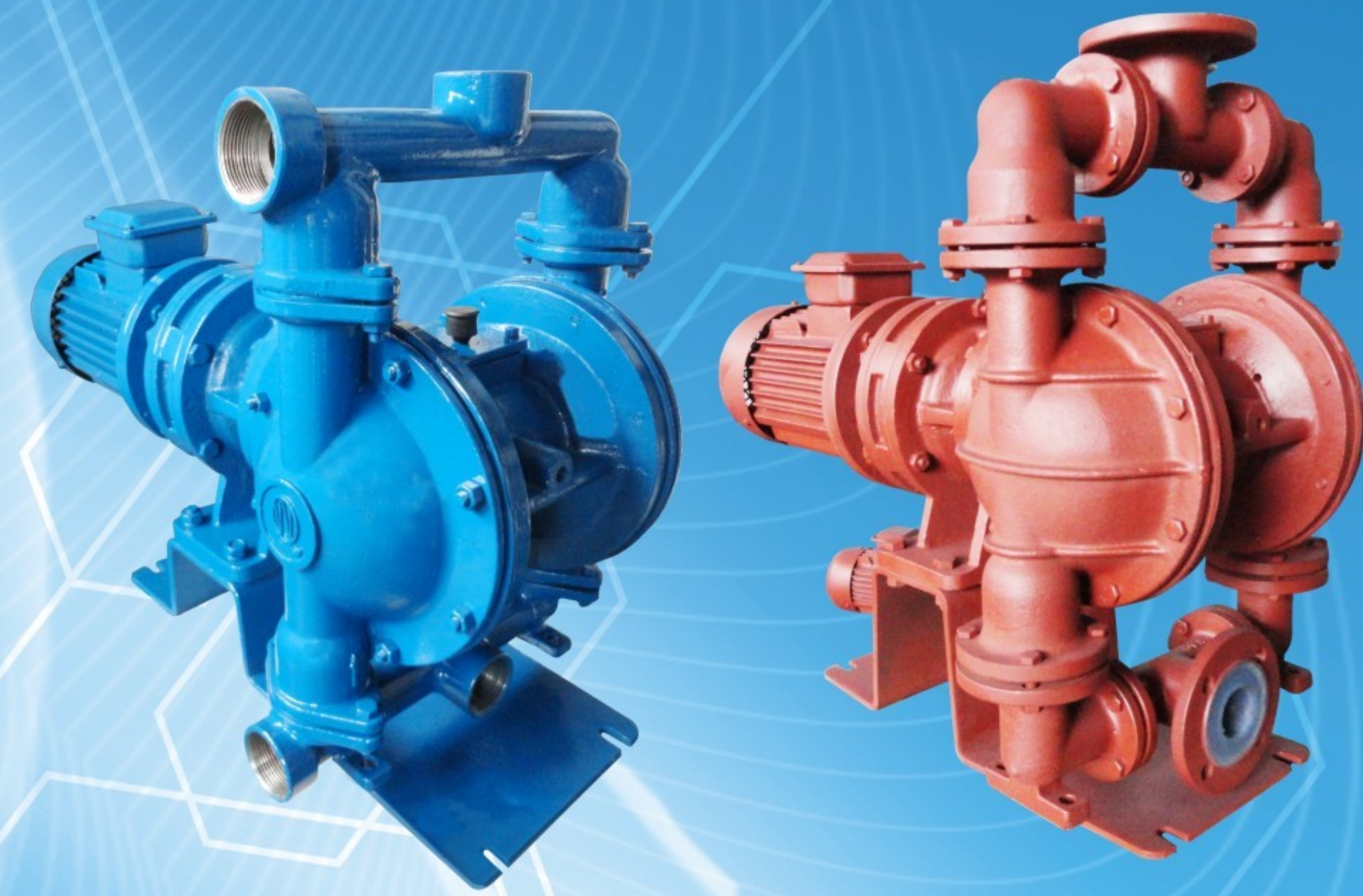




**DBY3 Series Dynamic
Diaphragm Pump**



**DBY3 Series Dynamic
Diaphragm Pump**
DBY3系列电动隔膜泵



概述

电动隔膜泵是一种新型的泵类，近年来、由于在隔膜材质上取得了突破性的进展，国际上越来越多的工业化国家采用此种型式的泵，取代部份离心泵、螺杆泵来应用于石化、陶瓷、冶金等行业，我厂目前生产的隔膜泵分为QBY气动式和DBY电动式，产品设计均参考美国ABEL公司样机，并通过煤炭部鉴定。DBY型隔膜泵适用于低压，即出口压 $\geq 3\text{kgf/cm}^2$ 的场合，QBY型适用于出口压力 $\geq 5\text{kgf/cm}^2$ 的场合。本说明书为DBY型隔膜泵。

性能特点

DBY系列电动隔膜泵具有下列特点：

- 一、不需灌引水，自吸能力达5米以上。
- 二、通过性能好，直径在5毫米以下的颗粒、泥浆等均可以毫不费力地通过。
- 三、由于隔膜将被输送介质和传动机械性分开，所以介质绝对不会向外泄漏。且泵本身无轴封，使用寿命大大延长。根据不同介质，隔膜分为氯丁橡胶、氟橡胶、丁腈橡胶等，完全可以满足不同用户的要求。
- 四、体积小重量轻：由于采用了行星摆线传动结构，故使泵型获得小尺寸如与同类型泵来比较，其体积重量均下降一半左右。
- 五、泵体介质流经部份，可根据用户要求，分为铸铁、不锈钢、衬胶、衬氟。电机分为普通式和防爆式、调速式三种，目前该泵正应用在下列场合。

主要用途

- 1、各种剧毒、易燃、易挥发液体。
- 2、各种强酸、强碱、强腐蚀液体。
- 3、可输送较高温度的介质 100°C 。
- 4、热水回收及循环。
- 5、油罐车、油库、油品装卸。
- 6、泵吸泡菜、果酱、土豆泥、巧克力等。
- 7、泵吸油漆、树脂、颜料粘合剂。
- 8、各种瓷器釉浆水泥灌浆灰浆泥浆。
- 9、各种橡胶浆乳胶、有机溶剂、填料。
- 10、用泵为油轮驳船清仓吸取仓内污水及剩油。
- 11、啤酒花及发酵粉稀浆、糖浆、糖蜜。
- 12、泵吸矿井、坑道、隧道、下水道中污水、沉淀物。
- 13、各种特殊介质的吸送。

Summary

The electric diaphragm pump is a new type of pumps. In recent years break-through progress has been made in the diaphragm material, so more and more industrialized countries in the world have adopted such a pump type to replace some centrifugal or screw pumps to be applied in such industries as petrochemicals, ceramics and metallurgy. Our diaphragm pumps include QBY pneumatic and DBY electric types, and all of our product designs are based on reference of the prototypes of American-based ABEL and have been appraised by the Ministry of Coal Industry. DBY diaphragm pumps are applicable for low pressure applications, namely the outlet pressure $\geq 3\text{kgf/cm}^2$, while QBY applicable for applications with the outlet pressure $\geq 5\text{kgf/cm}^2$. This manual is for DBY diaphragm pumps.

Performance and Characteristics

DBY series of electric diaphragm pumps has the following characteristics:

- I. There is no need for water filling or diversion, and its self-priming capacity is above 5m.
- II. Its trafficability is good, and those grains, slurry or others with a diameter less than 5mm can all be passed easily.
- III. The diaphragm will be separated by the working medium and the transmission machinery, so the medium can by no means leak outwards. Besides, the pump itself has no shaft seal, so its service life is extended greatly. According to different medium types, the diaphragm can be divided into neoprene, fluorine rubber, chemigum and so on, which can meet requirements of different users completely.
- IV. Compact and light: with a planetary cycloid transmission structure, the pump can be small-size, and compared with similar pump types, both of its volume and weight are half or so.
- V. The medium flow-through part on the pump body can adopt cast iron, stainless steel, rubber lining or fluorine lining, as required by users, and the motor includes three types: common, explosion-proof and speed regulation. At present the pumps is being used in the following applications.

Main Applications

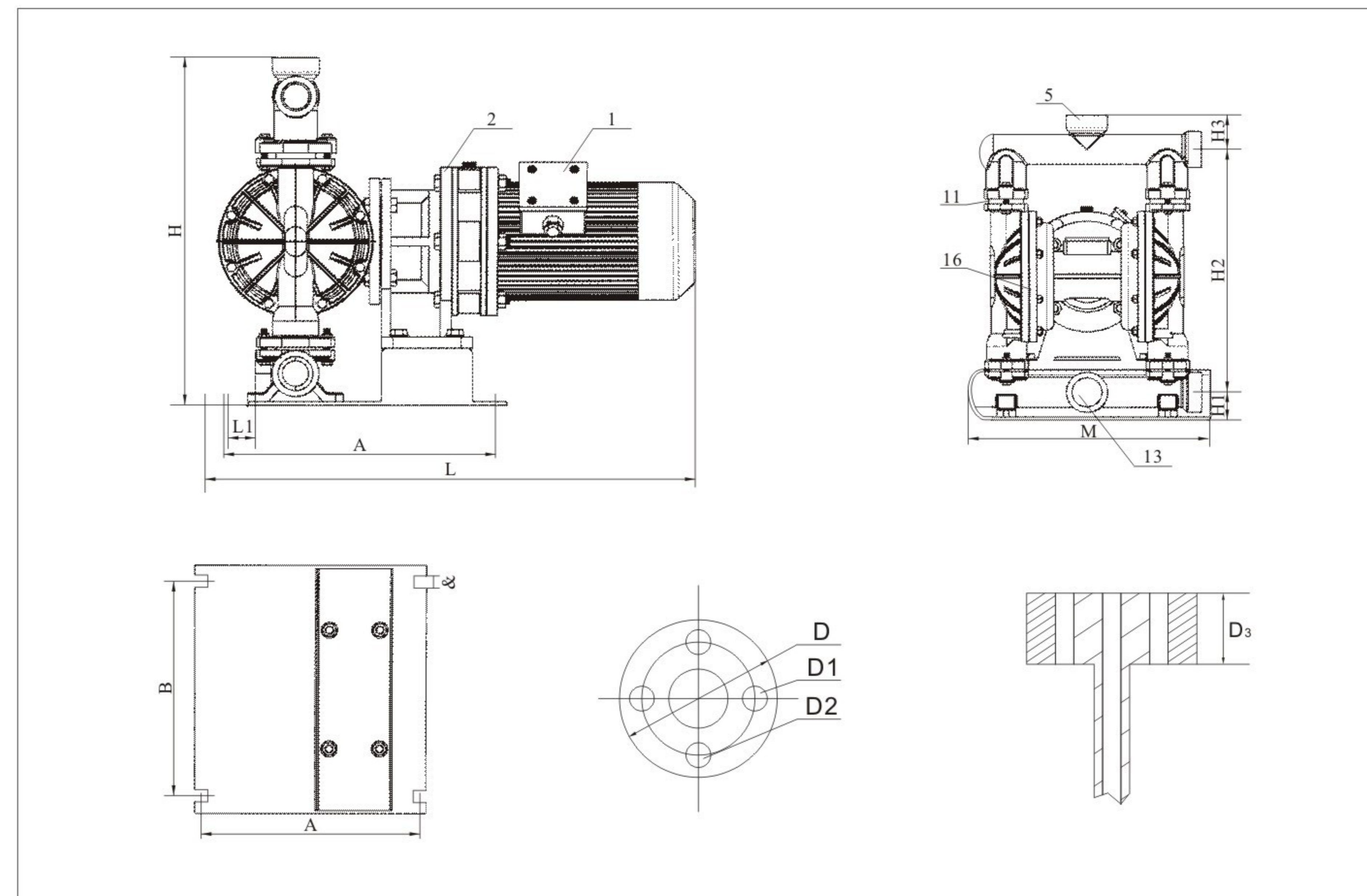
1. Different kinds of virulent, inflammable or volatile liquids.
2. Different kinds of strong acid, alkali and strong-corrosion liquids.
3. Transporting high-temperature media: 100°C .
4. Recovery and circulation of hot water.
5. Loading and unloading of oil tankers, oil depots and oil products.
6. Pumping of pickle, jam, mashed potato, chocolate, etc.
7. Pumping of oil paint, wood gum and pigment adhesive.
8. Different kinds of porcelain glaze, cement grout, mortar and slurry.
9. Different kinds of latex, organic solvents and packing.
10. Pumping of sewage and remaining oil from cabins of oil tankers or barges for cabin emptying.
11. Hops, yeast slurry, syrup and molasses.
12. Pumping of sewage and sediment from shafts, adits, tunnels and sewer culverts.
13. Suction and transportation of different kinds of special media.

工作原理图

电机(1)通过减速机(2)带动左右两端活塞轴上面的隔膜(16)一左一右往复运动。在左右两个泵腔内，装有上下四个单向球阀(11)运动，造成工作腔内的容积的改变，迫使四个单向球阀交替地开启和关闭，从而将液体不断地吸入(13)和排出(5)。

Working Principle Diagram

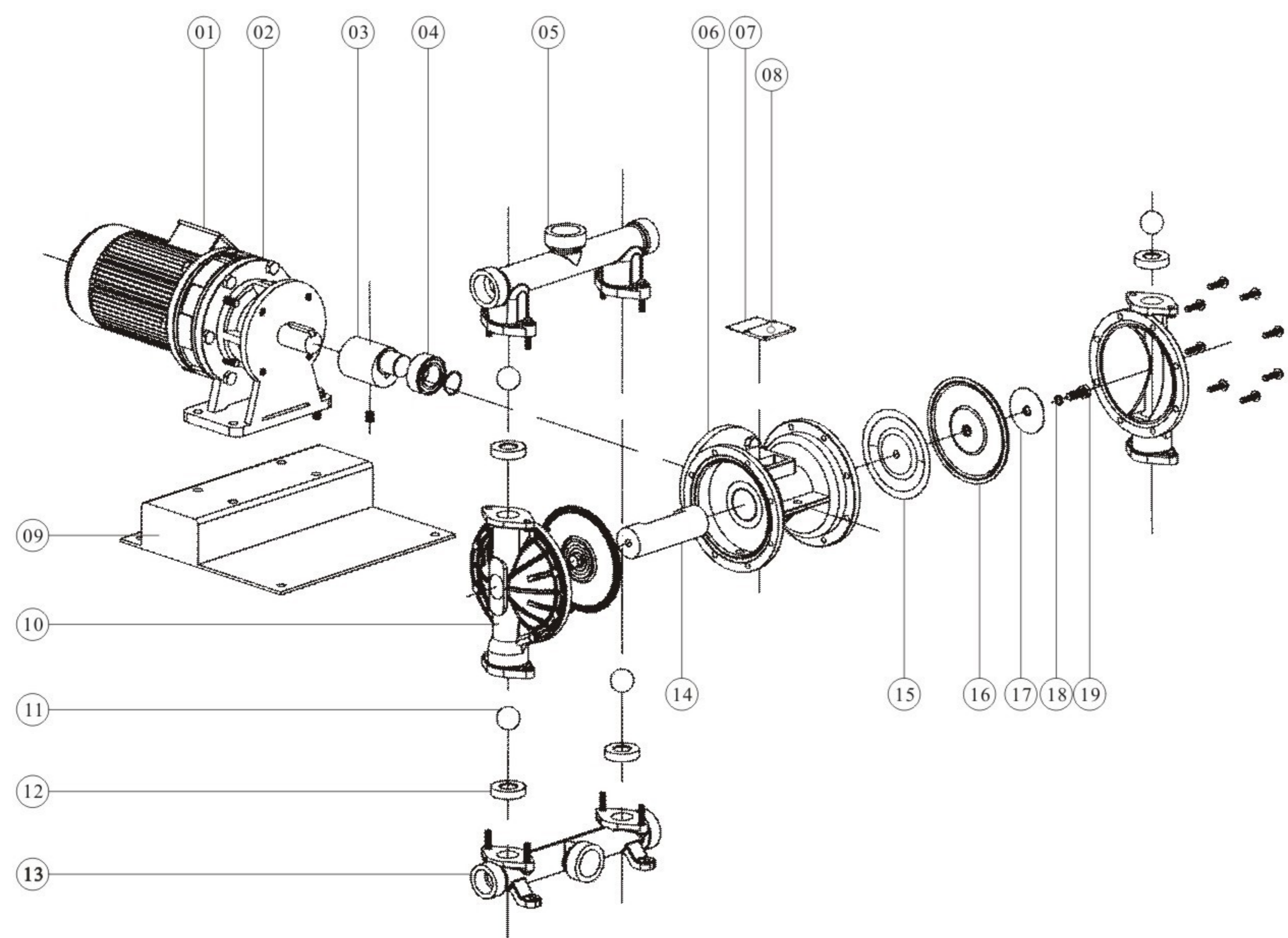
The motor (1) drives the diaphragm (2) on the plungers on left and right ends through the reducer (16) to make reciprocating motions from left to right. Inside the left and right pump cavities, there are four upper and lower non-return ball valves (11) making motions to change volumes of the working cavities and drive the four non-return ball valves to open and close alternately, thus sucking (13) and discharging (5) the liquid continually.



安装尺寸与外形尺寸 Installing and Overall Dimensions

型号 Type	A	B	&	L	L1	H	H1	H2	H3	M	螺纹式 Thread type	法兰式 Flange type				重量 Weight				
												D	D1	D2	D3	铸铁 Cast iron	不锈钢 Stainless Steel	铝 Aluminum	塑料 Plastic	流体衬氟 Fluid with fluorine lining
DBY3-10	335	145	12	630	70	330	75	215	35	220	1/2					45	44	42	41	
DBY3-15	335	145	12	630	70	330	75	215	35	220	1/2					45	44	42	41	
DBY3-25	430	155	14	760	20	560 F605	125	400	50	340 F400	1	100	75	12×4	12	98	96	89	87	109
DBY3-40	430	155	14	760	20	560 F605	125	400	50	340 F400	1 1/2	125	100	14×4	14	98	96	89	87	109

DBY3-15-25-40结构图 Structural Diagram of DBY3-15-25-40



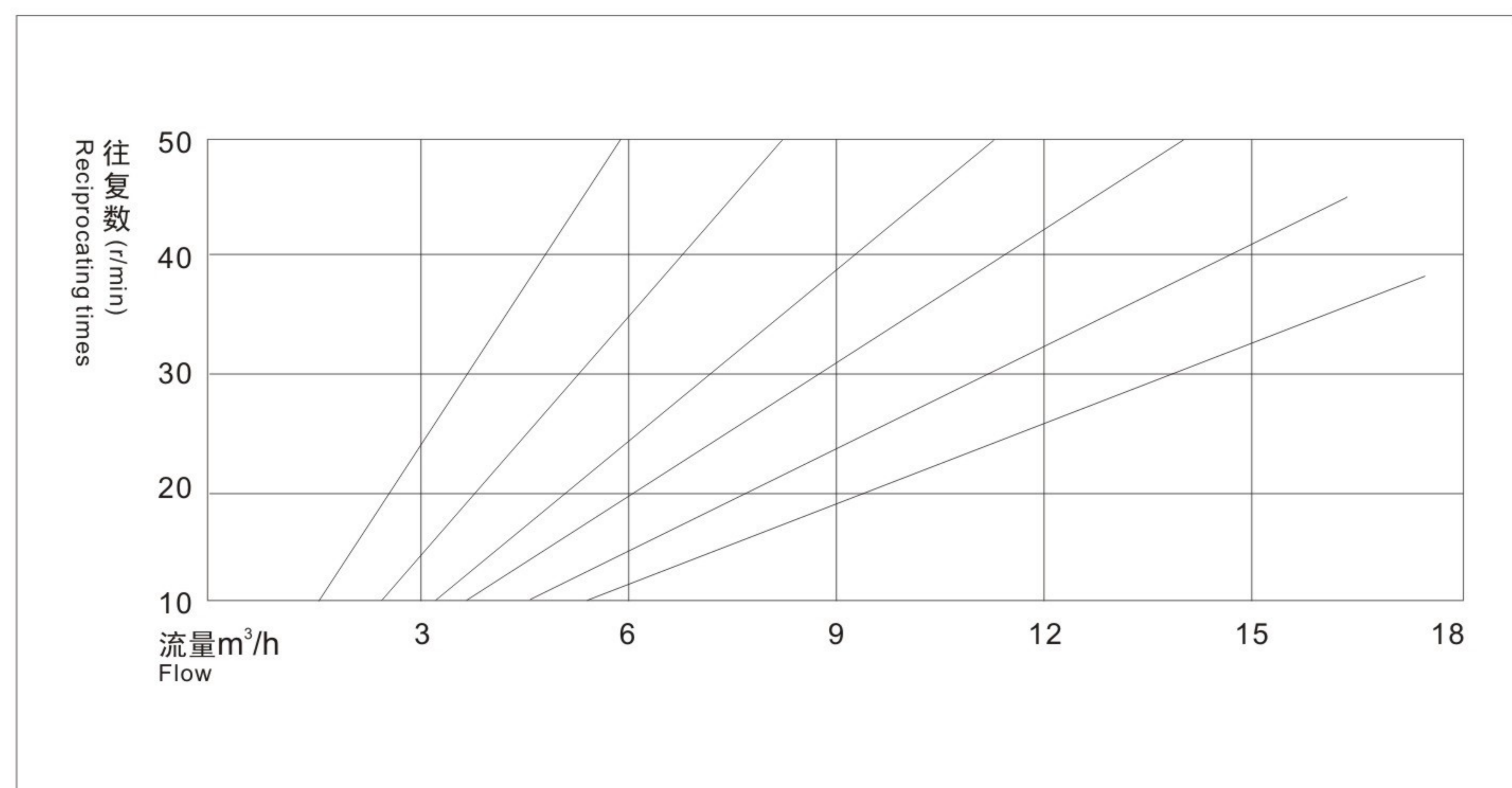
DBY3-15-25-40主要零件清单

零件序号	名称	数量	材 料
1	电机	1	普通电机、防爆电机、变频调速电机380伏、4极、0.55KW、1.5KW
2	减速机	1	摆线针轮减速机XWD
3	偏心轮	1	碳钢
4	轴承	1	1202 1207
5	出管	1	铸铁、不锈钢、铝合金、聚丙烯、流体衬聚全氟乙丙烯、(F46)
6	中间体	1	铸铁
7	盖板	1	碳钢
8	油嘴	1	碳钢
9	底脚	1	碳钢
10	泵体	2	铸铁、不锈钢、铝合金、聚丙烯、流体衬聚全氟乙丙烯、(F46)
11	密封球	4	丁腈橡胶、氯丁橡胶、三元乙丙橡胶、聚四氟、陶瓷、不锈钢
12	密封座	4	丁腈橡胶、氯丁橡胶、氟橡胶、三元乙丙橡胶、聚四氟
13	进管	1	铸铁、不锈钢、铝合金、聚丙烯、流体衬聚全氟乙丙烯、(F46)
14	活塞轴	1	碳钢
15	内压板	2	碳钢
16	隔膜	2+2	丁腈橡胶、氯丁橡胶、氟橡胶、三元乙丙橡胶、聚四氟
17	外压板	2	不锈钢、碳钢、衬聚全氟乙丙烯
18	密封垫	2	聚四氟
19	压板螺丝	2	不锈钢、碳钢

List of Major Parts of DBY3-15-25-40

零件序号	名称	数量	材 料
1	Motor	1	Common motors, explosion-proof motors and frequency control motors, 380V, 4-pole, 0.55KW, 1.5KW
2	Reducer	1	Cycloid pin gear reducer XWD
3	Wobbler	1	Carbon steel
4	Bearing	1	1202 1207
5	Outlet pipe	1	Cast iron, stainless steel, aluminum alloy, polypropylene, fluid with polyethylene FEP lining, (F46)
6	Intermediate	1	Cast iron
7	Cover plate	1	Carbon steel
8	Grease nipple	1	Carbon steel
9	Footing	1	Carbon steel
10	Pump body	2	Cast iron, stainless steel, aluminum alloy, polypropylene, fluid with polyethylene FEP lining, (F46)
11	Sealing ball	4	Nitrile rubber, neoprene, EPDM, PTFE, ceramic, stainless steel
12	Sealing seat	4	Nitrile rubber, neoprene, Viton, EPDM, PTFE
13	Inlet pipe	1	Cast iron, stainless steel, aluminum alloy, polypropylene, fluid with polyethylene FEP lining, (F46)
14	Piston shaft	1	Carbon steel
15	Inner press plate	2	Carbon steel
16	Diaphragm	2+2	Nitrile rubber, neoprene, Viton, EPDM, PTFE
17	Outer press plate	2	Stainless steel, carbon steel and poly FEP lining
18	Sealing gasket	2	PTFE
19	Press plate screw	2	Stainless steel, Carbon steel

■ 特性曲线图 Characteristic Curve Diagram



■ 主要性能规格 Key Properties and Specifications

型号 Type	流量 Flow (m³/h)	吸程 Suction lift (m)	扬程 Head (m)	出口压力 Outlet pressure (kgf/cm²)	转速/功率 Speed(r/min)/power(kW)	使用温度℃ Working temperature		铝合金 Aluminium alloy	聚丙烯 Polypropylene	流体衬氟 Fluid fluorine-butterfly
						铸铁 Cast iron	不锈钢 Stainless steel			
DBY3-10	0.5	3	30	3	1450/0.55	90	100	80	70	
DBY3-15	0.75	3	30	3	1450/0.55	90	100	80	70	
DBY3-25	3.5	4	30	3	1450/1.5	90	100	80	70	80
DBY3-40	4.5	4	30	3	1450/1.5	90	100	80	70	80

■ 正确选用隔膜

本隔膜泵的主要部件是隔膜，正确选用隔膜可以达到事半功倍的目的，用户订货时须注明输送介质的性质，以便配备不同隔膜，一般隔膜有下列几种：

- 一、丁腈隔膜，主要用于耐油场合。
- 二、氯丁橡胶5031#本厂特制，主要用于耐丙酮及各种酸类、碱类。
- 三、氟橡胶6021#本厂特制，主要用于高温150℃，耐甲苯耐腐蚀。但价格比其它隔膜高。
- 四、食品橡胶，专用于食品饮料的输送。

■ Select the Diaphragm Correctly

The diaphragm is a major part of this diaphragm pump and correct selection of the diaphragm can get twice the result with half the effort. The users shall note nature of their working medium in their orders so as to provide appropriate diaphragms. Generally the diaphragms include the following types:

- I. Butyronitrile diaphragm, mainly for oil-proof applications.
- II. Neoprene 5031#, specially made by our company, mainly for resistance to acetone and different kinds of acid and alkaline.
- III. Fluorine rubber 6021#, specially made by our company, mainly for high temperature 150℃ and resistance to methylbenzene and corrosion, but more expensive than other diaphragm types.
- IV. Food rubber, exclusively for transportation of food and beverage.

■ 几种隔膜材料特性 Characteristic of diaphragm

介质种类 Medium	隔膜品种 Variety	丁腈橡胶 Nitrile Rubber	氯丁橡胶 Chloroprene Rubber	氟橡胶 Fluorine Rubber	聚四氟乙烯 PTFE	食品橡胶 Food Rubber
发烟硝酸	Smoke nitric acid	×	×	△	△	
浓硝酸	Density nitric acid	×	×	△	△	
浓硫酸	Density sulfuric acid	×	×	○	△	
浓盐酸	Density hydrochloric acid	×	△	△	△	
浓磷酸	Density phosphoric acid	×	△	△	△	
浓醋酸	Density acetic acid	×	×	×	△	
浓氢氧化钠	Density sodium hydroxide	○	○	△	△	
无水氨	Non-aqueous ammonia	△	△	△	△	
稀硝酸	Thin nitric acid	×	×	○	△	
稀硫酸	Thin sulfuric acid	△	△	△	△	
稀盐酸	Thin hydrochloric acid	×	○	△	△	
稀磷酸	Thin phosphoric acid	×	×	△	△	
稀氢氧化钠	Thin sodium hydroxide	○	○	△	△	
氨水	Liquid ammonia	△	△	×		
苯	Benzene	×	×	○	○	
汽油	Gasoline	○	○	○	○	
石油	Petroleum	△	×	○	○	
四氯化碳	Carbon tetrachloride	○		○	○	
二硫化碳	Carbon disulphite	○		×	○	
乙醇	Alcohol	○	○	○	○	
丙酮	Acetone	×	△	×	○	
甲酚	Cresol	×	△	△	○	
乙醛	Acetic aldehyde	×	×	△	○	
乙苯	Ethylbenzene	×	×	△	○	
丙烯腈	Acrylonitrile	△	△	×	○	
丁醇	Butanol	○	○	○	○	
丁二烯	Butadiene	○	×	△	○	
苯乙烯	Styrene	×	×	△	○	
醋酸乙酯	Vinyl acetate resin	×	×	×	○	
醚	Ether	×	×	×	○	

注：○——寿命较长、△——寿命一般、×——不可用、本表仅从耐腐蚀性考虑，因聚四氟乙烯弹性比橡胶差，故实际使用寿命因压力，泵行程杂质等因素影响而异。食品橡胶专用于食品饮料行业。

Note:○—means the long service life,△—means common service life,×—means use forbidden.This table is only considered from the anti-corrosion.Because the PTFE elasticity is worse than that in rubber.The actual use life will be affected because of the pressure and pump stroke factors.The food rubber specially uses for beverage industries.