efficiency of rock drilling.

Double-wall drill rock construction to avoid the mud motor operations required in the use of a large number of mud, reduce the mud dynamics and mud materials consumption and environmental pressure, reduce the construction cost.

in the Double-wall drill pipe condition, the sonde to control high precision and avoid the mud motor process due to large distance between the probe and drill guide bit point to the precision of the error, especially in the control to the high accuracy requirement of sewage pipe such as gravity pipeline construction is more important.

Compared with the traditional drill guide bit, which the advantages of the new product are more suitable for all kinds of working condition of the hardness of the complicated geological environment, it has the high efficiency through.

**Product series**

Type		KT-Z073	KT-Z076	KT-Z083	KT-Z089	KT-Z114
aperture	mm	95~121	95~121	114~149	114~149	149~200
	in	3 3/4~4 3/4	3 3/4~4 3/4	4 5/8~5 7/8	4 5/8~5 7/8	5 7/8~7 7/8
connector Type	top	2 3/8 REG	2 3/8 REG	3 1/2 REG	3 1/2 REG	3 1/2 REG
	under	NC26	NC26	D80	NC31	NC46
The drill speed	r/min	195-340	195-340	195-320	195-320	150-260
work torque	N.m	650	650	970	970	2000



Caston Drill tools (GROUP) is a professional drill pipe and drill tool manufacturer of science and education, research development, production, sales and service. Production include HDD drilling for city basic pipeline trenchless construction, Mining, water well, oil drilling for resources development, Anchor drilling for engineering construction, emergency rescue drilling for danger handle, Accessory for drill rig. The GROUP also to undertake OEM and ODM orders, committed to the development of new products to meet different engineering fields and customers demand. The annual year production capacity more than 7000 tons.

Caston Drill tools(GROUP) Headquartered in Beijing, equipped with four companies, Beijing Caston Drill Technology Co.,ltd , LLC KAITONG Russia, Wuxi Kaitong Drill Tools Co.,ltd, Xuanhua Xiandai Excavating Machinery Co.,ltd.

Beijing Caston Drill Technology Co.,ltd. is a group of science, technology research and development center, brand marketing center; and engineering work consulting, agent at domestic and abroad brand drill rig, and etc.

LLC KAITONG Russia is company overseas marketing agency, Independent registered business, mainly sale oil drill tools, HDD and Rotating.

Wuxi Kaitong Drill Tools Co.,ltd, Xuanhua Xiandai Excavating Machinery Co.,ltd is the Group manufacturer. For the realization of the " industry scale, produce professional quality excellent," the allocation of resources management idea, Wuxi Caston mainly produce HDD forged drill pipe, tools and oil drilling ,Xuanhua Xiandan produce HDD and Ming friction welded drill pipe.

The Group has two the most advanced pipe production lines, the automatic IF heat treatment production line has the world leading level, thread laser processor, self-research and development 600t drill pipe friction welder is the world largest welding machine, can welded pipe diameter 300mm, 1000t upset forging machine, kinds of intelligent CNC thread processing equipment, wear-resistant automatic welding machine and etc.

The Group's research and development center has technical personnel more than 20 persons, keep the drilling pipe product research and development in a leading level of the world. The drill pipe upset forging technology achieve world-class level, backward extrusion pipe transition zone forming technology, that the oil drill pipe IEU upset zone length 200mm above, forging drill pipe technology is best of the country.

New directional crossing drill pipe thread molding technology, double-wall drill bit for all geology, spectral type rock directional guide bit declare and obtains the national technology patents, the patent technology greatly reduces the risk of trenchless pipe in the construction

The GROUP has a professional quality testing center, configuration of quality control personnel and systematic test equipment, and have get the ISO9001:2008, API 5 DP certificate.

The GROUP has broad market both domestic and abroad, cause of reliable and reputable product quality, , Csaton establish long-term cooperative relations with domestic famous drill rig manufacturers, and become the qualified supplier. Csaton brand products are exported to Europe, the United States and other countries around the world, is well received by domestic and foreign professionals.

The GROUP work for the professional perfect quality, international first-class enterprise. Caston Committed to the company into the collectivization management, market-oriented operation, the modernization scale, international services, with strong development capacity, profitability and international competitiveness international drilling manufacturing company.