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BW850/2 型泥浆泵

BW850/2 mud pump

使用说明书

An instruction manual



山东中探机械有限公司

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中探
泥浆泵

一、用途 purpose

BW850 泥浆泵用于各类工程钻机、地质钻机钻进时向钻井压送循环液（泥浆或清水）。

BW850 mud pump is used in all kinds of engineering drilling rigs and drilling fluids are sent to the drilling fluid (mud or water) when drilling.

二、类型与特点 Types and characteristics

BW850 泥浆泵为卧式往复双缸双作用活塞泵，采用变速来改变排量和压力，以供使用时选择。

BW850 slurry pump is horizontal reciprocating double cylinder double acting piston pump. Variable speed is used to change displacement and pressure for use.

三、基本参数与尺寸 Basic parameters and dimensions

缸径: Bore:	150	(mm)
冲程: Stroke:	180	(mm)
冲次: Impulse:	82 58	(Num/min)
排量: Displacement:	850 600	(L/min)
压力: Stress:	2.0 3.0	(Mpa)
三角皮带轮: V-belt pulley:	ϕ 700*C-5	
三角皮带轮转速: V-belt speed:	470	(r/min)
输入功率: Input power:	37	(kw)
进水管内径: Inlet pipe bore:	125	(mm)
排水管内径: Inner drainage pipe:	65	(mm)
回水管内径: Inner channel of backwater pipe:	40	(mm)
一级减速: First stage deceleration:	$36/27=1.33$ $41/22=1.86$	
齿轮减速: Gear reduction:	$82/19=4.31$	
外形尺寸: Outline size:	2000*1030*1400	(mm)
重量: Weight:	1500	kg

四、结构 structure

泥浆泵的主体包括曲轴箱与泵头两部分。曲轴箱的作用除变速减速外，并将回转运动变为往复运动。泵头是直接进行吸水排水的机构

The main body of the mud pump includes two parts, the crankcase and the pump head. The function of the crankcase is to change the rotational motion into reciprocating motion, in addition to the variable speed reduction. The pump head is the water suction and drainage mechanism directly.

1. 曲轴箱 Crankcase (图 1 和图 2) (FIGS. 1 and 2)

为了适用于不同孔深和孔径的钻进，节约动力消耗，本泵采用变速方法来获得两种排量和相应的两种泵压。在曲轴箱内有两对速比分别是 $i=1.33$, $i=1.86$ 的齿轮付可供使用时选择。再经过一对齿轮付的减速。操作时，只要拨动曲轴箱上的变速手柄（1.2）即可使活塞有两种不同的冲次，从而获得不同的泵量泵压。

In order to apply to different drilling Kong Shen and aperture, saving power consumption, this pump uses the transmission method to obtain two kinds of two kinds of pump displacement and the corresponding pressure in the crankcase of two ratio respectively is $i=1.33$, $i=1.86$ gear available. After a reduction gear of operation. When, as long as the transmission handle toggle on the crankcase (1.2) can make the piston has two different strokes, resulting in different pump pump output pressure.

曲轴、齿轮、连杆、十字头、付杆属传动系统，曲轴大斜齿轮（2.8）由第二轴小斜齿轮（2.6）带动旋转，大斜齿轮装在有 90 毫米偏心，相互成 90° 的曲轴上。连杆（1.4）为整体式，内置轴承（与曲轴连接）。连杆小头采用滚针轴承通过销轴（1.1）与十字头（1.6）相连，十字头销轴是锥形的，可以从曲轴箱两侧用螺栓将销轴吊出。付杆（1.8）与十字头用螺纹连接，并用固定圈定为保险。十字头上下有十字头滑板（1.7），以利于在十字头导板中运动。如需更换十字头滑板，只要将十字头与付杆、连杆分离，然后再旋转 90° 即可以从曲轴箱两侧取出。十字头的往复运动，通过付杆、活塞杆，使活塞在缸套内作同步往复运动。曲轴箱底部设有放油口，曲轴箱盖上设有溢油堵（1.5）和散热油堵（1.3）。曲轴箱内各轴承和齿轮采用飞溅式润滑，曲轴箱与付杆之间圆柱密封采用双向密封。

The crankshaft gear, connecting rod, crosshead, pay rod belongs to transmission system, large helical gear crankshaft (2.8) consists of second small shaft helical gear (2.6) rotation, large bevel gear mounted on a 90 mm eccentric, each into 90 degree. The crankshaft connecting rod (1.4) is an integral type, built-in bearing (connection with a bent shaft). Connecting rod with a needle bearing through a pin shaft (1.1) and cross head (1.6) connected to the crosshead pin shaft is tapered, from the two sides of the crankcase by a bolt pin hanging out. Pay rod (1.8) is connected with the cross head screw, and the fixed fence for insurance. A crosshead skateboards cross head on (1.7) In order to facilitate the movement, in the crosshead guide. To replace the crosshead skateboards, as long as the crosshead and pay the rod, connecting rod separation, and then rotate 90 degrees that can be removed from the two sides of the crankcase. The reciprocating motion of the cross head, by paying a rod, a piston rod, the piston makes reciprocating movement in the cylinder synchronization. At the bottom of a crankcase

oil discharge outlet, the crankcase cover is provided with an oil spill plug (1.5) and cooling oil plug (1.3). The crankshaft box of each bearing and gear with splash lubrication, crankcase and cylinder rod seal with two-way sealing between pay.

2. 离合器 Clutch (图 2) (Figure 2)

离合器是在动力机照常转动情况下，需要泵工作或停止而设置的。本泵采用的是球卡式离合器，结构简单，体积小，重量轻，当不需要泵工作时，只要将手柄（2.12）朝上抬，则凸轮偏心轴（2.11），通过轴承（2.10），顶杆（2.9），把离合器滑套（2.3）与离合器外套（2.2）分离，皮带轮（2.1）即空转。如需泵工作，必须将手柄迅速放下，则凸轮偏心轴复位。弹簧（2.4）将离合器滑套与外套合拢， $\phi 18$ 钢球（2.5）就位。皮带轮李俊带动泵运转。由于离合器式单项离合器，要求皮带轮按皮带轮上指示牌的转向运转，反转则会损坏离合器。

The clutch is in the engine rotation as usual circumstances, need to pump or stop and set up. This pump uses a ball type clutch, simple structure, small volume, light weight, when the pump does not require work, as long as the handle (2.12) upward lift, cam eccentric shaft (2.11), (through the bearing 2.10), the top rod (2.9), the clutch sleeve (2.3) and the clutch sleeve (2.2) separation, pulley (2.1) is idle. For the pump, the handle must be quickly put down, then the cam eccentric shaft. The reset spring (2.4) the clutch sliding sleeve and the outer sleeve together, of 18 the ball (2 5) place the belt pulley. Li Jun drives the pump to run. As the clutch type individual clutch requires the belt pulley to turn on the direction indicator on the belt pulley, the reverse will damage the clutch

3. 泵头 Pump head (图 3) (Figure 3)

泵头是低压泥浆转为高压泥浆的场所，泵头（3.9）内装缸套（3.10），将泵头分为前后两室，活塞（3.2）在缸套中运动使前后两室发生容积改变，形成吸泥浆和压送泥浆的过程。活塞采用装配式，活塞装在活塞座（3.3）上，通过压板（3.1）可以调整与缸套配合的紧松。活塞杆（3.6）与活塞座采用锥面定心连接，并在活塞杆外圆有一道“O”型密封圈密封，活塞杆有高硬度并耐磨。泵头与曲轴箱通过中接（3.7）用螺栓连接，泵头与活塞杆外圆之间密封采用盘根盒（3.4），里面装有 V 型密封圈，工作可靠，更换方便。

The pump head is low pressure slurry for high pressure mud pump head (3.9), installed in the cylinder (3.10), the pump head is divided into two chambers (3.2), a piston moving in the cylinder so that the volume change occurred before and after the two rooms, the formation of mud and mud suction pressure feeding process. Using the piston assembly. The piston is arranged in the piston seat (3.3), (3.1) can be adjusted

by a pressure plate and cylinder with the tight loose. The piston rod (3.6) is connected with the piston seat with cone centering, and a "O" type seal circle on the piston rod, the piston rod has high hardness and abrasion resistance of the pump head. And then through the crankcase (3.7) connected by bolts The packing box (3.4) is sealed between the pump head and the outer circle of the piston rod, and the V sealing ring is arranged in the packing box, so the operation is reliable and the replacement is convenient.

泵头内阀门可分为出水阀门与进水阀门，它们将泵头分为低压腔，高压腔与活塞腔。吸水阀门是在活塞吸泥浆时打开，排泥浆时关闭，阻止吸进活塞腔的泥浆返流回池。出水阀门阻止泥浆从高压腔返流至活塞腔。

The pump head within the valve can be divided into the water outlet valve and inlet valve, they will pump head into the low pressure chamber, high pressure chamber and the piston cavity. The water valve is open in piston suction mud, mud off, stop into the piston chamber back into the pool. The water mud return valve to stop the mud from the high pressure cavity flow back into the piston cavity.

泵头进水管下部有丝堵，泵不工作时放出泥浆，以防冬季剩余泥浆冻结。

The water inlet pipe is arranged at the lower part of a pump head, pump does not work out the mud, in winter the remaining frozen mud.

4、泵座 Pump seat

本泵泵座（3.8）采用槽钢焊接而成，曲轴箱与泵头都用螺栓固定在泵座上，这样整体吊装，安放都很方便。

The pump base (3.8) is welded by channel steel, and the crankcase and the pump head are fixed on the pump seat by bolts, so that the whole lifting and placing are very convenient.

5、空气包和压力表 Air bag and pressure gauge（图4）(Figure 4)

由于双缸双作用泵排量与压力都是脉动不均匀的，为了使送入井底的冲洗液达到均匀稳定，本泵排除端装有一只常压空气包。空气包壳体，用螺栓安装与泵头上方。空气包顶端装有压力表和充油的想皮囊，油通过缓冲装置到压力表指示泥浆压力。

The double cylinder double acting pump displacement and pressure pulsation are not uniform, in order to make the washing liquid to achieve uniform stability into the bottom, the pump out end is provided with a constant pressure air bag. The air bag is only a shell, bolted and pump head. The air bag is arranged on the top of the pressure gauge and the oil to the oil body. Through the buffer device to the pressure gauge pressure of mud.

6.安全阀 Safety valve（图5）(Figure 5)

本泵安全阀采用弹簧可调式结构，安全阀装在空气包下部四通上，用螺栓与空气包连接。当井底压力升高（或井内堵塞整泵）超过调定压力时，弹簧被压，阀门打开，高压与回水连通，泵压立即下降，以免机械过载发生事故。

Safety valve of the pump adopts a spring adjustable structure, safety valve installed in the air bag is four, and the air bag are connected by bolts. When the bottom hole pressure (or well clogging pump blocking) exceeds the setting pressure, the spring pressure, the valve is open, high pressure pump pressure and return is immediately dropped to avoid mechanical overload accident.

7. 吸水龙头 Water faucet

吸水龙头是装在吸水软管下部，供泥浆泵吸泥浆进行过滤和防止泥浆反流回池之用。

The suction tap is installed at the lower part of the suction hose to filter the slurry pump and prevent the mud from flowing back into the tank.

五. 使用与维护 Use and maintenance

1. 安装 Installation

泥浆泵必须安装在稳固的基础架和地基上，固定牢靠不允许有松动，泥浆泵的皮带轮与动力机的皮带轮必须找正，同一皮带的两槽必须在同一平面内。

Mud pump must be installed in a solid foundation and foundation, the fixed firm, not allowed to loose, mud pump belt pulley and power machine pulley must be found, the same belt two slot must be in the same plane.

2. 开车前的准备 Preparation before driving

(1) 检查机器安装是否稳固可靠，各连接部位是否松动。

(1) check whether the installation of the machine is stable and reliable, and whether the connecting parts are loose or not.

(2) 曲轴箱内润滑油是否适量，油面高度以浸埋人字齿轮高 120 毫米为准。

(2) whether the lubricating oil in the crankcase is right or not, and the height of the oil in the tank is 120 inches higher than that of the gear.

(3) 检查皮带轮转向，不得反转。

(3) inspection of belt wheel steering shall not be reversed.

(4) 检查离合器松开，结合是否可靠，开车前离合器必须打开。

(4) check that the clutch is released. If the joint is reliable, the clutch must be opened before driving.

(5) 开车前用手盘动皮带使活塞往复二次以上，无阻碍时再开车。

(5) drive the belt with a hand disk before driving, so that the piston can be reciprocating more than two times, and then drive when there is no obstruction.

(6) 检查安全阀是否正常。

(6) check whether the safety valve is normal.

(7) 检查吸水龙头通道是否畅通，开关自如。

(7) check whether the water absorption channel is unblocked, and switch freely.

(8) 检查压力表缓冲器上端是否有油，若无油，须注满。

(8) check whether there is oil on the top of the pressure gauge buffer. If no oil is needed, fill it.

3.运转中的操作与维护 Operation and maintenance in operation

(1) 开车后将离合器合上，各部位运转正常时，然后再徐徐给泵加压。

(1) the clutch is closed after driving, and the parts are running normally. Then, the pump is pressed slowly.

(2)注意各档轴承发热情况，连续工作温升不超过 40℃

(2) pay attention to the heating situation of each gear bearing, and the continuous operation temperature rise is not more than 40 degrees centigrade.

(3) 注意各密封装置的密封性，应随时适当紧固压盖压紧盘根，以防止泥浆冲入曲轴箱内。拉杆与付杆要随时涂以机油润滑。

(3) pay attention to the tightness of each sealing device, and press the gland tightly at any moment to prevent the mud from flowing into the crankcase. The tie rod and the rod should be lubricated with grease at any time.

(4) 水龙头在泥浆池内的位置不得距池底 0.5 米内，以免吸入污泥、岩粉、尘砂。不得距液面 0.3 米以内，以免吸入空气。

(4) the tap in a mud pool location within 0.5 meters from the bottom of the pool shall not, in order to avoid inhalation of sludge, rock powder, dust and sand. Not less than 0.3 meters above the water surface, in order to avoid inhalation of air.

(5) 泥浆的含砂量对泵液力端易损件寿命影响极大，在工作过程中要经常测试泥浆含砂量，采取各种积极措施，把含砂量控制在 10%以内。

(5) the sand content of the mud has a great influence on the life of the pump hydraulic parts. In the process of work, the sand content of the mud should be tested regularly, and all kinds of positive measures should be taken to control the sand content within 10%.

(6) 泥浆泵运转中需调速变量时，一定要停车换挡。

(6) when the variable speed variable is needed in the operation of the slurry pump, the shift must be stopped.

4.停车后的维护 Maintenance after parking

(1) 停泵后应将排出管中泥浆放掉。

(1) the slurry in the discharge pipe shall be discharged after stopping the pump

(2) 停泵后需将泵体内的泥浆放干净，如停泵时间较长，则需要将曲轴箱内油放净。

(2) after stopping the pump, it is necessary to clean the mud in the pump. If the pump is stopped for a long time, the oil in the crankcase will be released

(3) 停泵时间较长时，尚需清洗泵中各部分的泥砂、油垢，且在各啮合，摩擦部位涂以黄油、以防锈腐蚀。

(3) longer when the pump stops, still need parts cleaning pump in sand and mud, grease, and in each mesh, friction parts coated with butter, to prevent rust and corrosion.

5.泵的润滑 Lubrication of pumps

本泵曲轴箱内各齿轮付及轴承、轴瓦的润滑采用飞溅式，用 30 号机油，每三个月换油一次。皮带轮上油眼每三天加油一次，用 3 号钙基润滑脂。

The gears in the crankcase of the pump are supplied with bearings. The lubrication of the bearing bush is splash type. Use No. 30 oil to change oil every three months. Oil on the pulley is lubricated once every three days, and the No. 3 calcium base grease is used

六、泥浆泵在运转中的故障、原因及消除方法

Fault mud pump in operation, causes and elimination methods

故障 fault	原因 Reason	消除方法 Elimination method
排量不足或根本不能排送冲洗液 Inadequate displacement or drainage at all	1.水龙头露出冲洗液面 1.The tap exposed the surface of the wash 2.水龙头堵塞 2.Clogged faucet 3.吸水管路密封不严,吸进空气 3.The suction line is not tight enough to absorb air 4.进出水阀不工作、或工作不正常,橡胶阀片损坏 4.The inlet and outlet valves do not work or work abnormally, and the rubber valve pieces are damaged 5.活塞或缸套磨损,拉伤损坏失去密封 5.Piston or cylinder liner worn, torn, damaged, lost seal 6.盘根处不密封 6.Packing is not sealed	1.将水龙头浸入水中其深度大于 0.3m 1.Immerse the faucet in water. The depth is greater than 0.3m 2.清洗水龙头 2.Cleaning faucet 3.检查各密封处,并消除之 3.Check the seals and eliminate them 4.消除并冲洗进、出水阀,或更换橡胶阀片 4.Remove and flush the intake valve or replace the rubber valve plate 5.调整活塞与缸套之过盈量,或更换之 5.Adjust the interference of the piston and cylinder, or replace it 6.上紧盘根或更换盘根 6.Tighten the packing or replace the packing
泵运转困难 Pump running difficult	活塞与缸套过盈太大,密封过紧 Piston and cylinder interference is too large, tight seal	调整活塞与缸套之过盈量 Adjust the interference of piston and cylinder
机器运转有异常响声 The machine operates with abnormal sound	十字头导滑板间隙过大 Clearance of crosshead guide plate is too large	调整十字头导滑板间隙调整十字头导滑板 Adjust the crosshead guide clearance and adjust the crosshead guide plate
压力表指针不动 The indicator of the pressure gauge does not move	1.压力油缓冲器无油 1.The pressure oil buffer is oil-free 2.压力表已坏 2.The pressure gauge is out of order	1.加入机油 Add oil 2.更换压力表 2.Replace the pressure gauge
压力表指针摆动过大 The gauge pointer swings too much	1.有的阀或缸不工作 Some valves or cylinders do not work	1.检查并消除之 Check and eliminate it

七、无偿更换和修理的规定 Free replacement and repair regulations

在用户遵守本泵保管和使用规则的条件下，从制造厂发货日期起，在一年内，其中使用不超过半年，因制造质量不良而损坏或不能正常工作时，本厂无偿的为用户维修和更换。

In the pump users comply with the custody and use of rules, from the factory from the date of shipment, within a year, which used less than half a year, the damage due to the bad quality or not work, this factory free for users to repair and replacement.

八、泥浆泵的轴承型号及数量 Bearing type and quantity of mud pump

轴承型号 Bearing type	名称 Name	数量 Number	规格 Specifications	所属部件 Subordinate parts
4084106	单列无保持架滚针轴承 Single row non cage needle roller bearing	4	$\varnothing 55 \times 40.1 \times 25$	曲轴箱 Crankcase
1000840	单列向心球轴承 Single row radial ball bearing	4	$\Phi 250 \times 240 \times 24$	传动系统 drive system
411	单列向心球轴承 Single row radial ball bearing	2	$\varnothing 55 \times 140 \times 33$	传动系统 drive system
117	单列向心球轴承 Single row radial ball bearing	2	$\varnothing 85 \times 130 \times 22$	传动系统 drive system
32312	单列向心短圆柱滚子轴承 Single row radial cylindrical roller bearings	2	$\varnothing 130 \times 60 \times 31$	传动系统 drive system
3520	双列向心球面滚子轴承 Double row radial spherical roller bearings	2	$\varnothing 100 \times 180 \times 46$	传动系统 drive system
202	单列向心球轴承 Single row radial ball bearing	1	$\varnothing 35 \times 15 \times 11$	传动系统 drive system
8202	单列推力球轴承 Single row thrust ball bearing	1	$\varnothing 32 \times 15 \times 12$	传动系统 drive system
8105	单向推力球轴承 single direction thrust ball bearing	2	$\varnothing 42 \times 25 \times 11$	随机附件 Random attachments

九、说明 Explain

由于产品在结构上不断地改进，说明书所述内容可能与产品有出入，尚请用户使用时注意。

Due to the continuous improvement of the product structure, the contents described in the manual may be different from those of the product

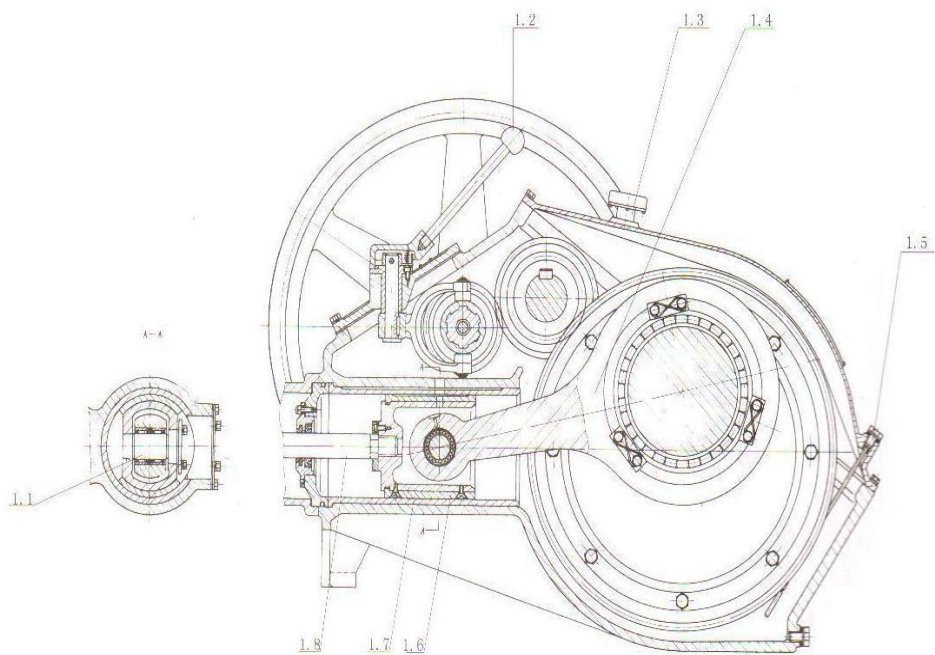


图 1 Figure 1

代号 Code	名称 Name	单位 Company	数量 Number	备注 Remarks
1.1	销轴 Pin shaft	件 piece	2	
1.2	手柄杆 Handle lever	件 piece	1	
1.3	散热油堵 Cooling plug	件 piece	1	
1.4	连杆 connecting rod	件 piece	2	
1.5	溢油堵 Oil spill plug	件 piece	1	
1.6	十字头 Crosshead	件 piece	2	
1.7	十字头滑板 Crosshead slide	件 piece	4	铜制 copper
1.8	付杆 Pay bar	件 piece	2	

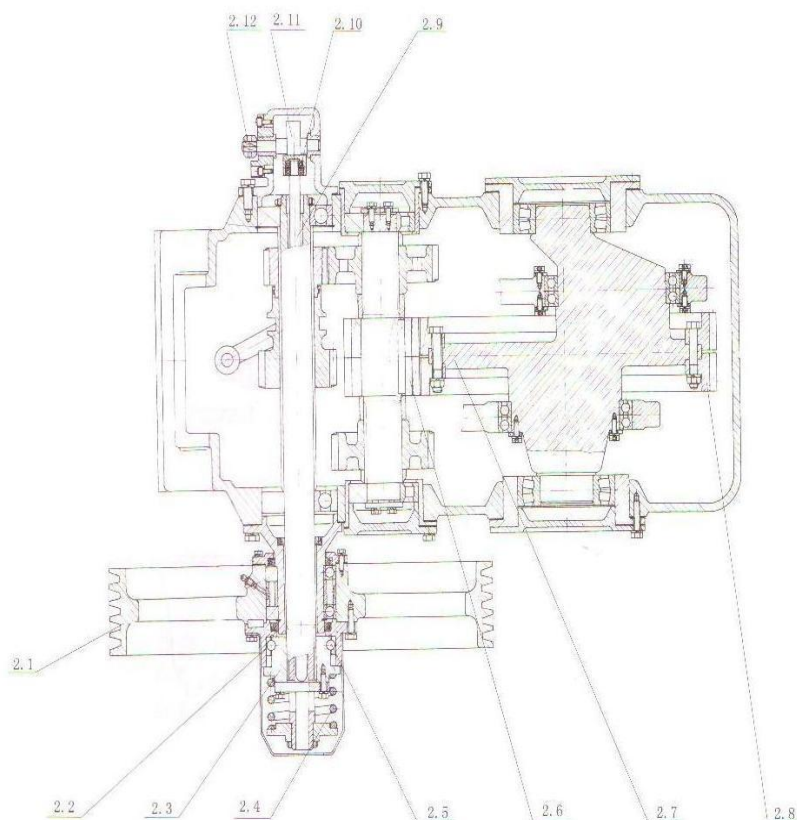


图2 Figure 2

代号 Code	名称 Name	单位 Company	数量 Number	规格 Specifications
2.1	皮带轮 Pulley	件 piece	1	
2.2	离合器外套 Clutch coat	件 piece	1	
2.3	离合器滑套 Clutch slip sleeve	件 piece	1	
2.4	弹簧 Spring	件 piece	1	
2.5	钢球 steel ball	件 piece	6	∅18
2.6	小斜齿轮 Small helical gear	双 double	1	Z=19
2.7	曲轴 crankshaft	件 piece	1	
2.8	大斜齿轮 Large helical gear	双 double	1	Z=82
2.9	顶杆 Push rod	件 piece	1	
2.10	轴承 Bearing	件 piece	1	SL202
2.11	偏心轴 Eccentric shaft	件 piece	1	
2.12	离合器手柄 Clutch handle	件 piece	1	

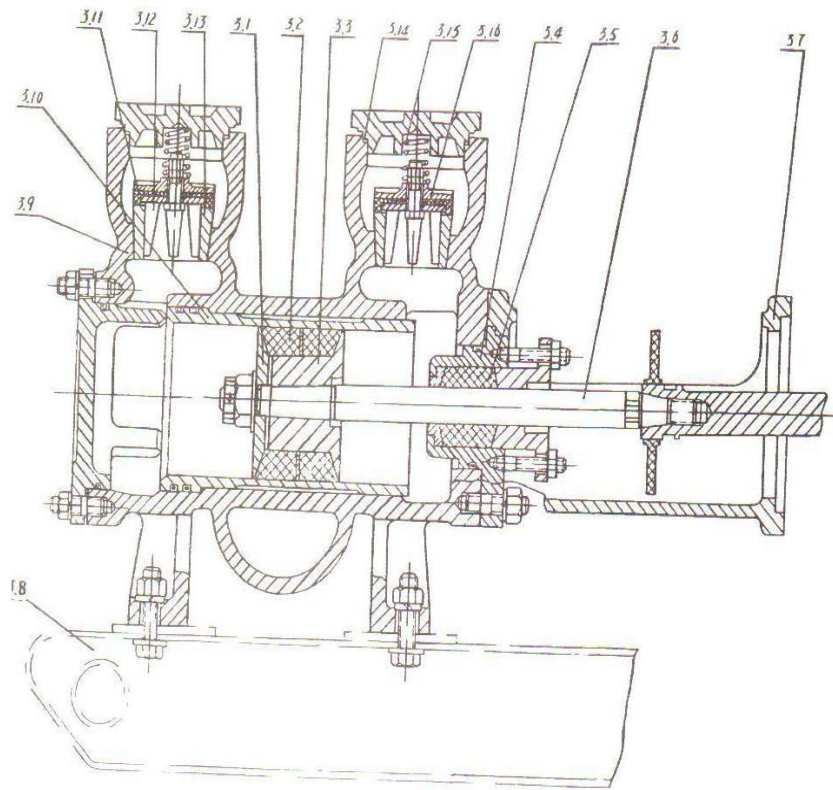


图 3 Figure 3

代号 Code	名称 Name	单位 Company	数量 Number	备注 Remarks
3.1	活塞压板 Piston plate	件 piece	2	
3.2	活塞 piston	件 piece	4	
3.3	活塞座 Piston seat	件 piece	2	
3.4	盘根盒 packing box	件 piece	2	
3.5	V型密封圈 V-ring	套 set	2	九合一 Nine in one
3.6	活塞杆 Piston rod	件 piece	2	
3.7	中接 Pump waist	件 piece	1	
3.8	泵座 Pump seat	件 piece	1	
3.9	泵头体 Pump head	件 piece	1	
3.10	缸套 Cylinder liner	件 piece	2	
3.11	橡胶阀片 Rubber valve plate	件 piece	8	阀脚垫 Valve pad
3.12	导向架 Guide frame	件 piece	8	阀脚 Foot valve
3.13	凡尔座 Valve seat	件 piece	8	阀座 valve seat
3.14	密封垫 A seal	件 piece	8	∅125×110×5
3.15	弹簧 Spring	件 piece	8	
3.16	凡尔压板 Valve plate	件 piece	8	

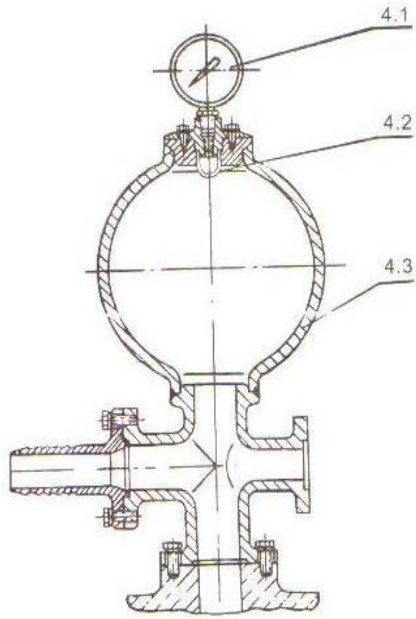


图 4 Figure 4

4.1 压力表 Pressure gauge

4.2 橡胶囊 Rubber capsule

4.3 壳体 housing

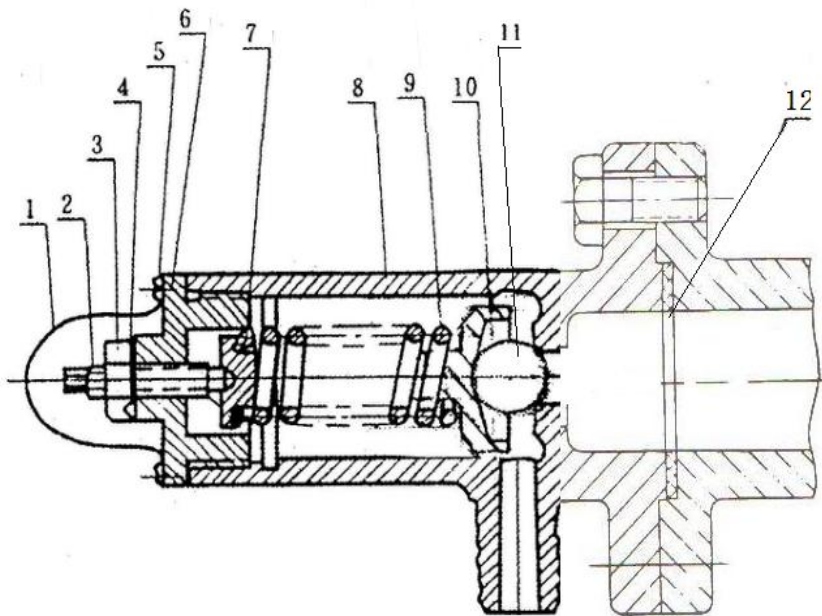


图 5 Figure 5

5.1 罩盖 Cover 5.2 螺钉 screw M12*50 5.3 螺母 Nut M12

5.4 垫圈 Washer M12 5.5 螺钉 screw M5*6 5.6 阀盖 Valve cover

5.7 弹簧座 Spring seat 5.8 阀体 valve body 5.9 弹簧 Spring

5.10 安全阀铁堵 Safety valve plug 5.11 钢球 steel ball 5.12 密封垫 seal

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