



Intelligent Drilling System

Advanced Technologies for
Optimized Drilling
Automation and Performance



Contact Us

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HEBEI JM TECHNOLOGY CO., LTD.



Max. trip-in/trip-out speed
30 stands/hr, 900 m/hr



Intelligent Drilling System

Intelligent Drilling System adopts digital and intelligent control technologies to achieve automatic, efficient, and precise movement of drilling pipes between the ground, wellhead, and set back. Compared with traditional manual operations, it significantly enhances operation efficiency, reduces labor intensity, and ensures intrinsic safety in drilling operation.

- 01 "One button" automatic operation
- 02 Integration controls and zone management, realizes unmanned drilling
- 03 Reduce headcount, enhance operation safety and boost efficiency



Technical Advantages



Safe

- Unmanned drill floor and monkey board reduce operation risk
- Intrinsic safety through equipment interlocking
- Anti-collision, zone management system, and AI vision enhance safety

Efficient

- Fully automatic "one-button" operation for tripping in and out
- Parallelize the pipe handling system and the hoisting system, shorten operation time
- Lightweight system, no change to normal rig up and rig down process

Reliable

- Top-grip design, avoid pipe bending or tilt
- Synchronize movement of robotic arms with servo motor control, enable stable and rapid movement of drill stands

Practical

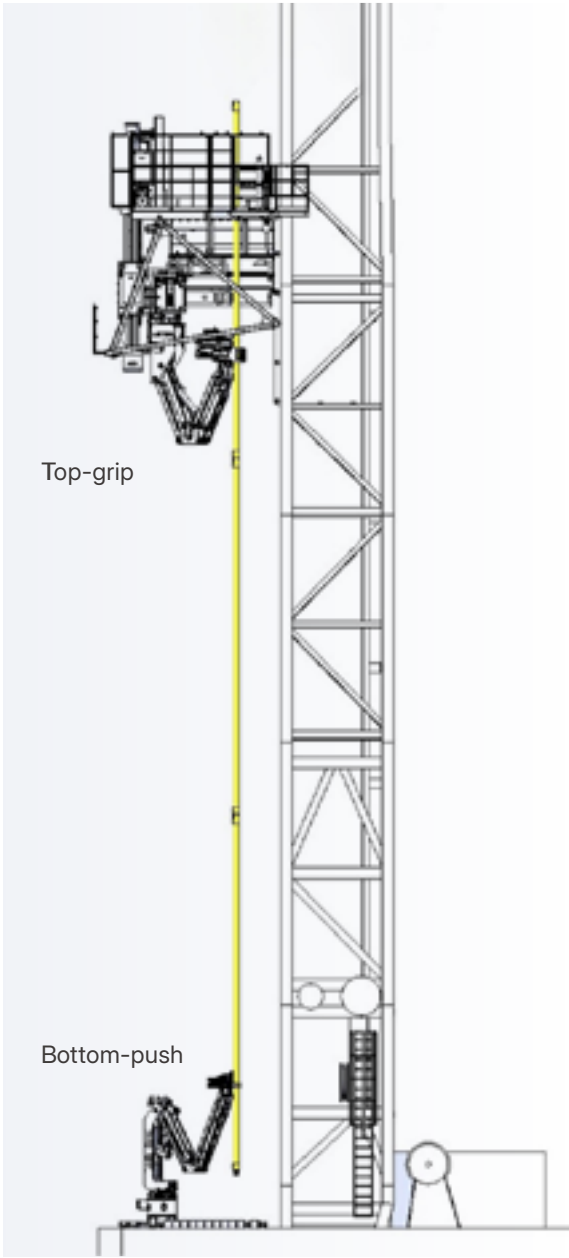
- Automated joint alignment, seamless drill stand handover
- Single or dual chairs options available in driller's house

Automatic Pipe Handling System

Features

- Adopt top-grip design, center of gravity in located below clamping point.
- All electric drive, high accurate and high precision.
- Advanced movement control for swift and smooth action, for fast and smooth movement.
- “One button” automatic control, reduce labor force.

Top-grip Method



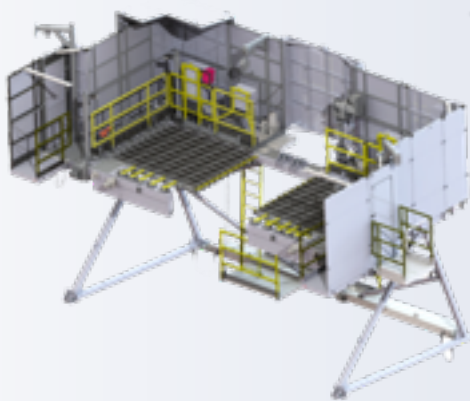
Technical Specification			
Model	SPH-1.5	SPH-2.5	SPH-2.9
Pipe Range	2-7/8"DP~10" DC	2-7/8"DP~11" DC	2-7/8"DP~11" DC
Max. Load	15 kN	25 kN	29 kN
Max. Vertical Travel	1.7 m	1.9 m	1.9 m
Max. Vertical Travel Speed	0.2 m/s	0.2 m/s	0.2 m/s
Max. Horizontal Travel Speed	0.3 m/s	0.3 m/s	0.3 m/s
Max. Rotating Speed	15° /s	15° /s	15° /s
Max. Rotating Angle	±90°	±90°	±90°



Technical Specification		
Model	PHR-6	PHR-8
Pipe Range	2-7/8"DP~10" DC	2-7/8"DP~11" DC
Max. Load	6 kN	8 kN
Max. Extend Range	3.0 m	3.8 m
Max. Extend Speed	0.4 m/s	0.4 m/s
Max. Horizontal Travel Speed	0.3 m/s	0.3 m/s
Max. Rotating Speed	20° /s	20° /s
Max. Rotating Angle	±90°	±90°

Rackingboard

Capacity and external dimensions are customized according to customer requirements.



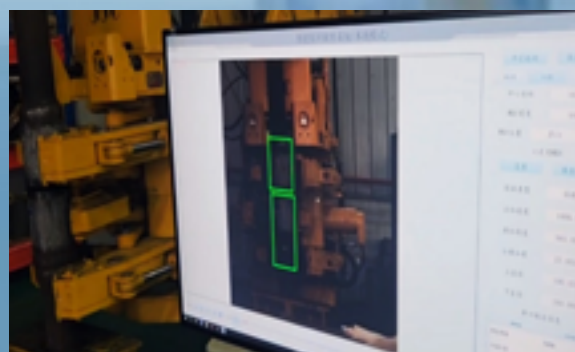
The automatic pipe handling system can be used for 1000 HP ~ 3000 HP drilling rig, and it can be customized according to customer requirements.

AI Technology Empowered

Intelligent Drilling System extensively applies AI technologies, including industry-leading computer vision technology and LiDAR technology, to achieve unmanned operations on the drilling platform, significantly enhancing operational efficiency while reducing operational risks.



Application Scenarios



AI Vision Technology



AI Zone Management System



Innovative Products

pursues the creation of customer value and strives for innovation. Our proprietary products with the patents are leading the industry and appraised by customers around the world.

Smart Wrench

Smart Wrench adopts innovative working principle, which can quickly and safely carry out the make-up and break-out operations. It is small-sized, light-weighted, reliable, durable, easy to use and maintain.



Technical Specifications



SW08

Pipe Range	2-7/8" DP~8-1/2" DC
Max. Spin Speed	80 RPM @ 5" DP
Max. Spin Torque	5,000 N·m (3,750 ft-lb)
Max. Make-up Torque	120,000 N·m (90,000 ft-lb)
Max. Break-out Torque	130,000 N·m (100,000 ft-lb)



SW10

Pipe Range	2-7/8" DP ~ 9-3/4" DC
Max. Spin Speed	80 RPM @ 5" DP
Max. Spin Torque	5,000 N·m (3,750 ft-lb)
Max. Make-up Torque	140,000 N·m (100,000 ft-lb)
Max. Break-out Torque	160,000 N·m (120,000 ft-lb)



SW12

Pipe Range	2-7/8" DP ~ 10" DC
Max. Spin Speed	80 RPM @ 5" DP
Max. Spin Torque	5,000 N·m (3,750 ft-lb)
Max. Make-up Torque	150,000 N·m (110,000 ft-lb)
Max. Break-out Torque	180,000 N·m (135,000 ft-lb)



SW16

Pipe Range	2-3/8" DP ~ 11- 1/2"DC
Max. Spin Speed	80 RPM @ 5" DP
Max. Spin Torque	5,500 N·m (4,100 ft-lb)
Max. Make-up Torque	160,000 N·m (120,000 ft-lb)
Max. Break-out Torque	200,000 N·m (150,000 ft-lb)



SW10-E1

Pipe Range	2-7/8" DP ~ 9-3/4" DC
Max. Spin Speed	80 RPM @ 5" DP
Max. Spin Torque	5,000 N·m (3,750 ft-lb)
Max. Make-up Torque	140,000 N·m (100,000 ft-lb)
Max. Break-out Torque	160,000 N·m (120,000 ft-lb)

Workover & Drilling Smart Wrench

Workover & drilling smart wrench designed with industry-first technology, for common use tubing and drill pipe to meet the demands of workover and sidetracking operation.



Two-in-one

Combine workover and sidetrack use.

Wide

Cover commonly used tubing and drill pipe range.

Efficiency

Make-up and break-out at one time.

Compact

Compact size and light-weighted.

Technical Specification			
Model	WD-140	Max. Spin Speed	80 RPM @2-7/8" DP
Pipe Range	Tubing 2-3/8" ~ 4-1/2" Drill pipe 2-3/8" to 5"	Max. Make-up Torque	45,000 N·m (33,300 ft-lb)
Horizontal Travel	1,450 mm (57.4")	Max. Break-out Torque	50,000 N·m (36,900 ft-lb)
Vertical Travel	920 mm (36.2")	Hydraulic Pressure	100 L/min @ 14 MPa
Max. Spin Torque	6,000 N·m (4,425 ft-lb)	Weight	8,267 lbs (3,750 kg)

Mechanical Seal Washpipe

Mechanical seal floating structure design, has obtained several Chinese and American patents, multiple award winning. Performed well in various working conditions around the world.

3" or 4" bore sizes are available.

Average work life: 1000 ~ 1500 hours.

Withstands 120 °C and 10,000 psi working condition.



Traditional washpipe



- Replace the whole assembly
- 2 persons
- Heavy hammering
- 120 mins required

Mechanical seal washpipe

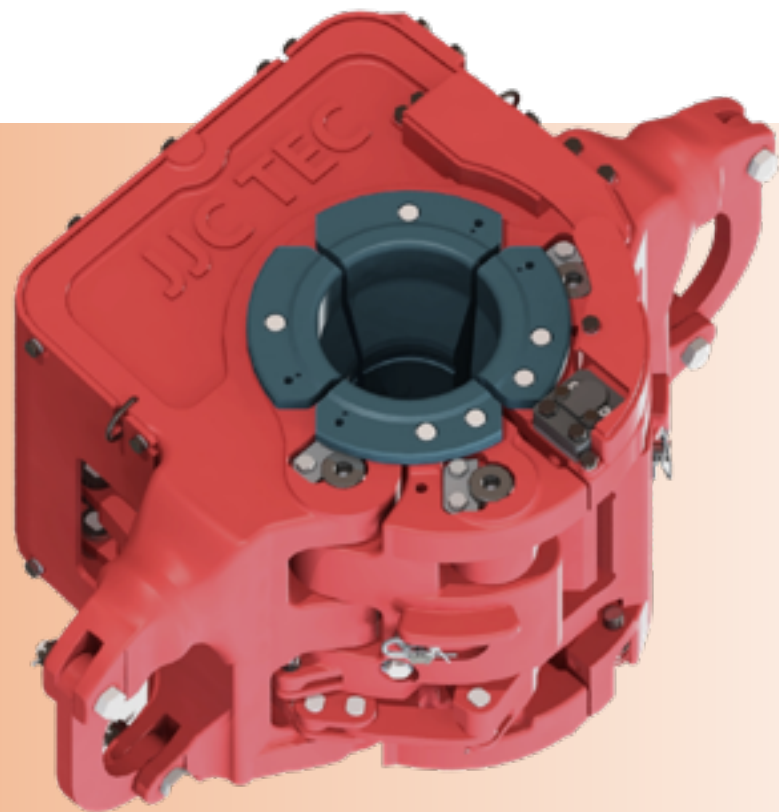


- Replace the seal rings only
- 1 person
- Ratchet wrenches
- 10 mins required

Technical Specification			
Bore Size	76.2 mm (3.0")	101.6 mm (4.0")	101.6 mm (4.0")
Working Pressure	52.5 MPa (7,500 psi)	52.5 MPa (7,500 psi)	70 MPa (10,000 psi)
Drilling Fluid	Water or Oil based mud		
Dimensions (H x OD)	368.3 × 241.3 mm	368.3 × 268.0 mm	367.3 × 268.0 mm
Weight	40 kg	50 kg	50 kg

Hydraulic Elevator

The Hydraulic Elevator adopts innovative fail-safe door opening, closing and interlock mechanisms to achieve fast clamping, loading and releasing of drilling pipes.



Minimum Oil Passages Used

Using 1 hydraulic path from top drive rotary head to realize door closing, opening and safety interlocking.
Good for new and old top drives.

Easy Maintenance

Main bearing pin can be removed quickly due to innovative structure design, easy to maintain.
Bushing can be replaced quickly.

Enhanced Safety

Innovative fail-safe locking mechanism and redundant hydraulic locking and feedback provides reliable and safety use.

High Reliability

High torque ensures reliable opening/closing of doors safely, regardless of icing and heavy mud loaded conditions.

Hydraulic Drill Pipe Elevator



Technical Specification				
Model	SE25-A1	SE35-A1	SE50-A1	SE75-A1
Max. Load Rating	2,250 kN	3,150 kN	4,500 kN	6,750 kN
Pipe Range	2-3/8" ~ 7-1/4"		2-3/8" ~ 9-3/4"	
Hydraulic Pressure	16 MPa (2,300 psi)			
Max. Open Torque	1,200 N·m (890 ft-lb)	1,600 N·m (1,180 ft-lb)		
Max. Close Torque	2,000 N·m (1,480 ft-lb)	2,800 N·m (2,070 ft-lb)		
Max. Safety Gate Open Torque	800 N·m (590 ft-lb)	1,400 N·m (1,030 ft-lb)		
Max. Safety Gate Close Torque	1,300 N·m (960 ft-lb)	2,500 N·m (1,840 ft-lb)		
Controls	Auto Close, Remote Open and Interlock			

Hydraulic Casing Elevator



Technical Specification		
Model	SE35-B1	SE50-B1
Max. Load Rating	3,150 kN	4,500 kN
Pipe Range	8-5/8"~ 14"	9-5/8"~ 20"
Hydraulic Pressure	16 MPa (2,300 psi)	
Max. Open Torque	1,700 N·m (1,250 ft-lb)	
Max. Close Torque	2,900 N·m (2,140 ft-lb)	
Max. Safety Gate Open Torque	1,400 N·m (1,030 ft-lb)	
Max. Safety Gate Close Torque	2,400 N·m (1,770 ft-lb)	
Controls	Auto Close, Remote Open and Interlock	

Power Slips System



Size

Compact size, light-weighted, easy to install and maintain.



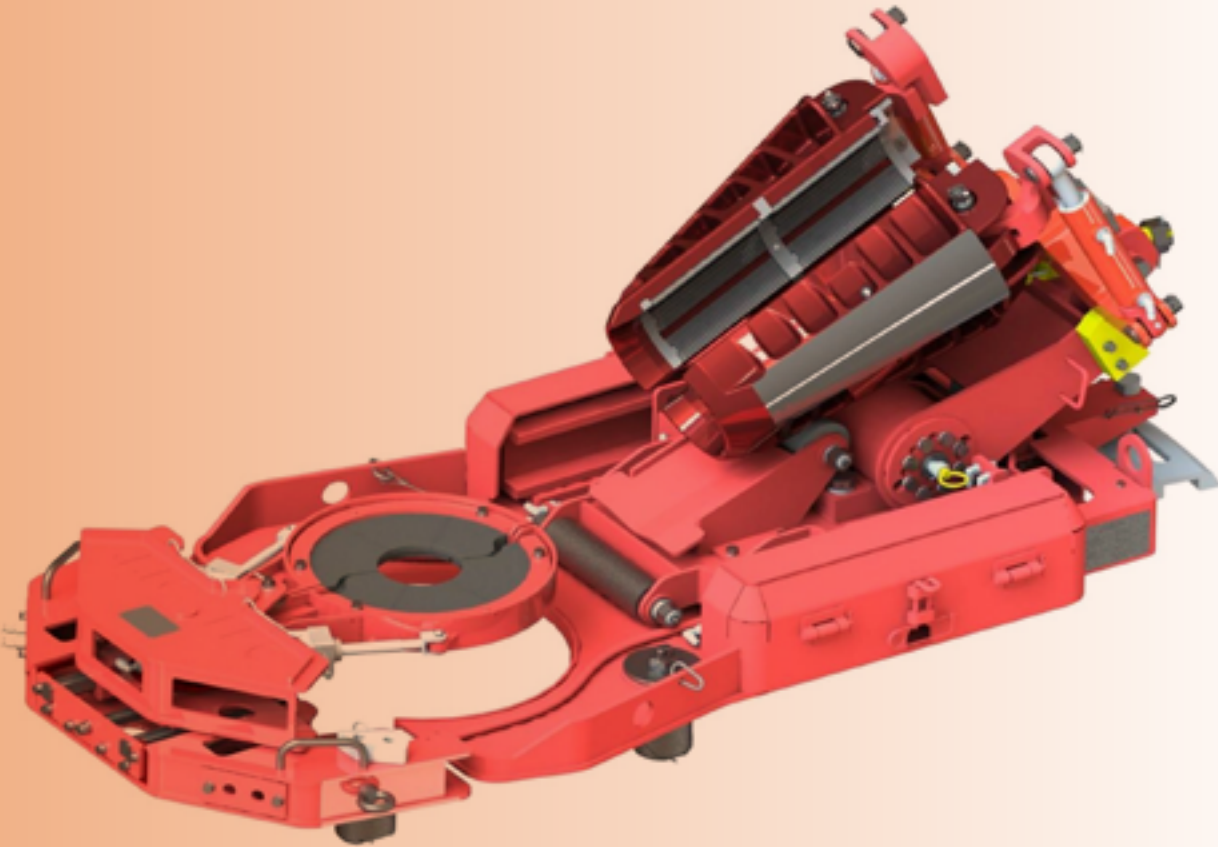
Design

Bionic design, interlock with other equipment.



No Intervention

Stay away from well center when standby, to avoid drill pipe friction.



Power Slips

PS-A1

Power Slips adopts innovative design. Lifting and setting operations are quick, safe, reliable and durable, easy to install and maintain.

Technical Specification	
Pipe Range	2-3/8" ~ 6-5/8"
Max. Rated Pressure	17.5 MPa (2,540 psi)
Max. Rated Flow	25 LPM (6.6 GPM)
Weight	310 kg (684 lbs)
Dimensions (W x H x L)	1,470 × 810 × 815 mm (57.9" x 31.9" x 32.1")
Controls	Local, Telecontrol, Integration



Mud Crab

PMW-A1

Mud Crab is an automatic wellhead tool to clean mud on outer wall of drilling tools during trip-out process.

Technical Specification	
Pipe Range	2-3/8" ~ 6-5/8"
Rated Pressure	0.5 ~ 1.0 MPa Pneumatic
Dimensions (W x H x L)	762 × 890 × 310 (30" x 35" x 12.2")
Weight	59 kg (110 lbs)
Controls	Foot Pedal, Telecontrol, Integration



Hydraulic Power Slips

HPS-A1

Hydraulic Power Slips features large gripping range, large contact area for setting, anti-torque capability, automatic centering function, accurate signal feedback, self-adaptive dies and safety interlock mechanism.

Technical Specification	
Adaptive Rotary Table	ZP375
Pipe Range	2-3/8"-14" (DP/DC/Casing)
Max. Load	4,500 kN
Max. Anti-torque	120,000 N·m
Hydraulic Pressure	40 L/min @ 16 MPa
Controls	Integration

* Product parameters can be customized according to customer requirements. There may be discrepancies between actual products and pictures.

Hydraulic Power Unit

Patented load-sensitive control technology, can match load power automatically. It enters low flow mode when standby, average energy consumption can be reduced by 80%.

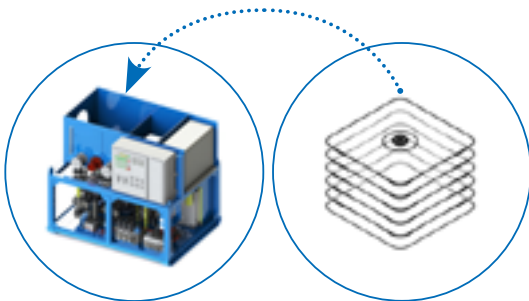
Modular design, interface for rig system integration reserved.

-  Durability
-  Environment Friendly
-  Flexibility



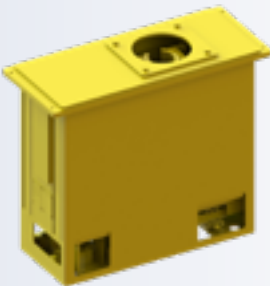
Patented Breathing Bladder

The breathing bladder installed inside the auxiliary tank, making it an enclosed system. Through contraction and expansion of the breathing bladder, internal and external pressure are always balanced, and the hydraulic oil is isolated from the outside air, ensures the purity of hydraulic oil, extend the service life of hydraulic fluid and hydraulic components of equipment.



Technical Specification		
Model	HPU45-140DI	HPU55-200DI
Max. Flow	140 L/min	200 L/min
Max. Pressure	21 MPa (3,000 psi)	21 MPa (3,000 psi)
Main Motor Power	45 kW × 2	55 kW × 2
Oil Tank Capacity	1,000 L	1,200 L
Weight	3,000 kg	4,800 kg
Dimensions	2,200 × 1,850 × 2,000 mm	2,450 × 1,850 × 2,100 mm

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There may be discrepancies between actual products and pictures.



Cleaning & Doping Module
ABM-H1

Cleaning & doping module installed under the drill floor saves floor space. It can operates with drilling operation at the same time.

Technical Specification	
Power Supply	10 A @ 220 V 50/60 Hz
Pipe Range	2-7/8" ~ 5-7/8" DP
Vertical Travel	445 mm (17.5")



Buffer Robotic Arm

It can replaces manual operation of pipe transfer, accurate and automatic alignment, compact design, easy to control and reliable.

Technical Specification	
Pipe Range	2-7/8" ~ 24"
Max. Cushioning Force	13 kN
Max. Extend Speed	0.65 m/s
Rotary Angle	-2° ~ 85°



Emergency Stabling Valve

The device is designed for dangerous snatch work instead of manual operate. It standby under drill floor to save operation space. It adopts to different check valves specification, with "one-button" operation function, it can rapid response and finish operation in 30-50s.

Technical Specification	
Max. Make-up Torque	9,000 N·m
Weight	2,000 kg
Dimensions	1,450 × 1,050 × 1,650 mm
Hydraulic Pressure	60 L/min @ 17.5 MPa
Air Pressure	150 L/s @ 0.7 MPa

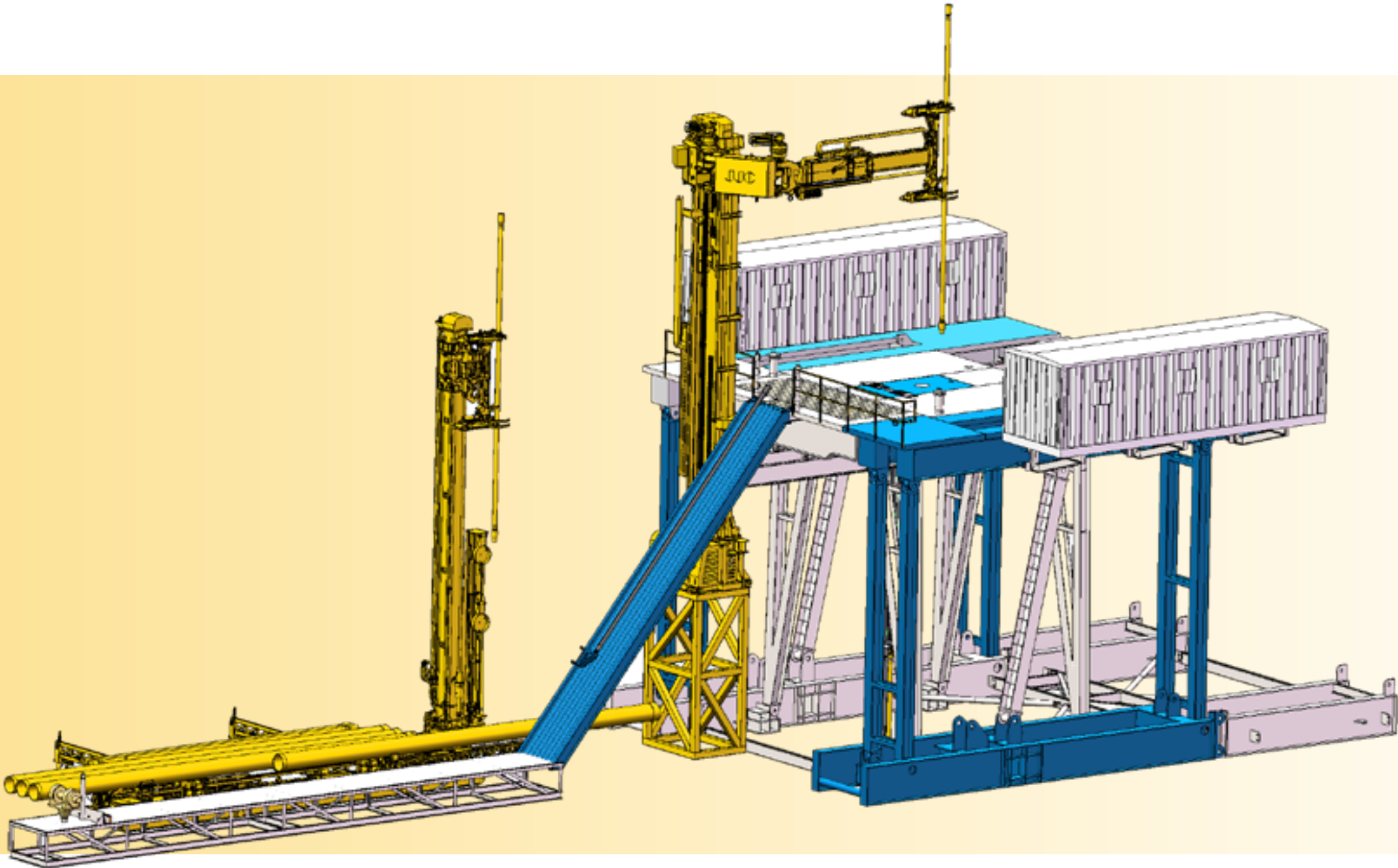
Ground Pipe Handling System

PHRB-4.5

Ground Pipe Handling System operates in assembly line method, it can handle drill tools vertically to wellhead and mousehole, decreases time use at wellhead.

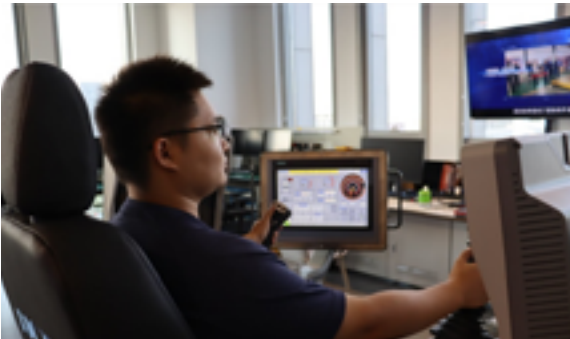
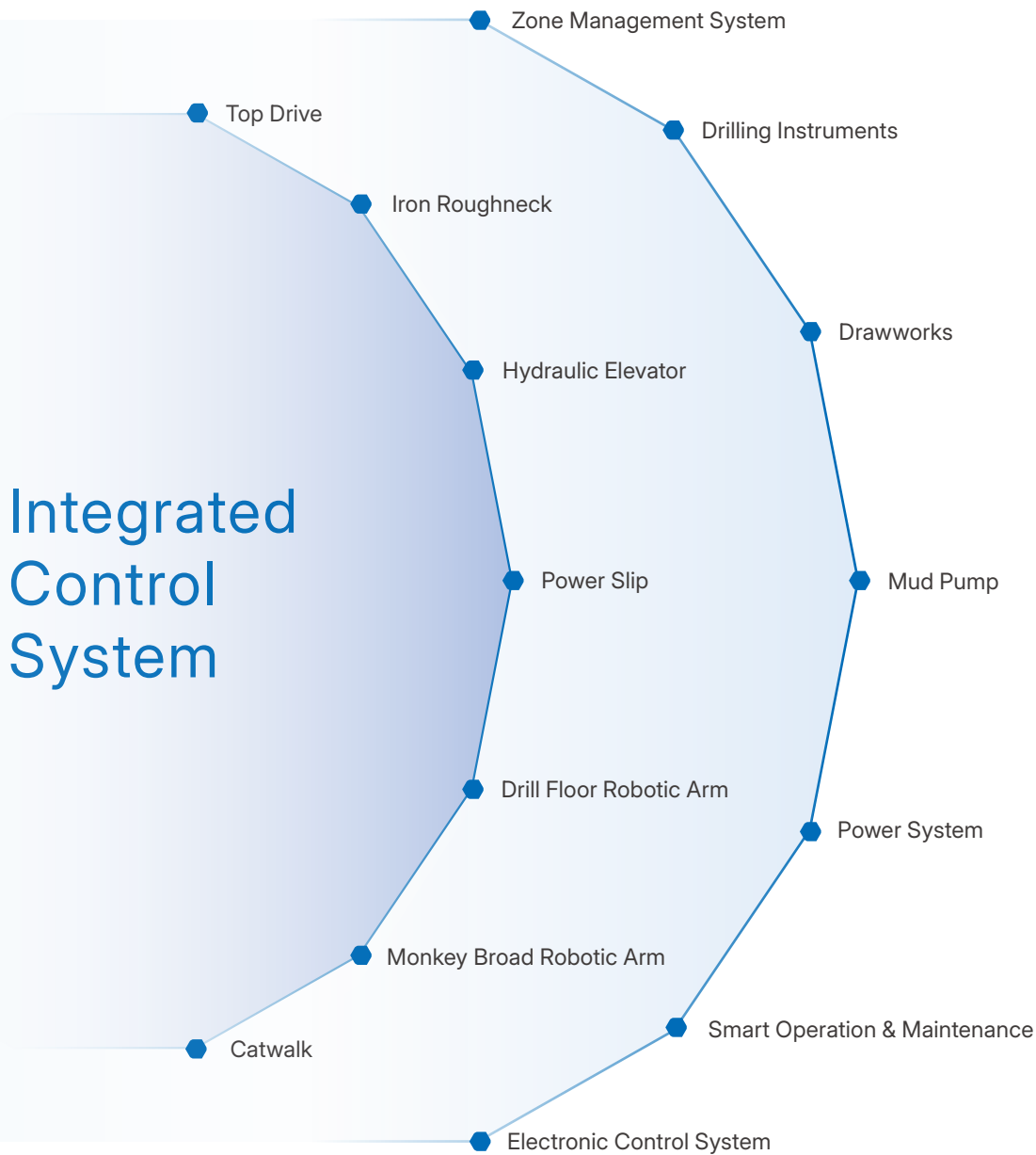
- Pipe stabbing, stands build, pipe pick-up and lay-down
- Cord guard release, length measurement, diameter measurement, thread cleaning, compound greasing, code printing functions integrated
- Serve-motor control, efficient, accurate, stable, weather proof

Technical Specification	
Max. Lifting Range	12 m
Pipe Range	2-3/8" ~ 20"
Rotary Speed	35°/s
Max. Lifting Mass	4,500 kg
Speed	60 pipes/h



Integrated Control System

- ✚ It integrates equipment control including top drive, mud pump, pipe handler, iron roughneck, elevator, slips, catwalk, etc.
- ✚ E-stop, CCTV and communication Integrated.
- ✚ AI vision, zone management system, remote operation and maintenance
- ✚ Hierarchical management of permissions, ensure operation safety.
- ✚ Open platform, third party equipment friendly.



AI Products

AI-based Zone Management System

AI vision device can be installed on the roof of driller's house, providing a horizontal scope up to 220° and vertical scope up to 85°. The system is also applicable to mud pump zone, filling area, BOP control room and etc.

This system can be customised to realize smoke and flames, equipment status, on-site head count, reflective clothing, workwear, worker falls detection and also operator leaving post, unauthorised absence or sleeping, smoking, phone usage.



Red-zone Alarm

Proactive E-stop

Safety Helmet Detect

CCTV-based Zone Management System

CCTV based ZMS upgrading service leverages AI and big data analytics, realizes transition from manual to intelligent monitoring and alarm. It provides comprehensive real-time monitoring and in-depth analysis of wellsite environment, operator and equipment, enhance the operational safety at wellsite.



Intelligent Driller Cabin

Intelligent driller cabin can be located at the far end of wellsite. It equipped with a multifunctional driller console, can support both operational mode and virtual commissioning mode. This system enables remote control of the drilling system, requiring only one operator to manage the drilling rig.



Remote Control

Allows remote control of all automatic equipment.

Virtual Training

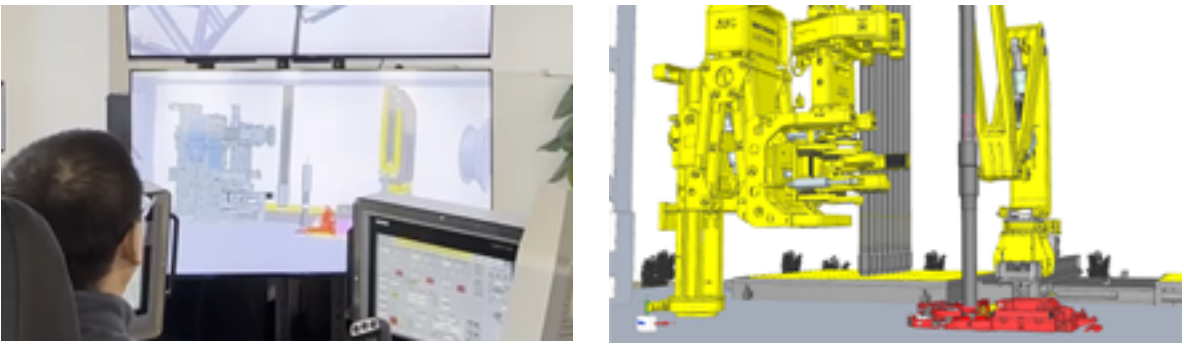
Driller training on simulation platform, experience the realistic field scenarios, and adapt to working conditions.

Virtual Commissioning

Debug system on simulation platform, significantly reducing time and improving efficiency.

Virtual Commissioning

- 3D digital twin models, shortens development cycle, reduces on-site operation risk at site.
- Simulation and training platform during development



Top Drive Integrated Control House

Based on the specific requirements of customers and the actual demands of on-site applications, we can provide frequency conversion drive products that include well-known international brands such as ABB and SIEMENS. We also support the selection of other high-quality domestic brands of frequency converters to meet diverse application scenarios and personalized needs.



* Product parameters can be customized according to customer requirements. There may be discrepancies between actual products and pictures.

High Performance

ABB ACS880 series or SIEMENS S120 VFD drive, based on customer preference.

Fast & Precise

According to the specific needs of customers, including Siemens S7-1500 controller and various modules can be selected, equipped with an integrated HMI with CPU and Profinet communication, which has fast response speed and supports debugging and diagnostic.

Cooling

The A/C unit adopts integrated industrial unit, Marine products can also be selected for the Marine environment which can work under extreme weather. 1 or 2 air conditioners as required, to maximize the cooling for VFD drive.

Reliability

All electrical components in the top drive control house are selected from world top brands such as SIEMENS, ABB, Schneider, Amphenol, etc., which gives better reliability of the system.

Tailored Program

We can provide tailored control software package, to control different brands and models of top drives, and can add inter-lock functions with other equipment (like drawworks/ iron roughneck) or additional control function (like hydraulic elevators).

Safety

The electrical house complies with industry quality standards, skidded for lifting transportation, suitable for both land rigs and offshore rigs.



Jacking System Lubrication Equipment

JUL-A1 jacking system lubrication equipment is used to automatically grease the transmission gears of platform jacking system, which is compatible with all kinds of jack-up offshore drilling platforms that use rack and pinion .

Compared to the conventional method (manual grease by rig crew), this system can be operated remotely and work automatically, and only applies necessary grease to the transmission gears, which enables a safer, more economical and environment-friendly approach. It is also easy for installation and maintenance. The system has been widely deployed on the jack-up platforms of COSL and CPOE .



* Product parameters can be customized according to customer requirements. There may be discrepancies between actual products and pictures.

Safety

Remotely and automatically operated. No need to climb up high for jacking system gears lubrication.

Economy

Greatly reduce the man power (save up to 9 manpower*), and only applies necessary grease (volume can be adjusted as required).

*Subject to platform size and design.

Environmental Protection

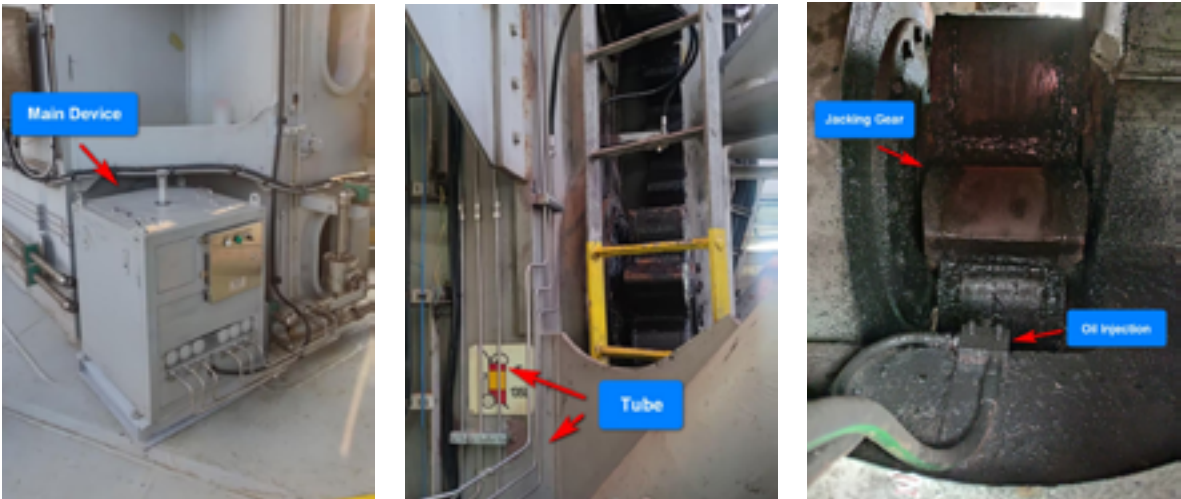
Through precisely control of grease volume, the system greatly reduces the risk of grease leaking into the sea water, reduces oil consumption and is environmental friendly.

Easy Maintenance

Multi-point lubrication system, isolated with each other, makes the system highly reliable. The system is also highly flexible with variable quantity of grease points and positions to match the platform.

Small Footprint

Compact envelop size and light weighted, makes it easy to be accommodated in platform.



Drilling Equipment Technical Service

A+ Team

- With over 20 experts and a team of engineers with years of on-site working experience.
- The core members of the team have long been employed by well-known international companies in the industry.

Expertise

- Offer 24/7 on-site and remote technical support for different drilling packages and individual equipment, as well as hardware and control system.
- Familiar with the equipment and systems of various mainstream manufacturers in the industry.

Fast Turnaround

- With sufficient inventory of equipment parts, it is possible to achieve rapid response and efficient delivery of equipment maintenance.
- Relying on the optimized supply chain management system, the required materials can be accurately deployed and obtained in time according to the actual needs, ensuring the continuity and efficiency of maintenance and operation work.

Case Study - Drilling Equipment 10-Year SPS



Aker-MH bridge crane & fingerboard inspection & repairing



Aker-MH service access basket inspection & repairing



Aker-MH riser fingerboard inspection & repairing

Drilling Equipment On-site Troubleshooting/Maintenance/Overhaul

We offer on-site inspection & repairing service or in-workshop overhaul for all kinds of critical drilling equipment including top drives, iron roughnecks, pipe rackers, mud pumps, overhead cranes, BOP stacks and BOP controls systems.

Top Drives



On-site



Workshop



Shipyard

Drawworks



Iron Roughnecks



Drilling Control System Upgrade

We provide on-site troubleshooting service and maintenance service for drilling rigs and equipment, including cold/warm rigs.

- Served 50+ platforms with COSL, CPOE, SINOPEC of fast turnaround.
- Inhouse spare parts support & short lead time sourcing capability.



Upgrade work of a semi rig drilling control system including:

Drilling Control System

Drilling equipment control server hardware and communication cards are upgraded, avoids shutdown and incompatibility of server cards caused by parameter missing, prolonged server's life.

Operating system of the drilling control system server is upgraded, without changing the original logic and framework control software, perfectly combined the systems.

Other Control Systems

Upgrades and renovations of other control systems, such as variable frequency control systems, VMS systems, and various specialized control systems.

Drilling Control System Technical Service



Software Lab



On-site Commissioning



Spare Parts Service

Mechanical Parts



Assemblies

Electrical Parts



Sensors

Hydraulic Parts



Pumps & Motors



Cylinders



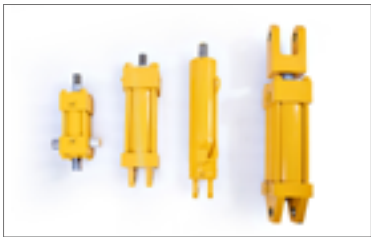
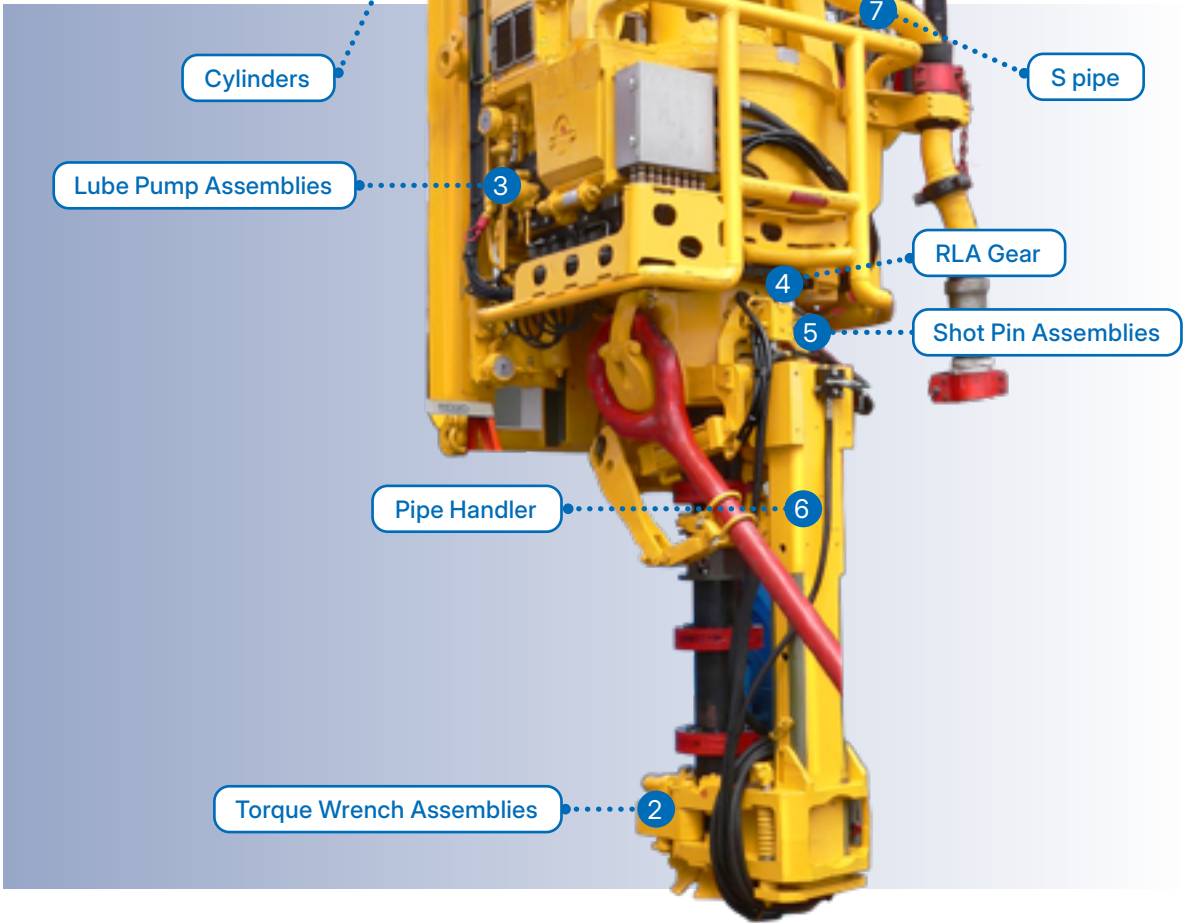
Connectors



Manifold Assemblies

We stock regular repair spare parts that can deliver in the same day, to better serve our customers.

Typical Top Drive Spare Parts



1 Cylinders



2 Torque Wrench Assemblies



3 Lube Pump Assemblies



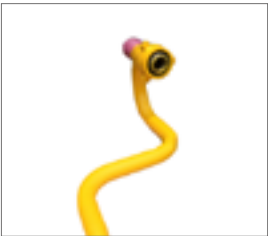
4 RLA Stem



5 Shot Pin Assemblies



6 Pipe Handler



7 S pipe

Iron Roughneck Spare Parts

Iron roughneck torque wrench & spin wrench are key components. Due to frequency, high intensity and high load-bearing use in muddy conditions, a frequent replacement and installation is needed.



Spin Wrench Assemblies



Stabilizers



Torque Jaws



Torque Wrench Jaws



Special Hydro Blocks



Jaws



Spinners



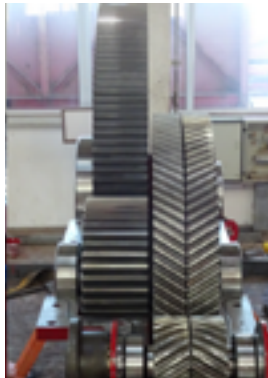
Rollers

ADS Drawworks Spare Parts

Due to ADS (Automatic Drawworks System) series its high work load conditions, frequent replacement and installation are needed.



High Torque Gearbox Assembly

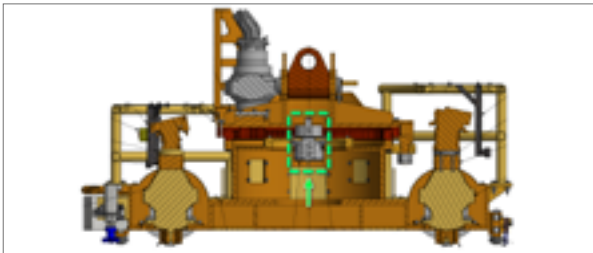


Eaton Friction Disc Brake Assembly



Pipe Racker Spare Parts

Hydraulic swivels are widely used on all kinds of drilling equipment. Fluid can be routed from the stator to rotator by respective internal fluid passages. They have been used on PRS and HR series pipe racker system.



Contact Us

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HEBEI JM TECHNOLOGY CO., LTD.

**Empowering smarter, safer,
and more efficient drilling operations.**

Contact Us

For more information about our Intelligent Drilling System solutions, product customization, or service support, please feel free to get in touch with us. Our team will be pleased to provide professional consultation and technical assistance.

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We stock regular repair spare parts that can deliver in the same day, to better serve our customers