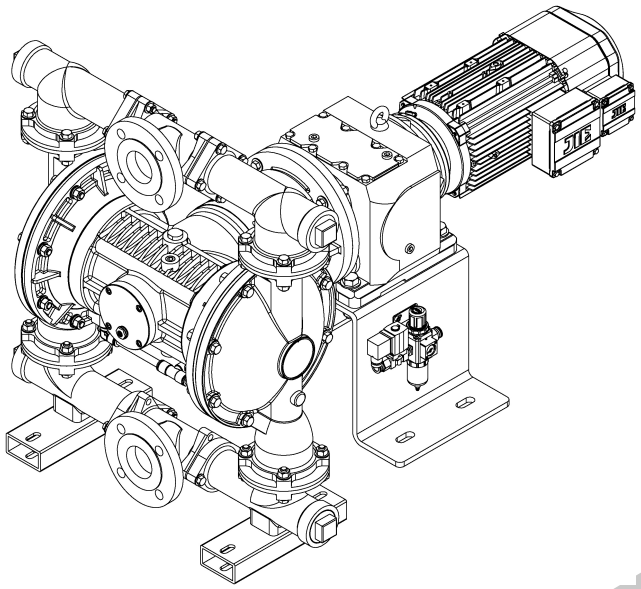
skylink

Specialist in Fluid Transfer
致力于流体输送

SKY-E-E-03-2016



INSTRUCTIONS
操作指南

This manual contains warnings and caution.本手册包含警告和注意事项
READ AND RETAIN FOR REFERENCE阅读和保留以供参考

E40

Operation and Maintenance Manual
操作维护手册

CE

Diaphragm Pump隔膜泵

警告



热膨胀危险

在诸如软管等密闭空间内受热的流体，会因热膨胀而导致压力升高。过压会造成设备破裂以及严重伤害。

- 加热期间，打开阀体以释放液体膨胀。
- 根据作业条件，以固定间隔主动更换软管。


塑料零配件清洗剂危险

许多溶剂可降解塑料零配件并引起它们故障，可能造成人员严重受伤或财产损失。

- 仅使用兼容的水基溶剂来清洁塑料结构或承压零配件。
- 请参阅本手册和所有其他设备说明手册中的**技术数据**。阅读流体和溶剂制造商的安全数据表 及建议。


流体或烟雾中毒危险

如果吸入有毒的烟雾、食入有毒的流体或让它们溅到眼睛里或皮肤上，都会导致严重伤害或死亡。

- 应阅读安全数据表以熟悉现用流体的特殊危险性。
- 危险性流体要存放在规定的容器内，并按照有关规定的要求进行处置。

烧伤危险

设备表面及加热的流体在工作期间会变得非常热。为避免严重烧伤：

- 不要接触热的流体或设备。

个人防护装备

在工作区内请穿戴适当的防护装备，以免受到严重伤害，包括眼损伤、听力受损、吸入有毒烟雾和烧伤。这些防护装备包括但不限于：

- 防护眼镜和听力保护装置。
- 流体和溶剂生产厂家所推荐的呼吸器、防护服及手套。

警告

以下为针对本设备的设置、使用、接地、维护及修理的警告。惊叹号标志表示一般性警告，而各种危险标志则表示与特定操作过程有关的危险。当本手册正文中或警告标志上出现这些符号时，请回头查阅这些警告。若产品特定的危险标志和警告未出现在本节内，则可能出现在本手册的其他章节。

警告

电击危险

必须将本设备接地。系统接地不当、设置不正确或使用不当都可导致电击。

- 在断开任何电缆连接前和维修或安装设备前，要关掉并切断其电源。
- 只能连接到已接地的电源上。
- 所有的电气接线都必须由合格的电工来完成，并符合当地的所有规范和标准。
- 打开设备前，等待电容器放电五分钟。

火灾和爆炸危险

工作区内的易燃烟雾（如溶剂及油漆烟雾）可能被点燃或爆炸。设备内流经的涂料或溶剂可产生静电。为避免火灾及爆炸：

- 仅在通风良好的地方使用此设备。
- 清除所有火源，如引火火焰、烟头、手提电灯及塑胶遮蔽布（可产生静电火花）。
- 将工作区内的所有设备接地。参见**接地**说明。
- 保持工作区清洁，无溶剂、碎片、汽油等杂物。
- 存在易燃烟雾时不要插拔电源插头或开关电源或电灯。
- 只能使用已接地的软管。
- 如果出现静电火花或感到有电击，**则应立即停止操作。**在找出并纠正问题之前，不要使用设备。
- 工作区内要始终配备有效的灭火器。

清洁过程中，塑料零部件上可能会积累静电，导致放电和点燃易燃蒸汽。为避免火灾及爆炸：

- 仅在通风良好的地方清洗塑料零部件。
- 不要用干布清洗。
- 不得在设备工作区操作静电喷枪。

⚠ 警告

高压设备危险

从设备、泄漏处或破裂的组件流出来的流体，会溅入眼内或皮肤上，导致重伤。

- 在停止喷涂/分配时以及在清洗、检查或维修设备之前，要按照**泄压步骤**进行操作。
- 在操作设备前要拧紧所有流体连接处。
- 要每天检查软管、吸料管和接头。已磨损或损坏的零配件要立刻更换。

设备误用危险

误用设备会导致严重的人员伤亡。

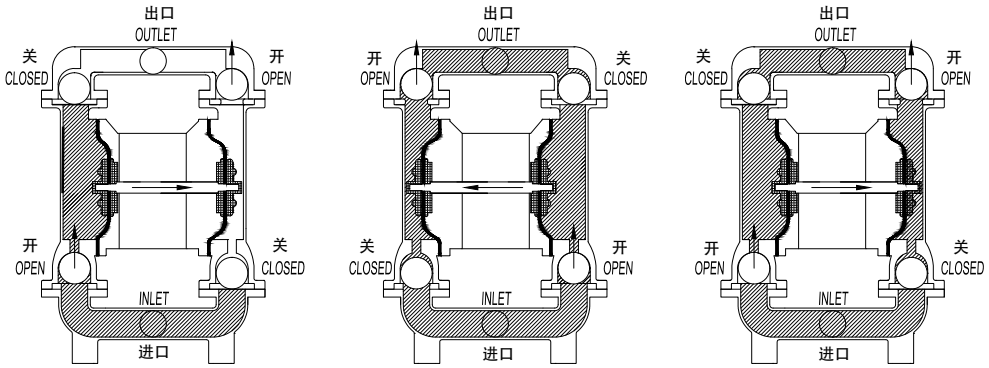
- 疲劳时或在吸毒或酗酒之后不得操作本装置。
- 不要超过额定值最低的系统组件的最大工作压力或温度额定值。参见所有设备手册中的**技术数据**。
- 请使用与设备的接液部件相适应的流体或溶剂。参见所有设备手册中的**技术数据**。阅读流体及溶剂生产厂家的警告。有关材料的完整信息，请向分销商或零售商索要安全数据表。
- 当设备不使用时，要关闭所有设备并按照**泄压步骤**进行操作。
- 设备需每天检查。已磨损或损坏的零配件要立刻修理或更换，只能使用生产厂家的原装替换用零配件进行修理或更换。
- 不要对设备进行改动或修改。改动或修改会导致机构认证失效并造成安全隐患。
- 确保所有设备额定和批准用于其正在使用的环境。
- 只能将设备用于其预定的用途。有关资料请与经销商联系。
- 让软管和电缆远离公共区域、尖锐边缘、移动部件及热的表面。
- 不要扭绞或过度弯曲软管或用软管拽拉设备。
- 儿童和动物要远离工作区。
- 要遵照所有适用的安全规定。

高压铝质零配件危险

在压力设备中使用与铝不兼容的流体可导致严重的化学反应和设备破裂。若不遵循本警告，则可能导致死亡、严重受伤或财产损失。

- 不得使用 1,1,1-三氯乙烷、二氯甲烷、其他卤代烃溶剂或含有这些溶剂的流体。
- 请勿使用氯漂白剂。
- 很多其他流体可能含有与铝发生反应的化学物质。联系您的涂料供应商了解是否兼容。

The Skylink diaphragm pump is an electric, positive displacement, self-priming pump. These drawings show the low pattern through the pump upon its initial stroke. It is assumed that the pump has no fluid in it prior to its initial stroke.
斯凯力电动隔膜泵是一种电动、正排量、自吸泵。这些图显示了泵在初始冲程时的流型。假设泵在其初始行程之前没有流体。



Skylink pumps adopt electric power for power source and depend on diaphragms which move left and right to reach the volume sealed working chamber to achieve loading and discharging.
斯凯力电动隔膜泵采用电机作为动力源，依靠向左和向右移动的膜片改变密封的腔体容积来实现进料和出料。

The electric diaphragm pump is composed of a suction port, a discharge port, a medium chamber and a power assembly. The power assembly is composed of a motor, a crankshaft, a piston and an intermediate shaft
电动隔膜泵由吸入口、排放口、介质室和动力总成构成，动力总成由电机、曲轴、活塞和中间轴构成

When the diaphragm pump is working, the left and right diaphragms are driven by the crankshaft and the piston to move left and right
隔膜泵工作时，左右膜片均通过曲轴和活塞驱动左右运动

The motor drives the crankshaft, the crankshaft drives the piston, the piston pushes the central shaft, and the diaphragm moves to the left. As a result, the volume of the left cavity decreases and the liquid is squeezed out
电机带动曲轴，曲轴驱动活塞，活塞推动中心轴，驱动膜片向左移动，结果是左腔容积减小，液体被挤出。

Since the right diaphragm and the left diaphragm are connected by a shaft, the right diaphragm moves to the left, the volume of the right cavity increases, and liquid is sucked. Due to the reciprocating movement of the crankshaft eccentric, the left and right diaphragms move to the right, the volume of the left cavity increases, liquid is sucked in, and the volume of the right cavity decreases, the liquid is discharged. , Repeat the above actions to complete the continuous pump fluid delivery.
由于右膈膜和左膈膜通过轴连接，右膈膜向左移动，右腔容积增大，吸入液体。由于曲轴偏心轮往复运动，左、右膈膜向右侧移动，左腔容积增大，液体吸入，右腔容积减小，液体被排出，重复以上动作完成隔膜泵的流体连续输送。

E Electromechanical Diaphragm Pump

Model 型号	Size 口径	Houseing Material 外壳材质	Diaphragm Material 膜片材质	Valve Seat Material 球座材质	Valve Ball Material 阀球材质	Other 其它	泵性能等级	电机类型	辅助装置	
E501/XNTTT/BV0/1A00	E501	X	NT	T	T	BV0	1级	A	0	0

SIZE (DN)

E 501双腔	E 502四腔
1/2”=151	1/2”=152
1“=251	1“=252
1.5”=401	1.5”=402
2”=501	2”=502
3”=801	3”=802

HOUSING MATERIAL
外壳材质
A= acrylic coated aluminium铝合金
I = acrylic coated Cast Iron 铸铁
X= Stainless Steel(316L)316L不锈钢
H= Alloy-C 合金-C
P= Polypropylene 聚丙烯
K= PVDF 聚偏二氟乙烯

泵性能等级
1级
2级
3级
4级
5级电机竖装
6级电机竖装
7级电机竖装
8级电机竖装

电机类型
A=非防爆非变频
B=防爆非变频
C=变频非防爆
D=变频 防爆

辅助装置
V0=目视泄露 无报警装置
A0=压力开关 带报警装置
B0=压力开关 不带报警装置
C0=压力传感器 带报警装置
D0=压力传感器 不带报警装置
E0=压力传感器 带报警装置 防爆
F0=压力传感器 不带报警装置 防爆
00=无辅助装置

DIAPHRAGM MATERIAL
膜片材质
NE= Neoprene
氯丁橡胶
NT= Teflon/Neoprene
特氟龙/氯丁橡胶
BN= Buna
丁腈橡胶
VT=Viton
氟橡胶
GT=Teflon/EPDM
特氟龙/三元乙丙
GG= EPDM
三元乙丙
LT= 泄露报警隔膜
复合特氟龙/EPDM背膜
EE=Santoprene
三道橡胶
GT=Teflon/SP
特氟龙/三道橡胶

VALVE SEAT MATERIAL
球座材质
P= Polypropylene
聚丙烯
T= Teflon
特氟龙
X= Stainless Steel (316L)
316L不锈钢
A= Alumium
铝合金
K=PVDF
聚偏二氟乙烯
E=Santoprene
三道橡胶

VALVE BALL MATERIAL
阀球材质
N= Neoprene
氯丁橡胶
B= Buna
丁腈橡胶
V= Viton
氟橡胶
T= Teflon
特氟龙
X= Stainless Steel (316L)
316L不锈钢
C= Ceramic
陶瓷
G= EPDM
三元乙丙
E=Santoprene
三道橡胶

OTHERS
其它
B00= BSPT Thread (BSPT)
N00= NPT Thread (NPT)
D00= DIN Flange(DIN)
A00= ANSI Flange (ANSI)
J00= JIS Flange (JIS)
0V0= 带有出口溢流阀
00T=带有扭矩限制联轴器

Chemical Properties are as follows化学特性如下:

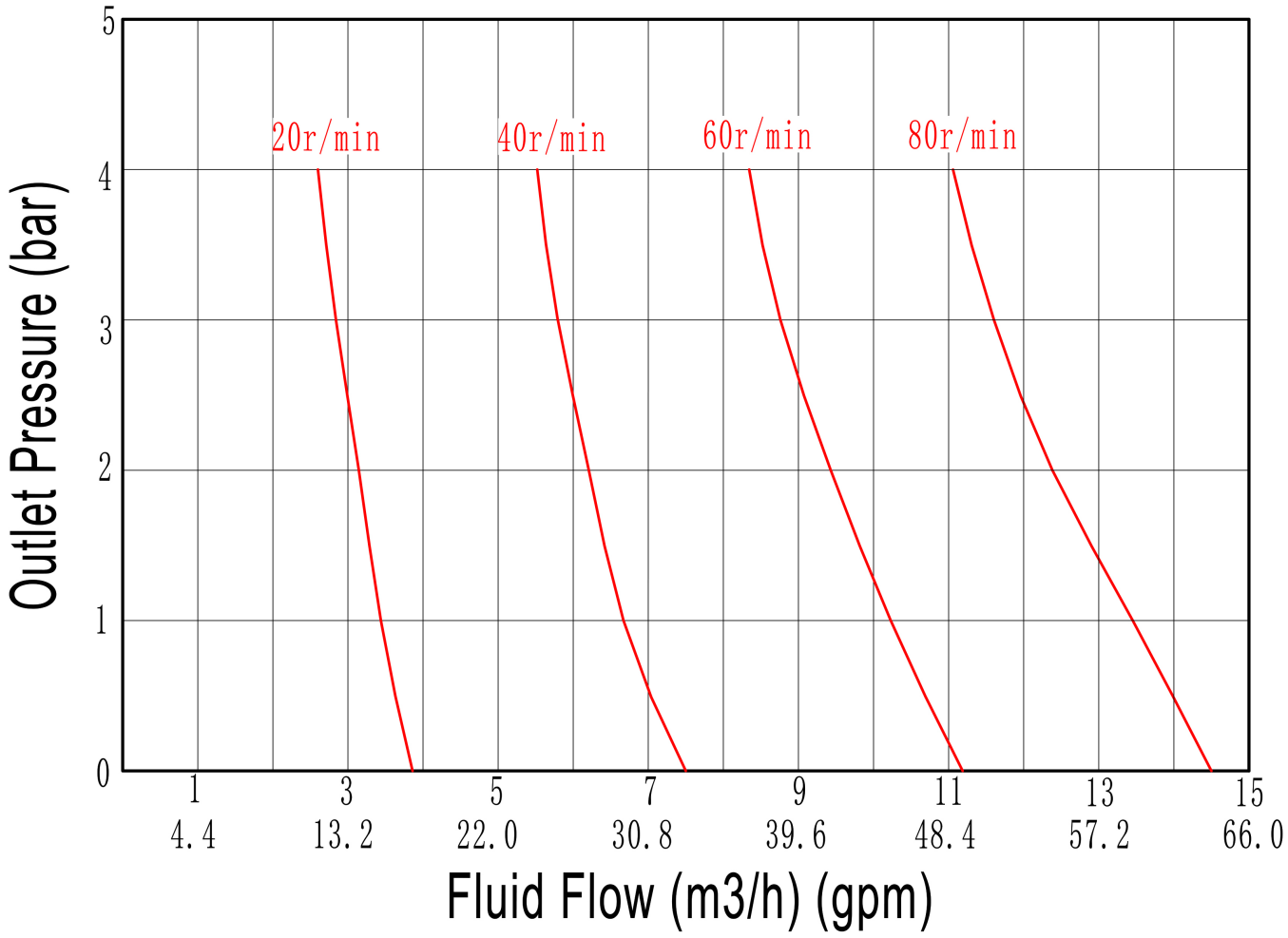
Materials材质	Chemical Properties化学特性
Virgin PTFE 聚四氟乙烯	Chemically inert,virtually impervious. Very few chemicals are known to chemically react with PTFE; molten alkali metals, turbulent liquid or gaseous fluorine and few fluorochemicals such as chlorine trifluoride or oxygen difluoride with ready liberate free fluorine at elevated temperatures. 化学惰性，几乎完全不透水。很少有化学品可以与聚四氟乙烯发生化学反应；熔融的碱性金属、湍流液体或气态氟，以及一些在温度升高时易释放的游离氟的氟代化学物质，如三氟化氯或二氟化氧等会迅速腐蚀聚四氟乙烯。
Santoprene 三道橡胶	Injection molded thermoplastic elastomer with no fabric layer,Long mechanical flex life. Excellent abrasion resistance. 注塑成型的热塑性弹性体，无织物层，机械弯曲寿命长。具有优异的耐磨性。
Neoprene 氯丁橡胶	All purpose, Resistant to vegetable oil. Generally not affected by moderate chemicals, fats, greases and many oils and solvents. Generally attacked by strong oxidizing acids, ketones, esters, nitro hydrocarbons and chlorinated aromatic hydrocarbons. 用途广泛，耐植物油。一般不受温和的化学品，脂肪，油脂和许多油和溶剂的影响。通常会受到强氧化酸、酮类、酯类、硝基烃和氯代芳烃的腐蚀。
Buna 丁腈橡胶	General purpose, oil-resistant. Shows good solvent, oil, water and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and MEK, ozone, chlorinated hydrocarbons and nitro hydrocarbons. 通用，抗油性。具有良好的耐溶剂、油、水和液压特性。不可与强极性溶剂如丙酮和丁酮、臭氧、氯化烃和硝基烃等一起使用。
Viton 氟橡胶	Shows good resistance to a wide range of oils and solvents; especially all aliphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetable oils. 对各种油和溶剂具有良好的抗性，尤其是所有脂肪族、芳香族和卤代烃、酸、动物和植物油。
PVDF 聚偏二氟乙烯	A durable fluoroplastic with excellent chemical resistance. Excellent for UV applications. High tensile strength and resistance. 一种耐用的氟塑料，具有优异的耐化学性,在UV应用方面是最佳选择，具有高拉伸强度和耐冲击性。
Polypropylene 聚丙烯	Thermoplastic polymer. Moderate tensile and flex strength. Resists strong acids and alkalie. Attacked by chlorine,fuming nitric acid and other strong oxidizing agents.热塑性聚合物。中等拉伸强度和抗弯强度。抗强酸和强碱。易受氯气、发烟硝酸及其他强氧化剂的侵蚀。
Alloy C 合金C	Equal to ASTM494 CW-12M-1 specification for nickel and nickel alloy. 相当于ASTM494 CW-12M-1规格的镍和镍合金。
EPDM 三元乙丙橡胶	Shows very good water and chemical resistance. Has poor resistance to oil and solvents, but is fair in ketones and alcohols. 表现出很好的耐水性和耐化学性，对油和溶剂耐受性差.但在酮和醚中性质不变。
Stainless steel 不锈钢	Equal to exceeding ASTM specification A743CF-BW forcorrosion resistant iron chromium,iron chromium nickel,and nickel based alloy castings for general applications. Commonly referred to as 316 Stainless Steel in the pump industry. 相当于或超过ASTM规范A743CF-BW，适用于一般用途的耐腐蚀的铬铁、铁铬镍和镍基合金铸件。泵行业通常称为316不锈钢。

For specific applications,you can contact us其他特殊应用请联系我司。

Operating temperature limitations are as follows工作温度极限如下:

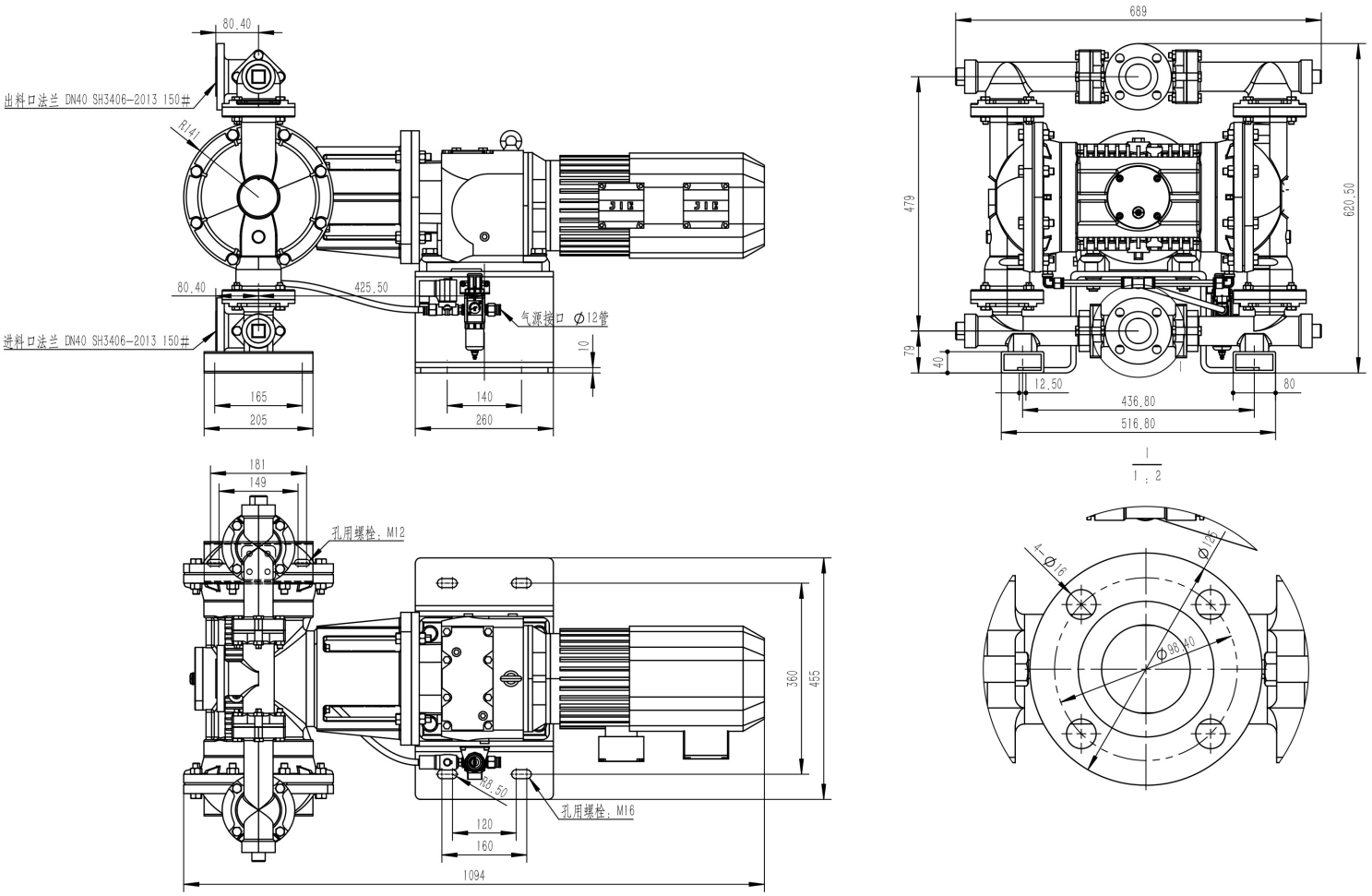
Materials材质	Maximum最高	Minimum最低
Virgin PTFE 聚四氟乙烯	220°F 104℃	-35 °F -37℃
Santoprene 三道橡胶	225 °F 107℃	-10 °F -23℃
Neoprene 氯丁橡胶	177°F 77℃	-10 °F -23℃
Buna 丁腈橡胶	190 °F 88℃	-10 °F -23℃
Viton 氟橡胶	350 °F 177℃	-40 °F -40℃
PVDF 聚偏二氟乙烯	250 °F 121℃	0 °F -18℃
Polypropylene 聚丙烯	150°F 66℃	32 °F 0℃
EPDM 三元乙丙橡胶	280 °F 138℃	-40 °F -40℃
Alloy C 合金C	-	-
Stainless steel 不锈钢	-	-

For specific applications,you can contact us其他特殊应用请联系我司。



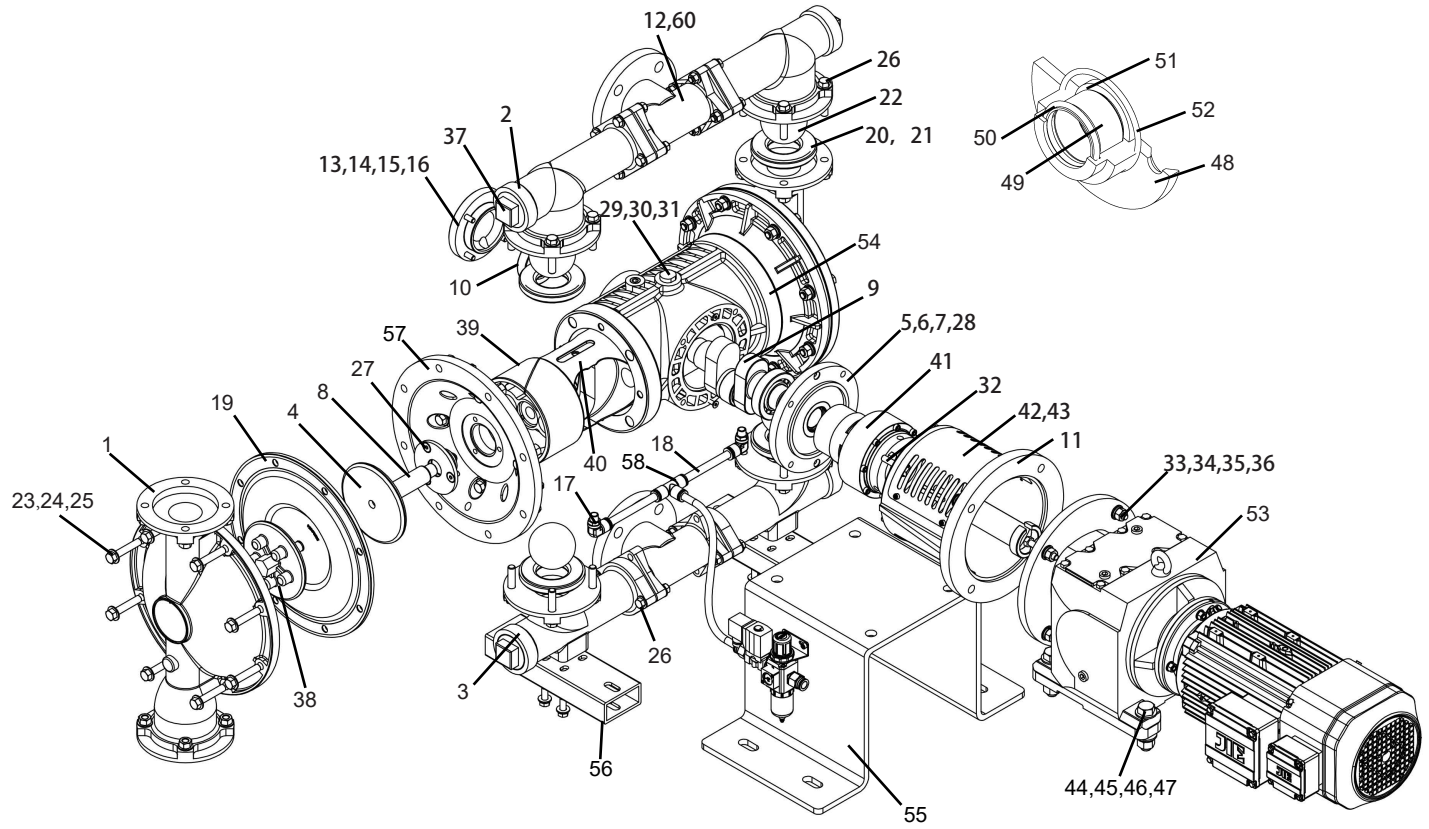
*Performance is based on the following: elastomer fitted pump, flooded suction, water at ambient conditions. The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.
以上性能是基于以下：氯丁橡胶膜片泵，泵入口没有吸程，出口没有扬程，输送介质为水。使用其他材料和不同的液压条件可能导致偏差超过5%。

3.5 E40 Dimensional drawing 尺寸图



* The dimensions on this drawing are for reference only A certified drawing can be requested if physical are needed.
此图的尺寸仅供参考，如果需要，可以向我司要求提供图纸。

Figure 1 E40 Diaphragm Pump Exploded View
图1 E40隔膜泵分解图



■ E40 Parts List E40零件目录

Number图号	Part Number零件号	Description描述	Quantity数量
1	1.5"外腔体`	QT450&316L	2
2	E40出料口	QT450&316L	2
3	E40进料口	QT450&316L	2
4	E50内压板（螺纹）	40Cr	2
5	E50曲轴箱盖	AL6063-T6	1
6	骨架油封(FB型)	GB/T 13871.1-2007 40X60x8	1
7	内六角沉头螺钉	M6×20 8.8级 CS 发黑	2
8	E50中心轴	42CrMo	2
9	E50曲轴组件	42CrMo	1
10	圆柱滚子轴承	GB/T 283-2007 NJ208EW	2
11	E50联轴器护罩	AL6063-T6	1
12	1.5"三通	QT450&316L	2
13	E50轴承端盖	AL6063-T6	1
14	内六角圆柱头螺丝	5/16"-18x7/8 304	4
15	旋入式油标	G1/4A	1
16	轴承端盖O型圈	77.5*3.55 N70 丁腈	1
17	90°快速接头	PL16-04 304	2
18	透明气管	φ16	1
19	1.5"膜片	SP&NE&PTFE&EPDM	2
20	1.5"球座	316L&PTFE&SP&NE	4
21	1.5"球座密封圈	94.85*3.5 PTFE&Vition	8
22	1.5"阀球	PTFE (70MM)&SP&EPDM&316L	4
23	外六角螺钉	半牙 7/16"-14x2-1/4" 304	16
24	弹垫	7/16" 304	44
25	平垫	7/16" 304	44
26	外六角螺钉	半牙 3/8-16*2-1/4 304	28
27	沉头内六角螺钉	M8x16 10.9级 CS 发黑	6
28	E50曲轴箱盖O型圈	106*3.55 N70 丁腈	1
29	E50活塞定位杆	2Cr13	1
30	圆柱滚子滚轮轴承	CF5（KR13PP）	1
31	1/2"气阀端盖内塞O型圈	12x1.8 丁腈	1

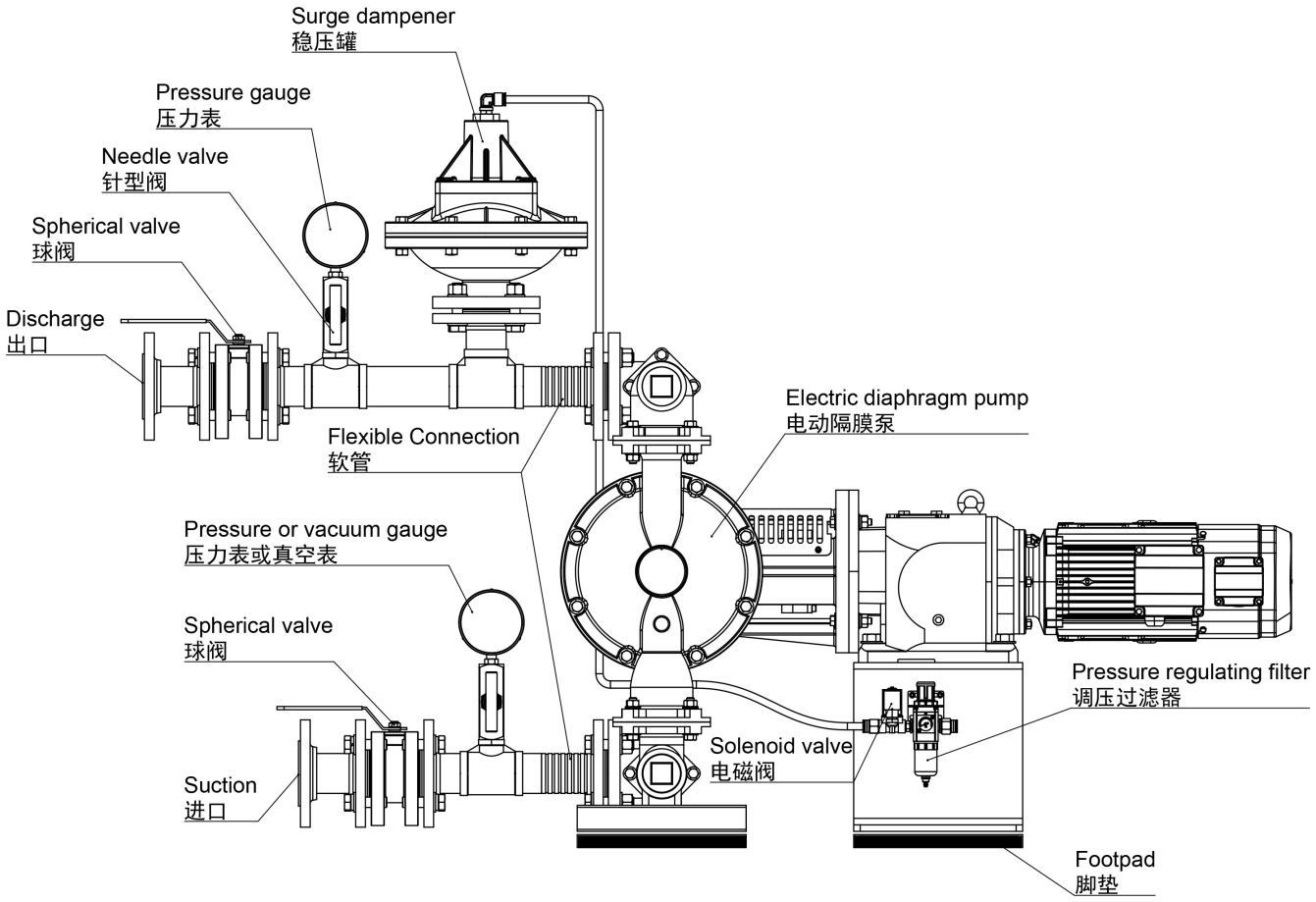
■ E40 Parts List E40零件目录

Number图号	Part Number零件号	Description描述	Quantity数量
32	外六角螺钉	半牙 3/8x16x2 304	4
33	外六角螺丝	半牙 3/8x16x2-1/4 304	4
34	平垫	3/8 304	16
35	弹垫	3/8 304	12
36	外六角螺母	3/8 304	4
37	内六角头管塞	R 1.5"/304	4
38	1.5-2"外压板	316L&CI	2
39	E50活塞衬套	酚醛树脂夹布	1
40	E50活塞	20CrMnTi	1
41	扭矩限制联轴器	BF2轴径35键10mm+轴径40键12mm	1
42	E50联轴器护罩网罩	304	1
43	内六角圆柱头螺钉	GB/T 70.1 M5x10 304	4
44	外六角螺钉	半牙 5/8x11x2-3/4 304	4
45	外六角螺母	5/8"-11 304	4
46	平垫	5/8" 304	8
47	弹垫	5/8" 304	4
48	E50中间轴密封盒	AL6063-T6	2
49	E50活塞衬套	酚醛树脂夹布	2
50	E50中间轴格莱圈	28x35x3.2 POB+特氟龙	4
51	E50中间轴U型圈	28x35.5x5 N70 丁腈	2
52	E50中间轴密封盒O型圈	48.9*2.62 N70	2
53	杰牌减速电机	JRTR79 -DN100L4-V-3KW变频-23.37	1
54	E50中间体	AL6063-T6	1
55	E40底座	卧式 CS	1
56	E40地脚	304	2
57	E40内腔体	AL6063-T6	2
58	正三通气动管接头	IPEP 16	1
59	外六角螺钉	3/8x16x1 304	8
60	1.5"三通密封圈	PTFE&Vition	4

SKYLINK pumps are able to fulfill different requirements of most demanding fluid transfer, they are designed as well as manufactured in such high quality, in order to satisfy our clients' various demands. SKYLINK provides diaphragms which are made of different elastomeric materials to be suitable for different environments according to clients' requirements.
斯凯力隔膜泵高超的设计和制造品质，能够满足客户不同需求以及最苛刻条件的流体输送。斯凯力可根据客户的要求提供不同弹性材料制成的隔膜，以适用于不同的环境。

Piping管道:
The pipes which are connected to the inlet and outlet must be incompressible material, so that those pipes are able to bear a high vacuum. All piping should be equivalent size or larger than the diameter of the inlet and outlet, which will improve pump's performance.
连接到入口和出口的管道必须是不可压缩的材料，以便那些管道能够承受高真空。所有管道的尺寸应大于或等于进口和出口的直径，这将提高泵的性能。

Location位置:
When install pumps, enough space shall be left for maintenance personnel to do maintenance or even rebuild your system, such as add a pressure gauge or a valve on the pump in the future.
安装泵时，维修人员应留有足够的空间进行维修或重建系统，如将来在泵上加装压力表或阀门。



5.1 Recommended Installation推荐安装

Installation安装:

Engineer and installation personnel shall propose an integrated installation plan, which will make pumps perform better, meet fluid transfer requirement and easier to maintain in the future.
工程师和安装人员应提供一体化的安装计划，以满足流体输送要求，而且将来更方便维护。

1.First, fix the anchor screw of the pump, and then connect the power supply to the motor. Generally, 380V AC is used, and the frequency converter can also be configured to adjust the frequency, and the frequency conversion range is generally 5-50Hz.
1.首先将泵地脚螺丝固定，然后将电源接到电机上，一般使用380V交流电，配置变频器也可以变频调节，变频范围一般5-50Hz。

2.Set the air source, generally set the air source pressure according to the outlet pressure, and the inflation pressure is less than the outlet pressure. This air source is not consumed to protect the diaphragm and extend the life of the diaphragm.
2.设置气源，一般按照出口压力设置气源压力，充气压力≤出口压力，此气源不消耗，是为了保护膜片，延长膜片寿命。

Caution注意:

When the outlet pressure exceeds 2Bar, we recommend the use of compressed gas support for optimal diaphragm life. When the outlet pressure is below 2Bar, we recommend against using compressed gas support.
在出口压力超过2Bar时，我们建议使用压缩气体支撑，从而获得最佳膜片寿命。当出口压力低于2Bar时，我们建议不要使用压缩气体支撑。

The pressure of the compressed gas output by the pressure regulating filter should be set to 1.5±0.2Bar, not exceeding the recommended compressed gas pressure.
调压过滤器输出的压缩气体的压力应设置为1.5±0.2Bar，不要超过建议的压缩气体压力。

For precautionary purposes, it is recommended to filter the air with a filter of 5 microns or finer, and the recommended air quality is grade 6 for particles, grade 4 for water and grade 4 for oil according to PN-ISO8573-1:2010. In cases where this level is not reached, dirt or oil in the compressed air may be the cause of the failure.
出于预防目的，建议使用5微米或更细的过滤器过滤空气，根据PN-ISO8573-1:2010，建议的空气质量为颗粒6级、水4级和油4级。在没有达到这个级别的情况下，压缩空气中的污垢或油可能是导致故障的原因。

3.In order to reduce the pipe resistance (especially the high viscosity of the material), it is recommended that the diameter of the discharge port ≥ the diameter of the pump.
3.为了减少管阻（特别是物料粘度比较高）建议出料口口径 ≥泵的口径 。

Maintenance维修 :

Different working condition (Frequency of use, air pressure, viscosity of fluid and abrasiveness of process fluid) affects parts life of pumps, so each pump must have its own maintenance schedule. Before operating the pump, a visual inspection shall be taken, check all fasteners, tighten if they are loose.
不同的工作条件（使用频率，气压，流体粘度和流体磨损性）会影响泵部件的寿命，所以每台泵都必须有自己的维护计划。在操作泵之前，应进行目视检查，检查所有紧固件，有松的必须拧紧。

Records记录:

Each maintenance shall be recorded, those records will become a useful tool to predict and avoid some potential issues which would happen in the future. Furthermore, an elaborate record can identify if the pump is truly suitable for such application as well.
每次维护都应该被记录下来，这些记录将成为预测和避免以后可能发生的一些潜在问题的有用工具。此外，精细的记录可以识别泵是否确实适合这种应用。

Use and installation排液管使用及安装:

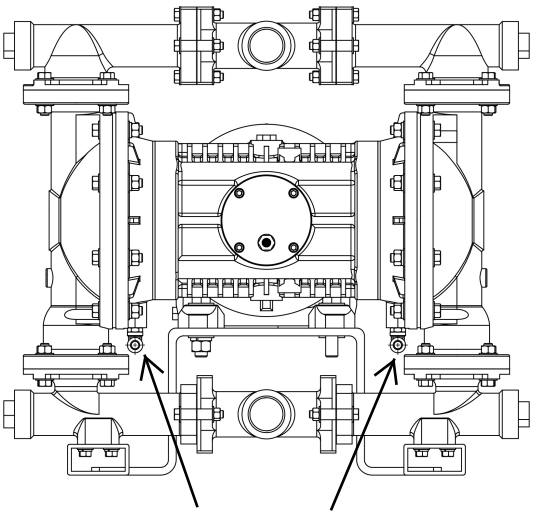
When the diaphragm fails, the pumping medium may enter the intermediate body of the pump, and the medium will be discharged into the surrounding environment through the visual tube. When the dangerous or toxic medium is pumped, the visual tube must be externally connected to the pipeline and discharged to an area that is convenient for safe handling.

隔膜失效时，泵送介质或会进入泵的中间体内，介质将通过可视管被排到周围环境中，泵送危险或有毒介质时，可视管必须外接管路，排放到便于安全处理的区域。

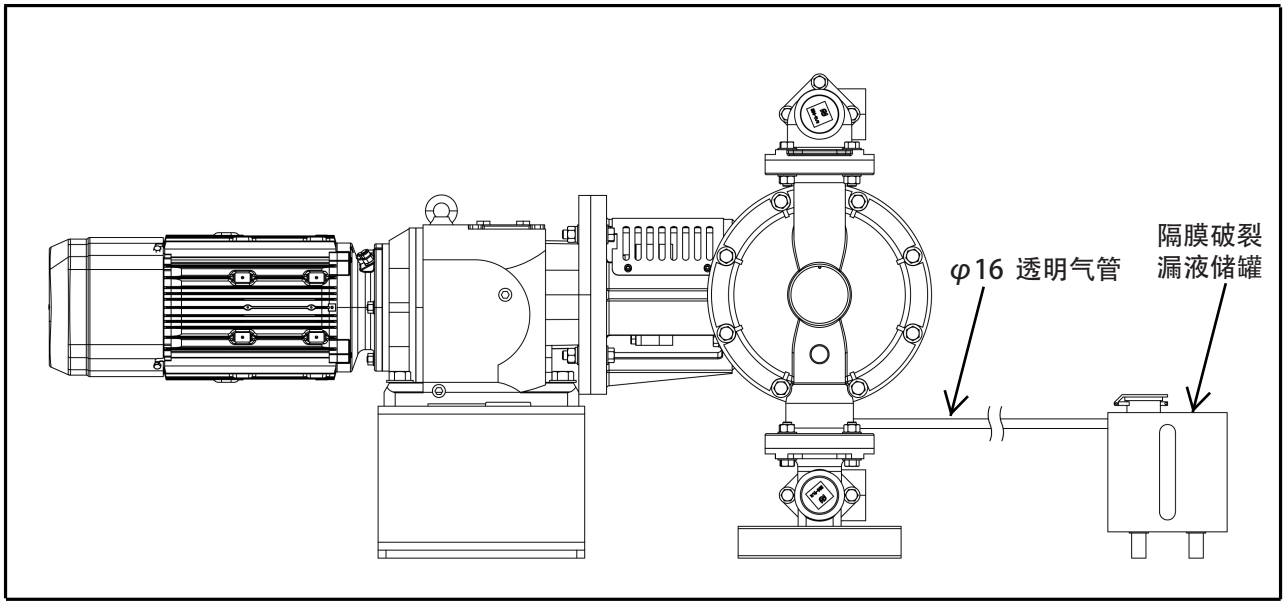
When the diaphragm fails, the pumping medium may enter the drive chamber, and the leakage can be diverted outside the pump through the external drainage interface to reduce the damage to the mechanical parts in the pump. At the same time, the liquid discharge pipe is transparent and easy to find the material, which can react to the diaphragm rupture in time and reduce the loss caused by the diaphragm rupture.

隔膜失效时，泵送介质或会进入驱动腔内，通过外接排液接口可将漏液导流至泵外，降低对泵内机械部件的损坏。同时排液管透明易发现物料，可及时对膜片破裂作出反应，减少因隔膜破裂而引起的损失。

Location排液管口位置：



Schematic drawing电动隔膜泵外接排液管示意图：



Caution注意：

1. The drainage pipe is recommended to use a transparent trachea that has no chemical reaction with the solvent, which is convenient for timely detection after the rupture of the diaphragm.

1.排液管推荐使用与溶剂无化学反应的透明气管，便于隔膜破裂后能及时发现。

2. It is recommended to store the leakage centrally in a container that is convenient for observation, and timely response can be made when there is leakage in the tank.

2.建议将漏液集中存储在方便观察的容器内，发现罐内有漏液时可及时作出反应。

Lubrication润滑:

1. The lubricating oil of reducer has been added before leaving the factory.
The first oil change of reducer is after 500h operation, and the filling amount is 0.8L. There is no need to change the lubricating oil brand: VG220 Mobil
2. The grease of the intermediate body cavity has been filled before delivery.
Intermediate grease is generally filled once in the first 500h, the filling amount is 0.2L, and then replaced once a year, grease brand number: XHP222

1. 减速机润滑油已经在出厂的时候加注。
减速机首次换油为运行500h后，加注量0.8L，后面不需要更换，润滑油牌号：**VG220 美孚**

2. 中间体腔体的润滑脂已经在出厂时加注完毕。
中间体润滑脂一般在首次500h加注一次，加注量为0.2L，后面每一年更换一次，润滑脂牌号：**XHP222**

Caution注意:	It is forbidden to carry out maintenance while the machinery and equipment are in operation 禁止在机械设备运转时进行维护保养

Oil from the oil standard (15).从油标(15)处注油。

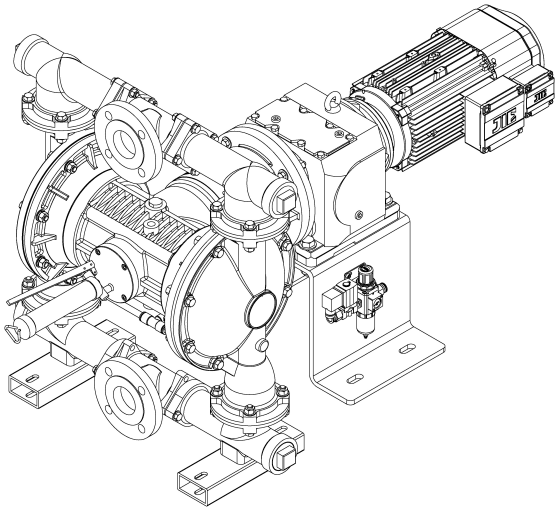


Figure 6.1.1 Bearing lubrication 轴承润滑

Oil from the hexagon plug (49).从内六角管塞(49)处注油。

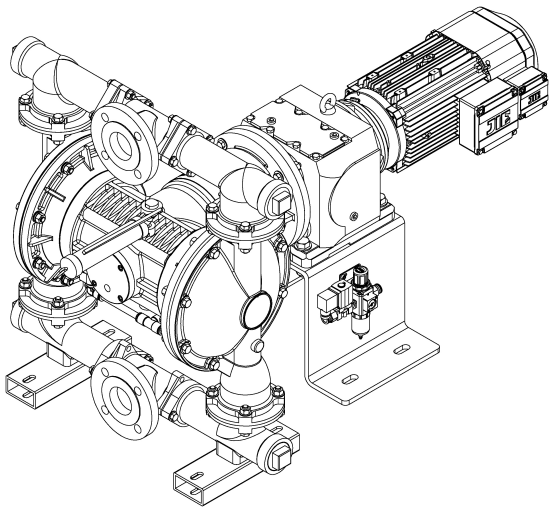


Figure 6.1.2 Piston lubrication 活塞润滑

Malfunction description 故障描述	Reason 原因	Solution 解决方法
Pump is working, but no fluid is discharged or low outlet pressure, few fluid is discharged. 泵在工作，但没有流体排出或出口压力低，很少有流体排出。	Due to serious damage of check valve(ball & seat), so that it is not able to seal properly. 止回阀（球和阀座）严重磨损无法密封 。	Dismantle both upper and bottom seat, if a huge gap between ball and seat, ball can be changed, seat can be continued using flip. 拆开上、下两个球座，如果球与座之间有较大间隙，则可更换球，球座可翻一面继续使用
	Fluid inlet or pipe are unsealed. 流体入口或管道未密封好。	Check if fluid inlet and pipe are sealed properly 检查流体入口和管道是否已被正确密封
	Exceed pump's performance. 超出泵的工作能力 。	Adjust installation position of pump, as closer to fluid as possible. 泵的安装位置越靠近流体越好。
	Unsealing due to loosen bolts. 螺栓松动。	Tightening all bolts. 紧固所有螺栓。
	Outlet is blocked. 出口堵塞。	Check outlet and valve opening. 检查出口阀门是否开。
	Ball is not able to fully return by its own weight and seal due to high viscosity of fluid 由于流体太粘稠球无法通过自重回落密封。	Clean check valve and replace heavy ball or stainless steel ball 清洗止回阀，更换重球或者不锈钢球。
	Fluid leaks out form muffler due to damage of diaphragm or washer. 隔膜或垫圈损坏，流体从可视管中泄漏出来。	Change diaphragm, tightening washer 更换隔膜，紧固压板。
	Flow limit due to inflation of ball 阀球膨胀导致流量受限制。	Check chemical compatibility of ball material and fluid。 检查阀球与流体的化学适应性。
	Check valve(ball & seat) is not totally sealed, sundries might be stuck between 止回阀（阀球和球座）无法完全密封，有杂物卡在球和球座之间。	Change check valve(ball & seat) of clean sundries 清除止回阀（阀球和球座）间的杂物。
Noise or abnormal sound 噪音或声音异常	Sound due to ball in the pump shell 球撞击声音。	No maintenance, does not affect the normal use 无需维修，不影响正常使用。
	The torque limit coupling skids and makes a friction sound.The pump runs near the shutdown pressure 扭矩限制联轴器打滑，发出摩擦声。泵在停机压力附近运行。	Check if the outlet pressure exceeds 4bar and tighten the three screws on the torque limit coupling evenly. 检查出口压力是否超出4bar，均匀紧固扭矩限制联轴器上的三颗螺丝。
Outlet occurs bubble 出口出现气泡	Inlet or inlet pipes are not sealed properly 入口或入口管道未正确密封。	Check if fluid inlet and pipe are sealed properly 检查入口或入口管道是否正确密封。
	Air leakage due to damage of diaphragm or looseness of washer 隔膜损坏或压板松动引起的空气泄漏。	Change diaphragm, tightening washer 更换隔膜，紧固压板。
Leak inspection tube filled with material. 漏液视察管内充满物料。	Air leakage due to damage of diaphragm or looseness of washer 隔膜损坏或压板松动引起的空气泄漏。	Change diaphragm, tightening washer. 更换隔膜，紧固压板。
Torque limits coupling heat or smoke.Soft mat burn out 扭矩限制联轴器发热或冒烟、软垫烧化。	The outlet valve is not open and the outlet pressure exceeds the set torque of the coupling. 出口阀门未打开，出口压力超出联轴器设置扭矩。	Open outlet valve and evenly tighten three screws on torque limiting coupling. 打开出口阀门，均匀紧固扭矩限制联轴器上三颗螺钉。

注 意

The inside of the electric pump must be free of process fluids, clean and free of obstacles before maintenance can be performed. Appropriate cleaning procedures are performed for the application of process fluids.
电动泵的内必须无工艺流体、干净且没有障碍物，然后才能进行维护。并对工艺流体的应用执行适当的清洗程序。

8.1 Replace valve ball and seat
更换阀球、阀座

Tools工具: 16mm, wrenches扳手

Caution: Before removing the pump, you must disconnect the power supply. Discharge pressure from the pump chamber, which may cause injury, pump damage or property damage if removed with pressure.

注意：在拆卸泵之前，必须先断开电源。对泵腔内泄压，如果带压拆卸，可能会造成伤害、泵损坏或财产损失。

Remove 16 bolts (26) with a wrench, move the inlet and outlet port, observe the wear condition of the valve ball (22) and ball seat (20), and install the valve ball and ball seat in the order of in, up and out after replacement.

用扳手拆卸16个螺栓(26)，移开进出料口，观察阀球(22)和球座(20)磨损状况，更换后按下进上出顺序安装阀球和球座。

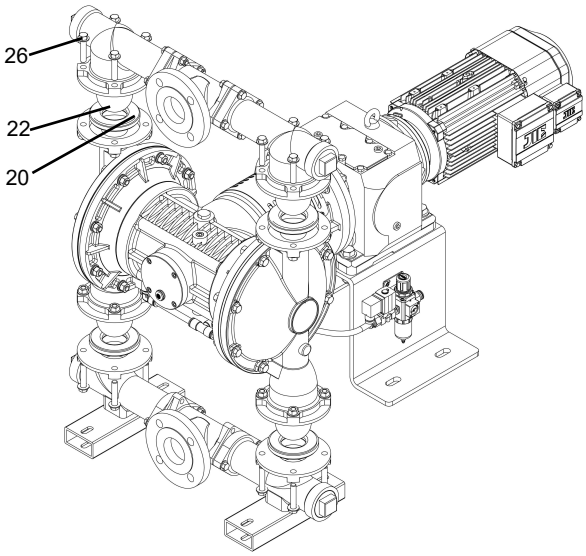


Figure 8.1 Replace valve ball and seat 更换阀球、阀座

8.2 Remove the outer cavity and diaphragm
拆卸外腔体、膜片

Tools工具: 16mm, 27mm，wrenches扳手

Remove the 16 bolts (23) with a 16mm wrench, remove the outer cavity (1), and remove the diaphragm (19), inner pressure plate (4), and outer pressure plate (38) from the center shaft (8) with a 27mm wrench.

用16mm扳手拆卸16个螺栓(23)，移开外腔体(1)，使用27mm扳手将膜片(19)、内压板(4)、外压板(38)，一起从中心轴(8)上卸下。

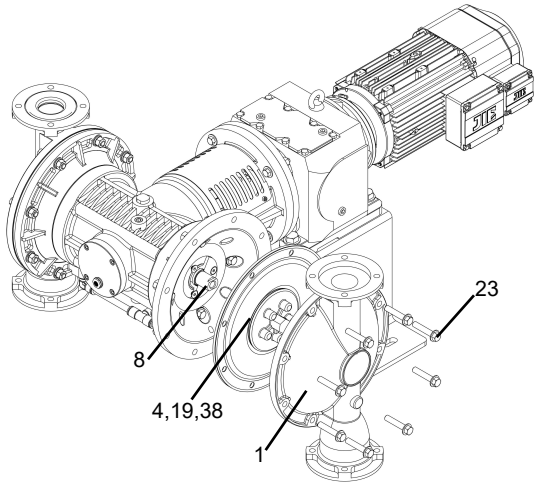


Figure 8.2 Remove the outer cavity and diaphragm 拆卸外腔体、膜片

8.3 Replacement of diaphragm
更换膜片

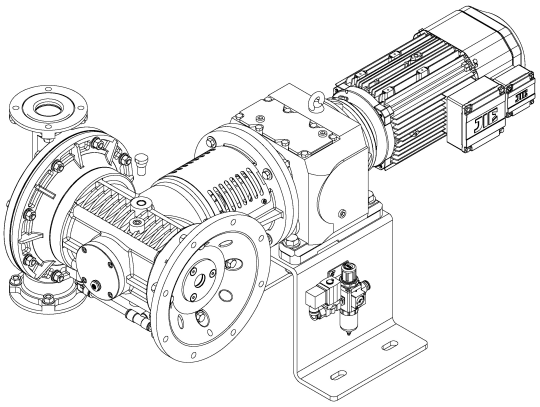
Tools工具: 27mm Torque wrenches 扭矩扳手

1. Replace the piston positioning rod (29) with the tooling.
2. Tighten the central shaft (8) on the piston.
3. Manually press the intact diaphragm (19) onto the outer plate (38) using the inner plate (4).
4. Replace one part of the center shaft (8) of the diaphragm to move out and tighten the diaphragm assembly on the center shaft.
5. Tighten the inner pressing plate (4) with force using a 27mm wrench to ensure that the inner pressing plate (4) fits the center shaft tightly and aligns the eight screw holes.
6. Use 4 bolts (23) to tighten evenly on the middle body to fix the diaphragm.
7. Use torque wrench to press the external pressure plate (38), torque value: 200 N·m.
8. Replace the tooling with a piston locator rod.
9. Remove the 4 screws and install the outer cavity (1).

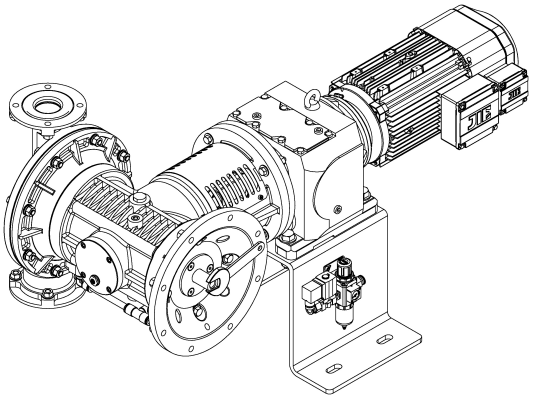
1.使用工装替换活塞定位杆(29)。
2.将中心轴(8)拧紧在活塞上。
3.使用内压板(4)将完好的膜片(19)手动压紧在外压板(38)上。
4.更换膜片的一侧中心轴(8)向外移出一部分，将膜片组件拧紧在中心轴上。
5.使用27mm扳手带力拧紧，确保内压板(4)与中心轴贴合紧密，同时对齐8个螺丝孔。
6.使用4颗螺栓(23)均布将膜片固定在中间体上。
7.使用扭矩扳手压紧外压板(38)，扭矩值：200 N·m。
8.将工装更换为活塞定位杆。
9.使用16mm扳手安装外腔体(1)。

注 意

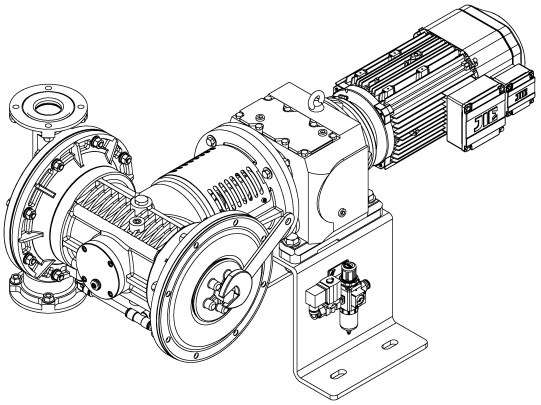
The inside of the electric pump must be free of process fluids, clean and free of obstacles before maintenance can be performed. Appropriate cleaning procedures are performed for the application of process fluids.
电动泵的内必须无工艺流体、干净且没有障碍物，然后才能进行维护。并对工艺流体的应用执行适当的清洗程序。



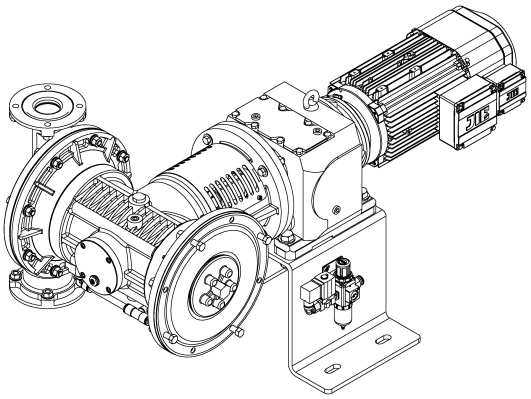
STEP 1



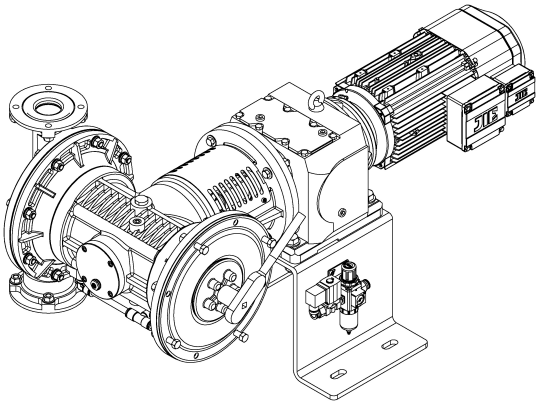
STEP 2



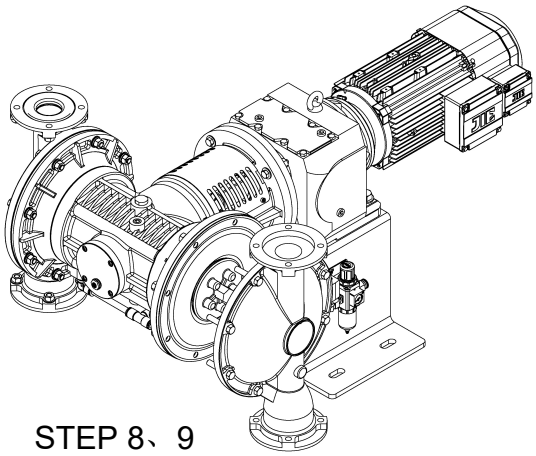
STEP 3、4、5



STEP 6



STEP 7



STEP 8、9

注 意

The inside of the electric pump must be free of process fluids, clean and free of obstacles before maintenance can be performed. Appropriate cleaning procedures are performed for the application of process fluids.
电动泵的内必须无工艺流体、干净且没有障碍物，然后才能进行维护。并对工艺流体的应用执行适当的清洗程序。

9.1 Remove the pump head
拆卸泵头

Tools工具: 16mm, 17mm wrenches扳手

Caution: Before removing the pump, you must disconnect the power supply. Discharge pressure from the pump chamber, which may cause injury, pump damage or property damage if removed with pressure.

注意：在拆卸泵之前，必须先断开电源。对泵腔内泄压，如果带压拆卸，可能会造成伤害、泵损坏或财产损失。

Remove the 4 bolts (33) with a 16mm wrench, remove the pump head, and observe the wear condition of the spline cushion of the coupling. If there is any wear, replace it in time.

用16mm扳手拆卸4个螺栓(33)，移开泵头，观察联轴器花键软垫磨损状况，若有磨损，要及时更换。

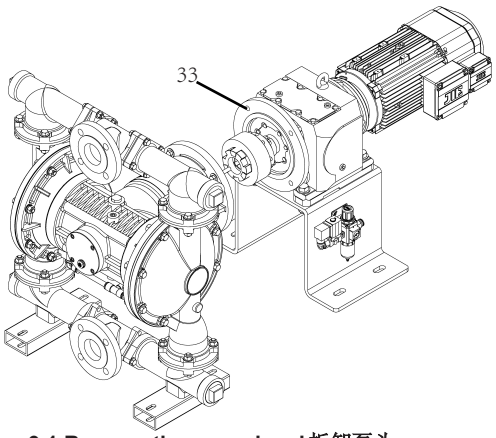


Figure 9.1 Remove the pump head 拆卸泵头

6.2 Remove feed inlet and outlet
拆卸进出料口

Tools工具: 16mm, wrenches扳手

Remove 16 bolts (33) with a 16mm wrench, move into the discharge port, and observe the wear condition of the valve ball (22) and tee (20). If there is an obvious gap between the valve ball and tee, it is necessary to replace the valve ball and tee.

用16mm扳手拆卸16个螺栓(33)，移开进出料口，观察阀球(22)和球座(20)磨损状况，若阀球和球座有明显间隙，则需要更换阀球和球座。

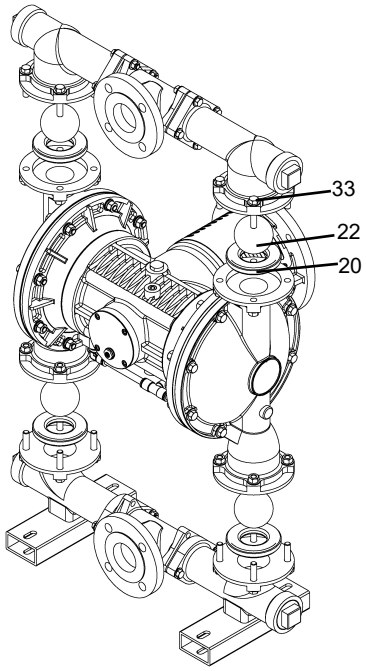


Figure 9.2 Remove feed inlet and outlet 拆卸进出料口

9.3 Remove the outer chamber
拆卸外腔体

Tools工具: 16mm, wrenches扳手

Remove the 16 bolts (23) with a 16mm wrench to remove the outer cavity.

用16mm扳手拆卸16个螺栓(23)，移出外腔体。

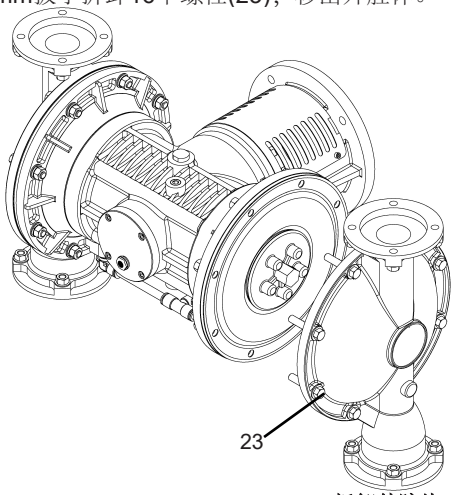


Figure 9.3 Remove the outer chamber 拆卸外腔体

9.4 Remove the diaphragm, the center axis
拆卸膜片、中心轴

Tools工具: 27mm, wrenches扳手

Remove the external pressure plate (38), diaphragm (19), and internal pressure plate (4) with a 19mm wrench and unscrew the central shaft (8) from the piston.

用27mm扳手拆卸外压板(38)、膜片(19)、内压板(4)、将中心轴(8)从活塞上拧下。

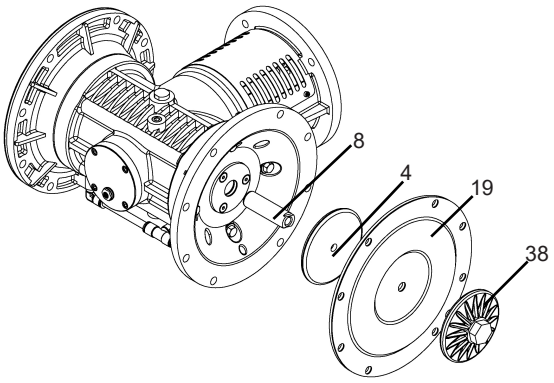


Figure 9.4 Remove the diaphragm, the center axis 拆卸膜片、中心轴

9.5 Remove the inner chamber
拆卸内腔体

Tools工具: 16mm, wrenches扳手

Remove the four bolts with a 16mm wrench, pull out the transparent air pipe (18), and pull out the inner cavity (57).

用16mm扳手拆卸4颗螺栓并拔出透明气管（18）,将内腔体（57）拉出。

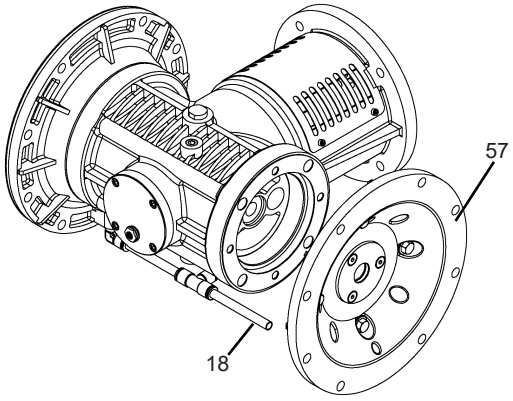


Figure 9.5 Remove the diaphragm, the center axis 拆卸膜片，中心轴

9.6 Remove coupling shield and bearing end cover
拆卸联轴器护罩、轴承端盖

Tools工具: 6mm, wrenches内六角扳手、13mmwrenches扳手

Remove the four cylindrical head screws (14) with a 6mm hex wrench and pull out the bearing end cover (13)

用6mm内六角扳手拆卸4颗圆柱头螺钉(14)，将轴承端盖(13)拉出。

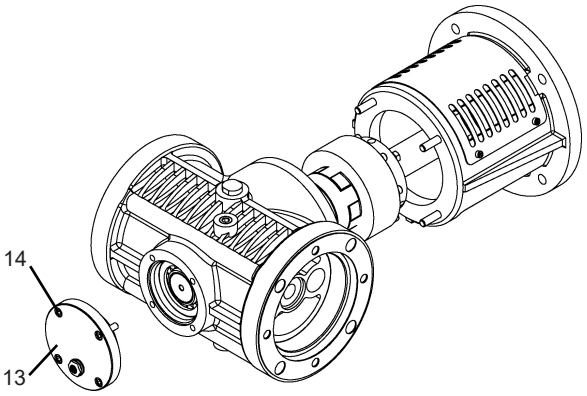


**Figure 9.6 Remove coupling shield and bearing end cover
拆卸联轴器护罩、轴承端盖**

9.7 Remove crankshaft assembly
拆卸曲轴组件

Tools工具: 4mm, wrenches内六角扳手

Remove 2 countersunk screws (7) with a 4mm hex wrench and pull out the coupling (41), crankcase cover (5) and crankshaft (9) together. (It can only be removed when the direction of the crkshaft is up and down, and the piston (40) needs to be adjusted in the middle position)

用4mm内六角扳手拆卸2颗沉头螺钉(7)，将联轴器(41)、曲轴箱盖(5)、曲轴(9)一同拉出。（曲轴方向朝上下时才可以拆出，需要调整活塞(40)在中间位置）

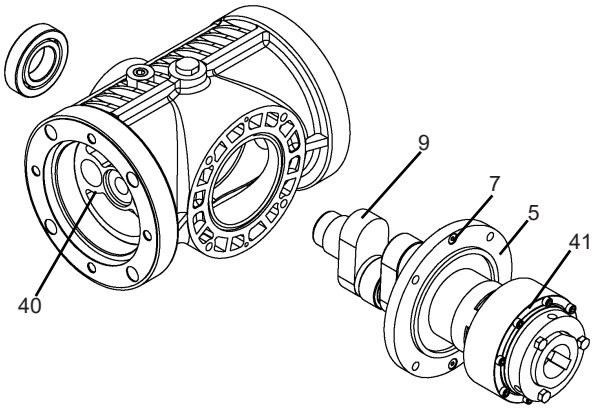


Figure 9.7 Remove crankshaft assembly 拆卸曲轴组件

9.8 Remove the piston
拆卸活塞

Tools工具: wrenches活动扳手

Use an adjustable wrench to unscrew the piston positioning rod (29), at which point the piston (40) can be pushed out from one side.

使用活动扳手将活塞定位杆(29)拧出，此时可从一侧将活塞(40)推出。

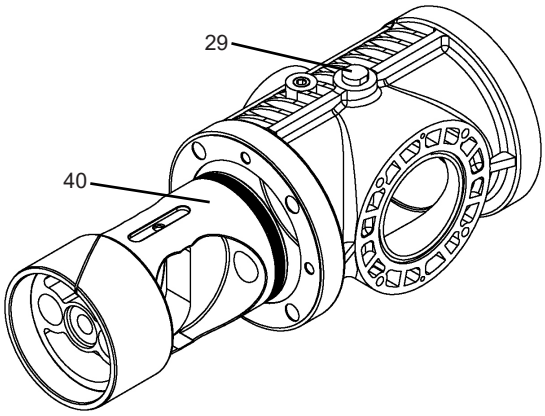


Figure 9.8 Remove the piston 拆卸活塞