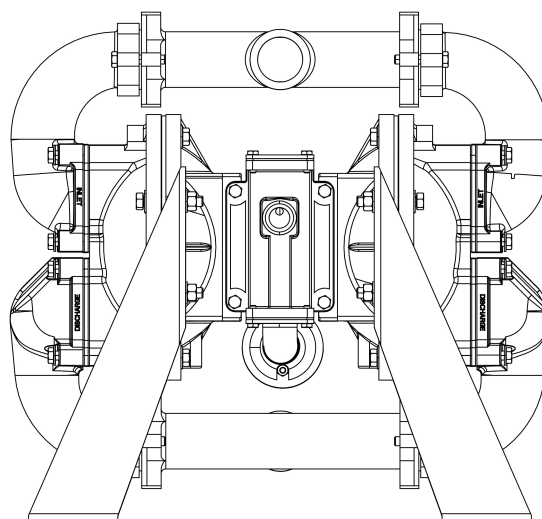




Specialist in Fluid Transfer
致力于流体输送

SKY-SK-SE-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

SA40

**Operation and
Maintenance Manual**
操作维护手册



Diaphragm Pump隔膜泵

⚠ IMPORTANT 重要

- Read the safety warnings and instructions in this manual before pump installation and start-up. Failure to comply with the recommendations stated in this manual could damage the pump and void factory warranty.

在泵安装和启动之前，请阅读本手册中的安全警告和说明。不遵守本手册中的建议可能损坏泵和保修无效。

- When the pump is used for materials that tend to settle out or solidify, the pump should be flushed after each use to prevent damage. In freezing temperatures the pump should be completely drained between uses.

当泵用于易沉淀或固化的材料时，每次使用后应冲洗泵以防止损坏。在冰冻温度下，泵应在使用后完全排空。

⚠ CAUTION 注意

- Before pump operation, inspect all fasteners for loosening caused by gasket creep. Retighten loose fasteners to prevent leakage. Follow recommended torques stated in this manual.

在泵运行前，检查所有紧固件是否因垫片蠕变而松动。重新拧紧松动的紧固件以防止泄漏。请遵循本手册规定的推荐扭矩。

- Nonmetallic pumps and plastic components are not UV stabilized. Ultraviolet radiation can damage these parts and negatively affect material properties. Do not expose to UV light for extended periods of time.

非金属泵和塑料部件不是紫外线稳定的。紫外线辐射会损坏这些部件，并会对材料性能产生负面影响。不要长时间暴露在紫外光下。

- Pump not designed, tested or certified to be powered by compressed natural gas. Powering the pump with natural gas will void the warranty.

泵未经设计、测试或证明可由压缩天然气驱动。如用天然气作为气源驱动泵会使保修无效。

Torque sheet 扭矩表 1-1

Description of Part 零件描述	Torque 扭矩
Air Valve & center Block(Aluminum) 气阀与中间体 (铝合金)	13.6 N · m(120 in-lb)
Air Valve & cap 气阀与端盖	5.1 N · m(45 in-lb)
Air Chamber/Center Block 内腔体/中间体	27.1 N · m(20 ft-lb)
Liquid Chamber /Air Chamber, Aluminum Bolted Only 外腔体/内腔体, 铝合金螺栓	27.1 N · m(20 ft-lb)
Outer Pistons,Rubber & PTTE, Inner Pistons 外压板, 橡胶和聚四氟乙烯隔膜, 内压板	22 N · m(16 ft-lb)
Center Shaft & Inner Pistons 中间轴与内压板	109 N · m(16 ft-lb)
Bumper Plung & Center Block 顶针座与中间体	5 N · m(45 in-lb)

⚠ WARNING 警告

- When used for toxic or aggressive fluids, the pump should always be flushed clean prior to disassembly.
当用于有毒或腐蚀性流体时，泵在拆卸前应冲洗干净。

- Before maintenance or repair, shut off the compressed air line, bleed the pressure, and disconnect the air line from the pump. Be certain that approved eye protection and protective clothing are worn at all times. Failure to follow these recommendations may result in serious injury or death.

在维护或修理之前，关闭压缩空气管路，释放出压力，并将空气管路与泵断开。一定要在所有时间佩戴被认可的眼睛保护和防护服。不遵守这些建议可能导致严重的伤害或死亡。

- Airborne particles and loud noise hazards. Wear eye and ear protection.

大气颗粒物和大声危害，戴眼耳防护。

- In the event of diaphragm rupture, pumped material may enter the air end of the pump, and be discharged into the atmosphere. If pumping a product that is hazardous or toxic, the air exhaust must be piped to an appropriate area for safe containment.

在隔膜破裂的情况下，泵送材料可能进入泵的空气末端，并被排放到大气中。如果泵送危险或有毒的产品，则必须将排气管送入适当区域以确保安全。

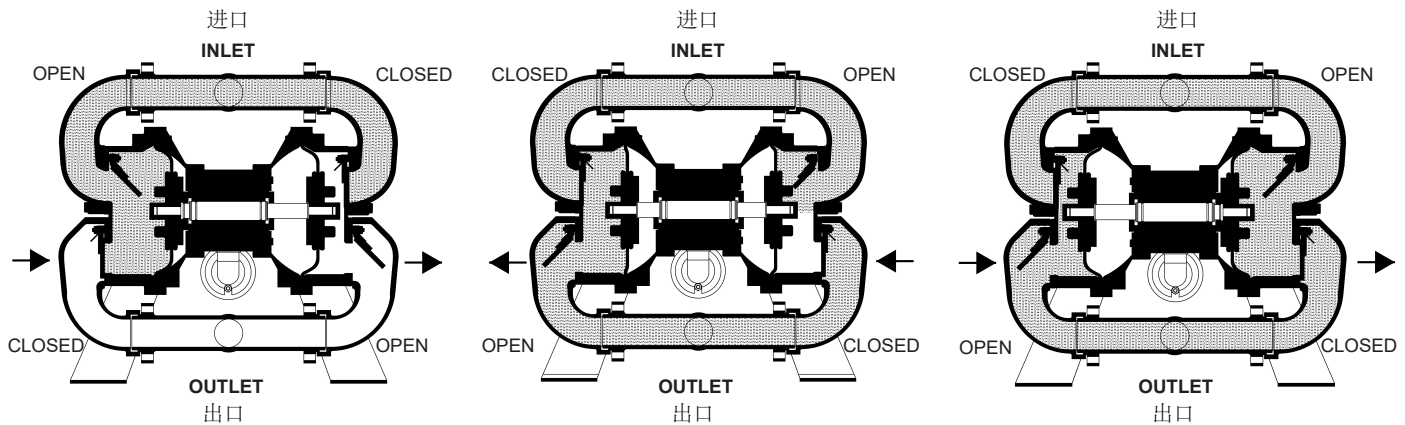
- Take action to prevent static sparking. Fire or explosion can result, especially when handling flammable liquids. The pump, piping, valves, containers and other miscellaneous equipment must be properly grounded.

采取必要措施防止静电火花可能导致的火灾或爆炸，特别是在处理易燃液体。泵、管道、阀门、容器等杂项设备必须正确接地。

- This pump is pressurized internally with air pressure during operation. Make certain that all fasteners are in good condition and are reinstalled properly during reassembly.

泵运行期间内部被空气压力加压。请确保所有紧固件处于良好状态并在重新装配过程中正确安装。

The Skylink diaphragm pump is an air-operated, 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. 斯凯力隔膜泵是一种气动、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 AODD pumps adopt compressed air for power source and depend on diaphragms which move left and right to reach the volume sealed working chamber to achieve loading and discharging.

斯凯力气动隔膜泵采用压缩空气作为动力源，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。

AODD pump is structured by suction port, discharge port, medium chamber and air chamber, air chamber is structured by main air valve, pilot valve, thimble on left diaphragm chamber and right diaphragm chamber, medium chamber is structured by left medium, right medium and check valve. Check valve are set on the top or bottom, left and right medium chambers are connected by suction port and discharge port.

气动隔膜泵由吸入口、排放口、介质室和空气室构成，空气室由主气阀、导向阀、左膜片室和右膜片室的顶针构成，介质室为由左介质、右介质和止回阀构成。止回阀设置在顶部或底部，左、右中腔室通过进料口和出料口连接。

When AODD pump is working, left and right diaphragms are moving by compressed air, and the air valve has lubricating demand, so clear and dry air can improve the performance of AODD pump.

隔膜泵工作时，左右膜片均通过压缩空气运动，气阀有润滑要求，干燥的空气可提高气动隔膜泵的性能。

Compressed air comes into air chamber across air inlet port, after the regulation of pilot valve, compressed air come into left diaphragm chamber and drive diaphragm move on the left, the result is that the volume of left medium chamber decreases, the liquid is extruded.

压缩空气通过进气口进入气室，在导向阀调节后，压缩空气进入左侧隔膜室，驱动膜片向左移动，结果是左腔容积减小，液体被挤出。

Because the right diaphragm and the left diaphragm are connected by an axle, the right diaphragm moves to the left side, the right chamber volume increases, the liquid is inhaled. When the right diaphragm plate touches the right thimble, the right thimble can change the direction of compressed air by pilot valve, air come into the right chamber, the left and right diaphragm move to the right side, the left medium chamber volume increases, liquid is inhaled, the right chamber volume decreases, liquid is excluded. When the left diaphragm plate touches the left thimble, the air comes into left diaphragm chamber through pilot valve. The actions above are repeated complete the fluid continuous transporting on by AODD pump.

由于右隔膜和左隔膜通过轴连接，右隔膜向左移动，右腔容积增大，吸入液体。当右隔膜的压板接触右顶针时，右顶针可通过导向阀改变压缩空气的方向。空气进入右室，左、右隔膜向右侧移动，左腔容积增大，液体吸入，右腔容积减小，液体被排出。左隔膜压板接触左顶针时，空气进入左腔室，通过导向阀，重复以上动作完成气动隔膜泵的流体连续输送。

SECTION 3

3.1 Defination of Pump Nomenclature命名说明

SA40 Air Operated Diaphragm pump气动隔膜泵

Model 型号	Size 尺寸	Air Valve 气阀	Housing Material 外壳材质	Intermediate Material 中间体材质	Air Valve Material 气阀材质	Diaphragm Material 膜片材质	Valve Seat Material 片阀座材质	Valve FLAP Material 片阀材质	Other 其它
SA40/3AAA/EEXB/0B0	40	3	A	A	A	EE	X	B	0B0

SIZE (DN) 口径	AIR VALVE 气阀	HOUSING MATERIAL 外壳材质	INTERMEDIATE MATERIAL 中间体材质	AIR VALVE MATERIAL 气阀材质
1/2"=15	3= *SPGO	A= acrylic coated aluminium 铝合金	A= acrylic coated aluminium 铝合金	A= Epoxy coated aluminium 环氧树脂涂层铝合金
1"=25	格莱圈型	I = acrylic coated Cast Iron 铸铁	T= Teflon coated aluminium 特氟龙涂层	T= Teflon coated aluminium 特氟龙涂层铝合金
1.5"=40	*SPGO=Glyd Ring Style	S= Stainless Steel (304) 304不锈钢	S= Stainless Steel 不锈钢	S= Stainless Steel 不锈钢
2"=50		X= Stainless Steel(316L) 316L不锈钢	P= Polypropne 聚丙烯	N= Nickel coated aluminium 镀镍铝合金
3"=80		H= Alloy-C 合金-C		

DIAPHRAGM MATERIAL 膜片材质	VALVE SEAT MATERIAL 片阀座材质	VALVE FLAP MATERIAL 片阀材质	OTHERS 其它
EE= Santoprene 三道橡胶	X= Stainless Steel (316L) 316L不锈钢	E= Santoprene 三道橡胶	0B0= BSPT Thread (BSPT) BSPT内螺纹
ET= Santoprene/Teflon 三道橡胶/特氟龙	A=AL 铝合金	N= Neoprene 氯丁橡胶	0N0= NPT Thread (NPT) NPT内螺纹
NE= Neoprene 氯丁橡胶		B= Buna 丁腈橡胶	DF0= DIN Flange(DIN) 国标法兰
NT= Neoprene/Teflon 氯丁橡胶/特氟龙		V= Viton 氟橡胶	AF0= ANSI Flange (ANSI) 美标法兰
BN= Buna 丁腈橡胶		G=EPDM 三元乙丙	JF0= JIS Flange (JIS) 日标法兰
VT=Viton 氟橡胶			
GT=EPDM/Teflon 三元乙丙/特氟龙			
GE=EPDM 三元乙丙			

3.2 SA40 Technical Data 技术参数

Suction/Discharge size 进出口尺寸	Capcacity 流量	Air Valve 气阀	Solids-handing 可通过粒径	Heads up to 出口最高压力	Weight(kg) 重量		
1.5"	89.8gallon(US)	No-lub , no-stall	1.2"	125psi	Aluminum 铝合金	Stainless Steel 不锈钢	Cast Iron 铸铁
DN 40	340lpm (max)	无需加油无死点	30mm(max)	8.6bar	36 KG	56 KG	80 KG

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 alkalis. 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。

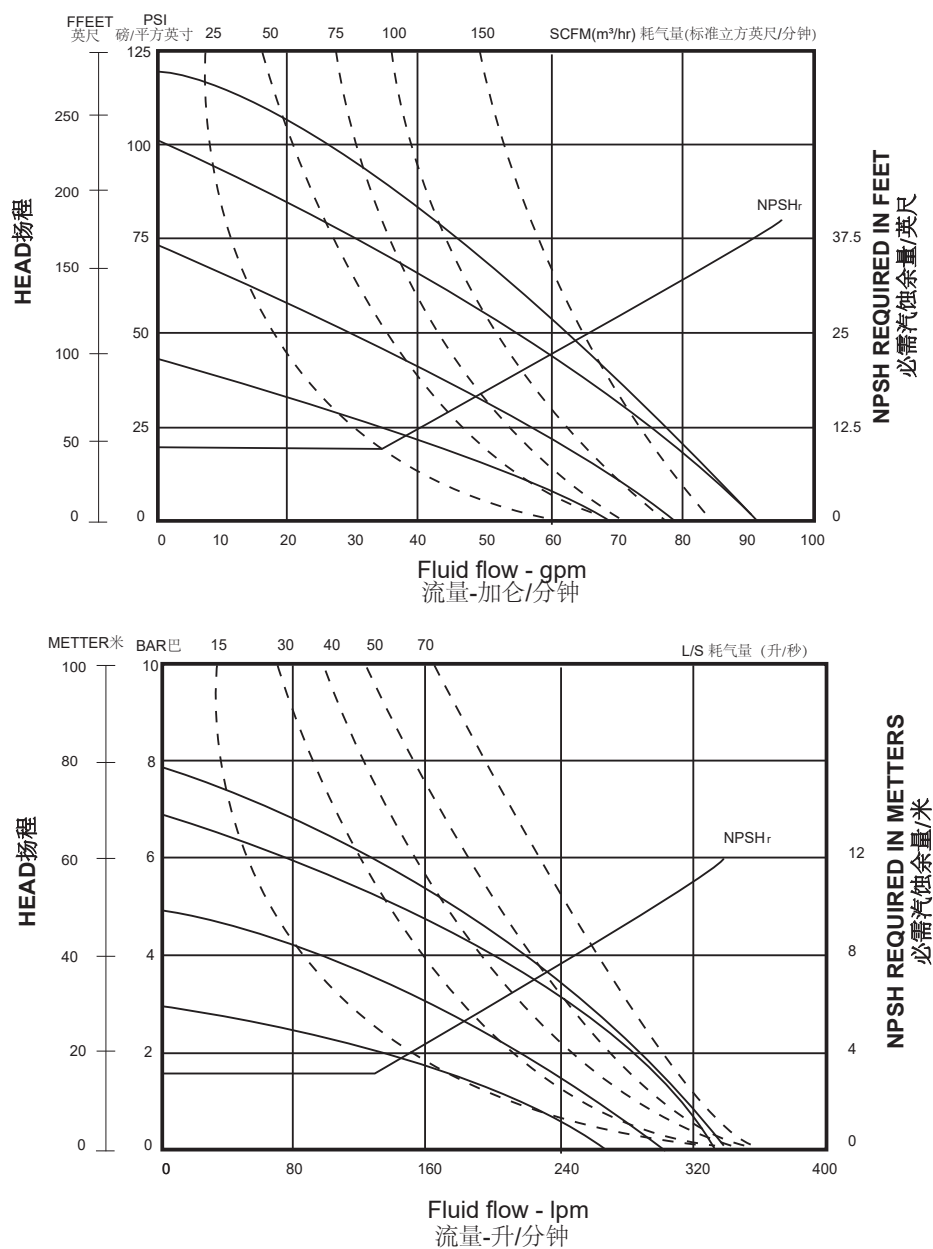
SECTION 3

3.4 Temperature limitations温度极限

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°C	-35 °F -37°C
Santoprene 三道橡胶	225 °F 107°C	-10 °F -23°C
Neoprene 氯丁橡胶	177°F 77°C	-10 °F -23°C
Buna 丁腈橡胶	190 °F 88°C	-10 °F -23°C
Viton 氟橡胶	350 °F 177°C	-40 °F -40°C
PVDF 聚偏二氟乙烯	250 °F 121°C	0 °F -18°C
Polypropylene 聚丙烯	150°F 66°C	32 °F 0°C
EPDM 三元乙丙橡胶	280 °F 138°C	-40 °F -40°C
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。

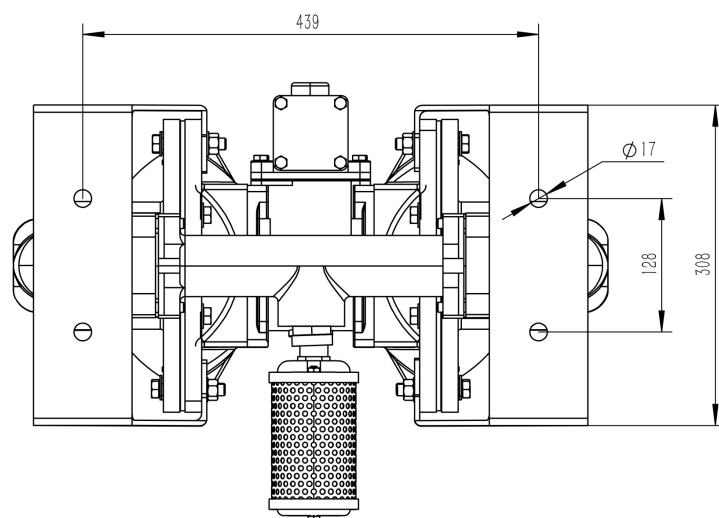
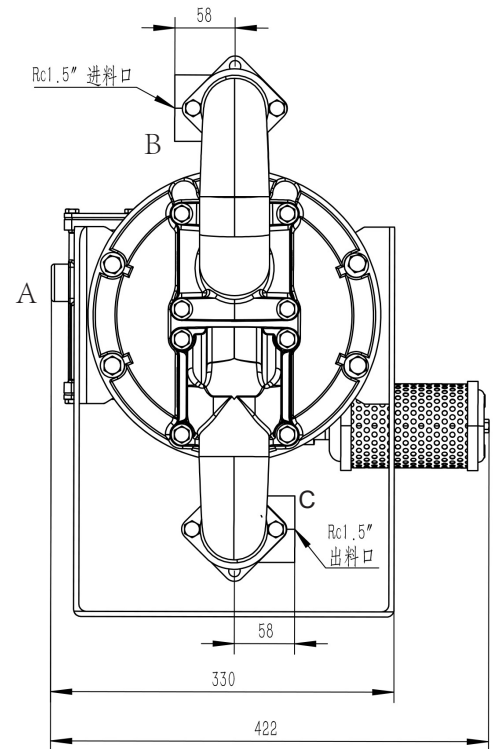
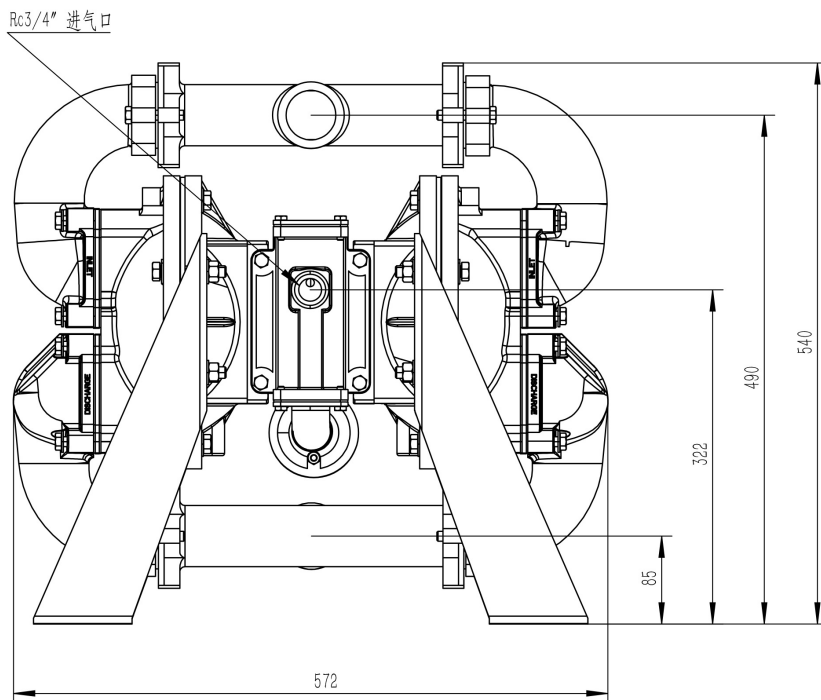


*Performance is based on the following: elastomer fitted pump, flooded suction, water at ambient conditions. The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.

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%。

SECTION 3

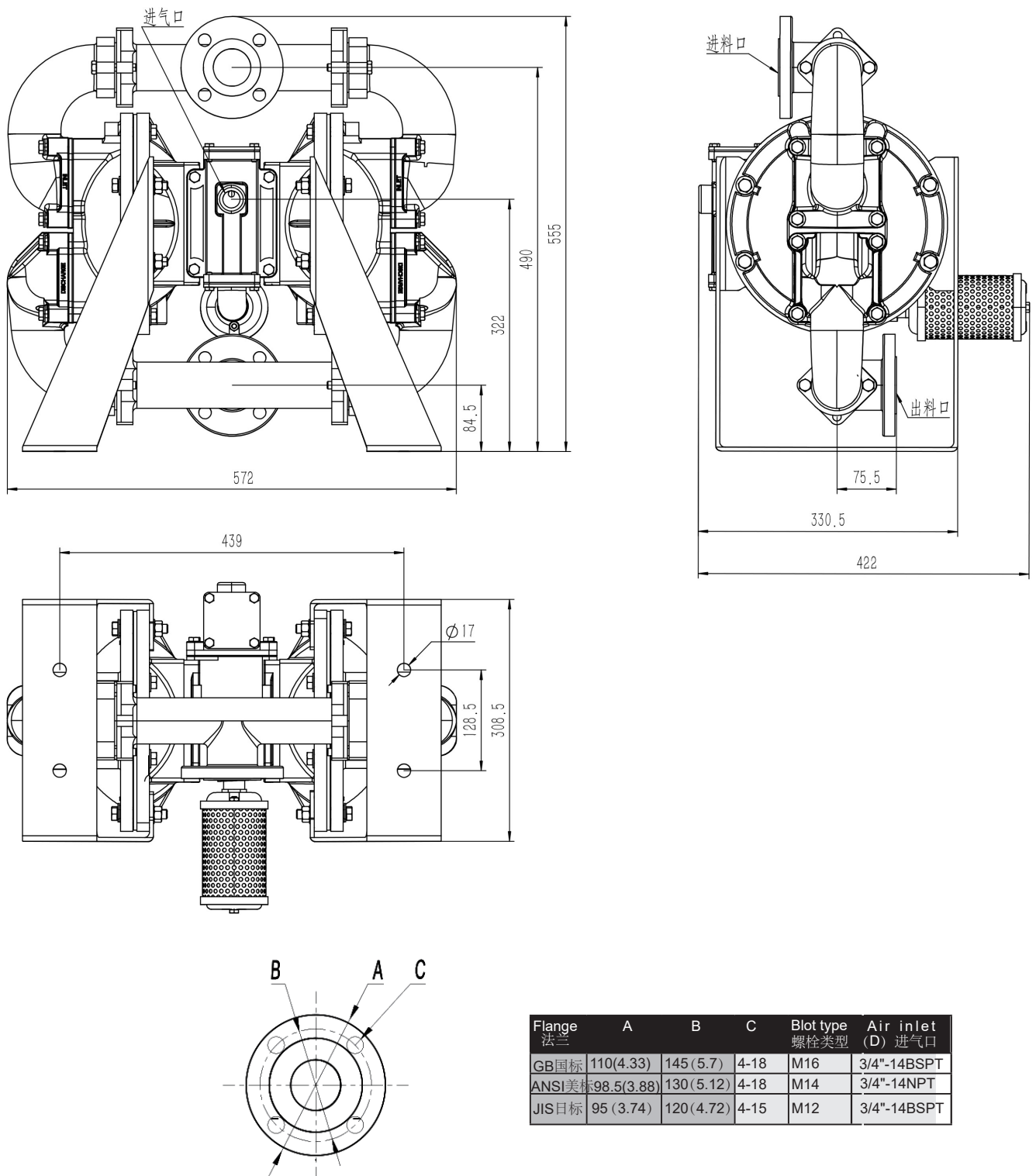
3.6 SA40 dimensional drawing (Thread)尺寸图 (螺纹)



Thread 螺纹	AA(Air Inlet) (进气口)	B(Discharge) (出口)	C(Suction) (进口)
GB国标	3/4-14BSPT	1.5"-11BSPT	1.5"-11BSPT
ANSI美标	3/4"-14NPT	1.5"-11.5NPT	1.5"-11.5NPT
JIS日标	3/4"-14BSPT	1.5"-11BSPT	1.5"-11BSPT

* 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。

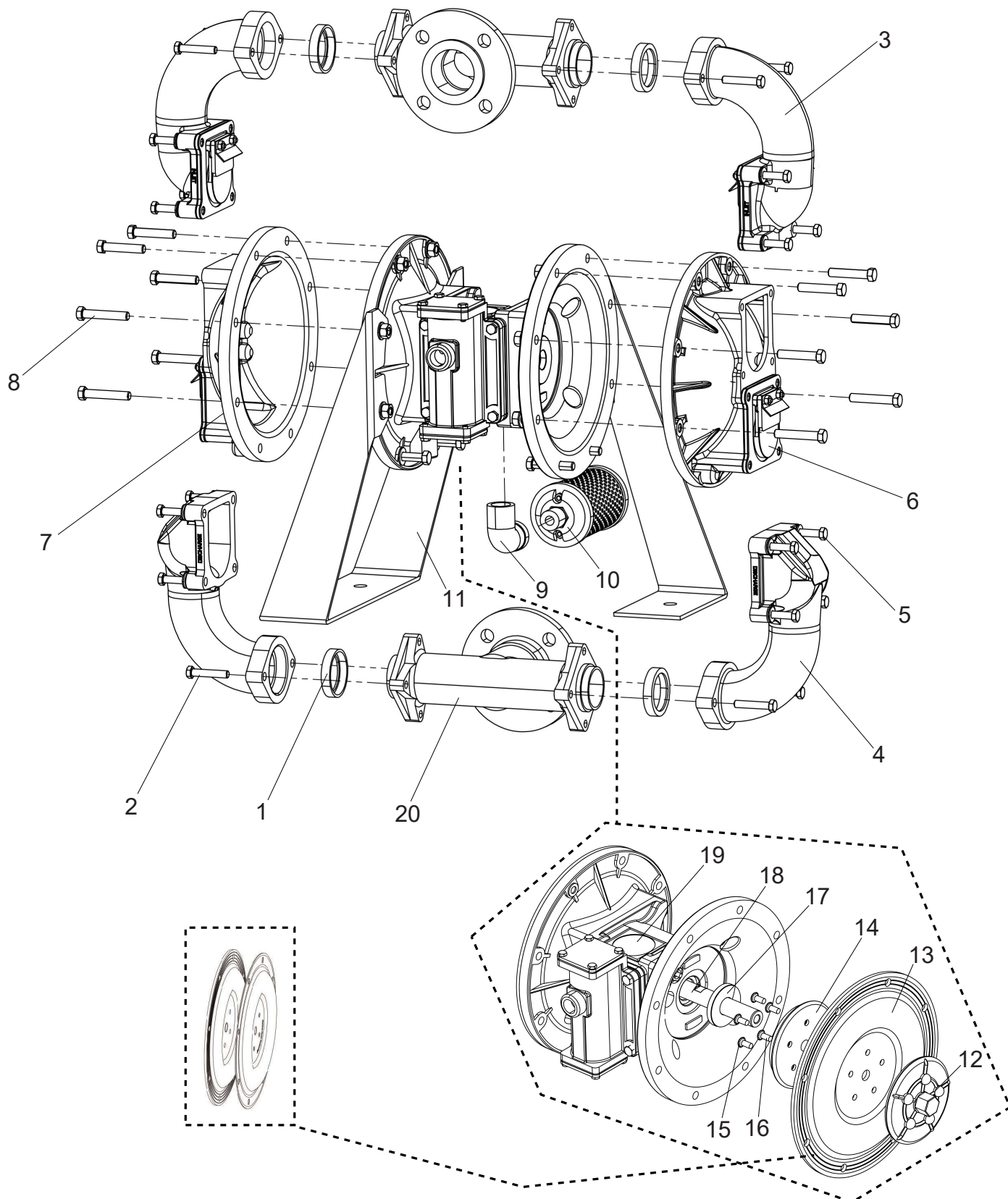
3.7 SA40 Dimensional drawing(flange)尺寸图 (法兰)



* 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 SA40 Diaphragm Pump Exploded View

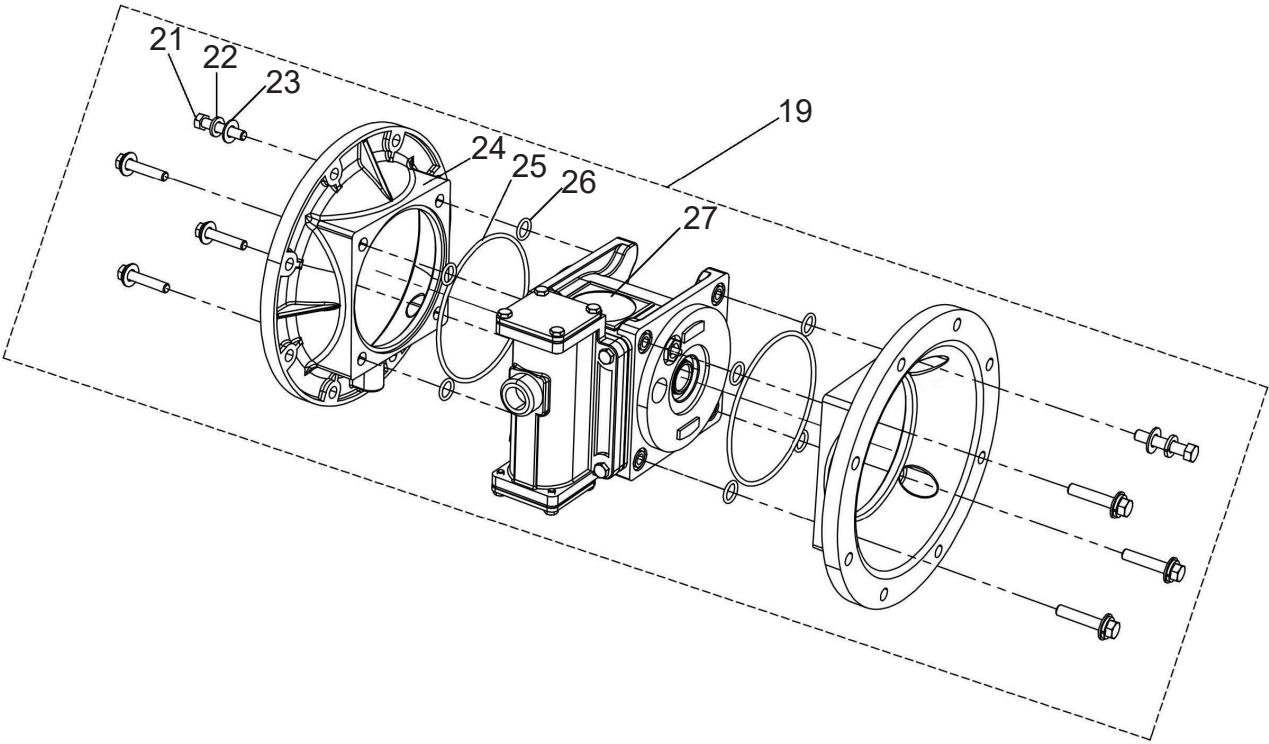
图1 SA40隔膜泵分解图



4.2 Housing Parts List外壳零件目录

Number图号	Part Number零件编号	Description描述	Quantity数量
1	7040.7751	Seal ring (Buna) SA40三通密封圈 (丁腈橡胶)	4
	7040.7754	Seal ring (Teflon) SA40三通密封圈 (特氟龙)	
	7040.7753	Seal ring (Vition) SA40三通密封圈 (氟橡胶)	
2	0040.1199	Capscrew (Cast Iron) 三通螺丝 (碳钢)	8
	0040.1190	Capscrew (Stainless Steel) 三通螺丝 (不锈钢)	
3	7040.1491	Elbow,Suction (Acrylic coated Aluminium) SA40进料口弯头 (铝合金)	2
	7040.1493	Elbow,Suction (Stainless Steel(316L)) SA40进料口弯头 (316L不锈钢)	
	7040.1490	Elbow,Suction (Stainless Steel(304)) SA40进料口弯头 (304不锈钢)	
	7040.1495	Elbow,Suction (Acrylic coated Cast Iron) SA40进料口弯头 (铸铁)	
4	7040.1791	Elbow,Discharge (Acrylic coated aluminium) SA40出料口弯头 (铝合金)	2
	7040.1793	Elbow,Discharge (Stainless Steel(316L))SA40出料口弯头 (316L不锈钢)	
	7040.1790	Elbow,Discharge (Stainless Steel(304)) SA40出料口弯头 (304不锈钢)	
	7040.1795	Elbow,Discharge (Acrylic coated Cast Iron) SA40出料口弯头 (铸铁)	
5	0040.0699	Capscrew (Cast Iron) 外腔体连接螺丝 (碳钢)	16
	0040.0690	Capscrew (Stainless Steel)外腔体连接螺丝 (不锈钢)	
6		Tablet valve (Teflon) SA40-50片阀组件	4
7	7040.1991	Chamber,Outer (Acrylic coated Aluminium) SA40外腔体 (铝合金)	2
	7040.1993	Chamber,Outer (Stainless Steel (316L)) SA40外腔体 (316L不锈钢)	
	7040.1990	Chamber,Outer (Stainless Steel (304)) SA40外腔体 (304不锈钢)	
	7040.1995	Chamber,Outer (Acrylic coated Cast Iron) SA40外腔体 (铸铁)	
8	0040.1999	Capscrew (Cast Iron) 外腔体螺丝 (碳钢)	16
	0040.1990	Capscrew (Stainless Steel)外腔体螺丝 (不锈钢)	
9	1458.5389A	Muffler Transfer 1.5-3寸消音器转接头	1
10	1458.5390	Muffler 1.5-3寸消音器	1
11		Foot SA40-50地脚	2
12	1045.3291	Plate,Outer (Acrylic Coated Aluminium) 1.5-2寸外压板 (铝合金)	2
	1045.3293	Plate,Outer (Stainless Steel) 1.5-2寸外压板 (不锈钢)	
	1045.3295	Plate,Outer (Acrylic Coated Cast Iron) 1.5-2寸外压板 (铸铁)	
13	1040.8668	Diaphragm backup(Santoprene/Teflon)1.5寸膜片背膜 (三道橡胶/特氟龙)	2
	1040.8662	Diaphragm backup(Neoprene/Teflon)1.5寸膜片背膜 (氯丁橡胶/特氟龙)	
	1040.8658	Diaphragm (Santoprene) 1.5寸膜片 (三道橡胶)	
	1040.8652	Diaphragm (Neoprene) 1.5寸膜片 (氯丁橡胶)	
	1040.8654	Diaphragm (PTFE) 1.5寸膜片 (特氟龙)	
14	1045.3391	Plate,Inner Diaphragm 1.5-2寸内压板	2
15	1045.0190B	Capscrew 1.5-2寸外压板沉头螺钉垫片	10
16	1045.0190	Gasket 1.5-2寸外压板沉头螺钉	10
17	1045.6351	Bumper,Diaphragm 1.5-2寸中间轴缓冲垫	2
18	1045.3400	Rod,Diaphragm 1.5-2寸中间轴组件	1
19	1040.3701	Gracket,Intermediate assembly 1.5寸中间件组件 (含内腔体)	1
20	7040.1591	Tee BSPT (Aluminium) 1.5寸三通, BSPT内螺纹接口 (铝合金)	2
	7040.0Z91	Tee NPT (Aluminium) 1.5寸三通, NPT内螺纹接口 (铝合金)	
	7040.0W91	Flange Tee DIN (Aluminium) 1.5寸三通, 国标法兰接口 (铝合金)	
	7040.0V91	Flange Tee ANSI (Aluminium) 1.5寸三通, 美标法兰接口 (铝合金)	
	7040.0X91	Flange Tee JIS (Aluminium) 1.5寸三通, 日标法兰接口 (铝合金)	
	7040.1593	Tee BSPT (316L) 1.5寸三通, BSPT内螺纹接口 (316L不锈钢)	
	7040.0Z93	Tee NPT (316L) 1.5寸三通, NPT内螺纹接口 (316L不锈钢)	
	7040.0W93	Flange Tee DIN (316L) 1.5寸三通, 国标法兰接口 (316L不锈钢)	
	7040.0V93	Flange Tee ANSI (316L) 1.5寸三通, 美标法兰接口 (316L不锈钢)	
	7040.0X93	Flange Tee JIS (316L) 1.5寸三通, 日标法兰接口 (316L不锈钢)	
	7040.1595	Tee BSPT (CI) 1.5寸三通, BSPT内螺纹接口 (铸铁)	
	7040.0Z95	Tee NPT (CI) 1.5寸三通, NPT内螺纹接口 (铸铁)	
	7040.0W95	Flange Tee DIN (CI) 1.5寸三通, 国标法兰接口 (铸铁)	
	7040.0V95	Flange Tee ANSI (CI) 1.5寸三通, 美标法兰接口 (铸铁)	
	7040.0X95	Flange Tee JIS (CI) 1.5寸三通, 日标法兰接口 (铸铁)	

Figure 2 Center intermediate Exploded View
图2 中间体分解图

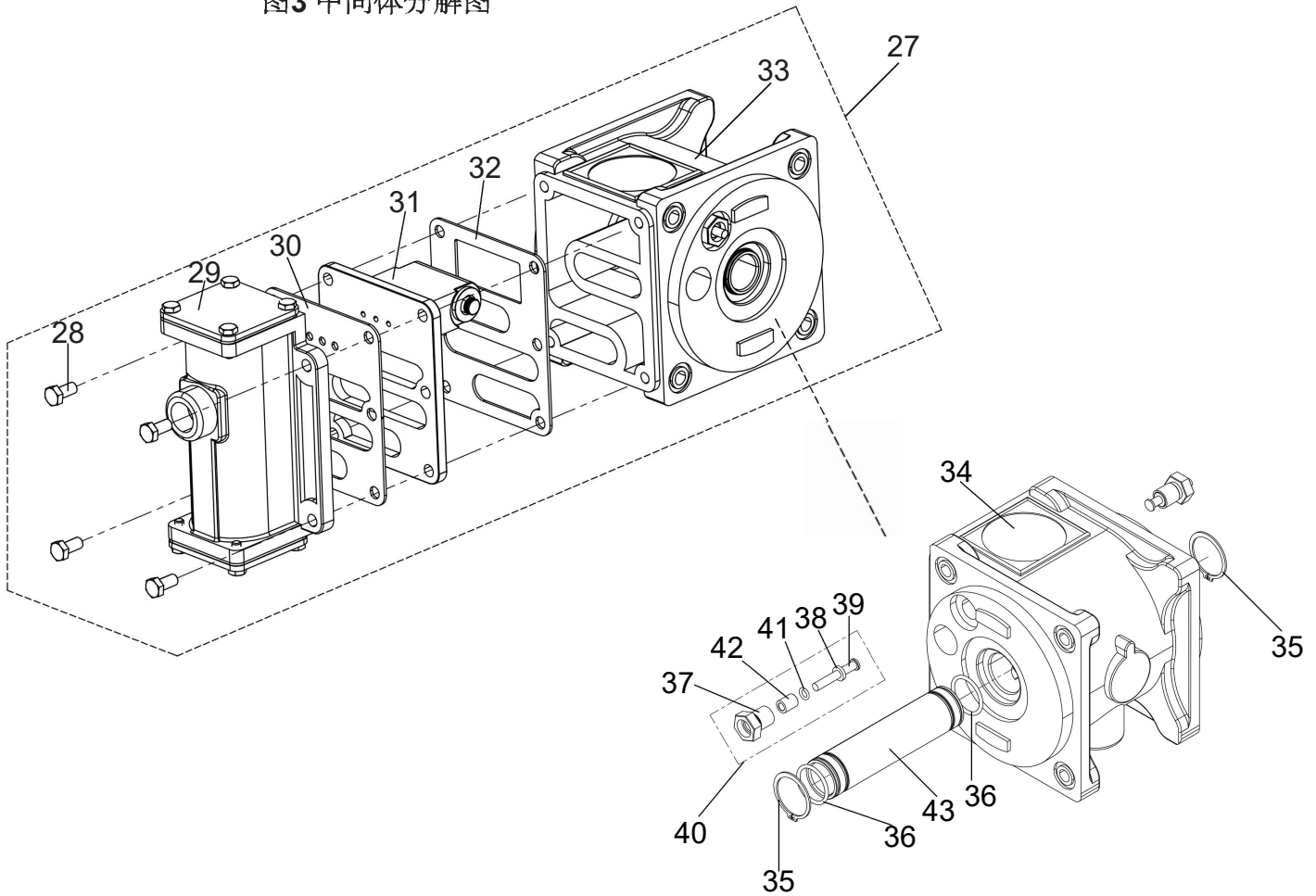


Center intermediate Parts List中间体零件图

Number图号	Part Number零件编号	Description描述	Quantity数量
Center intermediate Assembly中间体组件			
19	1040.3701	Gracket,Intermediate assembly 1.5寸中间体组件 (含内腔体)	1
21	1458.1390	Screw 1.5-3寸中间体螺丝	8
22	4050.1490B	Flat Pad 平垫	8
23	4050.1490C	Spring Washer 弹垫	8
24	1040.2691	Chamber,Inner 1.5寸内腔体	2
25	1458.7251	"O"ring 1.5-3寸中间体O型圈	2
26	1458.7551	"O"ring 1.5-3寸中间体螺丝O型圈	8
27		Bracket,Intermediate Assembly 1.5-2寸中间体组件 (不含内腔体)	1

■ Figure 3 Center intermediate Exploded View

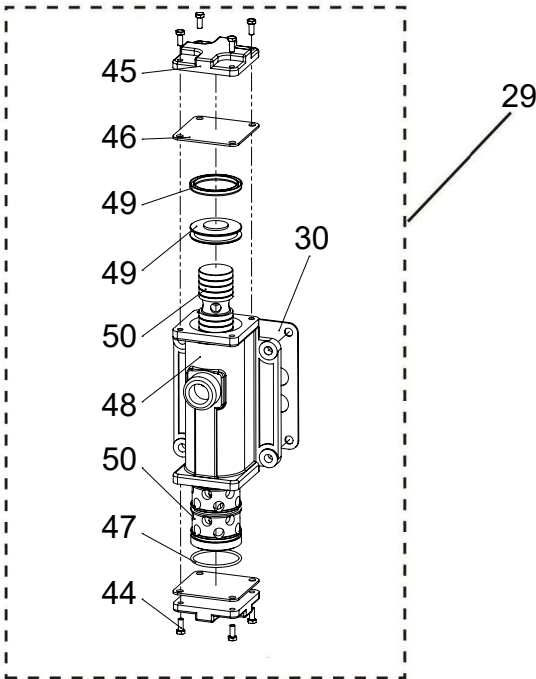
图3 中间体分解图



■ Center intermediate Parts List中间体零件目录

Number图号	Part Number零件编号	Description描述	Quantity数量
Center intermediate Assembly			
27		Bracket,Intermediate Assembly 1.5-2寸中间体组件 (不含内腔体)	1
28	0458.0790	Screw 主气阀螺丝	4
29	1458.4600	Sliding Style Main Valve 1.5-3寸主气阀组件	1
30	1458.7039	Main Gasket.Cap 1.5-3寸主气阀密封垫片	1
31	1458.4100	Pilot Valve 1.5-3寸导向阀组件	1
32	1458.6639	Gasket.Cap 1.5-3寸导向阀密封垫片	1
33	1045.3700	Bracket,Intermediate 1.5-2寸中间体组件 (不含内腔体气阀导向阀)	1
34	1045.3791G	Bracket,Intermediate 1.5-2寸中间体	1
35	1045.9789	Snap rings 1.5-2寸中间轴套筒卡簧	2
36	1045.9651	O-ring 1.5-2寸中间轴套筒O型圈	2
37	1458.8092	Bumper,plung 1.5-3寸顶针座	2
38	1458.5651	O-Ring 1.5-3寸顶针垫圈	2
39	1458.3593	Pin,Actuator 1.5-3寸阀套式顶针	2
40	1458.8000	Bumper,plung 1.5-3寸顶针组件	2
41	1458.7351	Oring 1.5-3寸顶针O型圈	2
42	1458.3642	Bush 1.5-3寸顶针袖套	2
43	1045.9540	Bush 1.5-2寸中间轴套筒	1

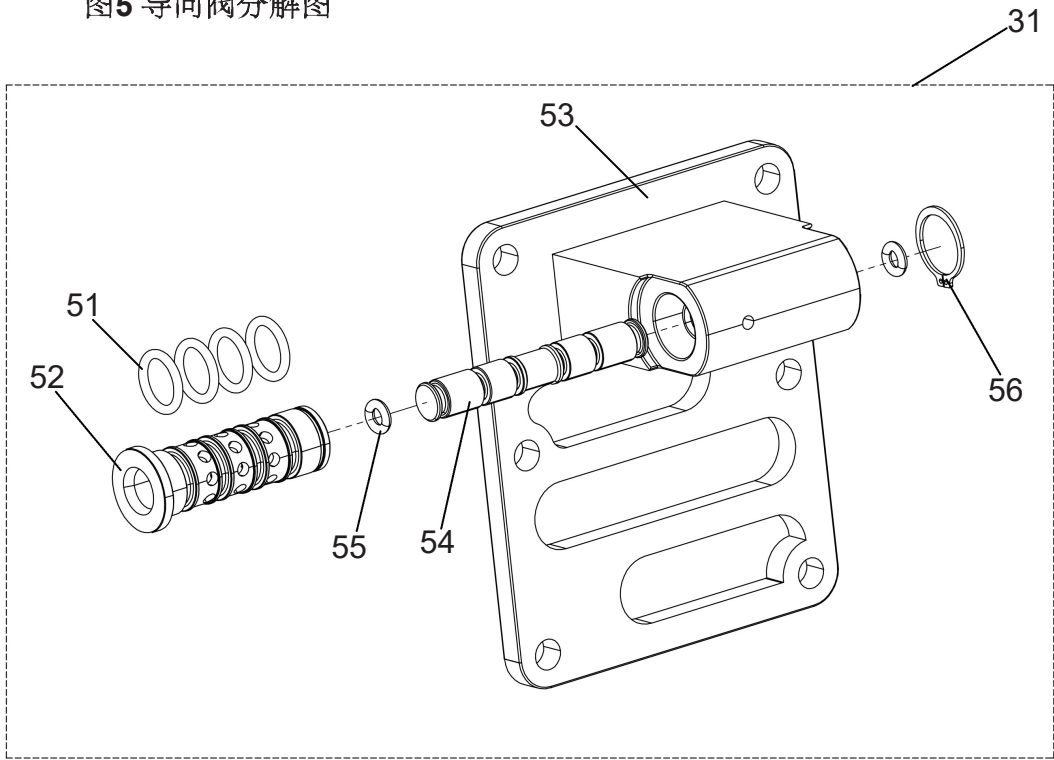
Figure 4 Sliding Style Main Valve
图4 滑阀式主气阀



Air Valve List气阀零件目录

Number图号	Part Number零件编号	Description描述	Quantity数量
Sliding Style Main Valve滑阀式主气阀			
29	1458.4600	Sliding Style Main Valve 1.5-3寸主气阀组件	1
44	1458.0891	Screw 1.5-3寸主气阀端部螺钉	8
45	1148.4899	Cap,End 1.5-3寸主气阀端部挡板	2
46	1458.7151	Gasket,Cap 1.5-3寸主气阀端部垫片	2
47	1458.6751	O-Ring outside 1.5-3寸主气阀外层O型圈	6
48	1458.4791	Air valve 1.5-3寸主气阀外壳	1
49	1458.9000	Piston 1.5-3寸活塞组件	1
50	1458.5291	Spool Assembly 1.5-3寸主气阀滑阀芯阀套	1

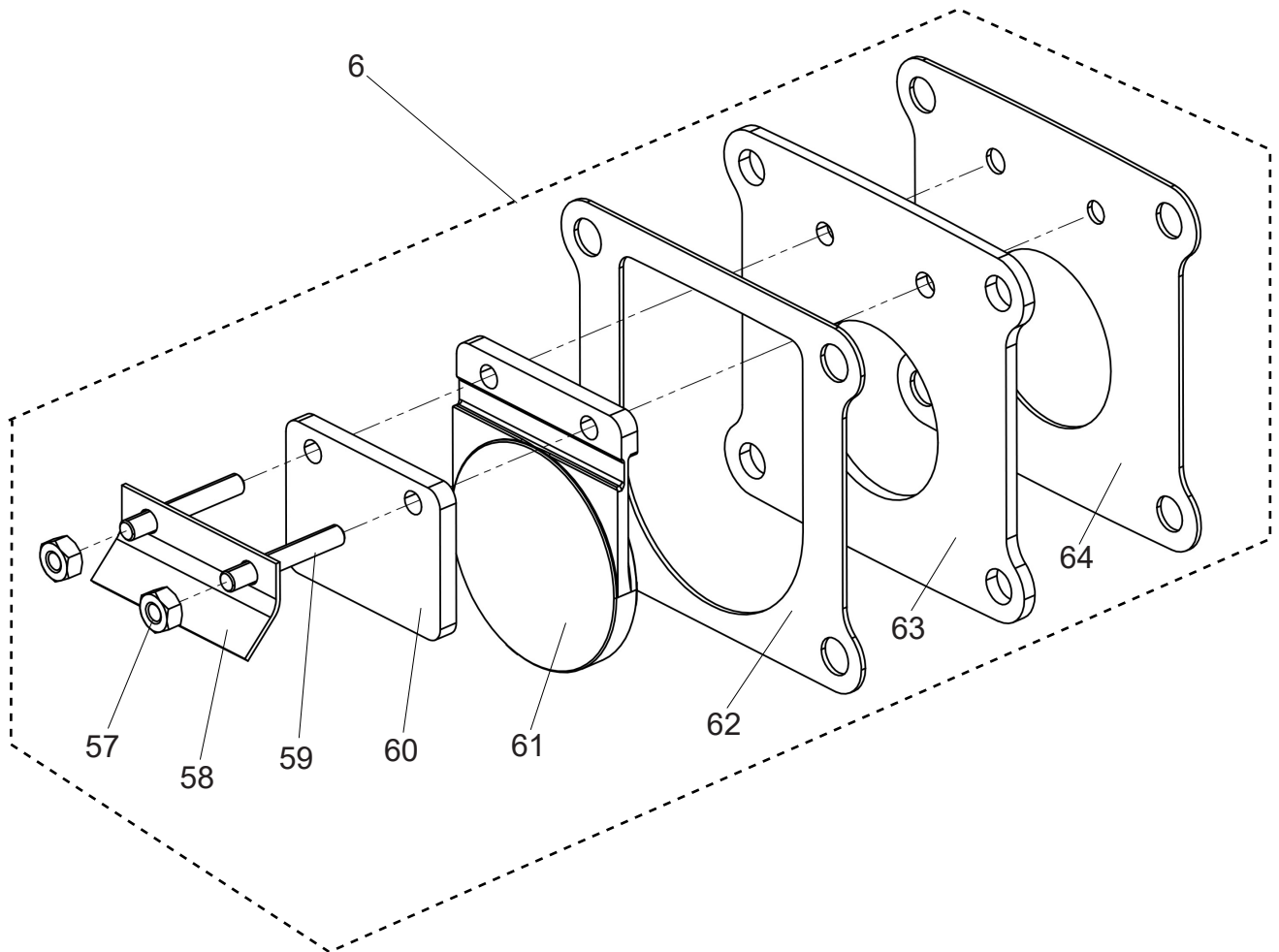
Figure 5 Pilot Valve Exploded View
图5 导向阀分解图



Pilot Valve List 导向阀零件目录

Number图号	Part Number零件编号	Description描述	Quantity数量
Pilot Valve 导向阀			
31	1458.4100	Pilot Valve 1.5-3寸导向阀组件	1
51	1258.6851	O-Ring 1-3寸阀套式导向阀阀套O型圈	4
52	1458.4291	Spool Bush 1.5-3寸阀套式导向阀阀套	1
53	1458.4391	Pilot Valve 1.5-3寸导向阀阀壳	1
54	1458.4400	Spool 1.5-3寸阀套式导向阀阀芯组件	1
55	1258.8451	O-Ring 1-3寸阀套式导向阀阀芯减震圈	2
56	1258.4589	Snap rings 1-3寸阀套式导向阀卡簧	1

■ **Figure 6 Tabular Valve Assembly Exploded View**
图6 片阀组件分解图



■ **Tabular Valve Assembly 片阀组件零件目录**

Number图号	Part Number零件编号	Description描述	Quantity数量
Tabular Valve Assembly 片阀组件			
6		Tabular Valve Assembly SA40-50片阀组件	4
57		Fasten The Screw Nut 锁紧螺母	8
58	7040.5993	Tablet Valve Limit SA40-50片阀限位片	4
59		Double Head Stud 双头螺柱	8
60	7040.5851	Packed Valve Protection Pad SA40-50片阀保护垫(NBR75黑色)	4
	7040.5853	Packed Valve Protection Pad SA40-50片阀保护垫(FKM75棕色)	
	7040.5858	Packed Valve Protection Pad SA40-50片阀保护垫(三道橡胶)	
61	7040.6151	Tabular Valve SA40-50片阀 (NBR80+不锈钢)	4
	7040.6153	Tabular Valve SA40-50片阀 (FKM80+不锈钢)	
	7040.6158	Tabular Valve SA40-50片阀 (三道橡胶+不锈钢)	
62	7040.7851	Gasket,After SA40-50片阀座后密封垫(NBR80黑色)	4
	7040.7853	Gasket,After SA40-50片阀座后密封垫(FKM80棕色)	
63	7040.6091	Tablet Seat SA40-50片阀座(AL)	4
	7040.6093	Tablet Seat SA40-50片阀座(316L)	
64	7040.7651	Gasket,Before SA40-50片阀座前密封垫(NBR80黑色)	4
	7040.7653	Gasket,Before SA40-50片阀座前密封垫(FKM80棕色)	

Part Package备件包	Part Number零件编号	Description描述	Quantity数量
SA40 Fluid Space Part Package SA40流体备件包			
1.5"Buna fluid spare part package 1.5寸丁腈橡胶流体备件包	7040.0151	1.5" NBR75 Tabular Valve 1.5寸丁腈橡胶片阀	2
		1.5" BN Diaphragm 1.5寸丁腈橡胶膜片	4
		1.5" NBR75 Protection Pad 1.5寸丁腈橡胶保护垫	4
1.5"Viton fluid spare part package 1.5寸氟橡胶流体备件包	7040.0153	1.5" FKM80 Tabular Valve 1.5寸氟橡胶片阀	2
		1.5" VT Diaphragm 1.5寸氟橡胶膜片	2
		1.5" FKM80 Protection Pad 1.5寸氟橡胶保护垫	4
1.5"Santoprene fluid spare part package 1.5寸三道橡胶流体备件包	7040.0158	1.5" Santoprene Tabular Valve 1.5寸三道橡胶片阀	4
		1.5" Santoprene Diaphragm 1.5寸三道橡胶膜片	2
		1.5" Santoprene Protection Pad 1.5寸三道橡胶保护垫	4
SA40 Air Spare Part Package SA40空气备件包			
1.5"Air spare part package 1.5寸空气备件包	7040.0003	External "O" ring of 1.5-3"main valve 1.5-3寸主气阀外层O型圈	6
		"O" ring of 1.5"-2"main shaft 1.5-2寸中间轴O型圈	2
		"O" ring of 1.5"-3"pilot shaft 1.5-3寸导向阀阀套O型圈	4
		Piston 1.5-3寸活塞组件	1
		Spool Assembly 1.5-3寸主气阀滑阀芯阀套	1
		Gsaket.cap 1.5-3寸导向阀密封垫片	1
		Main Gasket.cap 1.5-3寸主气阀密封垫片	1

SKYLINK AODD 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.

斯凯力气动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。

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。

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。

Air supply供气:

Each pump must have a sufficient air supply to meet pump's air demand, if air supply is not powerful enough, the pump will not reach its best performance. Use air pressure up to 8.6 bar (125 Psig) according to different pumps.

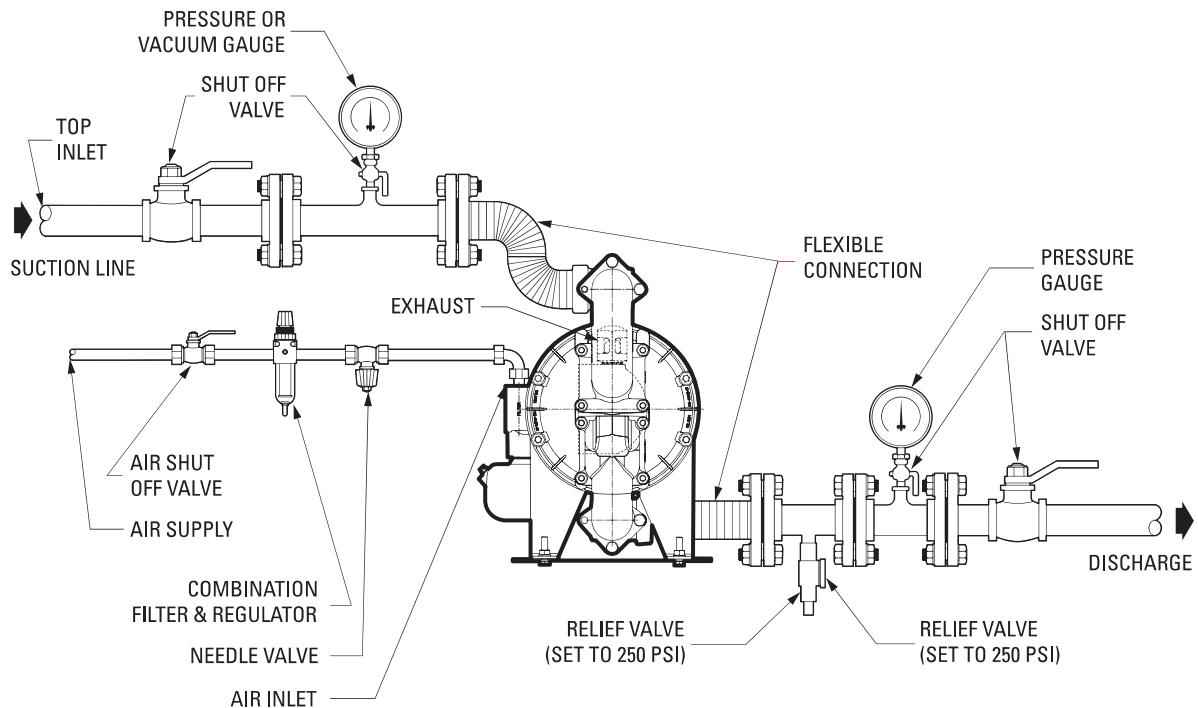
In addition, proper air filter and regulator are also important for pump to its performance, so SKYLINK recommends that a 5μ(micron)air filter shall be applied before pump's air inlet.

每台泵都必须有足够的空气供应以满足泵的空气需求。如果空气供应不足，泵将无法达到最佳性能。根据不同的泵，使用空气压力最高可达8.6巴（125Psig）。此外，适当的空气过滤调压阀对于泵的性能也是重要的，因此斯凯力建议泵进气口前应使用5 μ m（微米）空气过滤器。

Solenoid control电磁阀控制

If air supply of pump is controlled by solenoid valve, a three-way valve shall be applied in order to release the air which is stuck between the pump and valve.

如果用电磁阀控制泵的供气，则应采用三通阀，以释放泵和阀之间的空气。

**Operation:** 操作

Do not lubricate the pump before operate, because it is pre lubricated, additional lubrication will not damage the pump, however if the pump is heavily lubricated by an external source, the pump's internal lubrication may be washed away. If the pump is over-lubricated, when the pump is moved to a non-lubricated location, it shall be dismantled and re-lubricated as disassembly/reassembly section.

在运行泵之前不需要再润滑泵内部结构，因为已经预先润滑了。额外的润滑不会减少泵寿命，但是如果泵内部过度润滑，泵可能会出现润滑失效的情况，这个时候就要拆掉主气阀重新组装。

The flow rate of the pump can be adjusted according how powerful the air supply is, an air regulator is used to regulate air pressure, and the needle valve is to regulate volume.

泵的流量可根据空气供应量的大小进行调节，空气调压阀用来调节空气压力，针形阀调节输出流量。

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。

6.1 Disassembly of inlet/outlet 进出口拆卸

Tools工具: 9/16 wrenches扳手

Dismantle 16 bolts (5) which connect elbow (3,4) and outer chamber (7) by certain wrenches.

用扳手拆卸16个螺栓（5），这是连接弯头（3,4）和外腔体（7）的。

Caution: Before changing outer chamber,air supply must be cut and disconnect from air source. It may cause injury, damage of pump or loss of property if disassembly with pressure. Finally,drain out all material in the chamber,assure there is no material in the chamber.

注意：拆卸外腔体前，必须切断气源，消除气压；如果带压力拆卸，则可能造成伤害、泵的损坏或财产损失。最后，排空泵腔体内的所有物料，确保腔体内没有任何物料。

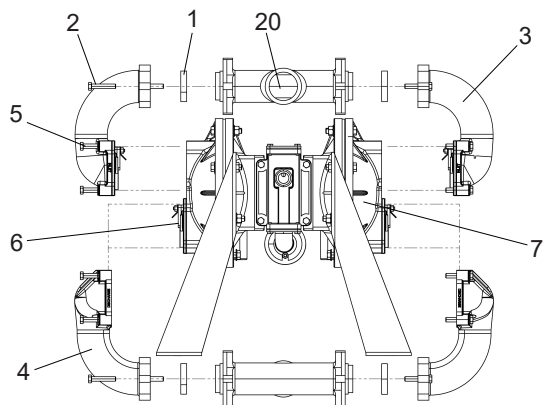


Figure 6.1 Disassembly of Inlet/Outlet进出口拆卸

6.2 Disassembly of outer chamber 外腔体拆卸

Tools工具: 5/8 wrenches扳手

Dismantle 16 bolts (8) which connect internal chamber (24) and outer chamber (7) by certain wrenches.

用扳手拆卸16个螺栓（8），这是连接内腔体（24）和外腔体（7）的。

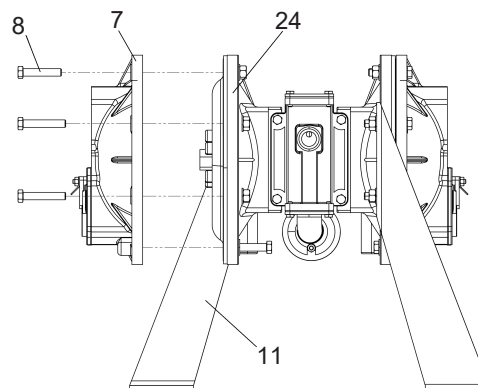


Figure 6.2-1 Disassembly of Outer Chamber外腔体拆卸

Caution注意:

Please strictly follow the sequence to tighten bolts.
请严格按照顺序拧紧螺栓。

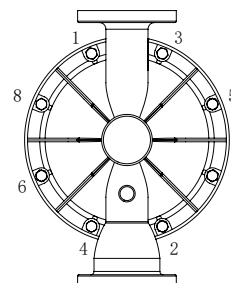


Figure 6.2-2 Disassembly Sequence of Bolts on Outer Chamber 外腔体螺栓的拆卸顺序

6.3 Disassembly of Diaphragm 膜片拆卸

1. Tool工具: monkey wrench, 3/16 allen wrench.
活动扳手, 3/16内六角扳手。
2. Bench clamp.
台钳。

Caution: Before changing diaphragm, air supply must be cut and disconnect from air source. It may cause injury, damage of pump or loss of property if disassembly with pressure. Finally, drain out all material in the chamber, assure there is no material in the chamber.

注意: 更换膜片前, 必须先关气阀切断气源。如果带压拆卸, 可能会造成人员伤害、泵损坏或财产损失。最后, 排出腔体内的所有物料, 确保腔体内没有物料。

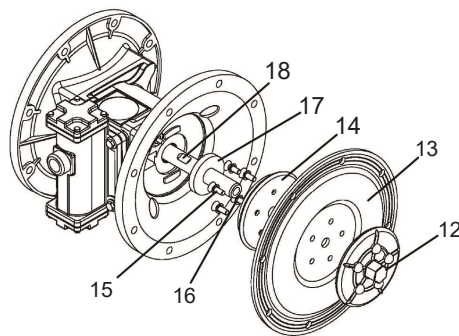


Figure 6.3 Disassembly of Diaphragm 膜片拆卸

1. Follow steps to disassemble inlet/outlet on page 20.
按照20页所述步骤拆卸入口/出口。
2. Follow steps to disassemble outlet chamber on page 20.
按照20页所述步骤拆卸腔体。
3. Using monkey wrench to turn diaphragm components (including outer washer (12), diaphragm (13)) out of mid shaft (18) in CCW.
用活动扳手将隔膜部件 (包括外压板 (12)、隔膜 (13)) 从中间轴 (18) 中取出。
4. Screwing off 5 bolts (16) on inner washer (15) by 3/16 allen wrench, separate outer washer (12), diaphragm (13) and inner washer (14).
用3/16内六角扳手拧紧内垫圈 (15) 上的5个螺钉 (16), 分离外压板 (12)、隔膜 (13) 和内压板 (14)。

6.4 Disassembly of air chamber 内腔体拆卸

Tool工具: 5/8 socket wrench

Lift away air chamber from center section and remove center block gasket. Replace gasket if necessary.

用5/8套筒扳手把内腔体从中间体组件拆下来, 并取下中间体O型圈。必要时更换中间体O型圈。

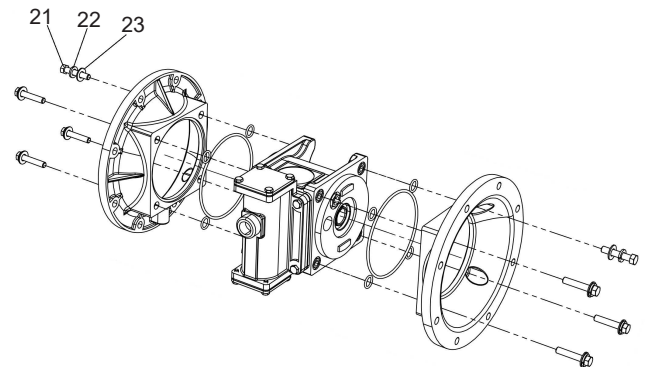


Figure 6.4 Disassembly of air chamber 内腔体拆卸

6.5 Disassembly of center block Assembly 中间体组件拆卸

Tools工具: 1/2 wrenches扳手

Lift away main valve (29) pilot valve(31) from center block. Inspect for wear and replace if necessary. Lift away air valve assembly and remove air valve gasket. Inspect the gasket and replace if necessary.

将主气阀 (29)、导向阀 (31) 从中间体取出，检查磨损情况，必要时更换。取下主气阀组件和主气阀密封垫片。检查垫片，在必要时进行更换。

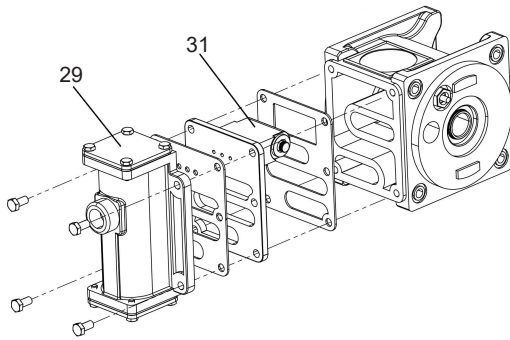


Figure 6.5 Disassembly of center block assembly
中间体组件拆卸

6.6 Disassembly of U ring & bumper plung O型圈和顶针座组件拆卸

Tools工具: 20mm socket wrench 20毫米套筒扳手

Disassemble bumper plung assembly (40) which internal chamber and pick out O ring (41), replace if the O ring is damage. Check the brush (43), replace if brush is abrade. 拆开中间体上的顶针座组件 (40)，再取出O型圈 (41)，检查，如有损坏则更换。检查轴套筒 (43)，如有磨损则更换。

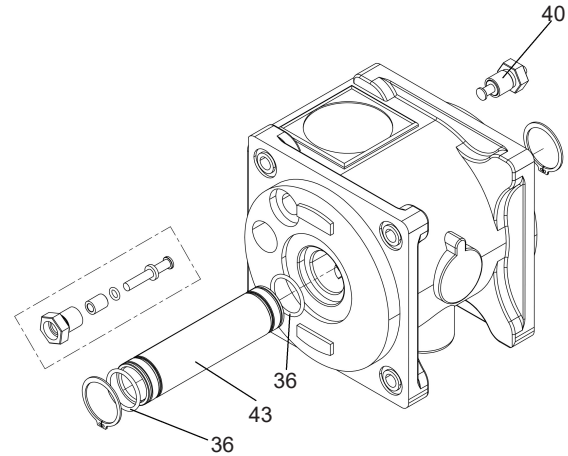


Figure 6.6 Disassembly of O ring & Bumper plung
O型圈和顶针座拆卸

6.7 Disassembly of Main Valve 主气阀拆卸

Tools工具: 1/2 , 7/16 wrenches 扳手

Using 1/2 wrench to disassemble 4 bolts (44) on main valve (29), take off main valve (29) and disassemble both upper and lower end caps(45), by using 7/16 wrench, then remove end gaskets(46). Finally, push spool valve(52) out of it.

用1/2扳手在主气阀 (29) 上拆卸4个螺栓 (44)，取下主气阀 (29)，用7/16扳手拆卸上、下端盖 (45)，然后取下端盖垫片 (46)。最后，将滑阀芯阀套 (50) 推出。

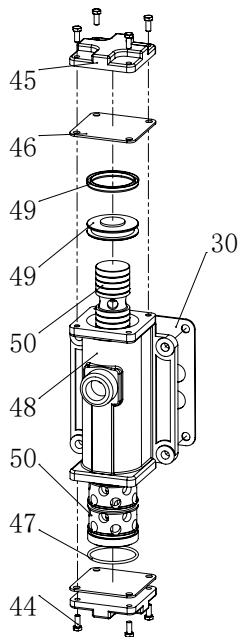


Figure 6.7 Disassembly of main Valve 主气阀拆卸

Caution: before disassembling main valve, air supply must be cut and disconnect from air source. It may cause injury, damage of pump or loss of property if disassembly with pressure.

注意：在拆卸主阀之前，必须先关供气并断开气源。如果带压拆卸，可能会造成伤害、泵损坏或财产损失。

6.8 Disassembly of Pilot Valve 导向阀拆卸

Tools工具: circlip plier outer 外卡簧钳

Take off poilt vavle (31) from center intermediate, extract out spool valve (54), disassemble vavle bush (52) by using circlip plier outer.

从中间体取下导向阀组件 (31)，取出阀芯组件 (54)，用卡簧钳拆下阀套 (52)。

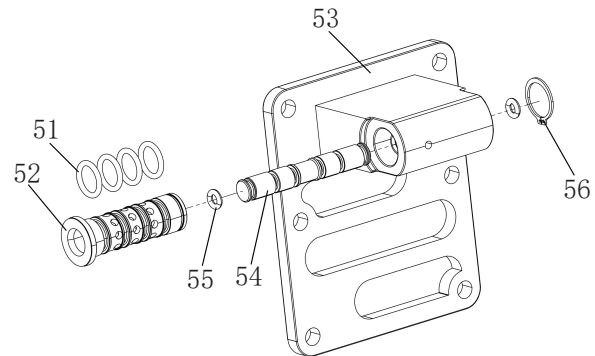


Figure 6.8 Disassembly of Pilot Valve 导向阀拆卸

6.9 Maintenance of air vavle(sliding style)

主气阀维修（滑阀式）

Tools工具: 7/16, 1/2 wrenches扳手

Caution: Before disassembling main valve, air supply must be cut and disconnect from air source. It may cause injury, damage of pump or loss of property if disassembly with pressure.

注意: 在拆卸主阀之前，必须先关供气并断开气源。如果带压拆卸，可能会造成伤害、泵损坏或财产损失。

Using 1/2 wrench to disassemble 4 bolts (44) on main valve (29), take off main valve (29) and disassemble both upper and lower end caps(45), by using 7/16 wrench, then remove end gaskets(46). Finally, push spool valve(50) out of it.

用1/2扳手在主气阀（29）上拆卸4个螺栓（44），取下主气阀（29），用7/16扳手拆卸上、下端盖（45），然后取下端盖垫片（46）。最后，将滑阀芯阀套（50）推出。

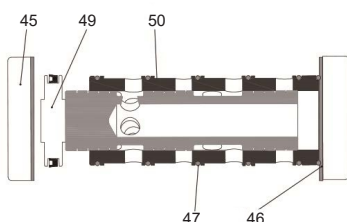


Figure 6.9-1 Section View OF Sliding Style Main Valve
滑阀式主气阀剖视图

*Spool valve and valve bush share one part(50), if one of those is damaged, the other one must be change as well.

滑阀芯和阀套是一套的，共用一个零件编号（50），如果其中一个损坏，另一个也必须更换。

a. If spool valve (50) is too loose, it drops itself without pushing, please observe if there is scratch, change both spool valve (50) and valve bush (50) together if scratch occurs.

如果滑阀芯阀套（50）太松，不需推动阀芯就会自行下落，请观察阀芯是否有划痕；如果阀芯表面有明显划痕，将该滑阀芯阀套（50）一起更换。

b. If spool valve (50) is too tight to push, the valve is stuck, also, change both spool valve (50) and valve bush (50) together.

如果滑阀芯阀套（50）太紧而不能用手指推动，则阀是被卡住；请同时将滑阀芯阀套（50）一起更换。

c. Install end caps(45), bolts (44) back to their original position.

安装端盖（45），螺栓（44）回到原来的位置。

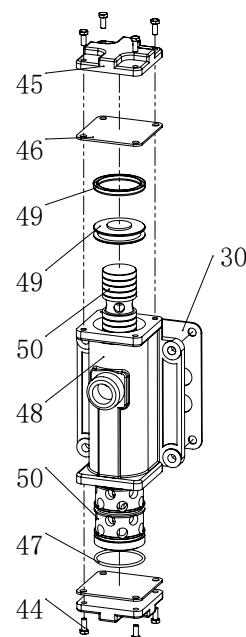


Figure 6.9-2 Sliding Style Main Valve滑阀式主气阀

6.10 Maintenance of pilot valve 导向阀维修

Tool工具: circlip plier outer外卡簧钳

1. Take off pilot valve (31) from center intermediate, extract out spool valve (54), disassemble valve bush (52) using circlip plier outer.

从中间体取下导向阀组件 (31)，取出阀芯组件 (54)，用卡簧钳拆下阀套 (52)。

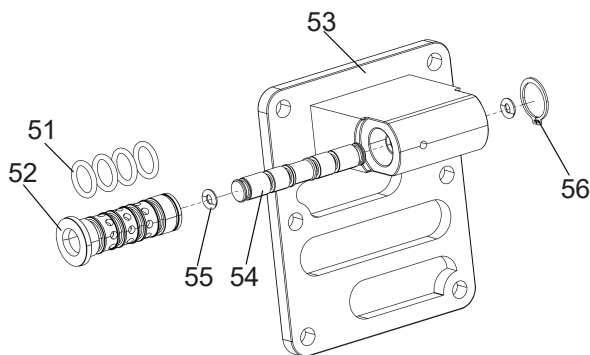


Figure 6.10 Pilot Valve 导向阀

6.11 Tablet valve assembly repair 片阀组件维修

Tool: 9/16 wrench 扳手

Caution: Before changing tablet valve(6), air supply must be cut and disconnect from air source. It may cause injury, damage of pump or loss of property if disassembly with pressure. Finally, drain out all material in the chamber, assure there is no material in the chamber.

注意: 在更换片阀组件(6)之前，必须先关供气并切断气源。如果带压拆卸，可能会造成人员伤害、泵损坏或财产损失。最后，排出腔体内的所有物料，确保腔体内没有物料。

1. Follow steps to disassemble inlet/outlet on page 20. After disassemble inlet/outlet, you may see tablet valve

1. 按照20页所描述步骤拆卸入口/出口。拆卸入口/出口后，可以看到片阀组件。

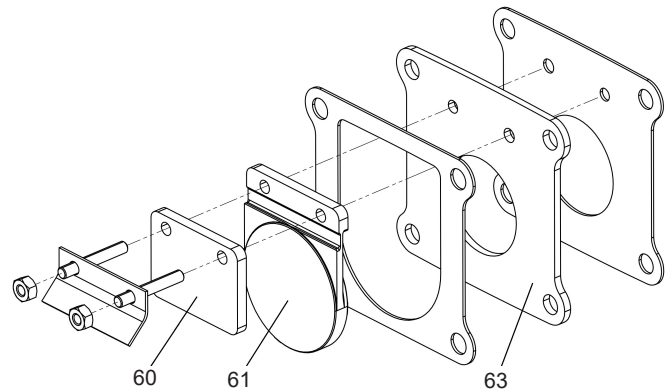


Figure 6.11 Tablet valve assembly disassembly
片阀组件的拆卸

2. Check the surface of the disc valve (61) for damage, wear or cutting, and check the disc valve protective pad (60) in the same way. The disc valve (61) and disc valve seat (63) must fit tightly without obvious clearance. In order to obtain the best performance, please replace the damaged parts in time.

检查片阀 (61) 表面是否有损坏，磨损或切割，同样的方法检查片阀保护垫 (60)。片阀 (61) 和片阀座 (63) 必须贴合紧密没有明显间隙，为了获得最佳性能，请及时更换损坏的零件。

3. Reinstall check tablet valve parts.

重新安装片阀组件。

Caution注意:

- Please make sure all bolts are fully tightened after a period time of running.

请确保所有螺栓在运行一段时间后完全拧紧。

- While removing the disc valve assembly, check the disc valve (61) and disc seat (63) for any damage.

在拆卸片阀组件的同时，请检查片阀 (61) 与片阀座 (63) 结合是否有任何损坏。

6.12 Maintenance of diaphragms 膜片维修

Suitable for 适用于SA40/50/80

Tools 工具:

1.monkey wrench, 3/16 allen wrench.

活动扳手, 3/16内六角扳手。

2.Bench clamp

台钳。

Caution: Before changing diaphragm, air supply must be cut and disconnect from air source. It may cause injury, damage of pump or loss of property if disassembly with pressure. Finally, drain out all material in the chamber, assure there is no material in the chamber.

注意: 更换膜片前, 必须先关气阀切断气源。如果带压拆卸, 可能会造成人员伤害、泵损坏或财产损失。最后, 排出腔体内的所有物料, 确保腔体内没有物料。

1.Follow steps to disassemble inlet/outlet on page 20.

按照20页所述步骤拆卸入口/出口。

2.Follow steps to disassemble outer chamber on page 20.

按照20页所述步骤拆卸腔体。

3.Using monkey wrench to turn diaphragm components (including outer washer (12), diaphragm (13)) out of mid shaft (18) in CCW.

用活动扳手将隔膜部件 (包括外压板 (12)、隔膜 (13)) 从中间轴 (18) 中取出。

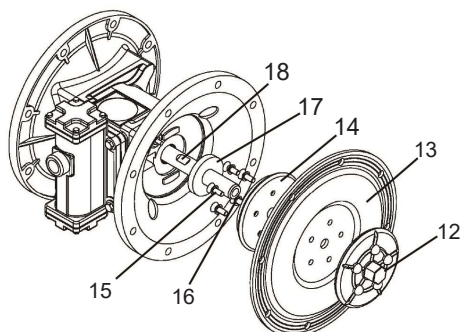


Figure 6.12-1 Disassembly of Diaphragm Assembly
膜片组件拆卸

4.Screwing off 5 bolts (16) on inner washer (14) by 3/16allen wrench, separate outer washer (12), diaphragm(13) and inner washer (14).

用3/16内六角扳手松开内压板(14)上的5个螺栓(16), 分离外压板(12)、隔膜(13)和内压板 (14)。

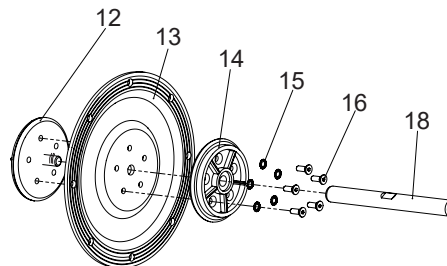


Figure 6.12-2 Parts of Diaphragm
隔膜组件零件图

5.Installation steps in reverse order.

安装步骤与上面的顺序相反。

Caution 注意:

• Please make sure all bolts are fully tightened after a period time of running.

请确保所有螺栓在运行一段时间后完全拧紧

• Spring washer cannot be reused.

弹簧垫圈不能重复使用。

• One side which with words must be facing inside.

特氟龙和三道橡胶隔膜有字的一面必须朝内侧。

• PTFE graphragm must be applied together with rubber diaphragm, which is installed outside of rubber diaphragm.

聚四氟乙烯 (特氟龙) 隔膜必须与橡胶隔膜一起安装, 并且安装在橡胶隔膜外与物料接触的一侧。

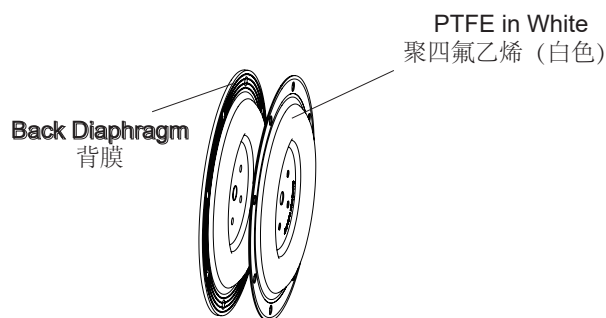


Figure 6.12-3 Installation of Double Diaphragms
双隔膜的安

6.13 Assembly装配:

Upon performing applicable maintenance to the air distribution system, the pump can now be reassembled. Please refer to the disassembly instructions for photos and parts placement. To reassemble the pump, follow the disassembly instructions in reverse order. The air distribution system needs to be assembled first, then the diaphragms and finally the wetted path. Please find the applicable torque specifications on this page. The following tips will assist in the assembly process.

在完成对气路系统的维护后，现在可以重新组装泵。请参阅拆卸说明和零件布置图。要重新组装泵，按照拆卸顺序逆向执行。气路系统需要首先组装，然后是隔膜，最后是液路通道。请在本页找到适用的扭矩规格。以下提示将有助于装配过程。

Torque sheet 扭矩 参数

Description of Part 零件描述	Torque 扭矩
Air Valve & center Block(Aluminum) 气阀与中间体（铝合金）	13.6 N·m(120 in-lb)
Air Valve & cap 气阀与端盖	5.1 N m(45 in-lb)
Air Chamber/Center Block 内腔体/中间体	27.1 N m(20 ft-lb)
Liquid Chamber /Air Chamber, Aluminum Bolted Only 外腔体/内腔体，铝合金螺栓	27.1 N m(20 ft-lb)
Outer Pistons,Rubber & PTTE, Inner Pistons 外压板，橡胶和聚四氟乙烯隔膜，内压板	22 N m(16 ft-lb)
Center Shaft & Inner Pistons 中间轴与内压板	109 N m(16 ft-lb)
Bumper Plung & Center Block 顶针座与中间体	5 N m(45 in-lb)

SECTION 7

Troubleshooting Guide故障指南

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
	Main valve serious damage, air leakage 主气阀严重磨损，漏气	Change spool valve & valve bush of main valve 更换主气阀的滑阀芯阀套
	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
	"O"ring of pilot valve damages 导向阀密封圈磨损	Check pilot valve 检查导向阀
	Damage of internal spring or "O" ring of quick adapter which is connected to the pump.进气快接头内的弹簧或 O 型圈损坏	Dismantle quick adapter, check if it works after connect to the air source 拆除快接头，重新连接气源后看泵是否恢复正常
	Unsealing due to loosen bolts 螺栓松	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	Change a heavier ball or stainless steel ball 更换重球或者不锈钢球
	Unsealing due to damage of "O" ring of shaft, "O" ring of thimble or gasket of pilot valve. 由于中间轴的O型圈、顶针的 O 型圈或导向阀垫片的损坏无法密封。	Check all rings, gaskets, change if damaged 检查所有密封圈，垫片，如有损坏更换
Pump is not working 泵不工作	Fluid leaks out form muffler due to damage of diaphragm or washer. 隔膜或垫圈损坏，流体从消声器中泄漏出来。	Change diaphragm, tightening washer 更换隔膜，紧固压板
	Insufficient air pressure or air flow 气压或气流量不足	Increase air pressure or air flow 增加气压或气流量
	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
	Main valve is stuck, unmovable by hand serious damage of spool valve of main valve, huge gap causes air leakage 主气阀卡死，手指推不动，或滑阀芯严重磨损，间隙大造成漏气	Change spool valve & valve bush 更换滑阀芯阀套
	Pores of pilot valve are blocked, glyd ring of valve bush damages seriously, air leakage 导向阀小孔堵塞，阀芯格莱圈严重磨损，漏气	Clean up valve casing, change Spool assembly 清理阀套，更换阀芯组件
	Valves of inlet and outlet stay shut 进出口阀门关闭	Release valves 打开进出口阀门
	Muffler is blocked, air suffocate 消音器堵塞，无法排气	Change muffler 更换消音器
	Damage of thimble sealing, thimble socket; bend of thimble and other issue 顶针密封、顶针座损坏、顶针弯曲等问题	Change thimble and socket 更换顶针及顶针座
	Thimble falls into mid chamber 顶针掉入中间体	Change mid chamber 更换中间体组件
	Excessive lubrication 过度润滑	Decrease lubricating oil volume in oil-water separator 降低油水分离器润滑油流量
	Air leakage due to glyd ring of shaft damages seriously 中间轴格莱圈严重损害导致漏气	Change glyd ring 更换格莱圈

	Air valve stays shut 气阀关闭	Solenoid valve fails or air source is shut 电磁阀失灵或气源关闭
	Mid chamber occurs pores due to corrosion 中间体因腐蚀穿孔	Change mid chamber 更换中间体
	Air valve, pilot valve, air inlet gasket damage 气阀、导向阀进气垫片损坏	Change damaged parts 更换损坏零件
	Material solidified in chamber 物料凝固在腔体	Dismantle chamber and clean up 拆开腔体清理
Pump is working after outlet valve is shut 出口阀门关闭后泵仍在工作	Outlet valve is not totally sealed 出口阀门没有完全密封	Shut outlet valve totally or change it 完全关闭出口阀门或更换阀门
	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
After a period of time works normally, the pump fails to work, then it back to normal again after a few hours in winter time 在冬天经过一段时间的正常工作,泵停止工作,然后几小时后又恢复正常。	Pump is frozen 泵结冰	Keep air source dry and moisture percentage of air compressor, air container air pipes on time 保持气源干燥,降低气源的湿度百分比。及时排放空压机、储气罐和气管中的水
		Change surrounding environment, keep warm in order to avoid freezing 改变周围环境保暖以避免结冰
		Slow down working frequency, so that avoid freezing 放慢工作频率,以免结冰
		Add a few lubricating oil, lower the freezing point 加入少量润滑油,降低冰点
Noise or abnormal sound 噪音或声音异常	Sound due to ball in the pump shell 球撞击声音	无需维修,不影响正常使用
	Mid chamber occurs a loud noise when release air 中间体排气时发出很大的声音	Change muffler 更换消音器
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
Fluid leaks from chamber 流体从消音器泄露出来	Leakage occurs around bolt 螺栓周围发生泄漏	Retightening bolt 再拧紧螺栓
	Leakage occurs around muffler 消音器周围发生泄漏	Check diaphragm and washer 检查隔膜和压板