

KY-250D ROTARY DRILL FOR OPEN PIT

I. Main features

- 1 Suggested equipment: KY series rotary drill with tricone bit for open pit



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NANCHANG KAMACH MINING CO.,LTD.

2. Main features

2.2 High productivity and excellent value.

The drilling diameter of KY-250D rotary drill with tricone bit is $\phi 165-250\text{mm}$

- Maximum drilling depth is 48m.
- High axial pressure, large power head torque and high rotation speed, which can meet the drilling needs of vertical and inclined blast holes under rock formation conditions with hardness f4-20.
- Fast and efficient drilling speed, may provide excellent solutions for the construction of large-diameter blast holes productivity.

2.3 Extremely low cost and high reliability.

KY-250D is driven by diesel power and equipped with a low air pressure and large flow air compressor. The whole machine has low energy loss and extremely low cost of use. The matching of power, air compressor, and hydraulic systems have been utilized.

The volume flow of the air compressor is balanced with the actual air consumption, and the hydraulic pump and hydraulic actuator are controlled by electro-hydraulic proportion and load sensitivity; two high-pressure automatic variable displacement.

A large amount of plunger motor drives the rotating power head, which has strong overload capacity, sensitive load adaptive performance and reliable application.

2.4 Strong terrain adaptability and short positioning time. It adopts reinforced three-

tooth gripping track shoes, which has a small ground contact pressure and better drilling stability; the chassis adopts a three-point balance support, which has strong load-bearing capacity, large ground clearance, good pass ability, and excellent road adaptability, meeting the requirements of mines and rugged terrain. Traveling and construction on complex

terrain such as working surfaces; hydraulic cylinders and reducers are used to drive the rotating shaft to feed the rod. It is equipped with a safety limit device, making it easy to retrieve and store the drill rod and requiring less auxiliary time.

2.5 High-end configuration and reliable performance.

Core components such as the power system, air compressor, plunger hydraulic pump, multi-way valve, power head motor, traveling motor, controller and four-wheel belt adopt international first-class brands to ensure the reliability of the equipment.

The integral high-strength steel platform and truss-type mast have high stability and ensure the quality of hole formation. Double oil cylinder + Chain pressurizing mechanism, large stroke, good stability, stepless adjustment of propelling loading force and loading speed, meeting efficient drilling speed, extending drilling tool life and reducing drilling tool consumption.

2.6 Safe, environmentally friendly, and easy to operate.

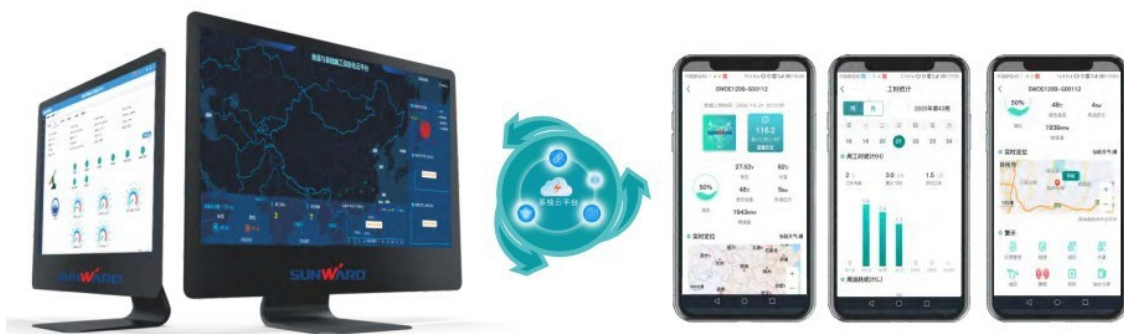
The fully sealed cab adopts an integral structure of framework, which meets the requirements of FOPS & ROPS certification, and the noise is less than 80dB; double-layer insulated safety glass provides a wide field of vision; it is equipped with high-power heating and cooling air conditioners to meet the heating, cooling and ventilation functions. It improves the comfort of workers; the arrangement of electro-hydraulic handles or switches in the cab conforms to ergonomic principles and meets the convenience of operation and parameter setting. Double-stage cyclone + laminar flow dry dust removal system, the dust removal efficiency can reach more than 95%.

2.7 Modular and standardized design, easy maintenance.

Modular design makes disassembly and debugging simple; standardized design maximizes interchangeability and universality and reduces accessory costs; Maintenance and basic parameter adjustment can be easily completed inside the cab or platform, with large maintenance space and safety , convenient and efficient; equipped with a microcomputer control system, parameter settings can be completed directly on the display, and has fault alarm and self-diagnosis functions to assist in rapid diagnosis and troubleshooting, shortening downtime.

2.8 High degree of intelligence (optional).

New computer control system accurately detects angles and displays drilling depth in real time, effectively preventing over drilling and reducing the difficulty of root cleaning after blasting; real-time display of operation and drilling parameters, fuel level, water temperature, hydraulic oil temperature, exhaust temperature, maintenance prompts, etc.; fault self-diagnosis and alarm, providing immediate solutions. Cooperate with KAMACH intelligent Internet cloud platform to realize real-time remote monitoring of equipment operation, quality process management and data mining analysis of equipment construction.



II. KY-250D main parameter

MODEL: KY-250D			
KY-250D	Item	Unit	Parameter
Main specifications	Boring method	/	Tricone bit
	Bore range	mm	165-250
	Rock hardness applicable	/	f4-f20
	Drill pipe diameter	mm	140、178、194
	Drill pipe length	m	9.14m (optional)
	Maximum bore depth	m	48
	Bore inclination	°	60-90
	Dust collector (Dry Wet)	/	Optional
Weight and Dimensions	Empty weight	t	68
	L×W×H (travelling)	m	17×5.9×4.2/5/7
	L×W×H (drilling)	m	11.5×5.9×15/17
PowerTrain	Diesel engine	kw/rpm	Air compressor 250/1480
		kw/rpm	CAT C18 @ 571/1800
Travelling	Travelling speed	km/h	0-1.9
	Ground clearance	mm	560
	Grade ability	°	20
Air compressor	Brand	/	Fusheng or Epiroc
	Work pressure	bar	8
	Air volume displacement	m³/min	40
Hydraulic system	Main pump flow	L/min	380
	System pressure	MPa	35
	Control method	/	Electro-hydraulic proportional control
Power head	Rotating speed	rpm	0-160
	Torque	Nm	11800
Mast	Length	mm	15000
	Feeding stroke	mm	11600
	Feeding force	kN	350

MAIN COMPONENTS AND SUPPLIER

S/N	COMPONENT NAME	BRAND	MODEL	PLACE OR ORIGIN
1	AIR COMPRESSOR	FUSHENG COPCO	ZP250A	China
2	MAIN PUMP	DANFOSS	D1P+D1P+JRR	China
3	MULTI-WAY VALVE	DANFOSS	PVG32&PVG16	China
4	TRAVEL REDUCER	OK/ZHUZHOU	F130/206	Deutschland China Deutschland China Deutschland China
5	TRAVEL MOTOR	REXROTH LIYUAN	A2FE	
6	ROTARY MOTOR	REXROTH	A6VM107	
7	CONTROLLER	KAMACH	KMI02824	China
8	MONITOR	KAMACH	eTouch104	China
9	TRACK	SHANTUI	8216-MF	China
10	AIR CONDITIONER	ELECTRIC DRIVE	SG443270	China
11	BATTERY	OPTIMA	D31A	USA
12	DUST REMOVAL	KAMACH	ERDC250	China
13	WALKING REMOTE CONTROL	YOURONG	R595	China
14	HYDRAULIC MOTOR	DANFOSS		China

III. Technical features:

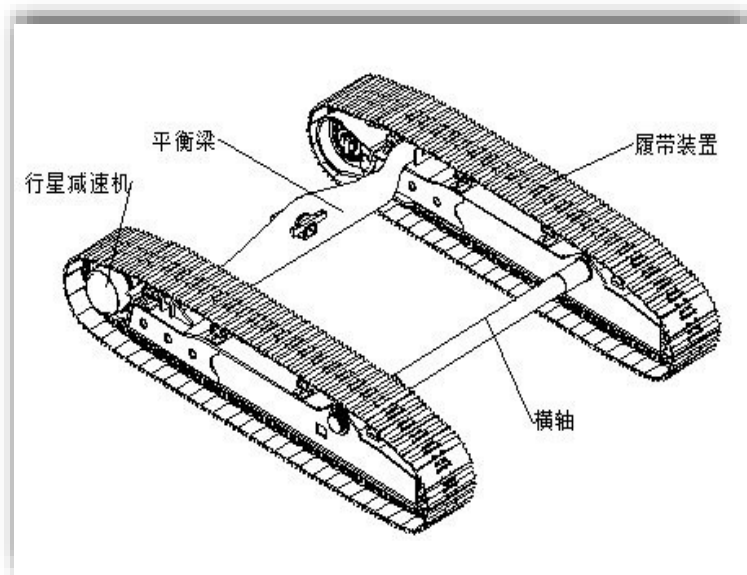
KAMACH adheres to the principle of "precise design, lean manufacturing, fine management, and meticulous service" and adheres to the purpose of "only by creating value for customers can we create value for ourselves"; using rigorous, scientific, and fast quality management service processes, we create "**KAMACH** service brand". For each customer, we will understand in detail and Analyze different needs and environments to provide customers with the most complete technical solutions and comprehensive construction solutions with excellent after-sales services. **KAMACH** targets at improving the manufacturing level of the industry as its own responsibility and continuously invests in research and development to meet the needs of the international market products requested. The company has the ability to provide customized solutions to meet the individual needs of different mines.

1 Track

KY-250D rotary drill with tricone bit adopt reinforced three-tooth gripping track shoes. The wide track shoes assure smaller grounding ratio and drilling stability.

KY-250D adopts a high-torque traveling motor and a planetary gear reducer, and the product climbs. It has stronger slope ability, with a climbing angle of up to 20°; it adopts a three-point floating structure balance beam and has self-balancing walking ability. When walking on a rugged working surface, it reduces the torsion on the main frame and has good terrain adaptability; The chassis has large ground clearance, good pass ability, and stronger ability to overcome obstacles; the track tension is adjusted hydraulically, and the buffer spring has a certain amount of pre-compression to generate pre-tensioning force to ensure that the track will not be affected by external force relaxation when moving forward. The meshing of the pin and the driving wheel generates enough traction when reversing and still maintains the normal meshing of the track pin and the driving wheel; the maximum traveling speed is close to 2km/h, which meets the high efficiency of equipment transition.

Track picture illustration



The crawler travelling mechanism realizes functions such as advance, reverse, left turn, right

turn, and in-situ steering. The track center distance is 4000mm, the track shoe width is not less than 800mm, and the grounding specific pressure is <106kpa.

The crawlers use well-known international and domestic brands, and reinforced rollers, drag sprockets and crawler tracks are selected according to the characteristics of use. After thousands of engineering equipment sales every year, they are stable and reliable. The walking chassis is fully adapted to walking and construction in mines and rugged working surfaces, meets the requirements of drilling and blasting construction, and has a long service life.

2 Platform

The main components of KY-250D (control system, power unit, hydraulic system, compressed air system, slag discharge system, electrical system) and the carrier of the drilling rig and other working mechanisms are installed on the platform. They are welded by the rectangular tube main beam and the connecting beam. The main materials are high-strength low-alloy steel, which has high strength and rigidity. There are four hydraulic outriggers at the front, rear and left, which are connected to the platform with bolts for leveling the drilling rig. There is an orifice mask at the rear of the platform, and a hydraulic cylinder drives a set of chain to lower and lift the orifice mask.

3 Air system

The air compressor of the KY-250D is driven by a CAT C18 engine. The air compressor is selected from the internationally renowned brand Fusheng ZP250A or COPCO, with a rated wind pressure of 5bar, an air volume of 50m³/min, and a motor power of 250kW. The working hole diameter is 165~250 mm using the cone drilling mode, which has large air volume and low energy consumption. It can be equipped with up to 5~10 meters of drill pipe, with a maximum drilling depth of 48m. The KY-250D air compressor is equipped with multiple air pressure and temperature sensors on the machine head, oil and gas barrels and pipelines to monitor the use of the machine head in real time and improve its service life. At the same time, the area utilization coefficient of the rotor profile is large, the structure is simple and compact, and the volumetric

efficiency is high. The reasonable ratio of pressure and gas volume can effectively improve work efficiency, maintain efficient drilling, and blow rock slag from the bottom of the hole to the hole opening.

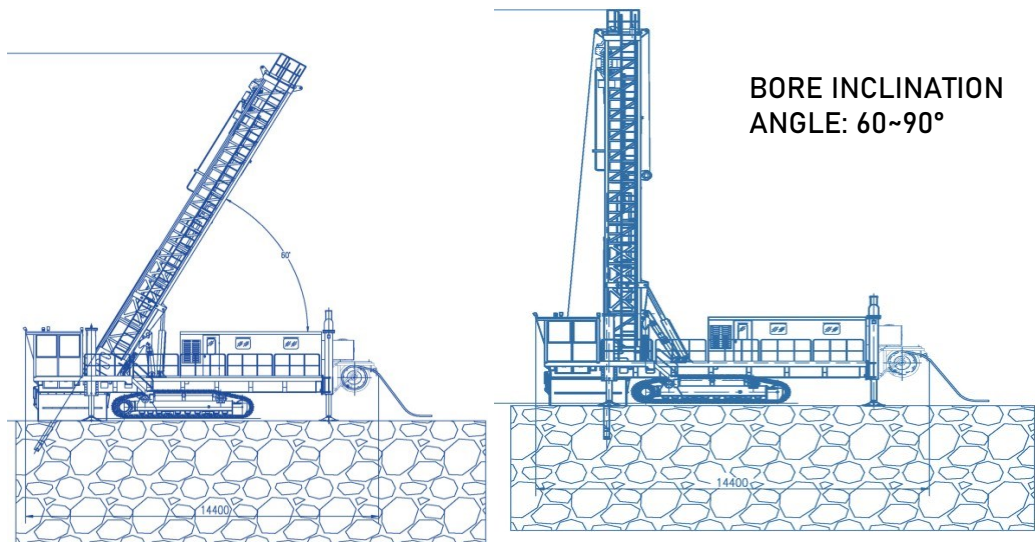
The air compressor system mainly consists of a screw compressor, a gas circuit system, an oil circuit system, a volumetric flow adjustment system, and an automatic control and protection system. The air intake system of the air compressor effectively filters out dust, impurities, and water vapor in the air. The air is mixed with lubricating oil during the compression process, improving the volumetric efficiency and long service life. The volume flow adjustment technology is used to balance the volume flow of the compressor with the gas consumption under actual working conditions, reducing energy consumption and saving usage costs. The lubrication system includes a cooler, temperature control bypass valve, air compressor oil filter element, oil and gas separator filter element and air storage tank to meet the lubrication of moving parts and improve volumetric efficiency.

Diesel engine driven screw air compressor



4 A-FRAME

The A-frame of the KY-250D is a separate component that connects the platform and the drill frame. It adopts a detachable structure and is equipped with a drilling frame fixing pin controlled by an oil cylinder. The standard diagonal support rod is an integral structure, and the optional adjustable diagonal support rod is equipped with a cylinder latch positioning, one position every 5°, and the maximum adjustment angle is 30°, which meets the requirements of the 60° oblique hole drilling process. The drilling frame lifting cylinder is used to lift and lower the working device. It is equipped with a balance valve to ensure the synchronization of the two cylinders and the hovering and locking of the working device at any position; it is equipped with an explosion-proof pipe valve to ensure the safety of the lifting process.



5 Pressurizing mechanism

The pressurizing mechanism provides propulsion and lifting power for the power head and drilling tools. It adopts the mode of double oil cylinders + chain pressurization + synchronous chain lifting. The pressurized oil cylinder has a large stroke and good stability. It is equipped with a balance valve to ensure the synchronization of the double oil cylinders. And the power head can be hovered and locked at any position. The pressurizing mechanism can provide a maximum shaft pressure of 400kN. According to the different hardness of the rock, the axial pressure provided by the pressurizing mechanism can be adjusted in the cab. Practice has proved that when the axial pressure is appropriate, it can achieve efficient drilling speed, extend the life of the drilling tool, and reduce the consumption cost of the drilling tool. The drilling frame is a truss structure welded by rectangular steel pipes, which has high stability and good hole forming effect, ensuring the drilling quality during the drilling process. The slide frame is used to support the rotary power head and move linearly on the slide rail, and transmit the axial force of the pressurized oil cylinder. The slide frame is equipped with a wear-resistant nylon slider. There is no hard contact between metal and metal, ensuring smooth operation of the power head. It has a gap compensation function, which facilitates adjustment of the wear gap and extends the service life. Maintenance of the pressurization system only requires replacement of the resistant nylon slider. Grinding plate, low cost. The drill pipe library can install up to four drill pipes. It adopts the method of oil cylinder collection and delivery, worm gear + open gear transmission reduction drive shaft feeding, and the rod changing work can be easily completed in the cab. When the hydraulic chuck is used to connect and unload rods, it blocks the drill pipe or tail rod (rod stabilizer) and relies on the rotation of the power head to loosen or tighten the threads of the transition joint (or drill pipe) between the drill pipe and the power head, adapting to the operation of the cone drilling rig. complex needs. It can be equipped with an auxiliary winch for hoisting drill pipes and drilling tools to reduce labor intensity. The protection function of the connecting and unloading rod mode is set, which is safe and reliable.



Pressurizing mechanism

The drill frame of the pressurizing mechanism is equipped with an auxiliary winch mechanism, driven by a hydraulic winch, which can meet the needs of working surface maintenance, replacement of drilling tools, etc. The rated lifting capacity is 2 tons, which reduces on-site labor intensity and improves operation safety.

6. Power head

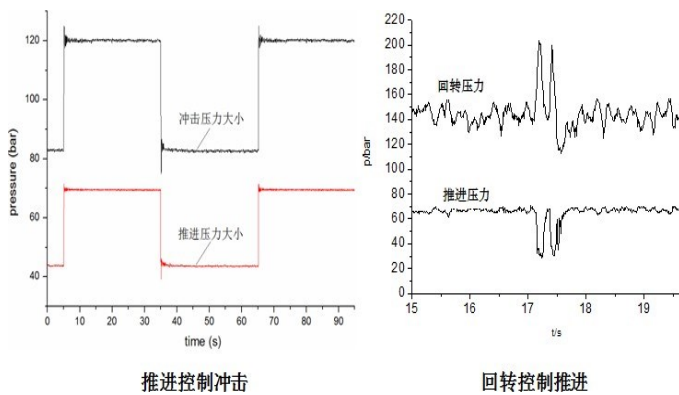
The power head is the main working mechanism of the drilling rig for drilling operations, including the slide frame, shock absorber and slewing mechanism. The power output by the power head is mainly used for the rolling and sliding of the tricone bit to break the rock and overcome the friction between the drill bit and the bottom of the hole. This is closely related to the rock properties, drilling diameter, rotation speed, shaft pressure, slag discharge, etc. According to the cone drilling rig Based on these dynamic characteristics, **KAMACH** optimized the design of the hydraulically driven power head to meet the requirements of the KY-250D drilling rig to drive the drill pipe to rotate, with large torque and high reliability, ensuring the continuous drilling performance of the equipment and reducing the risk of drill sticking; Experiment It is proved that a reasonable power head speed not only eliminates equipment vibration and improves operating efficiency, but also extends the service life of the drill bit. The power head is equipped with two high-pressure automatic variable displacement plunger motors, which are adaptive to the drill pipe operating environment, have strong overload capacity and are reliable in application. Through the control panel in the cab, the operating parameters of the power head can be continuously monitored and adjusted. The drill pipe and the driving spindle are connected through a replaceable transition joint with a specially designed buffer structure. On the basis of ensuring drilling efficiency, it reduces the impact of rock drilling impact on the equipment and increases the service life of structural parts such as the drill frame. , reduce drilling tool consumption.



DUAL HYDRAULIC MOTOR SYSTEM POWER HEAD

6 Hydraulic system

It adopts Danfoss plunger pump set, Danfoss main valve, RexRoth or Liyuan traveling plunger motor, RexRoth power head plunger motor, ATOS electro-hydraulic reversing valve and electro-hydraulic proportional valve, etc. It has high reliability and ensures the reliability and durability of the machine. The hydraulic main pump unit is composed of 3 plunger pumps. The pump unit is unloaded and started, and functions such as propulsion and rotation are controlled by independent pumps. Walking, boom adjustment and positioning, and rock drilling movements are independently controlled and interlocked. It does not work when walking and does not walk when working to prevent malfunctions and improve safety. The action adjustment system uses a high-pressure plunger pump to drive the drilling tower lifting, latch, dust removal and unloading rod actions, and is equipped with electrical interlocks. Using electro-hydraulic proportional and load-sensitive control, the hydraulic system and actuator are matched to achieve high overall efficiency and low energy consumption. It is equipped with a rock drilling adaptive system, which can output different operating parameters according to rock conditions, effectively deal with complex formations such as fissures and caves, and make adaptive matching according to openings and connecting and unloading rods, and has the function of preventing drill sticking.



凿岩自适应系统

It adopts an international famous brand electric control joystick, with smooth movement, good micro-movement, lightness and flexibility. The KY series drilling rigs are equipped with anti-wear hydraulic oil as standard that can adapt to most environmental operations, and oil with better adaptability can be selected according to the environmental characteristics of different regions and seasons provided by customers. For extremely cold areas, low-condensation hydraulic oil suitable for special working conditions can also be selected.

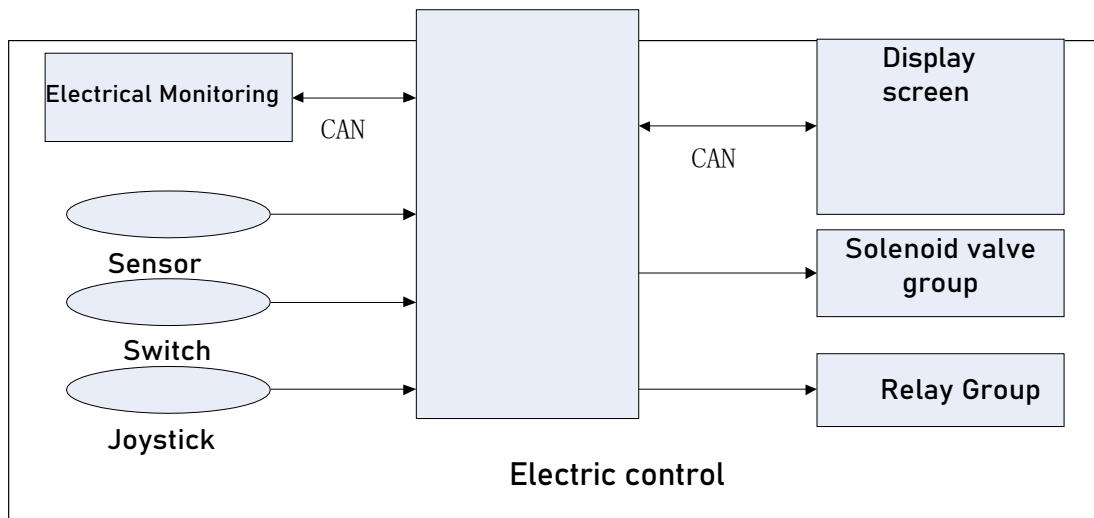
7 Diesel drive system

The power of the KY series rotary drill with tricone bits comes from CAT single diesel engine, which is much more modern design compared with two engine design.

Intelligent electronic control system applies advanced intelligent control technology, CANBUS technology, virtual instrument technology, and adopts the programmable controller, graphic display controller, and LCD display screen enable comprehensive digital monitoring of the entire machine. The full Chinese human-machine interface is friendly, easy to operate, and reliable to use. The working pressure values of propulsion, rotation and air compressor are displayed on the cab instrument; the display screen of hydraulic oil temperature and other parameters is integrated for monitoring. The monitoring of hydraulic oil temperature and other parameters has two levels: alarm and shutdown. When the set pre-warning value is reached, the display screen has an alarm message. When the shutdown setting is reached, the equipment automatically shuts down. Configure angle detection, and the driver's cab displays relevant data in real time. Equipped with an intelligent fault diagnosis system, system alarms and faults can be displayed on the cab display to reduce downtime. The circuit has overload

protection, short circuit protection, leakage protection and other functions.

The system mainly consists of controllers, display screens, electrical monitoring devices, sensors, solenoid valves and various operating switches. The main components of the electronic control system are as shown in the figure below:

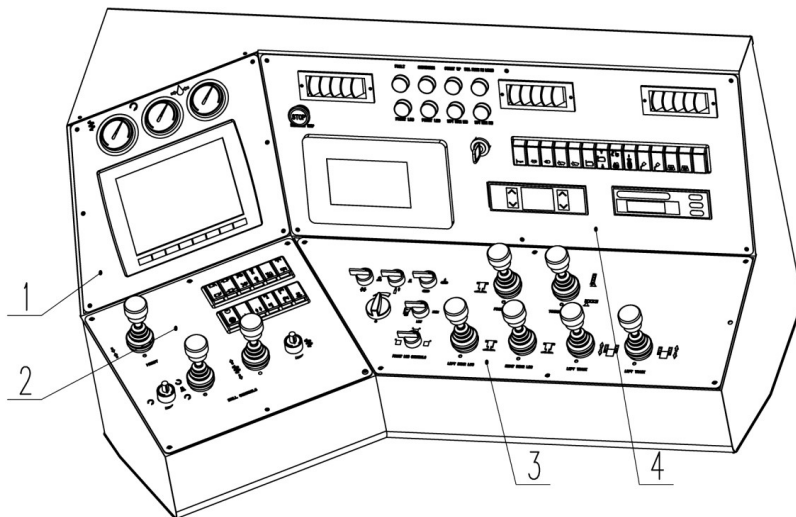


9. cab

The driver's cab adopts an integral structure with a special-shaped steel welded frame to prevent rockfall and ensure the safety of the operator; it is installed with shock absorption and has good comfort. The cab has a large operating space, the glass is hollow double-layer insulated safety glass, and the vision is wide. The KY series tricone bit drilling rig adopts a fully sealed driver's cab. The noise in the driver's cab is less than 80dB. The top of the cab is equipped with a high-power heating and cooling air conditioner to meet the functions of warm air, cold air and ventilation, improving the operator's operating comfort. A 40W LED light is installed inside.



Cab.



CONSOLE

- (1) Display screen (2) Drilling function console (3) Travelling & outriggers console (4) Right-Up

console

The driver's cab is equipped with a rotating seat with armrests, which is multi-directionally adjustable. The action of each actuator is controlled by an electro-hydraulic handle or an electrical switch, and the rotation and propulsion parameters during operation can be easily adjusted in the cab. The layout and installation in the cab are in line with ergonomic principles. Control handles, buttons, switches, touch screens, instruments and indicating devices are installed on the operating platform and are within easy reach.

10 . Dust removal system

The two-stage dry dust removal system of cyclone + laminar flow can effectively reduce dust and maintain a clean working environment. The dust sucked out by the axial flow fan is discharged to the collection area, and larger cuttings can be removed near the drilling hole. A pleated filter element is installed, and dust is filtered when passing through the filter element under the action of air flow. The pulse valve controls the air flow for intermittent flushing. The dry dust removal air volume and filtration area are large, and the filter element material is waterproof; the hydraulic motor drives the high-speed fan, which makes the work safe and reliable and has good dust removal effect. A wet dust removal system is optional. A high-pressure water pump injects water from the water storage tank into the main air duct, mixes it with the slag discharge compressed air, atomizes it, and sprays it into the bottom of the hole to form moist rock slag and then discharge it out of the hole without generating dust.



11. Lubricating system

KY-250D drilling rig is equipped with a centralized lubrication device (optional) for dozens of pin points of the whole machine. It adopts cab switch control and forced oil supply lubrication, which increases the convenience of maintenance of the whole machine and improves the reliability of pin connection and saves operator labor intensity and maintenance time

12. Safety

12.1 Drill pipe anti-drop design

Equipped with a pipe-drop protection device to prevent the drill pipe from damaging equipment or causing personal injury when improper operation or other factors cause the drill pipe to fall;

12.2 Emergency stop (E-Stop)

The driver's cab and the outside of the machine are equipped with emergency stop buttons and fire extinguishers. In case of emergency, press the button to cut off the power of the entire machine.



E-stop button



Fire suppression system

12.3 Operation protection lock

Rock drilling operations, adjustments, and traveling operations are controlled and interlocked through hydraulic pilot switches to ensure safe and reliable operations in case of

mal-operation by personnel.

13 Convenient to give maintenance

The main maintenance components such as air filter, oil filter, diesel filter, etc. are arranged on one side of the fuselage, making them easy for disassemble, replacement and maintainance. The whole machine adopts a modular design, dividing the system into multiple components that are relatively independent but easy to connect. Regarding the use of standard parts, the design process takes into account the reduction of varieties and specifications of standard parts, compresses and controls the types, specifications and quantities of raw materials and parts to the maximum extent, and improves interchangeability and generalization. The key components are all internationally renowned brands, which also ensures the reliability of the equipment and reduces maintenance.

14

Spare parts with delivery

S/N	Parts code	NAME	Qty	Unit
1	703101010001	OIL CUP M10X1 (STEEL) IMPORTED	10	件
2	750629000009	CAB FIRE EXTINGUISHER CAN	1	件
3	790099000035	PORTABLE DRY POWDER FIRE EXTINGUISHER	2	件
4	790010030043	SPRING AND AUTUMN WORK CLOTHES SUIT	5	件
5	790010030044	SUMMER WELDER WORK CLOTHES	5	件
6	750099000014	CABLE TIE 500X10	2	袋
7	760402000142	KAMACH PAINT	1	桶
8	760406000075	TOPCOAT HARDENER-H60	1	罐
9	750210011143	AIR COMPRESSOR D1400SM SPARE PARTS KIT	1	套
10	750210000190	AIR COMPRESSOR BDSJ1100S-5C1 SPARE PARTS KIT	1	
11	730403000380	FILTER ELEMENTΦ120X700	4	件
12	801198010000	POWER HEAD SEAL SPARE PARTS KIT	1	套
13	801198020000	CONE DRILL O-RING SPARE PARTS KIT	1	套
14	760306000038	2# MOLYBDENUM DISULFIDE GREASE	1	桶
15	760301000067	ANTI-WEAR HYDRAULIC OIL L-HM46#	2	桶
16	760301000065	LOW CONDENSATION HYDRAULIC OIL L-HV46	2	桶
17	304080004050	POWER HEAD SIX SQUARE WRENCH	1	件
18	320980008850	HEXAGONAL WRENCH TUBE	1	件
19	302030070657	ADRT000858 WEAR PLATE 1	2	件
20	302030070658	ADRT000859 WEAR PLATE 2	2	件
21	302030070659	ADRT000860 WEAR PLATE 3	8	件
22	302030070661	ADRT000861 WEAR PLATE 4	8	件
23	704301160101	CHAIN 160H-1 GB/T 1243	2	件
24	307990002395	CLAW(194)	3	件
25	307990002780	CLAW(178)	3	件
26	307990002407	CLAW(159)	3	件
27	307990002406	CLAW(133)	3	件
28	305070001998	DRILL PIPE PAD Φ159	10	件
29	302010011068	DRILL PIPE PAD 178	10	件
30	305070001997	DRILL PIPE PAD Φ194	10	件
31	302030070662	DUST PAD-133	2	件
32	302030070663	DUST PAD-159	2	件
33	302030070664	DUST PAD-178	2	件

34	302030070665	DUST PAD-194	2	件
35	730403010068	RETURN OIL FILTER ELEMENT 0850 R 010	2	件
36	730403010060	RETURN OIL FILTER RAE0300F010N-SW	1	件
37	730403000636	PILOT FILTER ELEMENT 0060D0100N	1	件
38	730505000003	PRESSURE MEASURING HOSE 6400-10.162-5000	1	件
39	740402000032	PRESSURE GAUGE 63LF-1/4" B-40MPA	1	件
40	801198040000	CONE DRILL HYDRAULIC COUPLING SPARE PARTS KIT	1	套
41	729804000198	NYLON METAL BUCKLE TIE KZD-25	10	件
42	750201010678	FUEL FILTER ELEMENT 3329289	2	件
43	750201010679	OIL FILTER ELEMENT 3101869	1	件
44	750201013514	FILTER ELEMENT KIT AA2960	1	件
45	750201014205	OIL WATER SEPARATOR FILTER ELEMENT YC-6874	1	件
46	760305000259	DIESEL ENGINE OIL MAN3277 0W/40	2	件
47	720701000262	2ND LINE INSURANCE 282-698/281-434	2	件
48	801198030000	CONE DRILL SAFETY DISC SPARE PARTS KIT	1	套
49	720701000376	DOUBLE LAYER SPRING TERMINAL 1674300000	10	件
50	720702000040	WAGO TERMINAL 280-833	10	件
51	720702000038	JUMPER 280-402	2	件
52	720306000013	DIODE IN4007	1	件
53	720301000021	RESISTOR 300 OHMS 2 WATTS	1	件
54	720301000010	RESISTOR 120Ω2W	2	件
55	720102000167	TEFLON WIRE 1332 WHITE 1.0	1	件
56	720237000384	EMERGENCY STOP BUTTON ZB5A+ZB5AZ102	1	件
57	720208000012	NORMALLY OPEN CONTACT MODULE ZB2BE101C	1	件
58	720213000044	INDICATOR LIGHT XB2BVD3C GREEN 24V	1	件
59	720241000003	KNOB SWITCH XB2BD33C	1	件
60	720223000032	SINGLE TURN POTENTIOMETER LA42DWQ-22-10K WITH KNOB DIAL	1	件
61	720236000246	ROCKER SWITCH JK992-107 SPARE	1	件

15

Tools with delivery

S/N	Parts code	Name	Qny
1	740115000019	DOUBLE-ENDED WRENCH 5.5-7	1
2	740115000007	DOUBLE END WRENCH 24-27	1
3	740115000029	DOUBLE-ENDED WRENCH 30-34	1
4	740115000071	DOUBLE-ENDED WRENCH 36-41	1
5	740115000001	FULLY POLISHED DOUBLE OPEN END WRENCH 8X10MM	1
6	740115000002	FULLY POLISHED DOUBLE OPEN END WRENCH 13X16MM	1
7	740115000003	FULLY POLISHED DOUBLE OPEN END WRENCH 17X19MM	1
8	740115000004	FULLY POLISHED DOUBLE OPEN END WRENCH 18X21MM	1
9	740106000014	TORX SPANNER 8-10	1
10	740106000007	TORX SPANNER 13-16	1
11	740106000006	TORX SPANNER 16-18	1
12	740106000009	TORX WRENCH 19-22	1
13	740106000010	TORX SPANNER 18-21	1
14	740106000003	TORX WRENCH 24-27	1
15	740106000012	TORX WRENCH 30-32	1
16	740106000011	TORX WRENCH 32-34	1
17	740111000003	COMBINATION WRENCH 21MM GB/T 4388	1
18	740103000001	ADJUSTABLE WRENCH 150X19 GB/T 4440	1
19	740103000004	ADJUSTABLE WRENCH 300X36 GB4440	1
20	740103000006	ADJUSTABLE WRENCH 450X55 GB/T 4440	1
21	740121000029	FLAT SCREW DRIVER 150X6.5X1 GB/T 10639	1
22	740121000026	CROSS SCREW DRIVER 75X3	1
23	740121000103	CROSS SCREW DRIVER 3X100	1
24	750625010179	NINE-PIECE SET OF HEXAGONAL WRENCHES	1
25	740131000021	PIPE WRENCH 450	1
26	750401000009	GREASE GUN JC-LG14K	1
27	740131000044	WIRE CUTTERS 160	1
28	740210000006	WOODEN HANDLE BALL PEEN HAMMER 2P	1
29	740119000067	BELT WRENCHΦ60-140	1
30	740505000124	THREE SECTION TOOL BOX	1
31	740131000022	NEEDLE NOSE PLIERS 200	1
32	740256000120	HEAVY DUTY SOCKET 36	1
33	740105000234	RATCHET WRENCH 36	1
34	740105000469	RATCHET WRENCH LIGHT SOCKET COMBINATION 8-32	1
35	740121000010	PLASTIC HANDLE CROSS SCREW DRIVER 75X5 GB1064-89	1
36	740121000089	PLASTIC HANDLE CROSS SCREW DRIVER 6X100	1
37	740121000120	PLASTIC HANDLE FLAT SCREW DRIVER 3X75	1
38	740121000095	PLASTIC HANDLE FLAT SCREW DRIVER 5X100	



KAMACH[®]

南昌市喀马赫矿业有限公司

NANCHANG KAMACH MINING CO., LTD.

7. High efficiency after-sales service and parts supplying system.

1. Technical support

Based on the service tenet of "Everything is for customers, service creates value", KAMACH provides you with comprehensive, positive, proactive, high-quality and fast services.



Information processing: Quickly process and respond to all types of letters and phone calls from customers.

Spare parts supply: Set up a dedicated service warehouse to ensure the supply of spare parts and timely replenishment according to spare parts consumption.

Response speed: The customer service department accepts customer demand service information, responds within 30 minutes, and promptly communicates with on-site personnel.

Contact the technician, determine the problem that requires maintenance within 2 hours, give a reply within 4 hours and arrange for personnel to go to the site to perform maintenance services, and service engineers who report equipment for repair within the city where our company's office is located within 12 hours.

Arrive at the site within 24 hours within the province where our company's office is located。

SERVICE GUIDE

KAMACH's services include pre-sales service, in-sales service and after-sales service. pre-sale service;

According to customer needs, guide customers to select models and configurations for specific products;

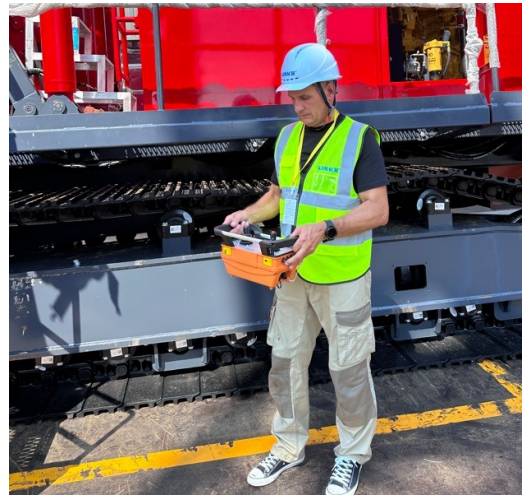
Provide corresponding product knowledge training for customers;

Provide engineering and construction technical consultation to customers. Sales service

Train operators for contract customers;

Complete all on-site service preparations before delivery;

Oversee product delivery. After-sales service; Assist users in formulating the first construction plan;



INSTALLATION AND DEBUGGING

Nanchang Kamach Mining Co., Ltd. dispatches skilled technicians to the site for free to provide technical services, which include:

- Inventory, acceptance and face-to-face delivery of incoming equipment to buyer's personnel;
- Technical exchange, installation acceptance, debugging, performance assurance inspection, etc.;
- Provide training to buyer's personnel on operation, commissioning and maintenance knowledge. repair

If the equipment fails during use, a reply will be provided within 2 hours. During the warranty period, KAMACH will repair the equipment.

We will be responsible for handling and resolving quality problems that arise, and our company will bear all costs incurred. Regardless of whether it is within the warranty period or outside the warranty period, our company is responsible for repairing equipment failures. After the maintenance personnel arrive at the site, general faults will be solved immediately. If key

components need to be replaced, our company will also solve the problem first and work with the customer. After reaching a service agreement and obtaining customer confirmation, we will solve the problem for customers as quickly as possible.

EQUIPMENT INSPECTION

The equipment is inspected twice a year free of charge, and the operation status of the equipment is promptly inquired. Existing problems are solved on-site so that users can receive the most satisfactory service and meet user requirements to the greatest extent. KAMACH maintenance personnel will inspect and maintain the equipment after , the "On-site Service Form" must be submitted to the user, and the user will fill in the comments. Sunward Intelligent Equipment Co., Ltd. will promptly improve the service quality based on the user's comments and continuously improve the service level.

SPECIAL SERVICE

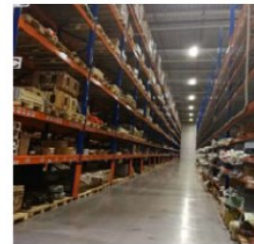
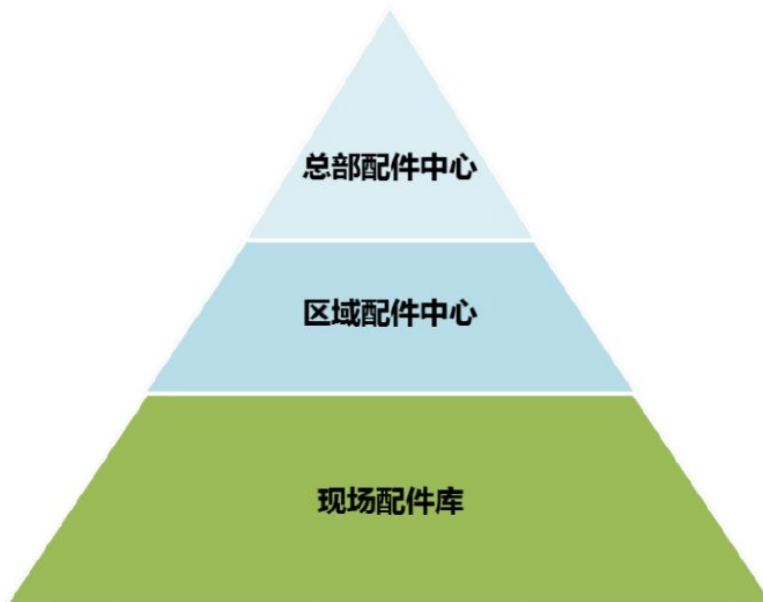
In the early stage of equipment use, KAMACH can provide a dedicated service personnel to follow up on your request.

Service trace. Provide a dedicated operator to operate the equipment and guide construction operations on-site, track and inspect the use of the equipment on-site, and respond as quickly as possible to any problems with the equipment.

Note: In order to protect the rights and interests of customers and clarify our company's service obligations, our company will sign a drilling rig service agreement with the customer. The equipment accompanying services provided by our company shall be subject to the signed service agreement.

COMPLETE PARTS SUPPLY AND LOGISTICS SYSTEM

There are parts warehouses around the world, forming a four-in-one parts supply guarantee system of headquarters, regional, provincial and prefecture-level municipal warehouses, storing more than 20,000 kinds of spare parts worth hundreds of millions of yuan, ensuring efficient and fast after-sales service .



For parts consignment warehouse, our company establishes an on-site parts warehouse according to project requirements. The parts list and quota are determined by KAMACH and the customer based on the model and quantity of the drilling rig. Payment is based on actual accessory usage and is settled monthly. Our company charges a deposit of 20% of the total value of the consigned accessories.



COMPREHENSIVE TRAINING

According to your company's needs, operations, maintenance and equipment management personnel can be arranged in advance to go to the KAMACH factory for training and become familiar with our company's culture, management system and rock drilling rig products. Master the operating methods, design concepts, hydraulic and electrical technical knowledge of drilling rigs, and practice drilling rig operation and participate in the production line assembly and debugging of rock drilling rigs. Have an in-depth understanding of the structure, functional components, and parameter settings of the drilling rig. The training content is divided into indoor theoretical training, practical exercises, training assessment, and qualification certificates are issued to those who pass the assessment.

Training project	Training in KAAMCH production center	Period (days)	Participants
Method	Content	10	
Training in office	Company Profile + Company Visit	3	All trainees
	Safety knowledge training		All trainees
	Drilling rig basic theory training		All trainees
	Product Training – Operation and Functionality	2	All trainees
	Routine maintenance and upkeep		All trainees
	Parts locating and proactive/preventive maintenance		All trainees
	Hydraulic and pneumatic systems training		Maintenance and management personnel
	Electrical and Control Systems Training		Maintenance and management personnel
	Engine and Powertrain Training		Maintenance and management personnel
	Driving - walking		operator
Driving – Drill boom positioning + transfer rod	operator		
Operation	Rock drilling control and operation process SOP	6	operator
	Drilling construction according to hole layout requirements		operator
	Participate in the production line assembly of rock drilling rigs	2	Maintenance and management personnel
Test	Participate in the debugging and parameter setting of rock drilling rigs	2	Maintenance and management personnel
	Theoretical assessment and practical assessment		All trainees
Certificates	Certificate issuance	1	All trainees

At the same time, in order to allow local operators to better use KAMACH drilling rigs, KAMACH will arrange experienced trainers and service personnel to the construction project site to conduct on-site startup debugging and operation training for operators, maintenance and equipment management personnel, such as maintenance videos.



PRODUCT QUALITY AND RELIABILITY COMMITMENT

KAMACH has passed CE and EAC certification. The company has extensively introduced internationally advanced management concepts and methods, always adheres to the quality policy of "precise design, lean manufacturing, meticulous service, and fine management", actively promotes integrated certification of quality, environment, and occupational health and safety and an excellent performance management model, and conducts extensive QC group and other quality improvement activities continue to improve quality management levels, and the company has received widespread praise abroad.

Nanchang Kamach Mining Co., Ltd.

2023.05