JERRYMETALS
Onshore and Offshore Drilling Equipments

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DRILLING RIG

Oil Drilling Rig can be used in exploration and exploitation of oil and gas well.

All products conform to API Spec. 4F, 7K, 8A, and acquired the certificate of authority to use the official API monogram.

Technical Performance

1. Electric-drive drilling rig: The drive mode of DC electric-drive drilling rig is AC-SCR-DC, while AC electric-drive drilling rig is AC-DC-AC; it is equipped with a complete diesel generator as the power source. Drawworks adopts hydraulic disc brake and the EATON auxiliary brake， etc. Drawworks, Mud Pump and Rotary Table can be driven by independent motors (Rotary table can be driven compound). K type mast, self-lifting or spin-lifting substructure, mast and substructure are raised integrally. The rig is controlled concentratively in Driller's control cabin and achieves automatic bit feeding function. The auxiliary brake of AC-VFD drilling rig is dynamic brake
2. Combined drive drilling rig: The rig's drive mode is that the diesel engines provide power and integrated chain compound box transmits power. Drawworks adopts sealed chain transmission with hydraulic disc brake, etc. Drawworks and Mud Pump are driven uniformly. Rotary Table is driven by AC frequency converter and equipped with VFD system; K type mast; Substructure adopts box on box type or spin-lifting type; Mast and substructure are installed at ground level and raised integrally.
3. Mechanical drive drilling rig: The rig's drive mode is that the diesel engines provide power and the belt compound device transmits power. Drawworks adopts sealed chain driving with band brake system. Drawworks, Rotary Table, Mud Pump are driven uniformly. A type or K type mast. Substructure adopts box on box type or spin-lifting type. Mast is installed at ground level and raised integrally.

5000m digital-control VF electric rig

Major features:

It adopts integrated design of mechanical, electrical, hydraulic, pneumatic and digital control, utilizes fully the advantages of advanced digital control AC VF electric transmission, and simplifies its mechanical structure.

As adopting of slingshot type substructure, drill floor equipments and driller cabin etc realize low-position installation and integer lifting.

Electric transmission adopts vector VF drive system to realize all digital operation and control, and also processes elementary functions of automation, intelligence and information to realize collection (signal), display, restoration, printing, remote monitoring and management of control and drilling parameters.

By the use of VF technology, DW realizes max torque output when its speed is zero to ensure the suspension function of rig lifting system, which change traditional driller operation mode completely.

This rig is equipped with an integral driller's cabin, in which a driller can finish major operations.

Main technical parameters:

ZJ50/3150DBS Rig

1	Nominal drilling depth	3500 ~ 5000m （ 114mmDP ）	9	Quantity and power of drilling pump	2× 1600 hp
		2800 ~ 4500m （ 127mmDP ）	10	Substructure type	slingshot type
2	Max hook load	3150 kN	11	Substructure height and clear height under RT beam	9m / 7.6m
3	Wire rope system of traveling system	6 × 7 ， parallel	12	Mast type and effective height	K TYPE ， 45m
4	DW rated power	1100 kW （ 1500 hp ）	13	Transmission mode	AC-DC-AC ， one-on-one control

5	DW gear	One gear stepless speed regulation	14	Quantity/power of main diesel engine	3 × 1087 kW
6	Diameter of drilling wire rope	φ 35mm	15	Quantity/power of auxiliary generator set	1×300kW
7	RT opening diameter	952.5mm （ 37 1/2 ″ ）	16	Quantity and power of VF motor	3×600kW+1x45 kW+2× 1200 kW
		698.5mm （ 27 1/2 ″ ）	17	HP mud manifold	φ 102mm （ bore diameter ） ×35MPa
8	RT gear	One gear stepless speed regulation	18	Effective mud volume of solid control system	320m^3

● 5000m AC electric trailer rig

Major features:

It's a newly designed all-trailer rig, of which all modules equip trailer-transportation device, so it has high transportation performance and suitable for oilfields in desert zones.

According to different road conditions, mast and substructure can be trailer-transported as a whole or separately.

During mast trailer-transportation, top drive may stay in it.

Substructure trailer device equips turning system to ensure the safety of trailer-transportation.

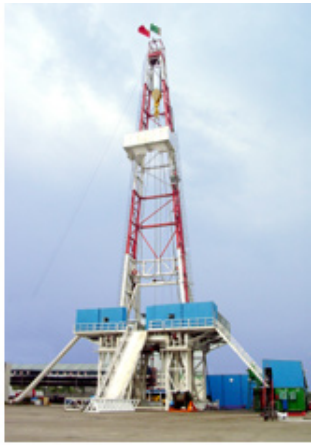
It has all operation capacity and advantages of digital control VF electric rig.

Main technical parameters:

ZJ50/3150DBST Rig

1	Nominal drilling depth	3500~ 5000m （ 114mmDP ） 2800~ 4500m （ 127mmDP ）	10	Substructure type	slingshot type
2	Max hook load	3150 kN	11	Substructure height and clear height under RT beam	9m ， 7.6m
3	Wire rope system of traveling system	6×7 ， parallel	12	Mast type and effective height	K TYPE ， 45m
4	DW rated power	1200 kW （ 1600 hp ）	13	Transimission mode	AC-DC-AC, one-on-one mode
5	DW gear	stepless speed regulation	14	Quantity and power of main generator set	3× 1200 kW
6	Diameter of drilling wire rope	φ 35mm	15	Quantity and power of auxiliary generator set	N/A
7	RT opening diameter	952.5mm （ 27 1/2″ ）	16	Quantity and power of AC motor	3×600kW+2× 1200 kW+45kW
8	RT gear	1 gear	17	HP mud manifold	Φ 103mm （ bore diameter ） ×35MPa
9	Quantity and power of drilling pump	2× 1600 hp	18	Effective mud volume of solid control system	320m^3

● 5000m DC electric trailer rig



Major features:

It's an electric-driven all-trailer rig, of which all modules equip trailer-transportation device, so it has high transportation performance and suitable for oilfields in desert zones.

According to different road conditions, mast and substructure can be trailer-transported as a whole or separately.

During mast trailer-transportation, top drive may stay in it.

Substructure trailer device equips turning system to ensure the safety of trailer-transportation.

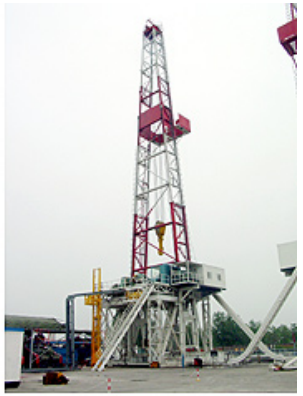
It has all operation capacity and advantages of DC electric rig.

Main technical parameters:

ZJ50/3150DT Rig

1	Nominal drilling depth	3500 ~ 5000m （ 114mmDP ） 2800 ~ 4500m （ 127mmDP ）	10	Substructure type	slingshot type
2	Max hook load	3150 kN	11	Substructure height and clear height under RT beam	9m / 7.6m
3	Wire rope system of traveling system	6×7 ， parallel	12	Mast type and effective height	K TYPE ， 45m
4	DW rated power	1100 kW （ 1500 hp ）	13	Transmission mode	AC-SCR-DC, one-on-one mode
5	DW gear	4 forward+ 4 reverse	14	Quantity and power of main generator set	3× 1200 kw
6	Diameter of drilling wire rope	φ 35mm	15	Quantity and power of auxiliary generator set	1×300kw
7	RT opening diameter	952.5mm （ 27 1/2″ ）	16	Quantity and power of motor	7×800 kW （ DC ） +45kw （ AC ）
8	RT gear	2 forward+ 2 reverse	17	HP mud manifold	Φ 103mm （ bore diameter ） ×35MPa
9	Quantity and power of drilling pump	2× 1600 hp pump	18	Effective mud volume of solid control system	320m^3

● 5000m DC electric rig



Major features:

DW, RT and mud pump realize independent DC stepless speed regulation which provide guarantee for drilling technology optimization.

Mast, substructure and drill floor equipments can be installed at lower position, and then be lifted integrally upon DW power.

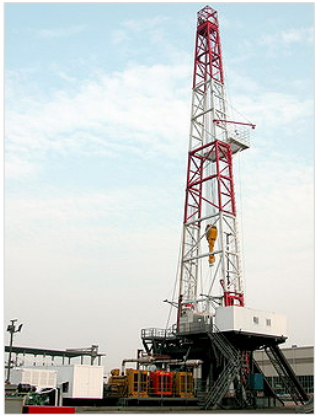
Auto-bit-feeding adopts all-digital auto control technique, driller operates the touch screen to fulfill drilling operation through optimized drilling parameters, which will reduce labor intensity significantly and improve work efficiency. Display, restoration, regulation and control, remote management of major drilling parameters can be realized.

Main technical parameters:

ZJ50/3150D Rig

1	Nominal drilling depth	5000m （ 114mmDP ） 4500m （ 127mmDP ）		10	Substructure type	slingshot type	Swing up type
2	Max hook load	3150kN		11	Substructure height and clear height under RT beam	9m / 7.62m	9m /7.75m
3	Wire rope system of traveling system	6×7 ， parallel		12	Mast type and effective height	K TYPE ， 45m	
4	DW rated power	1100 kW （1500hp ）		13	Transmission mode	AC-SCR-DC	
5	DW gear	4 forward+ 4 reverse ， stepless speed regulation		14	Quantity and power of main generator set	3 × 1200 kW	
6	Diameter of drilling wire rope	φ 38mm		15	Quantity and power of auxiliary generator set	1×292kW	
7	RT opening diameter	952.5mm （ 27 1/2″ ）		16	Quantity and power of DC motor	7 × 800kw（DC）+ 1 × 45kw（VF）	
8	RT gear	2 forward	2 reverse	17	HP mud manifold	Φ 103mm （ bore diameter ） ×35MPa	
9	Quantity and power of drilling pump	2 × 1600 hp pump		18	Effective mud volume of solid control system	320m^3	

● 5000m RT-independent-electric-driven rig



Major features:

On the basis of common mechanical rig, driving of RT a is separated from mud pump and DW, and RT is driven by an independent AC VF motor. RT rev, torque and mud pump stroke can be adjusted separately as per drilling technology.

RT rev adjusting and DW auto-bit-feeding both adopt all-digital auto control technique, which make the performance of the rig under drilling condition get close to digital-control electric VF rig; driller operates the touch screen to fulfill drilling operation through optimized drilling parameters, which will reduce labor intensity significantly and improve work efficiency. Display, restoration, regulation and control, remote management of major drilling parameters can be realized.

Main technical parameters:

ZJ50/3150LDB Rig

1	Nominal drilling depth	3500 ~ 5000m （ 114mmDP ）		9	Quantity and power of drilling pump	2× 1600 hp
		2800 ~ 4500m （ 127mmDP ）		10	Substructure type	Block package type
2	Max hook load	3150 kN		11	Substructure height and clear height under RT beam	9m / 7.62m
3	Wire rope system of traveling system	6x7 ， parallel		12	Mast type and effective height	K TYPE ， 44.5m
4	DW rated power	1100 kW （ 1500 hp ）		13	Transmission mode	hydraulic transmission and chain paralleling +AC-VFD-AC
5	DW gear	4 gears	6 gears	14	Quantity/power of main diesel engine	3x810 kW
6	Diameter of drilling wire rope	φ 35mm		15	Quantity/power of auxiliary generator set	3×400kW
7	RT opening diameter	952.5mm （ 37 1/2 ″ ）		16	Quantity and power of VF motor	1×600kW+1x45 kW
		698.5mm （ 27 1/2 ″ ）		17	HP mud manifold	φ 102mm （ bore diameter ） ×35MPa
8	RT gear	1 gear	2 gears	18	Effective mud volume of solid control system	320m^3

5000m mechanical rig

Major features:

K type mast is made of H steel, and has the advantages of wide eyeshot and convenient transportation.

The substructure is Block package type; while drawworks and mast adopt low-position installation and being lifted upon drawworks power.

Drawworks is a seal type chain transmission drawworks which has 4 forward gears+2 reverse gears (or 6 forward gears+2 reverse gears), and it equips auxiliary drive device for mast lifting and emergency lifting.

Between each part of rig transmission system adopt cardan shaft connection, which is convenient to install and disassemble.

Overall layout of the rig is reasonable, while its modularization can meet the requiremen ts of integrally lifting, train and truck transportation.

The rig has advantages of wide matching range, high mechanization degree and good operation adaptability.

Main technical parameters:

ZJ50/3150L Rig

1	Nominal drilling depth	3500 ~ 5000m （ 114mmDP ）		9	Quantity and power of drilling pump	2× 1600 hp
		2800 ~ 4500m （ 127mmDP ）		10	Substructure type	Block package type
2	Max hook load	3150 kN		11	Substructure height and clear height under RT beam	7.5m ， 6.3m
3	Wire rope system of traveling system	6x7 ， parallel		12	Mast type and effective height	K TYPE ， 44.5m
4	DW rated power	1100 kW （ 1500 hp ）		13	Transmission mode	hydraulic transmission and chain paralleling
5	DW gear	4 gears	6 gears	14	Quantity/power of main diesel engine	3x810kw

		4 forward+ 2 reverse	6 forward+ 2 reverse	15	Quantity and power of auxiliary generator set	2×320kW
6	Diameter of drilling wire rope	φ 35mm				
7	RT opening diameter	952.5mm （ 37 1/2″ ）		16	HP mud manifold	φ 102mm （ bore diameter ） ×35MPa
		698.5mm （ 27 1/2″ ）				
8	RT gear	4 forward+ 2 reverse	6 forward+ 2 reverse	17	Effective mud volume of solid control system	320m^3

● 5000m digital control electric VF Cryogenic rig

Major features:

The rig is designed integrated with mechanical, electric, hydraulic, pneumatic and digital control. It takes fully the advantages of digital control, AC VF electric transmission. So its mechanical structure has been simplified.

Slingshot substructure: the drill floor equipments and driller's cabin etc can be pinned in lower position and raised integrally.

Electric transmission uses a vector VF drive system; fully digitalized operation and control are realized, automatic and intelligent operation and control functions as well. The control data and drilling data can be acquired (signal) , displayed, stored, printed, controlled and managed remotely.

The VF technology used makes Max. DW output torque at zero rotation speed to ensure the suspending function of rig hoisting system, which completely replaces traditional driller's operation mode.

Integrated driller's cabin makes the driller fulfill the main operation of drill rig in the cabin.

In accordance with the characteristics of low temperature environment, full optimized design has been made for materials, lubrication and sealing, hydraulic and pneumatic control, electric transmission and control etc. So it meets the requirements of -45 ℃～ 40 ℃ operation environment. The load bearing components such as crown block, mast, substructure, ladders, handrails, drawworks and the parts related to human safety are all made of the anti- low temperature materials.

There are automatic temperature-control electric heating devices for oil tanks of DW, RT and mud pumps, and steam coiled tube heater can also be used.

Heat reservation shield, steam-heating system are available to heat the racking board and driller's cabin locally, and other heating measures can be used for improving the operation environment as well.

Main technical parameters:

ZJ50/3150DBS Rig

1	Nominal drilling depth	3500~ 5000m （ 114mm DP ）	9	Qty. and power of drilling pumps	2× 1600 hp pump
		2800~ 4500m （ 127mm DP ）	10	Substructure Model	Slingshot
2	Max. hook load	3150 kN	11	Substructure height & clear height under RT beam	9m ， 7.6m
3	Wire rope system of traveling system	6x7 ， parallel	12	Mast type and effective height	K type ， 45m
4	DW rated power	1100 kW （ 1500 hp ）	13	Transmission mode	AC-DC-AC ， one to one control
5	DW gear-shift	One gear, stepless speed regulation	14	Qty. and power of main diesel engine	3x 1087 kW
			15	Qty. and power of auxiliary diesel engine	1×300kW
6	Diameter of drilling line	Φ 28mm			
7	RT opening Diameter	952.5mm （ 37 1/2 ″ ）	16	Qty. and power of VF motor	3×600kW+1x45 kW+2× 1200 kW
		698.5mm （ 27 1/2 ″ ）	17	HP mud manifold	φ 102mm （ bore diameter ） ×35MPa
8	RT gear-shift	One gear, stepless speed regulation	18	Effective mud volume of solid control system	320m^3