

PRODUCTS



Five Areas of Rig Layout

1. Drilling floor zone: includes mast, base, rotary table and independent drive devices, lifting system, wellhead mechanical tools, hydraulic casing stabilizer and dog house, driller's console.
2. Engine house power zone: includes three A12V190P-ZL-3/O diesel engine coupler sets, whole chain box, drawworks, power saving generator sets, automatic air compressor sets, diesel engine sets, air source cleaning devices, variable frequency drive, VFD, and MCC control house.
3. Mud pump zone: includes 2 F-1600 mud pumps, drilling fluids valves, manifold and so on.
4. Mud processing and water tank zone: includes mud circulation tank, mud cleaning devices, water tanks and so on.
5. Oil tank zone: includes different types of oil tanks, pumps and lines.

- Three sets of diesel engine coupling and whole chain box are united to drive the drawworks, mud pump, rotary table, automated air compressor and energy saving electric generator.
- Diesel + saving energy generators provide the electric.
- The plate brake with the electromagnetism eddy brake (or Eton brake) is used together with the auxiliary device to the mast.
- 600kW, 400V AC frequency conversion motor drive the rotary table to adjust the speed .
- The mast is K type structure. It can go up and down as one block, and is satisfied for installing a 500 tons top drive.
- The height of drilling floor is 10.5m, and it is assembly with one operation in lower position.
- The Drilling rig could be equipped with VFD and MCC system. VFD is used to control the rotary table motor and automatic bit feed motor.



PRODUCTS

Energy & Technology Corp. Rigs & Equipments

Drilling Rigs

ZJ70/4500LDB Drilling Rig is suitable for 23000ft (7000m) well with 4.5in (114mm) drill pipe, in which the rotary table

is driven by AC frequency conversion independence. The draw works and mud pumps are driven by mechanical.



Specifications of Drilling Rigs

Model	ZJ130/1700L	ZJ40/2250L	ZJ50/3150L	ZJ70/4500L
Nominal Drilling Depth(114mm pipe)	5250-9850 ft	8200-13200 ft	11500-16500 ft	14800-23000 ft
Max hook load kN	1700	2250	3150	4500
Number of lines of Hoisting System	10	10	12	12
Dia. of Wire Line mm(in)	29(1- ¹ / ₈)	32(1- ¹ / ₄)	35(1- ³ / ₈)	38(1- ¹ / ₂)
Max. Pull of Fast Line kN	210	280	340	485
Model of Drawworks	JC30L	JC40L JC40LDB	JC50L JC50LDB	JC70L JCLDB
Rated Power of Drawworks kW	550	735	1100	1470
Speed of Drawworks	4Foward+2Reverse	4Foward+2Reverse	4Foward+2Reverse	4Foward+2Reverse
Main Brake of Drawworks	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc
Auxiliary Brake of Drawworks	Eddy Brake	Eddy Brake or EATON	Eddy Brake or EATON	Eddy Brake or EATON
Crown Block	TC170	TC225	TC315	TC450
Traveling Block	YC225	YC225	YC315	YC450
Hook	DG225	DG225	DG315	DG450
Swivel	SL225-II	SL225-II	SL450-II	SL450-II
Model of Rotary Table	ZP520 or ZP275	ZP520 or ZP275	ZP375	ZP375
Dia. of Opening of Rotary Table	520.7(20- ¹ / ₂)or698.5(27- ¹ / ₂)	520.7(20- ¹ / ₂)or698.5(27- ¹ / ₂)	952.5(37- ¹ / ₂)	952.5(37- ¹ / ₂)
Speed of Rotary Table	4Foward+2Reverse	4Foward+2Reverse	4Foward+2Reverse	4Foward+2Reverse
Model*Number of Mud Pump	F-1300 x 1	F-1300 x 2	F-1600 x 2	F-1600 x 2
Drive Mode of Mud Pump	Compound drive	Compound drive	Compound drive	Compound drive
Type of Mast	K	K	K	K
Working Height of Mast ft	136	141	148	148
Height of Drilling Floor ft	14.8 or 19.68	19.68 or 24.6	24.6 or 29.53	29.53 or 34.45

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Mud Pumps

The mud pumps mainly have three models as SL3NB-1600A, SL3NB-1300A, SL3NB-1000, all of which are triples single acting pistons. The characteristic of design is that to optimize parameter, appropriately increase stroke and reasonably lower stroke number to improve the performance of suction of pumps.



Specifications of Mud Pumps

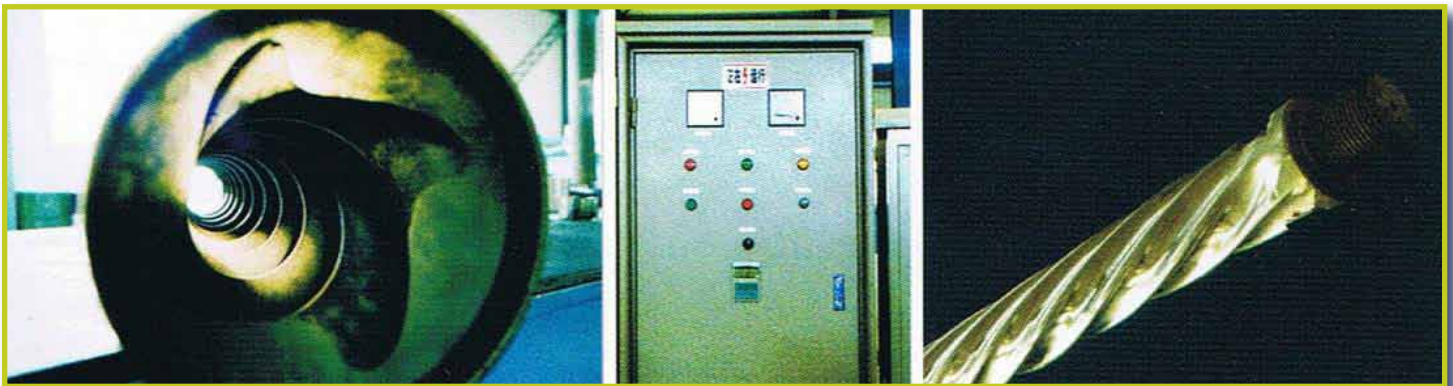
Model	SL3NB-1600A	SL3NB-1300A	SL3NB-1000
Model	SL3NB-1600A	SL3NB-1300A	SL3NB-1000
Mode	Triplex Single Acting Piston	Triplex Single Acting Piston	Triplex Single Acting Piston
Rated Power kW (hp)	1176 (1600)	956 (1300)	735 (1000)
Rated Strokes Per Minute	120	120	110
Stroke Length mm (in)	305 (12)	305 (12)	273 (10 ⁻³ / ₄)
Gear Ratio	3.657/4.206	3.657	3.482
Rated Rotating Speed r/min	438	438	383
Dia. of Suction Inlet inch	12	12	10
Dia. of Discharge Outlet inch	4	4	4
External Size mxm	4.72 x 2.82 x 2.66	4.30 x 2.05 x 2.45	3.75 x 2.16 x 2.05
Weight t	27.1	20.8	15.8

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Downhole Screw Motors

The downhole screw motor is a kind of power tool that transforms the pressure of liquid to mechanical energy in the downhole. When the power liquid flows into the screw motor, a pressure difference is produced between the inlet and outlet of the motor. The differential pressure drives the motor rotating round the stator, providing torque moment

and speed to the drill bit, thus the drilling process is performed. The drill pipe is not rotating during work process, so the advantages are obvious if comparing with conventional drilling system. The downhole screw motor is suitable for vertical, directional and horizontal wells.



Specifications of Downhole Screw Motors

Model	Flow Rate I/S	Pressure Difference MPa	Rating Torque Nx m	Max Torque Nx m	Bit Weight kN	Power kW	Diameter mm(in)	Length m	Weight kg
5LZ60X7.0	1.26~3.13	2.5	160	280	5	2.35~6.03	60 (2-3/8)	3.3	70
5LZ73X7.0	1.26~5.05	3.5	275	480	12	3.5~13.82	73 (2-7/8)	3.45	80
5LZ89X7.0	2~7	4.1	560	980	18	5.6~19.35	89 (3-1/2)	4.67	150
5LZ95X7.0	4.73~11.04	3.2	850	1240	21	10.4~23.79	95 (3-3/4)	3.2	160
C5LZ95X7.0	5~13.33	6.5	1490	2384	55	21.8~59.3	95 (3-3/4)	6.88	300
5LZ100X7.0	4.73~11.04	3.2	850	1240	21	10.4~23.79	100 (3-7/8)	4.7	200
5LZ120X7.0	5.78~15.8	2.5	1300	2275	55	9.5~27.23	120 (4-3/4)	4.88	400
D5LZ100X7.0	5.78~15.8	1.6	900	1440	55	6.6~18.85	120 (4-3/4)	3.29	350
5LZ165X7.0	16~28 (47)	3.2	3200	5600	80	33.5~59.65	165 (6-1/2)	6.25	830
D7LZ165X7.0	18~28	2.5	2300	3680	80	30.4~47.2	165 (6-1/2)	4.7	700
5LZ172X7.0	18.9~37.8	3.2	3660	5856	100	38.3~76.6	172 (6-3/4)	6.71	950

PRODUCTS

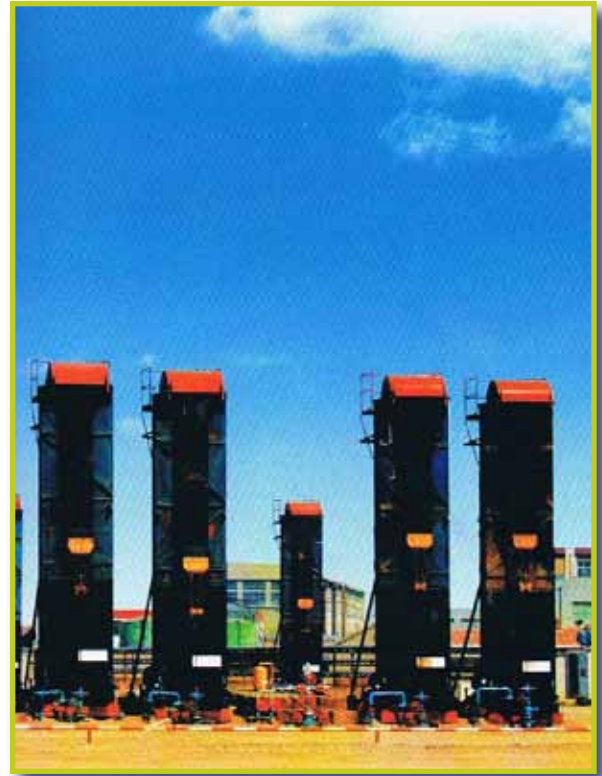
ROTAFLEX Pumping Units

The ROTAFLEX pumping units have demonstrated major features and advantages of all kind of pumping units through years of research and development. As a unique engineering breakthrough, the 100% mechanical ROTAFLEX is especially suitable for producing high volume fluid in deep wells with rod pumps.

Main Advantages

1. Slow, Long Strokes
2. Belt Transmission
3. Low Torque Demand
4. Optimum Structure Design
5. High Reliability and Low Maintenance

Specifications of ROTAFLEX Pumping Units



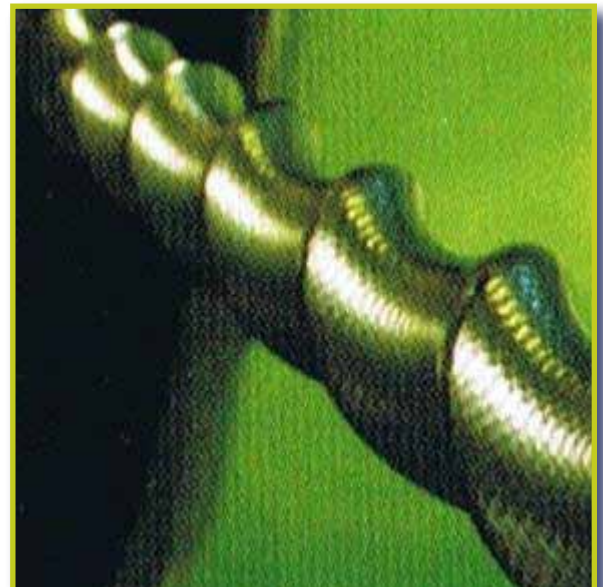
Model	1100	1000	900	800	700	600	500
Stroke Length m	8	8	7.3	7.0	6.0	5.0	4.5
Peak Polished Rod load t	22.7	20	16.3	14	12	10	8
Max of Strokes Per Minute	4	4	4	4	4	4	5
Min of Strokes Per Minute	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Counterweight- Base t	6.1	4.6	4.2	2.7	2.4	1.9	1.7
Counterweight- Max Aux. t	8.6	9.0	7.2	7.1	6.4	4.8	3.5
Shipping Weight t	26.5	22	19.5	16.5	15.5	12.0	11.0
External Size (L x W x H)	7.4 x 2.6 x 13.4	7.4 x 2.4 x 13.4	6.6 x 2.4 x 12.4	6.1 x 2.1 x 11.8	5.5 x 2.1 x 10.8	5.5 x 1.9 x 8.9	5.2 x 1.9 x 2.5
Shipping Size (L x W x H)	13.4 x 2.6 x 3.1	13.4 x 2.4 x 2.8	12.4 x 2.4 x 2.8	11.8 x 2.1 x 2.6	10.8 x 2.1 x 2.5	8.9 x 1.9 x 2.5	8.2 x 1.9 x 2.5
Motor Power kW	75	75	55	45	37	22	18.5
Torque of Gearbox	37	37	37	26	26	18	13
Electromagnetism Automatic Braking	Yes	Yes	Yes	Yes	Yes	N/A	N/A

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Surface Drive Progressive Cavity Pumps

The PC Pump with surface drive is a new type of production equipment, which consists of surface drive equipment and a downhole progressive cavity pump. The surface drive equipment transmits the power to the downhole through the rotating motion of the suck rod, then drives the rotor to rotate in the stator downhole. PC pump is a posi-

tive displacement pump. The rotor rotates within the stator, thus a series of cavities are formed and these cavities progress gradually from the bottom (suction end) to the top (discharge end), carrying the formation fluids through the pump and into the tubing.



Electric Submersible Progressive Cavity Pumps

The electric submersible progressive cavity pump (ESPCP) is a new breakthrough in artificial lift systems, which combines the flexibility of the progressive cavity pump with the reliability of the electric submersible motor to handle your most difficult artificial lift. It has a wide fluid range, more suitable for deviated and horizontal wells, especially with viscous crude oil, high sand cut and gas oil. The wear of tubing and sucker rod is eliminated and energy cost is reduced significantly.



Type	Casing size	Rated Rotating Speed rpm	PCP Displacement m ³ /d	Lifting Capacity m	Motor Power kW
QLB5-1/2	5-1/2" above	80-360	10-60	1000-1800	12-30
QLB7	7" above	80-360	30-120	1000-1800	22-43
QLB9-5/8	9-5/8" above	80-360	50-200	900-1800	32-80

PRODUCTS

Sub-Surface Sucker Rod Pumps

The workover process of the tubing pump is as follows: firstly the barrel being connected to the tubing is directly run into the well at desired depth and then the plunger is run into the barrel with the sucker rod. The applicable tubing pump is larger in size than a corresponding rod pump typically used for the same diameter pipe, The tubing pump also has a simple structure, giving it a greater displacement and making it most suitable for shallow wells with high production.

The THD type of tubing pump means that its standing valve is directly connected to the barrel and it cannot be pulled up separately with the barrel. The THC or THM type of tubing pump means that its standing valve can be pulled up separately with the barrel. The seating assembly of THC pump is cup type and for THM is mechanical type. The THC and THM type of tubing pump are suitable for the frequently work-over wells.



Specifications of Tubing Pumps

Model	Nominal Dia. mm (in)	Plunger Length m (ft)	Stroke m	Pump Constant m ³ /d	Tubing And Thread	Sucker Rod
20-125TH	32(1.25)	1.2-1.8(4-6)	0.6-7.3	1.14	2- ³ / ₈	³ / ₄
25-125TH	32(1.25)	1.2-1.8(4-6)	0.6-7.3	1.14	2- ⁷ / ₈	³ / ₄
20-150TH	38(1.50)	1.2-1.8(4-6)	0.6-7.3	1.64	2- ³ / ₈	³ / ₄
25-150TH	38(1.50)	1.2-1.8(4-6)	0.6-7.3	1.64	2- ⁷ / ₈	³ / ₄
20-175TH	44(1.74)	1.2-1.8(4-6)	0.6-7.3	2.24	2- ³ / ₈	³ / ₄
25-175TH	44(1.75)	1.2-1.8(4-6)	0.6-7.3	2.24	2- ⁷ / ₈	³ / ₄
25-225TH	57(2.25)	1.2-1.8(4-6)	0.6-7.3	3.69	2- ⁷ / ₈	³ / ₄
30-275TH	70(2.75)	1.2-1.8(4-6)	0.6-7.3	5.50	3- ¹ / ₂	⁷ / ₈
35-325TH	83(3.25)	1.2-1.8(4-6)	0.6-7.3	7.70	4	⁷ / ₈
40-375TH	95(3.75)	1.2-1.8(4-6)	0.6-7.3	10.26	4- ¹ / ₂	1

PRODUCTS

Sub-surface Rod Pumps

The rod pump is connected to the sucker rod after being assembled on the surface then it is lowered down to the well bottom through the tubing. Thus it is convenient for inspection and workover because it can be pulled up and down through the tubing and is therefore suitable for deeper well.

The lifespan of the tubing can also be prolonged due to the reduction of the number of makeup cycles. The rod pump can be classified into two types: mechanical seating and cup seating. Also it is divided into three types: RHA (stationary heavy well barrel top anchor rod pump), RHB (stationary heavy well barrel bottom anchor rod pump) and RHT (traveling heavy well barrel bottom anchor rod pump).



Sucker Rod

The sucker rod is an important part of the rod production equipment which drives the downhole pump from the motor of the pumping units. We produce the continuous sucker rod, ordinary sucker rod, pony rod, hollow sucker rod, special sucker rod, and polished rod.



Mechanical Properties

Grade	Yield Strength MPa	Tensile Strength MPa	Elongation %	Reduction of Area %
C	larger or equal to 414	620-793	larger or equal to 13	larger or equal to 50
D	larger or equal to 586	793-965	larger or equal to 10	larger or equal to 48
H	larger or equal to 793-862	larger to equal to 966-1136	larger or equal to 12	45-55