

# Wyther Corp.



## PROGRESSIVE CAVITY PUMP



## Reliable products

PC pump system consists of down-hole single screw pump, ground drive head and electric control part. As a new technology of oil extraction PC pump system has such features as broad adaptability, high efficiency and energy conservation and investment saving. PC pump system is especially advantageous when using for crude oil of high viscosity, high sandiness and other special features. Wyther Corp. works with the largest manufacturer of PC pump in China; whose annual production capacity is 8000 sets of down-hole screw pumps and 4000 sets of ground driving equipment. At same time the products of high quality and good after-sales service count with the approval of our customers.

The reasons for the customers to trust us:

### **Customized production**

Every pump supplied by Wyther Corp. is customized according to the crude oil physical and chemical parameters and use conditions of equipment.

### **Updated technology**

The process of production of PC pump for Wyther Corp. is covered by 5 Chinese patents, among them the one used for production of PC pump offset drive head for on-line testing of oil well with downhole tools and the one for production of PC pump for layering oil extraction.

### **Complete product series**

Wyther Corp. provides customers with complete series of PC pump with the delivery capacity of 2-720 m<sup>3</sup>/d (12-4524 b/d) and pump lift reaching 2000 m (6500 ft). We also offer such down-hole tools as anti-rotating and slip type anchor.

### **Customer Oriented after-sales service**

Wyther Corp. has a professional team of after-sales service that can solve problems of equipment application for customers at any moment.



## Conventional PC Pump

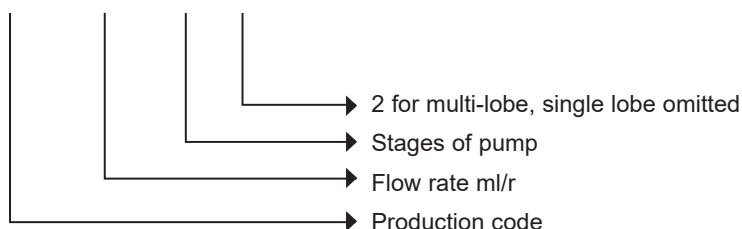


### ○ Features

1. Stator rubber is prepared on the basis of the chemical features of oil and tested on rubber swelling, in order to guarantee adaptability of stator to the working environment.
2. The special intersecting surface of stator can reduce adsorption torque when starting and avoid the damage of pump oil bar.
3. Due to the special surface of rotor which undergoes special technological process, rotor gets more resistant to abrasion.
4. The rotor with access hole of  $\Phi 20\text{mm}$  is used with washing well valve in order to implement thermal wax removal with low pressure and high delivery capacity, what can increase the service life of pump.

## Model illustration

**GLB 200---35 / 2**



GLB: PC pump of solid rotor

KGLB: PC pump of hollow rotor

## Specification

Model	Theoretical flow rate per revolution ml/r	Pump stages	Standard of rotor connection screw(in)	Stator OD (mm)	Tubing Size(in)	Casing Size(in)	Theoretical Daily Output at the status of 100r/min(m³/d)	Rated Head(m)
GLB40-30	40	30	7/8"	90	2 <sup>7</sup> / <sub>8</sub>	≥4 <sup>1</sup> / <sub>2</sub> "	5.7	1000
GLB40-40	40	40	7/8"	90	2 <sup>7</sup> / <sub>8</sub>	≥4 <sup>1</sup> / <sub>2</sub> "	5.7	1500
GLB40-50	40	50	7/8"	90	2 <sup>7</sup> / <sub>8</sub>	≥4 <sup>1</sup> / <sub>2</sub> "	5.7	2000
GLB75-30	75	30	7/8"	107	2 <sup>7</sup> / <sub>8</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	10.8	1000
GLB75-40	75	40	7/8"	107	2 <sup>7</sup> / <sub>8</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	10.8	1500
GLB75-50	75	50	7/8"	107	2 <sup>7</sup> / <sub>8</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	10.8	2000
GLB120-27	120	27	7/8"	107	2 <sup>7</sup> / <sub>8</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	17	1000
GLB120-35	120	35	1"	107	2 <sup>7</sup> / <sub>8</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	17	1500
GLB120-45	120	45	1"	107	2 <sup>7</sup> / <sub>8</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	17	2000
GLB200-25	200	25	1"	1 14	2 <sup>7</sup> / <sub>8</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	28	1000
GLB200-35	200	35	1"	1 14	2 <sup>7</sup> / <sub>8</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	28	1800
GLB300-21	300	21	1"	1 14	2 <sup>7</sup> / <sub>8</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	43	1000
GLB300-30	300	30	1"	1 14	2 <sup>7</sup> / <sub>8</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	43	1500
GLB400-17	400	17	1"	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	57	1000
GLB400-30	400	30	1"	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	57	1500
GLB500-14	500	14	1"	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	72	800
GLB500-25/2	500	25	1"	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	72	1500
GLB800-14	800	14	1 <sup>9</sup> / <sub>16</sub> "	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	115	800
GLB800-25/2	800	25	1 <sup>9</sup> / <sub>16</sub> "	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	115	1500
GLB1200-14/2	1200	14	1 <sup>9</sup> / <sub>16</sub> "	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	172	800
GLB1200-25/2	1200	25	1 <sup>9</sup> / <sub>16</sub> "	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	172	1500
GLB1400-14/2	1400	14	1 <sup>7</sup> / <sub>8</sub> "	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	202	800
GLB1600-13/2	1600	13	1 <sup>7</sup> / <sub>8</sub> "	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	230	800
GLB2000-12/2	2000	12	1 <sup>7</sup> / <sub>8</sub> "	1 14	3 <sup>1</sup> / <sub>2</sub>	≥5 <sup>1</sup> / <sub>2</sub> "	280	700

Hollow rotor is available for all above types, and the parameters of pump as flow rate and head can be customized by requirement of customers.

## Anti-sand PC pump



### ○ Features

1. It has all features and functions of conventional PC pump.
2. It can be used in sandy wells with sand percentage up to 60%
3. It performs flawless in oil extraction wells where sand percentage is no more than 15%.
4. The design of stator structure and its abrasion-resistant polymer construction, improves the pump's abrasive resistance.
5. Rotor hard alloy is used, and the surface is hardened in order to increase abrasive resistance and the service life. Taking into consideration anti-sand qualities of the structure, the end of rotor is provided with off-center design.
6. To meet the needs of anti-sand qualities of the pump, rotor and stator are matched according to reasonable interference magnitude.

## Specification

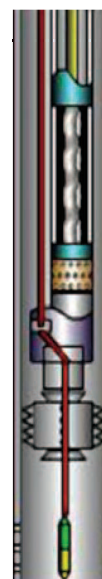
Model	Theoretical flow rate per revolution ml/r	Pump stages	Standard of rotor connection screw(in)	Stator OD (mm)	Tubing Size(in)	Casing Size(in)	Theoretical Daily Output at the status of 100r/min(m <sup>3</sup> /d)	Rated Head(m)
GLB40-30	40	30	7/8"	90	2 <sup>7</sup> / <sub>8</sub> "	≥4 <sup>1</sup> / <sub>2</sub>	5.7	900
GLB40-40	40	40	7/8"	90	2 <sup>7</sup> / <sub>8</sub> "	≥4 <sup>1</sup> / <sub>2</sub>	5.7	1300
GLB40-50	40	50	7/8"	90	2 <sup>7</sup> / <sub>8</sub> "	≥4 <sup>1</sup> / <sub>2</sub>	5.7	1500
GLB75-30	75	30	7/8"	107	2 <sup>7</sup> / <sub>8</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	10.8	900
GLB75-40	75	40	7/8"	107	2 <sup>7</sup> / <sub>8</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	10.8	1300
GLB75-50	75	50	7/8"	107	2 <sup>7</sup> / <sub>8</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	10.8	1500
GLB120-27	120	27	7/8"	107	2 <sup>7</sup> / <sub>8</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	17	800
GLB120-35	120	35	1"	107	2 <sup>7</sup> / <sub>8</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	17	1000
GLB120-45	120	45	1"	107	2 <sup>7</sup> / <sub>8</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	17	1300
GLB200-25	200	25	1"	1 14	2 <sup>7</sup> / <sub>8</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	28	800
GLB200-35	200	35	1"	1 14	2 <sup>7</sup> / <sub>8</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	28	1100
GLB300-21	300	21	1"	1 14	2 <sup>7</sup> / <sub>8</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	43	700
GLB300-30	300	30	1"	1 14	2 <sup>7</sup> / <sub>8</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	43	1000
GLB400-17	400	17	1"	1 14	3 <sup>1</sup> / <sub>2</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	57	700
GLB400-30	400	30	1"	1 14	3 <sup>1</sup> / <sub>2</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	57	1000
GLB500-14	500	14	1"	1 14	3 <sup>1</sup> / <sub>2</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	72	600
GLB500-25/2	500	25	1"	1 14	3 <sup>1</sup> / <sub>2</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	72	800
GLB800-20/2	800	14	1 <sup>9</sup> / <sub>16</sub> "	1 14	3 <sup>1</sup> / <sub>2</sub> "	≥5 <sup>1</sup> / <sub>2</sub> "	115	600

## Special PC pump

1. PC pump for layer oil extraction  
To solve interference of oil layer and develop oil producing potentiality.
2. Small diameter PC pump  
It is suitable for the offset well of 5 1/2 casing for on-line testing.  
100m<sup>3</sup>/d Max. flow rate  
2000m Max. head



1



2

### Drive head of conventional PC pump

#### ◎ Working principle

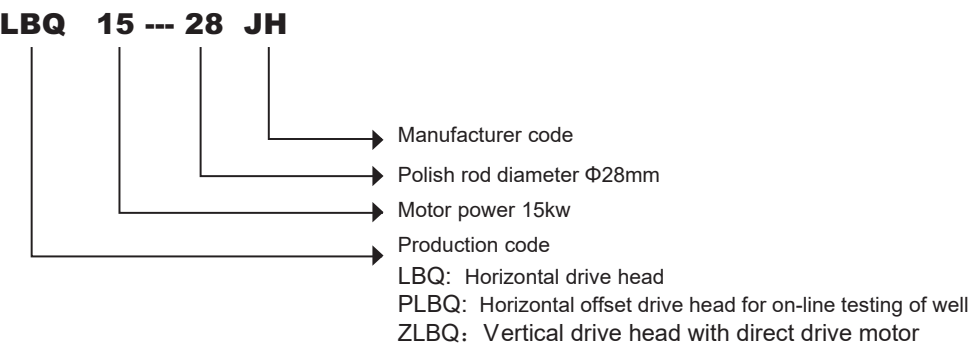
The drive head is driven by AC motor, and the power is transferred to oil pump rod by belt and gear box, then the oil pump rod brings the down-hole pump operation torque.



#### ◎ Features

1. Patented technology is used in the gear box, it solved the problem of lubrication leakage from the seal of input and output shaft.
2. In the well head seal patent technology of overhead mechanical seal is used, what extends service life of the seal, which is more than 1 year, and is more convenient for maintenance and replace.
3. The patented technology of anti- counter rotating is used. After the drive head stops, it will not counter-rotate. The torque of counter-rotating can be released by anti-counter rotating device safely.
4. The drive head is designed according to the standards, what makes it convenient for maintenance on-site, and keeps mechanical efficiency high and failure rate low.

○ Model illustration



Specification

Power	5.5-55KW (Flame proof motor)
Rated load	150KN
Diameter of polished rod	! 22mm-! 42mm
Rotary speed	65-250 r/min
Type of speed adjustment	exchanging belt pulley or variable frequency system
Pressure capability of Well seal	0-6Mpa (mechanical seal)
Anti-counter rotating device	mechanical brake
Type of protections	over current protection, outlet pressure control(option),Soft start(option)
Type of well head connection	7 <sup>1</sup> / <sub>16</sub> " flange (the customizing is available)

## Drive head with direct drive motor



### ◎ Working pricinple

The polished rod passes through the hollow main shaft of motor and connects with the main shaft at the upper end of the motor by locking mechanism. After the motor starts, the main shaft transfers torque to the sucker rod through locking structure, and the sucker rod drives down-hole pump into action.

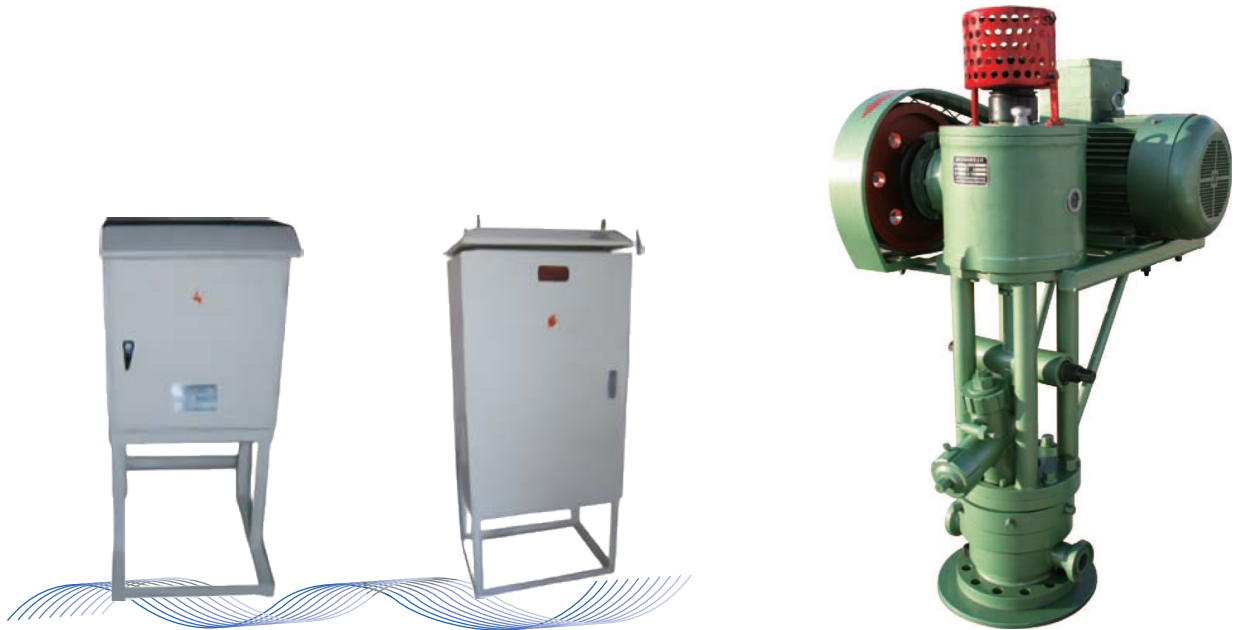
## ○ Features

1. High transmission efficiency.
2. In comparison to conventional drive head, at the same condition, the percentage of energy conservation is about 15%.
3. Electric regenerative braking is safe and reliable. Due to the use of the permanent electric regenerative motor drive, after the motor stops, the pump rod releases the torque to drive the rotor in counter-rotation. Under the effect of electrical regeneration, the stator coil generates an electric current caused by the rotation of the rotor that balances the counter torque of the pump rod, which guarantees the safe release of the torque.
4. Simple structure is convenient for maintenance.

## Specification

Power	5.5-55KW (Flame proof motor)
Rated load	150KN
Diameter of polished rod	22mm- 42mm
Rotary speed	0-400 r/min
Type of speed adjustment	Variable frequency system
Pressure capability of Well seal	0-6Mpa (mechanical seal)
Anti-counter rotating device	Electrical-magnetic brake
Type of protections	over current protection, outlet pressure control(option)
Type of well head connection	7 1/16" flange (the customizing is available)

## Offset drive head for on-line testing of well



### ◎ Working principle

The drive head is based on the conventional drive head, the way of oil pipe is moved to one side of center line through off-center well, and the other side is kept as a channel to pass the testing instrument into the well.

## ○ Features

1. Tri-parameter testing instrument can successfully reach the target level.
2. The well head can be rotated to prevent the pulling rope of the instrument from reeling around the oil pipe; the tubing hanger is sealed well.
3. It has all features and functions of a conventional drive head.
4. The height of the whole structure is increased.
5. With the annular bypass port on the well head, it is easy to put the testing instrument in annular clearance through the well.
6. It is equipped with special valve that used to prevent blowout during well testing.

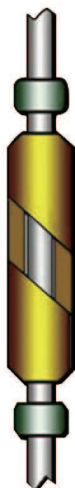
## Specification

Power	5.5-55KW (Flame proof motor)
Rated load	150KN
Diameter of polished rod	22mm- 42mm
Rotary speed	65-250 r/min
Type of speed adjustment	exchanging belt pulley or variable frequency system
Pressure capability of Well seal	0-6Mpa (mechanical seal)
Anti-counter rotating device	mechanical brake
Type of protections	over current protection, outlet pressure control(option),Soft start(option)
Type of well head connection	7 1/16" flange (the customizing is available)

### Sucker rod centralizer

#### ○ Size

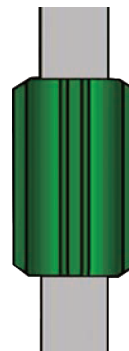
42× 73  
38× 73  
28× 73  
25.4× 73  
25.4× 59  
22× 59



### Oil pipe centralizer

#### ○ Size

73× 121  
89× 121  
89× 143  
89× 155



### Hole down blowout preventer

#### ○ Function

It is used to prevent the blowout of well liquid through the pump and pipes during the operation of run-in and put-out of PC pump.

#### ○ Features

1. It is used with slip type anchor in a set.
2. By raising and lowering the string preventer can be turned on and off what is convenient for operation on-site.
3. It can be used repeatedly.

#### Specification

Outside diameter	100mm
Length	850mm
Seal pressure	≤15Mpa



# Anti-rotating anchor

## Function

It is used to anchor the strings in PC pump system to prevent string twistoff.

## Features

- 1. This tool does not need setting.
- 2. The function of anti-rotating is effective; the instrument is convenient in use and with low costs.
- 3. It can be used to reduce off-center wearing-out of rod and oil pipe.



### Specification

Model	FZM-114-JH	FZM-138-JH	FZM-145-JH	FZM-204-JH
Overall Length	300	300	300	300
Max.Outside Diameter	Φ114mm	Φ138mm	Φ145mm	Φ204mm
Min.Drift Diameter	Φ55mm	Φ65mm	Φ65mm	Φ69mm
Max.Open Outside Diameter	130mm	154mm	161mm	220mm
Max.Anti-Rotating Torque	2000N·m	2500N·m	3000N·m	4000N·m
Adaptive Casting Size	5½"	6⅝"	7"	9⅝"

# Wash-down valve

## Function

It can be used in PC pump well to implement high flow rate washover above pump, especially to stripper well, it is not necessary to pick up polished rod during the process of washing well.

### Specification

Outside diameter	Φ114mm
Inside diameter	Φ76mm
Opening pressure of valve	0.5Mpa
Flow rate of washing well	≥20m³/h



## Slip-type anchor

### Function

It is mainly used to anchor the strings in PC pump

### Features

1. It adopts compression-set, slip anchor and pick-up releasing.
2. The anchor is effective, service life is long, it is easy to release.



### Specification

Model	ZQW-114-JH	ZQW-138-JH	ZQW-145-JH	ZQW-204-JH
Overall Length	848mm	1011mm	1011mm	1255mm
Max.Outside Diameter	1 14mm	138mm	145mm	204mm
Min.Drift Diameter	55mm	65mm	65mm	69mm
Anti-Setting Interval	350mm	350mm	350mm	350mm
Adaptive Casting Size	5 1/2"	6 5/8"	7"	9 5/8"

## Slip type offset anchor

### Function

It is used to anchor the strings in PC pump oil extraction system with the function of annular testing.

### Features

1. It adopts compression-set, slip anchor and pick-up releasing.
2. The anchor is effective, service life is long, it is easy to unseal.
3. It is with guide groove and channel on its side, what helps the instrument to pass smoothly.



## Specification

Model	PXZQW-114-JH	PXZQW-138-JH	PXZQW-145-JH	PXZQW-204-JH
Overall Length	848mm	1011mm	1011mm	1255mm
Max.Outside Diameter	114mm	138mm	145mm	204mm
Min.Drift Diameter	20mm	40mm	65mm	69mm
Anti-Setting Interval	350mm	350mm	350mm	350mm
Adaptive Casting Size	5 1/2"	6 5/8"	7"	9 5/8"

## Slip type anchor for heat wash

### Function

It is used for anchoring the strings and heat washing without well killing in PC pump system.

### Features

1. The tool is used compression-set, slip anchor and pick-up releasing.
2. The anchor is effective, service life is long, it is easy to unseal.
3. During heat washing and paraffin removal do not pollute oil layer.



## Specification

Model	RXZQW-114-JH	PXZQW-138-JH	PXZQW-145-JH	PXZQW-204-JH
Overall Length	1245mm	1295mm	1345mm	1395mm
Max.Outside Diameter	114mm	138mm	145mm	204mm
Min.Drift Diameter	55mm	65mm	65mm	69mm
Anti-Setting Interval	350mm	350mm	350mm	350mm
Compressive Interval of Packing Element	60mm	60mm	60mm	60mm
Adaptive Casting Size	5 1/2"	6 5/8"	7"	9 5/8"

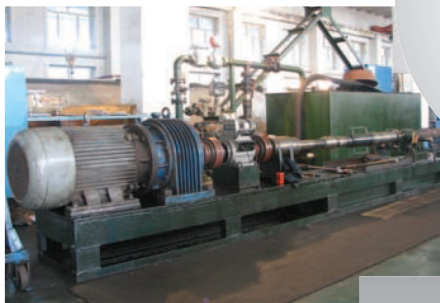
### Advanced manufacturing equipments and inspection methods

#### ◎ Manufacturing equipment

CNC milling machine developed for rotor forming



#### ◎ Inspection equipment



PC pump test stand of hydraulic character



**Wyther Corp.**

BETTER SERVICE HIGHER QUALITY

**Wyther Corp.**

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**PROGRESSIVE CAVITY PUMP**