

AC VARIABLE-FREQUENCY ELECTRIC DRIVE DRILLING RIG

CNPC can manufacture and provide AC VFD drilling rigs range from 1000 to 12000 meters in drilling depth. Main motors auto-driller and other new advanced technologies have been adopted in the AC VFD drilling rig, both the quantity and technology are in the leading position all of the world.

The advantage of AC VFD drilling rig is the AC motor brushless, no spark; stable start, high overload capacity; large speed regulation range with constant power, high system power factor, low motor power; rotary table and draw works are four quadrant running and full digital vector control; feedback/dynamic braking is used to replace auxiliary brake; zero maintenance can be achieved with reliable performance; communication and network is available by using PROFIBUS technology. Auto drilling technology improved the drilling efficiency. So AC VFD drilling rig is the first choice by the domestic and overseas drilling contractor for deep and super deep well.



TECHNICAL FEATURES

- Adopting advanced full numerical AC VFD technology, intellectual drilling control is accomplished through PLC, touch screen and integrated design of air, electric, hydraulic parts and drilling instrumentation.
- Large power and wide frequency motors are used for complete range speed setting of drawworks, rotary table and mud pumps.
- Single shaft, gear drive and one or two shift smooth speed change drawworks is simple in structure and reliable in operation. Compound hydraulic disc brake and dynamic braking are used for braking system.
- Automatic drilling is obtained by drawworks main motor or an independent motor real time supervision and control for tripping in, tripping out and drilling operation are obtained.
- Protective functions to air or hydraulic loss, electric control system or motor trouble, limit for rotary torque and pump pressure is available.
- A separate driller cabin is fitted. Operations for air, electric and hydraulic, drilling data and parameters are all in the cabin. Logic control, supervision and maintenance during complete drilling operations are available by PLC processes. The drilling data can be stored, printed and remote transmitted. All operations by driller can be completed in the cabin for better working conditions and less working strength.
- Top drive drilling system can be equipped.
- Integrated skid rail may be provided to meet requirements for cluster well drilling.
- Intellectual soft starting device, ET200 or ASI module is used for protection and supervision to MCC system.
- Intellectual position control for traveling block to prevent top and low collision is provided.

TECHNICAL PARAMETER

Drilling rig model		ZJ15/900DB		ZJ30/1700DB		ZJ40/2250DB		ZJ50/3150DB	
Nominal drilling depth, m	127mm(5") drill pipe	700-1400		1500-2500		2000-3200		2800-4500	
	114mm(4 1/2") drill pipe	800-1500		1600-3000		2500-4000		3500-5000	
Max. hook load, kN		900		1700		2250		3150	
Line strung of hoisting system		8		10		10		12	
Drill line diameter,mm		26		29		32		35	
Max. pull of fast line,kN		130		210		280		350	
Draw-works	Model	JC-15DB		JC-30DB		JC-40DB		JC-50DB	
	Power rating kW (hp)	300(410)		600(815)		800(1090)		1100(1500)	
	Speed	I or II, smooth change				I or IV, smooth change		I or II, smooth change	
Brake mode		Hydraulic disc brake + Regenerating brake				Hydraulic disc brake + Regenerating brake(Pneumatic disc brake)			
Crown block		TC90		TC170		TC225		TC315	
Traveling block		YG135		YG170		YC225		YC315	
Sheave OD of hoisting system, mm		660		1005		1120		1270	
Hook		YG135		YG170		DG225 DG250		DG315	
Swivel	Model	SL-135		SL-170		SL-225		SL-450	
	Stem dia.,mm	64		64		75		75	
Rotary table	Stem dia mm(in)	444.5(17 1/2)		520(20 1/2)		698.5(27 1/2)		952.5(37 1/2)	
	Speed	I or II, smooth change							
	Drive mode	combined or independent drive						Independent drive	
Mast	Type	K or telescoping		K or A		K			
	Height, m	31 or 39		33 or 41		44		45	
	Max. load, kN	900		1700		2250		3150	
Substructure	Type	Box or telescoping				Dual lift		Dual lift or Swing lift	
	Floor height, m	3.8	4.5	5	6	7.5		9	
	Clear height, m	2.6	3.3	3.8	4.8	6		7.6	
Mud pump	Model×number	F-800×1		F-1300×1		F-1300×2		F-1600×2	
	Drive mode	Electric drive or diesel engine drive						Electric drive	
Electric control mode		AC-DC-AC							

Drilling rig model		ZJ70/4500DB	ZJ90/6750DB	ZJ120/9000DB
Nominal drilling depth m	127mm(5")drill pipe	4000-6000	9000	12000
	114mm(4 1/2") drill pipe	4500-7000		
Max. hook load, kN		4500	6750	9000
Line strung of hoisting system		12	14	14
Drill line diameter , mm		38	45	46
Max. pull of fast line , kN		487	643	851
Draw-works	Model	JC-70DB	JC-90DB	JC-120DB
	Power rating, kW (HP)	1470(2000)	2200/3200(3000/4400)	4400(6000)
	Speed	I or II, smooth change		I smooth change
Brake mode		Hydraulic disc brake + Regenerating brak (Pneumatic disc brake)	Hydraulic disc brake + Regenerating brak	
Crown block		TC450	TC675	TC900
Traveling block		YC450	YC675	YC900
Sheave OD of hoisting system, mm		1524	1524	1828
Hook		DG450	DG 675	DG 900
Swivel	Model	SL-450	SL-675	
	Stem dia.,mm	75	102	
Rotary table	Stem dia , mm(in)	952.5(37 1/2)	952.5(37 1/2)	1257.3(49 1/2)
	Speed	I or II, smooth change	I , smooth change	II , smooth change
	Drive mode	Independent drive		
Mast	Type	K		
	Height, m	45	48	52
	Max. load, kN	4500	6750	9000
Substructure	Type	Dual lift or Swing lift	Swing lift	
	Floor height, m	10.5	12	
	Clear height, m	9	10.3	10
Mud pump	Model×number	F-1600 × 3	F-1600HL × 3	F-2200HL × 3
	Drive mode	Electric drive		
Electric control mode		AC-DC-AC		