

# ***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.



## ● 3000m RT-independent-electric-driven rig

### Major features:

Driving of RT, DW and mud pump is independent, 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 makes 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.

Major parts as mast, substructure and drawworks etc can be placed on shifting guide rail, to perform cluster well drilling by cylinder shifting.

### Main technical parameters:

#### ZJ30/1700LDB Rig

1	Nominal drilling depth	3000m ( 114mmDP )	10	Substructure type	box-on-box type
		2500m ( 127mmDP )			
2	Max hook load	1700 kN	11	Substructure height and clear height under RT beam	4.5m / 3.58m
3	Wire rope system of traveling system	5x6 , parallel	12	Mast type and effective height	K TYPE/ 42m
4	DW rated power	551kW ( 750hp )	13	Transmission mode	hydraulic transmission and chain paralleling+ AC-VFD-AC
5	DW gear	4 gears	14	Quantity/power of main diesel engine	2 × 810 kW
			15	Quantity/power of auxiliary generator set	3×400kW
6	Diameter of drilling wire rope	φ 29mm	15		
7	RT opening diameter	520.7mm ( 20 1/2" )	16	Quantity and power of VF motor	1×300kW+1 × 22 kW
8	RT gear	One gear stepless speed regulation	17	HP mud manifold	φ 102mm ( bore diameter )

					×35MPa
9	Quantity and power of drilling pump	1× 1300 hp pump	18	Effective mud volume of solid control system	245m <sup>3</sup>

## ● 3000m trailer rig

### Major features:

It is convenient to install and fast to transport as its power system, transmission system, control system, lifting system and rotation system etc are centralized on special semi-trailer chassis. RT and drawworks adopt reliable and proven mechanical transmission which is easy to maintain.

Optimized gear paralleling transmission box can realize separate running or paralleling running of two engines; RT climbing chain box is driven through transmission shaft of paralleling transmission box, thus the transmission system and installation is simplified, transmission is reliable.

### Main technical parameters:

#### ZJ30/1800T Trailer Rig

1	Nominal drilling depth	3000m ( 114mmDP )	10	Substructure type	Swing up type
		2500m ( 127mmDP )			
2	Max hook load	1800 kN	11	Substructure height and clear height under RT beam	6m / 4.3m
3	Wire rope system of traveling system	5×6 , parallel	12	Mast type and effective height	“Mast” type, bi-section matched installation , 38m
4	DW rated power	520kW ( 700hp )	13	Transmission mode	Hydraulic mechanical speed regulation+ chain transmission
5	DW gear	5 forward+ 1 reverse	14	Diesel engine model/power	CAT C15/ 403kw
6	Diameter of drilling wire rope	φ 29mm	15	Transmission box model	Allison S5610H
7	RT opening diameter	520mm ( 20 1/2" )	16	HP mud manifold	Φ 103mm ( bore diameter ) ×35MPa
8	RT gear	5 forward+ 1 reverse	17	Effective mud volume of solid control system	256m <sup>3</sup>

9	Quantity and power of drilling pump	1×1000hp	18	Hydraulic system working pressure	16MPa
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## ● 3000m mechanical rig

### Major features:

Major parts of the rig adopt mechanical transmission mode, of which the maintenance and control is simple and the cost performance is high.

Drawworks is a seal type chain transmission drawworks which equips auxiliary drive device for mast lifting and emergency lifting. It adopts integral chain box paralleling, of which the operation and maintenance is simple and dependable and the failure rate is low.

This rig is equipped with an integral driller's cabin, in which a driller can finish major operations and controls. The driller cabin is located on DW fixation water tank, so effect caused by drill floor vibration on instruments and control elements in it can be reduced.

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

### Main technical parameters:

#### ZJ30/1700L Rig

1	Nominal drilling depth	3000m ( 114mmDP )	9	Quantity and power of drilling pump	1×1000hp
		2500m ( 127mmDP )	10	Substructure type	box-on-box type
2	Max hook load	1700 kN	11	Substructure height and clear height under RT beam	5.5m , 4.5m
3	Wire rope system of traveling system	5×6 , parallel	12	Mast type and effective height	K TYPE , 41m
4	DW rated power	560kw	13	Transmission mode	hydraulic transmission+ chain paralleling
5	DW gear	4 forward+ 2 reverse	14	Quantity/power of main diesel engine	2×810kW
			15	Quantity and power of auxiliary generator set	2×400kW
6	Diameter of drilling	φ 29mm			

	wire rope				
7	RT opening diameter	520.7mm ( 20 1/2" )	16	HP mud manifold	Φ 103mm ( bore diameter ) ×35MPa
8	RT gear	4 forward+ 2 reverse	17	Effective mud volume of solid control system	245m <sup>3</sup>

### ● 3000m train type horizontally-moving digital control electric VF Cryogenic rig

#### Major features:

The horizontal-translating mode is railway moved type; all equipments are installed on a base which is laid on steel track, moved integrally through hydraulic cylinders for the requirements of cluster well drilling.

Suitable for the ambient temperature scope -45 °C— 40 °C .

The transportation dimension of each component should be not higher than 12m × 3.2m × 3.2m , and the weight of each module should not be higher than 40T.

There is a 6.3/0.4KV industrial substation equipped for the power system, so there is power selection of industrial grid and diesel generator sets .

#### Main technical parameters:

#### ZJ30/1700DBS train type horizontally-moving Cryogenic rig

1	Nominal drilling depth	1600 ~ 3000m ( 114mm DP )	10	Substructure type	Box on box
		1500 ~ 2500m ( 127mm DP )			
2	Max. hook load	1700 kN	11	Substructure height & clear height under RT beam	8.6m , 6.5m
3	Wire rope system of traveling system	5×6 , parallel	12	Mast type and effective height	K type , 41m
4	DW rated power	600kW ( 750HP )	13	Transmission mode	AC-VFD-AC , one-to-one control
5	DW gear	One gear, stepless regulation	14	Qty. and power of main diesel engine	3×748kw

6	Diameter of drilling line	φ 28mm	15	Qty. and power of auxiliary generator set	1×200kW
7	RT opening diameter	700mm	16	Qty. and power of VF motor	4×600kW+1×45kw
8	RT gear	One gear, stepless regulation	17	HP mud manifold	4" ( bore diameter ) ×35MPa
9	Qty. & power of drilling pump	2×800HP pump	18	Effective mud volume of solid control system	245m <sup>3</sup>