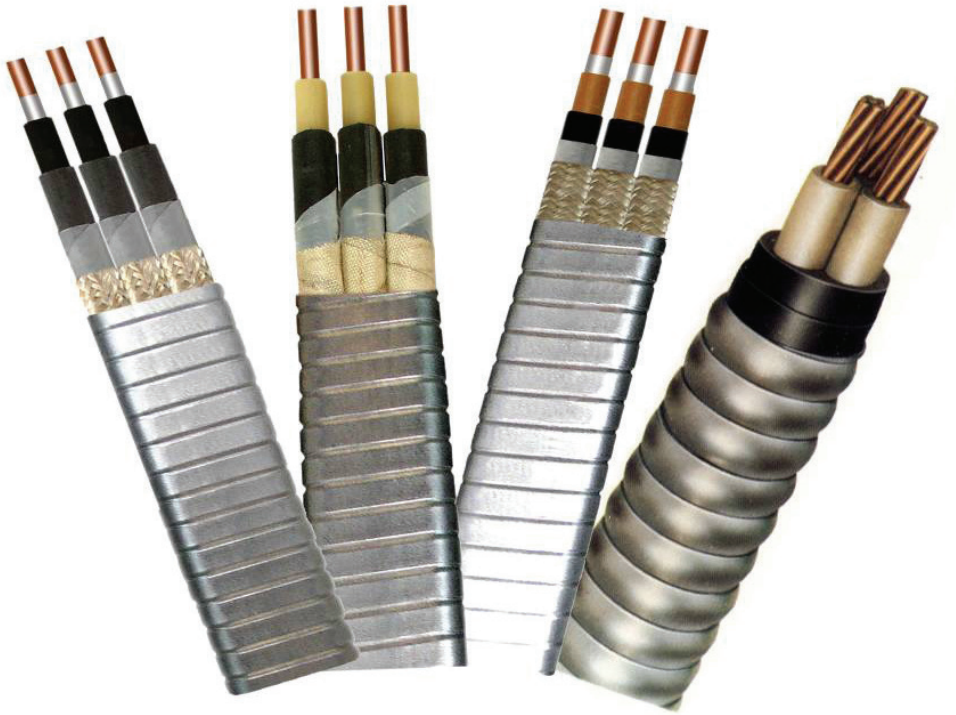
POWER CABLE

Product Explanation:

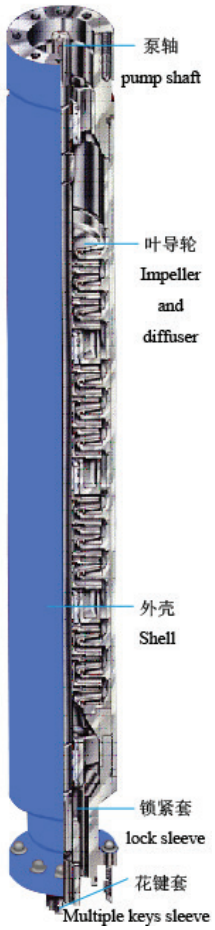
ESP cable is used to transfer power to the submersible motor. According to the different requirements of power and different conditions of oil well, there are different specifications of cable. The QYPDF cable are designed for operating in the wells with environmental temperature under 90℃,as well as the QYEQ10 cable can be used up to 120℃ while the QYAEQ10 type up to 200℃. To prevent it from being damaged, we usually use galvanized steel armor, and stainless steel or monel armor for corrosive medium. There are round power cable and flat power cable.



Product Specifications:

Model	Rated Voltage (KV)	Conductor Cross Section (mm^2)	Temperature
QYPDF	3、6	16 20 33 42	90℃
QYEQ10	3、6	16 20 33 42	120℃
QYAEQ10	3、6	16 20 33 42	200℃

The Submersible Centrifugal Pump



Product Explanation:

The number of pump stages is determined by the required lift. Each stage consists of a floating impeller connected to the Monel-k500 drive shaft and a stationary diffuser directing the flow of the fluid. The impeller axial force is made of wear-resistant material. In order to reduce axial force, the structure of impeller and diffuser is designed by floating type. The rest axial load and pump shaft deadweight are hold by protector thrust bearing.

Product Features:

• Principal whole floating type, it can eliminate effect that axial force acts at centrifugal pump, extend the life of electric submersible pump.

• The special technology design of impeller and diffuser makes the centrifugal pump fit all kinds of producing well (include viscous crude) and it has high efficiency as well as good result of sand prevention.

• The built-in strong magnetic scale remover in centrifugal pump according to user demand, it can effectively prevent scale from depositing in pump.

Product Specifications:

Series (O.D)	(Specification)							
	50HZ				60HZ			
	Max.BHP Rating For Pump Shaft		Flow Rate Range		Max. BHP Rating ForPump Shaft		Flow Rate Range	
	kW	HP	M3/D	BPD	kW	HP	M^3/D	BPD
86(338) 88(346)	58	78	10~189	63~1183	69	94	12~226	75~1422
95(375)	115	156	10~500	63~3145	103	138	12~600	75~3774
98/102 (287/400)	157	213	10~874	63~5497	188	256	12~1048	75~6596
102(400)	157	213	10~600	63~3774	188	256	12~720	75~4528
130(513)	300	408	109~1560	683~9766	360	490	131~1872	820~11718
172(675)	349	475	750~4800	4694~30038	419	570	900~5760	5633~36048

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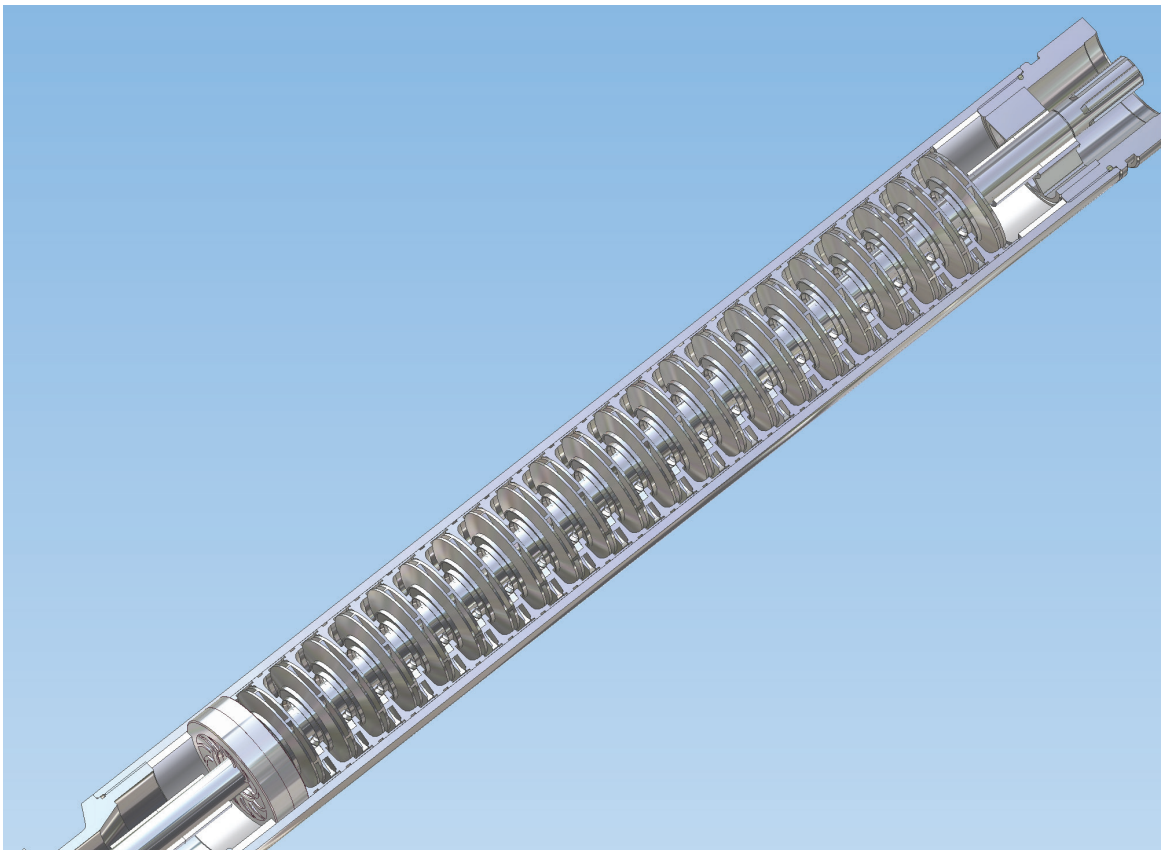
Electrical Submersible Pump (ESP)

Product Explanation:

Our company can manufacture ESP with almost 200 specification and 4 series of ESP applicable to casing from 4-1/2″ to 9 5/8″, flow-rate from 30 m3/d to 4700 m3/d, maximum operating temperature up to 180℃, life head up to 3500m, and motor maximum nameplate horsepower up to 420Kw. ESP is one of artificial lift equipment in oilfield, including motor, protector, pump, gas separator, control panel, transformer, and cable, and so on.



Product Specifications:

casing	series	0D(mm)	Displacement Rangem^3/d@50Hz	Displacement Range BPD@60Hz
4 1/2 "Or Large	86	86	24~350	181~2642
5 1/2 "Or Large	98	98	22~900	166~6792
	101	101.6		
7"Or Large	130	130	145~1715	1094~12900
8 5/8"Or Large	172	172	1600~5640	12076~42569

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$2\frac{7}{8}$"—35M PaHigh Pressure Seal Device

Product Explanation:

The ESP power cable seal device obtained the national patent (Patent No. :ZL 2004 20092496.1). The device has reasonable structure and easy operation, connecting with the well head. High pressure seal joint can be used in high gas well and also in low gas well.

Product Features:

1.Realize ESP oil recovery in the condition of no changing of Christmas tree.
2.Improved the structure and sealing reliability of cable
3.Avoid leak of ESP wellhead, which is caused by high-pressure well clean out.
4.The sealing device can be reused when length of Lead Extension is proper.

Electrical Submersible Pump Wellhead Mandrel

Product Explanation:

Wellhead Mandrel is a sealing device through what power cable can extend out of Christmas tree. It can prevent leakage from wellhead when washing task. It has advanced manufacturing engineering, more security and simple installation.

Product Features:

1 Leakage Current<0.03μA, when under 10KV Voltage
2 Insulation Resistance>2500MΩ
3 Working Pressure <25Mpa
4 Working Temperature <150℃

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Control Panel

Product Explanation:

The control panel is a controlling and protecting equipment specially designed to supply the AC power for the ESP. Its function is to protect ESP system when short circuit, under load, overload, overvoltage, phase loss or current unbalance happens.

line frequency control panel

VSD control panel

Product Features:

Controlling motor speed can lower motor temperature; improve ESP gas handing capabilities; control well drawdown; adjust ESP's to changing well conditions; decrease system stress at start up; maximize the benefits of down-hole monitoring; and improve System harmonics.

VSD Control Panel

Input Power Supply	Number ofPhases, Voltage, Frequency	Three phase, 800V~4000V,50HZ,60HZ
frequency	Allowable Fluctuate	voltage±10%、frequency±2%
	Maximal Frequency	Bellow 90HZ set up arbitrarily
	Startup Frequency	2~5HZ
	Precision	analog setting: below maximal set point ±0.3%(25±10℃)
		Digital setting: below maximal set point ±0.1%(-10~±50℃)
	Accuracy	analog setting: 1/2000 of the maximal set point
		Digital setting: 0.01HZ (below 99.99hz),0.1HZ(above 100HZ)
Control	Voltage Characteristic, Frequency Characteristic	Be decided by chosen V/F curve
	Torque Upgrade	Adjust to the best value according to the load torque
	Accelerating Time, Decelerating Time	1~999s, The accelerating time and decelerating time can be set alone

Running	Running Operation	Keyboard Operation、Computer Operation
	Frequency Setting	Panel Keyboard Setting、Analog Signals(0~5V) Setting
	Running Mode Output	Open circuit collector output, The frequency arrives some particular value to output
Display	Numeric Display	Output frequency、output current、input voltage、power factor etc. running parameter、setting value of frequency、fault code
	Sate Display	Running indication、protect indication
Protect Function		Over current、short circuit、over voltage、under voltage、under load、phase loss、overheat、seedless、external alarm

Specification for BYQ-1 VSD Control Cabinet

item	Parameter		Description
1	Rate Voltage		380V/415V±5%
2	Rate Frequency		50HZ
3	Working		FSD
			VSD
4	Control cabinet		ESP Control cabinet
			Junction box
5	Installation fashion		Fixed by bottom bolt
6	Protection grade	Control cabinet	IP54
		Junction box	
7	Environment		① There should not have acuity shake and impact on site, peak rake should not exceed 5°; ② Altitude should not exceed 1500m; ③ Working environment temperature-20℃+50℃ ④ Relative humidity should not exceed 80%;
Remark: The control cabinet should face operate, there has liable mechanical interlocking device, only the electric power is shut down the control cabinet door can open.			

trol feature

1. The control cabinet has two control methods: FSD and VSD, it can be changed by inter switch in the cabinet.
2. The control cabinets provide a voltage for observation: Main voltage gauge (indicate the main voltage) and control loop voltage gauge (indicate control loop voltage).
3. There is indicator light and operate button on the cabinet.
4. The control cabinet has a main switch for changing form FSD to VSD; the operator can open the cabinet door only the electronic power is shut down.
5. The control cabinet has a surge protector; it can restrain instantaneous high voltage and protect whole ESP system.
6. The protector provide a RS485 connector, it can provide on site signal far transmit.
7. The component of FSD control cabinet: plastic breaker, fuse, AC contactor, middle rely, current record instrument (change the motor current to curve and output), transformer, protector etc.
8. The control cabinet provide a protect for ESP motor when running under FSD, the protector can cue the AC contactor

when there is any fault, and then stop the running of the motor.

9. The component of VSD control cabinet: plastic breaker, fuse, AC contactor, middle relay, ear thing vault rely, transformer, protector, fan, transducer etc.

10. The control cabinet provide a protect through motor protector and transducer inner program.

11. The protect function of transducer: overload protect, under load protect, three phase current unbalance protect, low voltage protect, voltage unbalance protect etc.

12. The transducer provide a output and RS485 connector, it can provide on site signal far transmit.

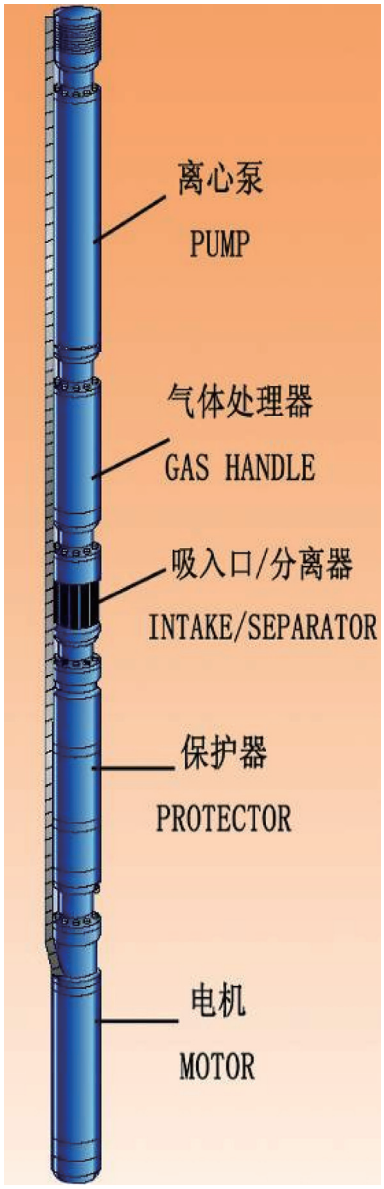
Gas Handler

Product Explanation:

Gas Handler can make high pressure with the worm wheel inside it, and compress the gas pass through it, make the tow phase well liquid turn into one phase.

Even the liquid coming out from Gas Handle also contains little gas, it can not form the gas locking and cavitations erosion.

Gas Handler can deal with the well liquid which has 70% volume factor gas in it, so Gas Handler has more effect than Gas Separator. It extends the range of application of ESP, and increases the life and efficiency of ESP.



Product Features:

1. Increase the intake pressure and the liquid in the pump;
2. Change the flow behavior of the gas, solve the trouble of gas locking;
3. Improve the efficiency of ESP system with the gas energy, and reduce the energy consume at the same time.
4. Reduce the disturb of the gas, increase discharge capacity of pump and the life of the ESP.

Under-well Monitoring System of ESP

Product Explanation:

Under-well Monitoring System of ESP is a set of highly precise and digital data colleting & processing system, which can accomplish the measurement of under-well temperature and pressure, and also can provide high performance multi-sensing instruments upon request.
We can collect and analyze the data from Under-well Monitoring System of ESP. By these data, we can measure the condition of the well and the ESP units, adjust the operation of ESP, optimize the well output, extend the ESP unit's life and reduce the cost of production.

Product Specifications:

Test Parameter	Measuring	Accuracy	Resolving Rate
Intake pressure	0~30MPa	0.1%	0.00069MPa
Discharge pressure	0~30MPa	0.1%	0.00069MPa
Intake temperature	0~150℃	1℃	0.1℃
Motor temperature	0~170℃	1℃	0.1℃
Discharge rate	0~4770m3/d	5%	0.159 m3/d
Vibration	0~5G	1.0%	0.003G
Current leakage	0~25mA	0.05%	1μA

Technological index of the temperature & pressure measuring device

Pressure measurement: 0-35MPa Accuracy:1.0
Over pressure endurance: 1.5Fs
Temperature measurement: 0-120℃ accuracy ±2℃
Weight: part of under-well parameter measurement transmitter≤10Kg;
part of above-well secondary instrument≤1.8Kg
When motor's star point is unbalanced and voltage reaches 150VDC its measuring error is not over 0.06%.
Function of insulated components insulated resistance is not less than 2000MΩ at 2500VDC
Reliable short circuit protection: voltage of input port is not over 1.5VAC when one phase of surface power cable is grounding. It doesn't cause the damage of the device when one phase of 2500VAC three phases working voltage of the ESP is grounding.

Operating condition of the temperature & pressure measuring device

Above-well part:

Temperature range: -25℃+50℃ relative humidity: not over 90%
Altitude is not higher than 2000 meters
There is not inflammable ,explosive or erosive gas, or conductive dust around
Under-well part
Under-well pressure is not over than 35MPa
Under-well temperature is not higher than 120℃
Under-well medium is oil or oil and water
Not interfered by working frequency
It transmits the data from power cable of motor ,so has no use for a special power.

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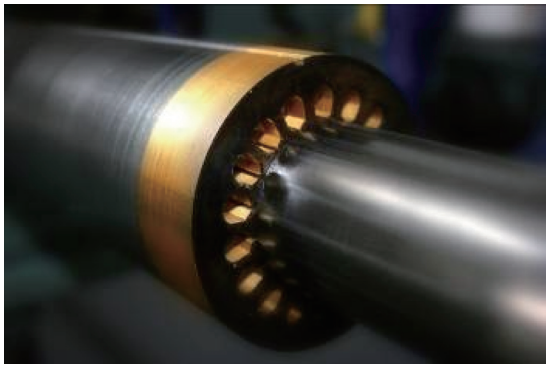
The Submersible Motor

Product Explanation:

The submersible Motor is the power of driving multi-stage centrifugal pump. It is two-pole three-phase squirrel cage asynchronous motor. It mainly consists of stator, rotator and oil cycle loop system etc. Due to submersible motor is limited by well diameter and environmental temperature. Its appearance is long and thin. The max length can reach 10m. It is filled with a high strength, super dielectric oil for lubrication and thermal conductivity.
The working state of submersible motor is upright hanging, its upper thrust bearing carries the axial force and dead weight of rotor. Heat generated by the motor is transmitted to the well fluid through motor housing.

Product Features:

● Three specifications concerning of heat-resisting: 90℃, 120℃, 150℃, 180℃. It makes the motor meet the demand of different inserted depth and well temperature.
● Seven Series of Motors with outside diameter of 95mm, 98mm, 107mm, 114mm, 138mm, 143mm, and 187mm for varied casing, which enable motor run with the highest efficiency.
● There are inserted and coiling types for cable with motor. It makes the motor work in reliably sealed and insulated condition as well as more convenient in operation.



Product Specifications:

Casing	Series	OD	power/kW@50Hz		horsepower/Hp60Hz		Note
			Range	per Potor kW	Range	Per Potor Hp	
4½"Or Large	95	95	6–72	1.2	10–116	1.9	150℃ down–hole temperature
5½"Or Large	114P	114	6–148	3.1	10–240	5	150℃ down–hole temperature
5½"Or Large	114J	114	7–152	3.7	10–246	6	120℃ down–hole temperature
5½"Or Large	114PH	114	8–151	4.3	14–245	7	90℃ down–hole temperature
5½"Or Large	114Y	114	8–152	4	12–243	6.4	Rare earth permanent magnet synchronous motor 90℃ down–hole temperature
7"Or	138	138	8–320	8	26–516	12.9	150℃ down–hole temperature
7"Or	143	143	10–420	10	32–672	16	150℃ down–hole temperature
7"Or	143	143	240–504	12	386–810	19.3	120℃ down–hole temperature
85/8"Or Large	188	188	50–900	25	643–1448	40	150℃ down–hole temperature

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The Gas Separator

Product Explanation:

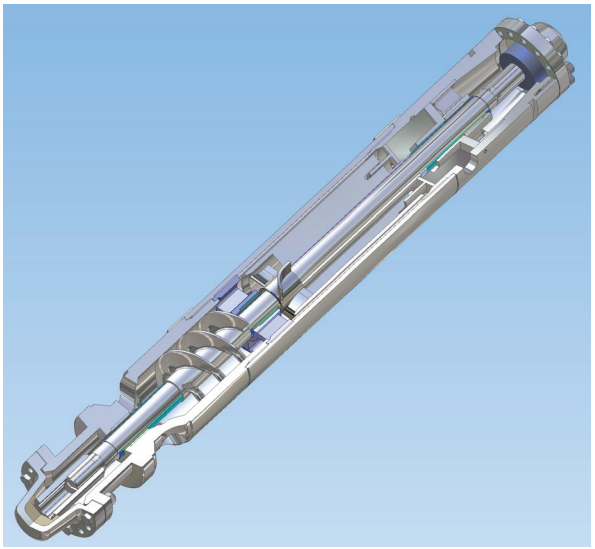
It consists of rotators, cross diffuser, separator shaft, induction wheel, pressure increased impeller, directive wheel, top and lower connection.

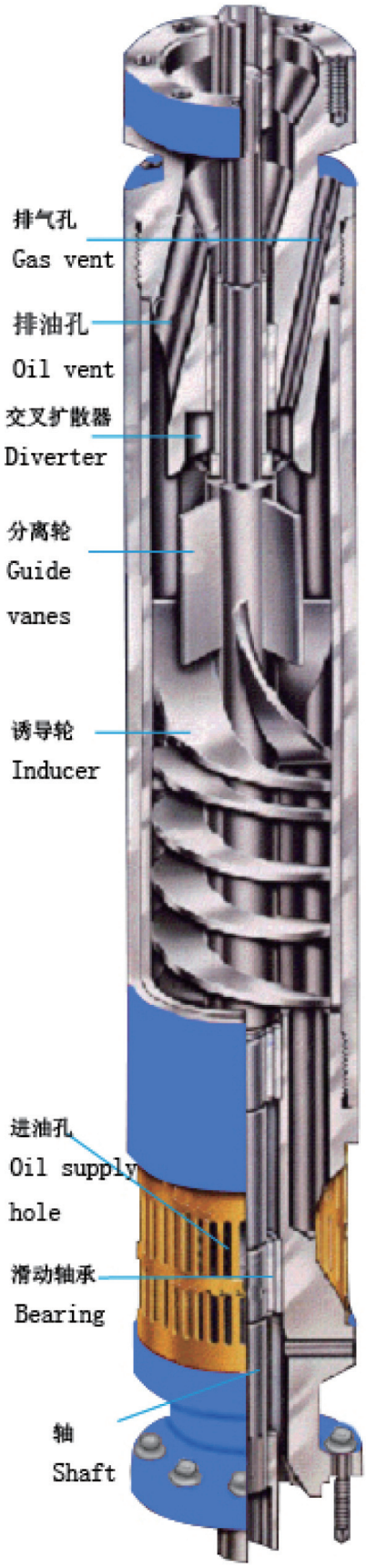
Function:

It's the suction port for well fluid entering the submersible centrifugal pump. Meanwhile, free gas can be separated prior to flowing into the submersible centrifugal pump, therefore relief gas effect on the pump unit..

Product Features:

1. It can separate 90% free gas from the mixture while GAL reach to 35%.
2. It adopts netted sealing structure at the port for the protection of the pump unit.
3. High strength sand-resistant sleeve can effectively avoid casing fracture and pump lost in well under high sand content conditions.
4. Tandem separators can be provided to improve the gas and oil separation.





Product Specifications

Casing	Series	Type	Length(m))	OD(mm)
4½"Or Large	86	QYF86X	0.65	86
5½"Or Large	98	QYF98X(17.4)	0.76	98
		QYF98X(22.2)	0.69	
	101	QYF101X(17.4)	0.76	101.6
		QYF101X(22.2)	0.69	
		QYF101XG(17.4)	0.71	
		QYF101XS(17.4)	1.22	
		QYF101XS(22.2)	1.07	
7"Or Large	130	QYF130X	0.944	130
		QYF130XS	1.888	

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