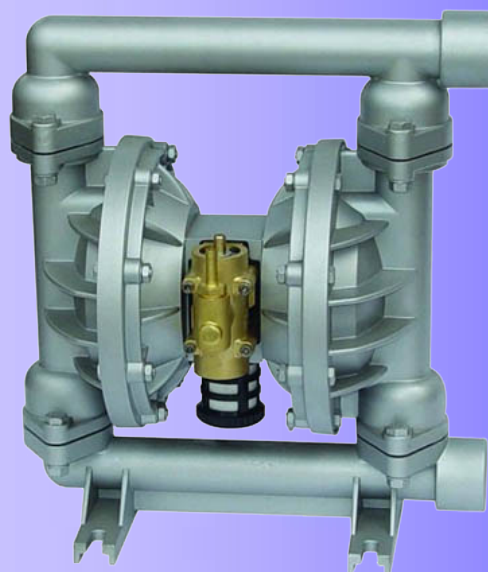


A CATALOGUE FOR CDBY AIR OPERATION DIAPHRAGM PUMP

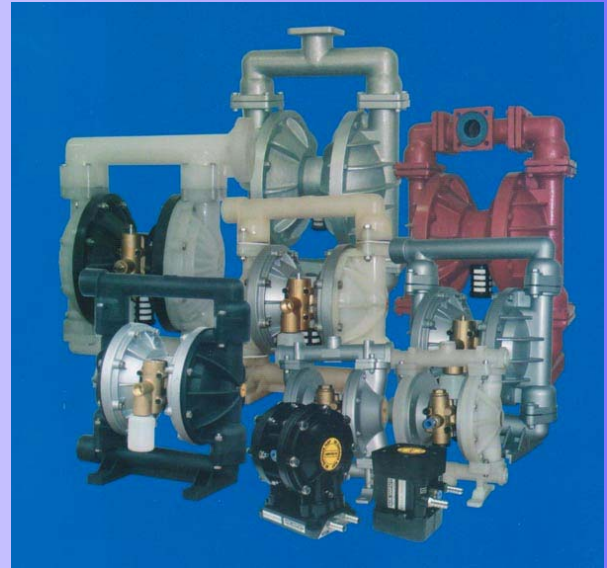
-  Food & Beverage
-  Mining
-  Paints & Dyes
-  Petrochemical
-  Pharmaceutical
-  Pulp & Paper
-  Power & Energy
-  Water Treatment



Catalouge for QBY air operated double diaphragm pump(AODD)

QBY series pump is a diaphragm pump (also known as a Membrane pump, Air Operated Double Diaphragm Pump (AODD) or Pneumatic Diaphragm Pump) is a positive displacement pump that uses a combination of the reciprocating action of a rubber, thermoplastic or teflon diaphragm and suitable valves either side of the diaphragm (check valve, butterfly valves, flap valves, or any other form of shut-off valves) to pump a fluid.

They are driven with compressed air without the need of electric power. Widely used for leak proof applications in industries like petrochemical chemical metallurgy and ceramics etc. Applicable to liquids of leaky corrosive inflammable and explosive & hazardous properties.



Brief Introduction

1. No need to fill in priming water, maximum suction head up to 7m head lift up to 50m, discharge pressure > 6kgf/cm².
2. Spacious flow and sound throughput performance, maximum permissible particle diameter up to 10mm, little abrasion to the pump when handling slurry and impurity.
3. Head lift and flow rate under steeples regulation through the opening regulation of valve (air pressure regulated between 1-7kgf/cm²).
4. This pump has no rotating elements and shaft seal. Diaphragm makes the media handled completely separated from moving elements and working media, so that the media cannot leak out, hardly causing any environmental pollution and personal safety threat when handling toxic volatile or corrosive media.
5. It doesn't use electricity to perform safe and reliable service in inflammable and explosive conditions.



6. It can work when being submerged into media.
7. Easy operation and dependable service. It is started or stopped simply by opening or closing the air Valve. Even under longtime no-media running or sudden stop due to unexpected circumstances, pump is not likely to be damaged therefore. In case of overload, pump will stop automatically to perform self-protection. Once load resumes normal, it will start automatically.
8. Simple structure and less wearing parts. Provided with simple structure, easy installation and maintenance, the media handled cannot get in touch with the moving elements such as distributing valve, link rod, etc., unlike other pumps that may suffer from declining performance as a result of the wearing of rotor, piston, gear, impeller and so on.
9. It is capable of handling relatively viscous liquid (viscosity below 10,000 centipoises).

Typical Application

- ◆ Toxic, flammable and volatile liquids.
- ◆ Strong acid, alkali and other corrosive liquids.
- ◆ Sludge suction from drilled oil wells.
- ◆ Oil loading & unloading in oil truck, oil depot and tanks. Paint, resin and dyes & glues.
- ◆ Ceramic glair, cement slurry and sludge.
- ◆ Sewage and remnant oil in oil vessels.
- ◆ Beer brewery and food processing.

Catalouge for QBY air operated double diaphragm pump(AODD)

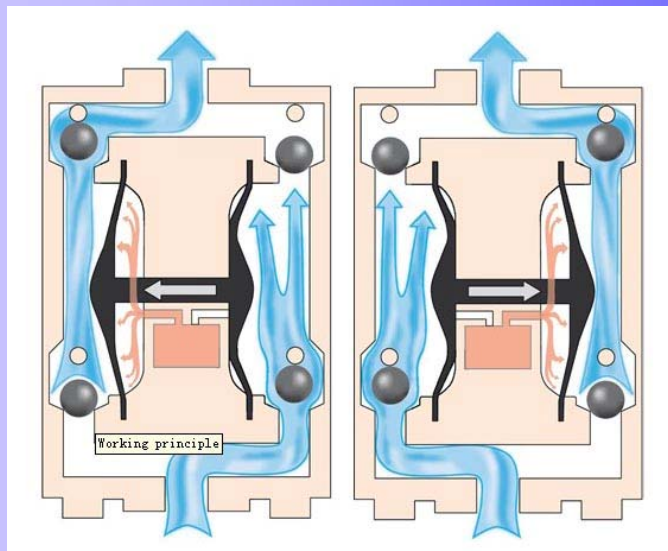
Basic Principle

When the volume of a chamber of either type of pump is increased (the diaphragm moving up), the pressure decreases, and fluid is drawn into the chamber. When the chamber pressure later increases from decreased volume (the diaphragm moving down), the fluid previously drawn in is forced out. Finally, the diaphragm moving up once again draws fluid into the chamber, completing the cycle. This action is similar to that of the cylinder in an internal combustion engine.

Model Meaning

QBY-100

QBY--- Air Operated Double Diaphragm Pump(AODD)
100--- Discharge Diameter (mm)



Brief Performance Parameters

Model	Flow rate	Head lift	Discharge Pressure	Suction head	Max. particle Diameter	Max. air consumption	Type connection			
	(m3/l)	(m)	(kgf/cm2)	(m)	(mm)	(m3/min)	NPT	BSPT	ANSI	DIN
QBY-10	0 - 0.8	0 - 50	6	0 - 5	1	0.3	★	★	/	/
QBY-15	0 - 1	0 - 50	6	0 - 5	1	0.3	★	★	/	/
QBY-25	0 - 2.4	0 - 50	6	0 - 7	2.5	0.6	★	★	/	/
QBY-40	0 - 8	0 - 50	6	0 - 7	4.5	0.6	★	★	/	/
QBY-50	0 - 12	0 - 50	6	0 - 7	8	0.9	/	/	★	★
QBY-65	0 - 16	0 - 50	6	0 - 7	8	0.9	/	/	★	★
QBY-80	0 - 24	0 - 50	6	0 - 7	10	1.5	/	/	★	★
QBY-100	0 - 30	0 - 50	6	0 - 7	10	1.4	/	/	★	★

Material for pump body and diaphragm

Model	Material for the pump body						Material for the diaphragm				
	Aluminum	S.S.	Cast iron	PP	PVDF	F46 lined	Buna-N	Neoprene	EPDM	Viton	Teflon
QBY-10	★	★	★	★	★	/	★	★	★	★	★
QBY-15	★	★	★	★	★	/	★	★	★	★	★
QBY-25	★	★	★	★	★	★	★	★	★	★	★
QBY-40	★	★	★	★	★	★	★	★	★	★	★
QBY-50	★	★	★	★	/	★	★	★	★	★	★
QBY-65	★	★	★	/	/	/	★	★	★	★	★
QBY-80	★	★	★	/	/	/	★	★	★	★	★
QBY-100	★	★	★	/	/	/	★	★	★	★	★

a. ANSI&DIN is flange connection type. All pump connection can be both in middle or in one side of the pump.

b. S.S.-stainless steel, it can be in SS304,SS316,SS316L., PP-reinforced polypropylene, PVDF-polyvinylidene fluoride, F46 means fluorinated ethylene-propylene.

Catalouge for QBY air operated double diaphragm pump(AODD)

QBY-10 & QBY-15 Air Operated Diaphragm Pump(AODD pump)

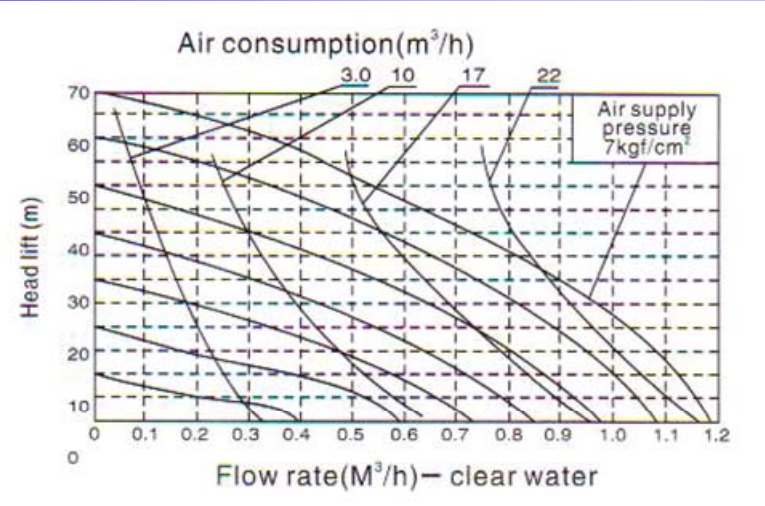
Technical parameters

Flow rate	0-1m3/h
Head lift	0-50m
Discharge pressure	6 kgf/cm2
Suction head	5 m
Maximum particle diameter	1 mm
Maximum air supply pressure	7 kgf/cm2
Max air consumption	0.3 m3/min
Max liquid viscosity	10K centipoises
Max temperature	80 degree Celsius

Material information

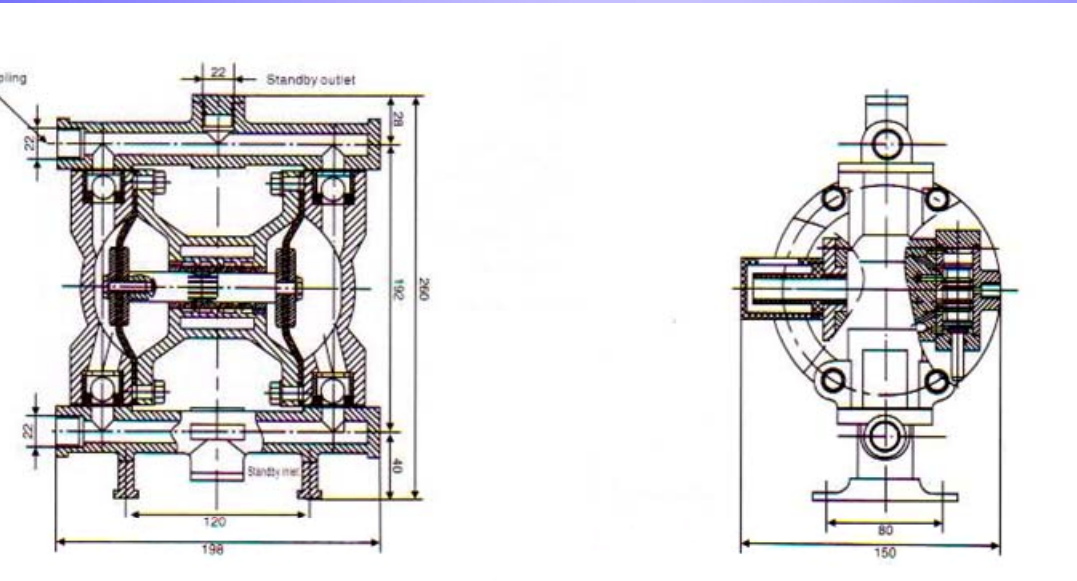
Pump body	Cast iron, Aluminum alloy, Stainless steel, Polypropylene(PP), Polyvinylidene fluoride(PVDF)
Diaphragm	Nitrile rubber, Neoprene, Fluorubber, Teflon
Sealing ball	Stainless steel, Alumina ceramic, Fluorinated ethylene-propylene(TFF)
Ball seat	Stainless steel, TFF.

Performance curve



aluminum material pump for example

Installation dimensions(mm)



Pump net weight, cast iron(8kg), aluminum(5kg), stainless steel(7kg), PP and PVDF(4kg)

Catalouge for QBY air operated double diaphragm pump(AODD)

QBY-40 Air Operated Diaphragm Pump(AODD pump)

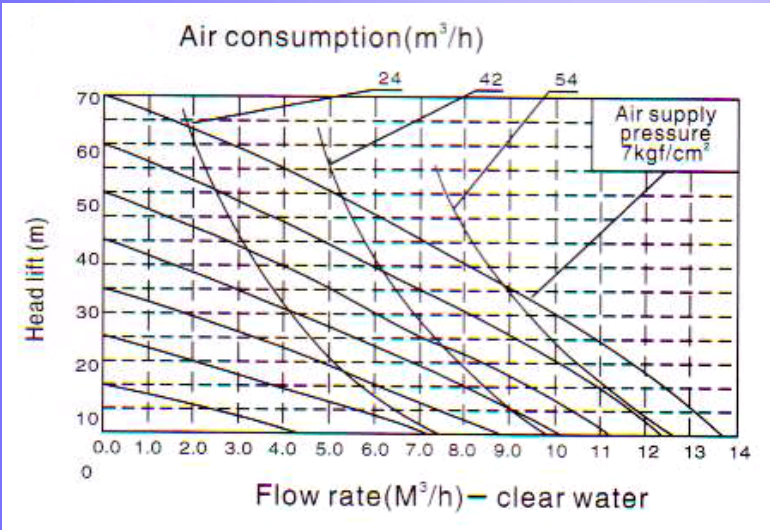
Technical parameters

Flow rate	0-8 m3/h
Head lift	0-50 m
Discharge pressure	6 kgf/cm2
Suction head	5 m
Maximum particle diameter	4.5 mm
Maximum air supply pressure	7 kgf/cm2
Max air consumption	0.6 m3/min
Max liquid viscosity	10K centipoises
Max temperature	80 degree Celsius

Material information

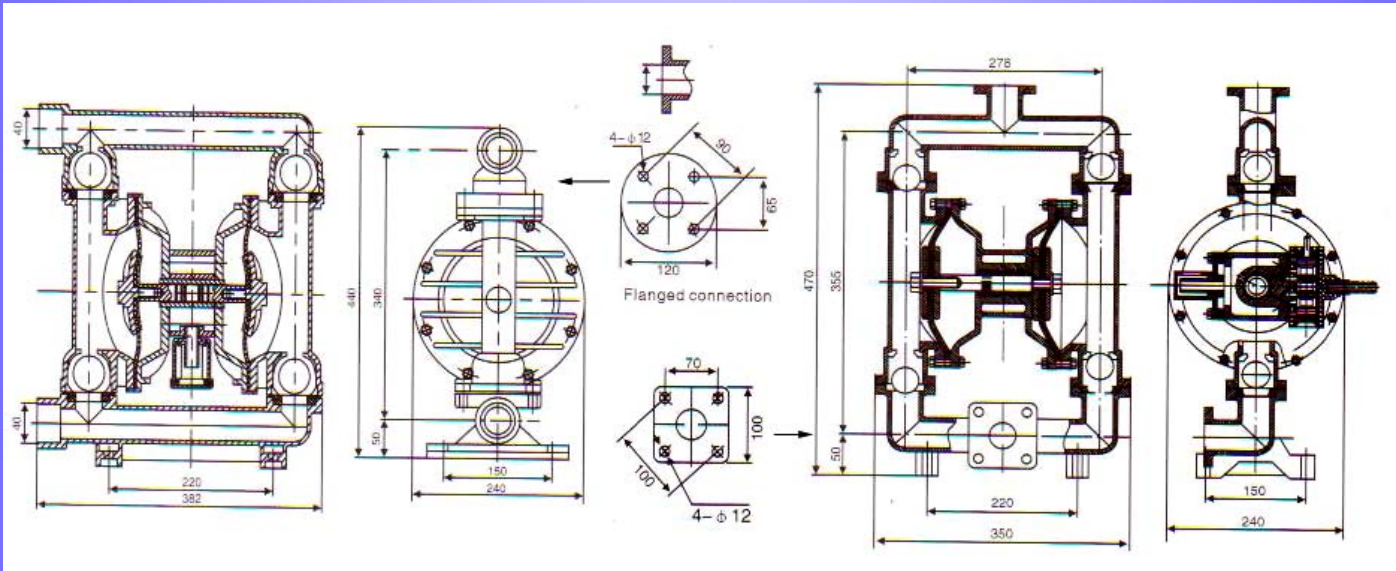
Pump body	Cast iron, Aluminum alloy, Stainless steel, Polypropylene(PP), Polyvinylidene fluoride(PVDF), lined with fluorinated ethylene-propylene
Diaphragm	Nitrile rubber, Neoprene, Fluorubber, Teflon
Sealing ball	Nitrile rubber, Neoprene, Fluorubber, Alumina ceramic, TFF
Ball seat	Nitrile rubber, Neoprene, TFF.

Performance curve



TFF lined material pump for example

Installation dimensions(mm)



Pump net weight, cast iron(35kg), aluminum(20kg), stainless steel(30kg), PP and PVDF(15kg),TFF lined(38kg)

Catalouge for QBY air operated double diaphragm pump(AODD)

QBY-65 Air Operated Diaphragm Pump(AODD pump)

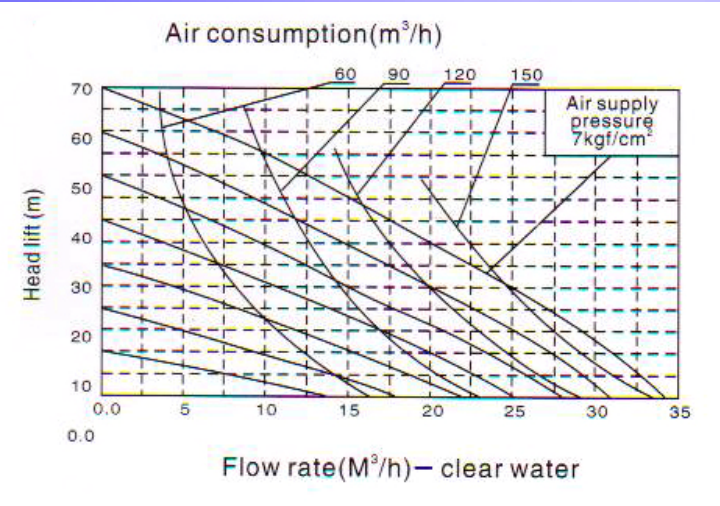
Technical parameters

Flow rate	0-16 m3/h
Head lift	0-50 m
Discharge pressure	6 kgf/cm2
Suction head	5 m
Maximum particle diameter	8 mm
Maximum air supply pressure	7 kgf/cm2
Max air consumption	0.9 m3/min
Max liquid viscosity	10K centipoises
Max temperature	80 degree Celsius

Material information

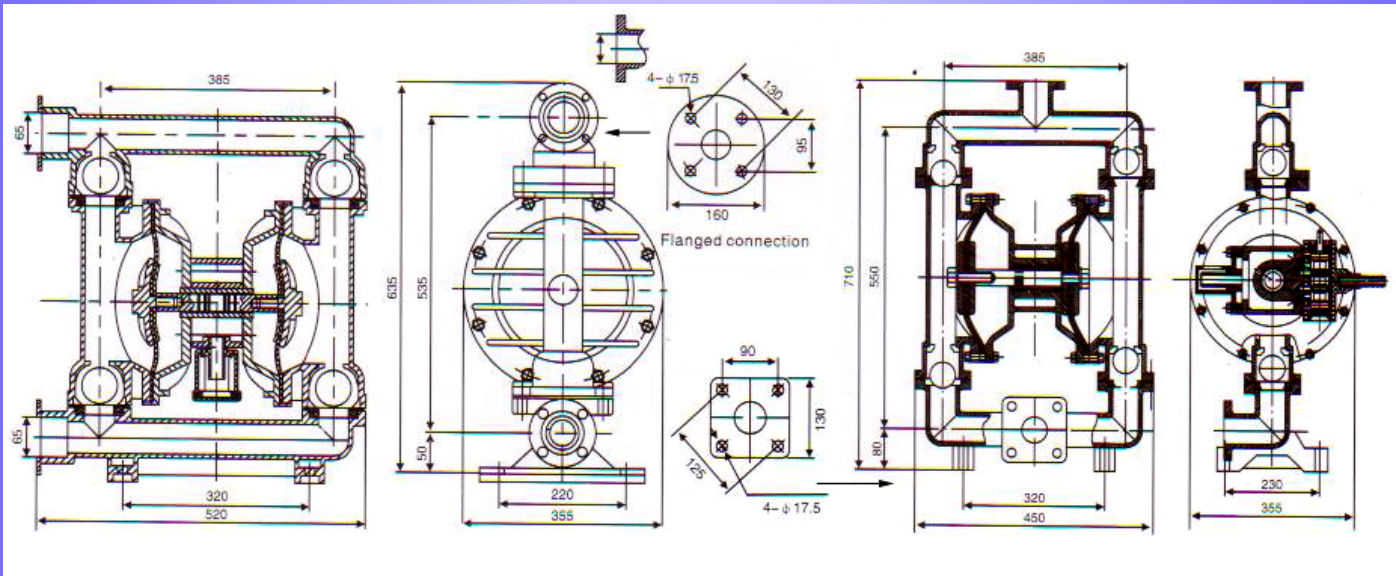
Pump body	Cast iron, Aluminum alloy, Stainless steel, Polypropylene(PP),
Diaphragm	Nitrile rubber, Neoprene, Fluorubber, Teflon
Sealing ball	Nitrile rubber, Neoprene, Fluorubber, Alumina ceramic, TFF
Ball seat	Nitrile rubber, Neoprene, TFF.

Performance curve



Cast iron material pump for example

Installation dimensions(mm)



Pump net weight, cast iron(75kg), aluminum(55kg), stainless steel(75kg), PP(46kg).

Catalouge for QBY air operated double diaphragm pump(AODD)

QBY-80 Air Operated Diaphragm Pump(AODD pump)

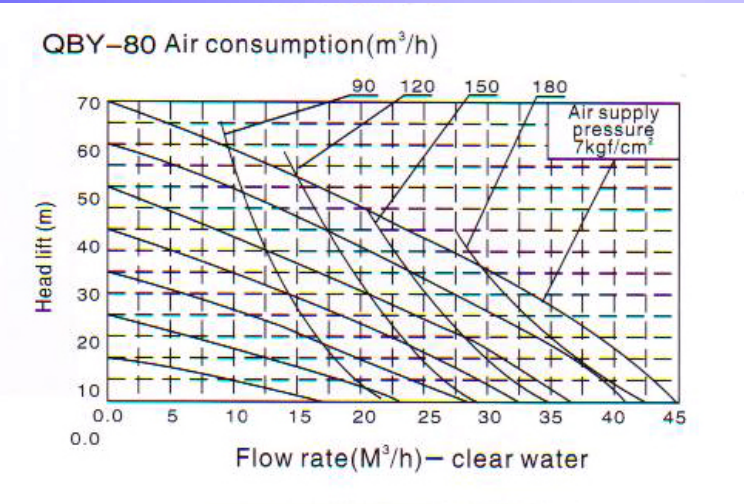
Technical parameters

Flow rate	0-24 m3/h
Head lift	0-50 m
Discharge pressure	6 kgf/cm2
Suction head	5 m
Maximum particle diameter	10 mm
Maximum air supply pressure	7 kgf/cm2
Max air consumption	1.5 m3/min
Max liquid viscosity	10K centipoises
Max temperature	80 degree Celsius

Material information

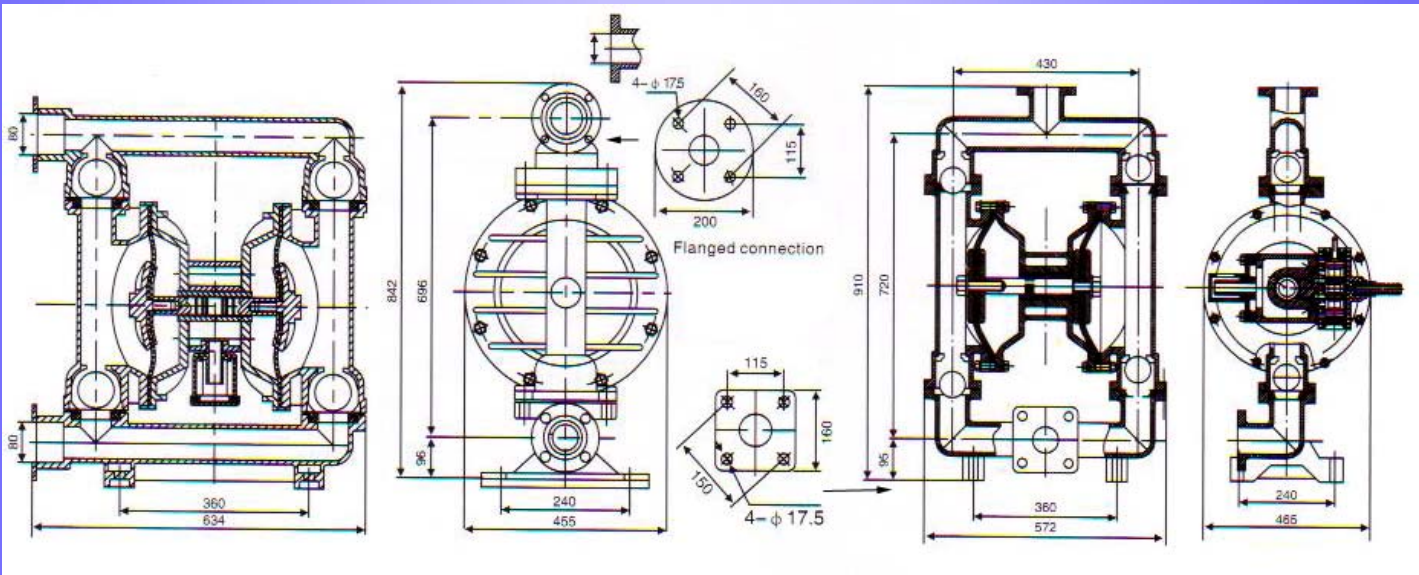
Pump body	Cast iron, Aluminum alloy, Stainless steel
Diaphragm	Nitrile rubber, Neoprene, Fluorubber, Teflon
Sealing ball	Nitrile rubber, Neoprene, Fluorubber, Alumina ceramic, TFF
Ball seat	Nitrile rubber, Neoprene, TFF.

Performance curve



Stainless steel material pump for example

Installation dimensions(mm)



Pump net weight, cast iron(170kg), aluminum(100kg), stainless steel(130kg).

Catalouge for QBY air operated double diaphragm pump(AODD)

QBY-100 Air Operated Diaphragm Pump(AODD pump)

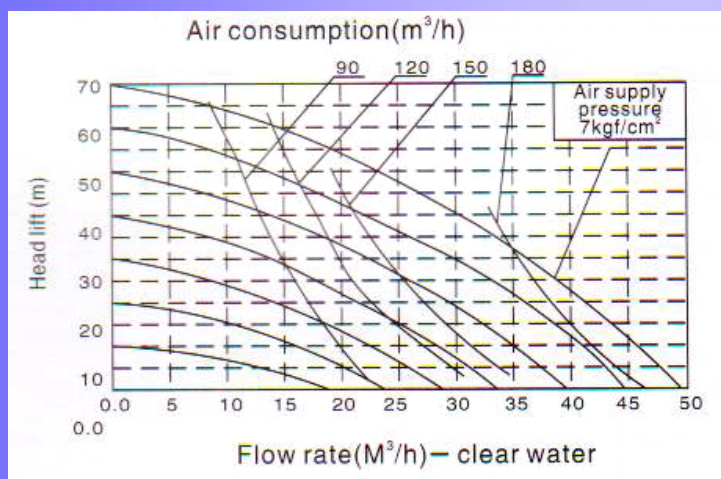
Technical parameters

Flow rate	0-30 m ³ /h
Head lift	0-50 m
Discharge pressure	6 kgf/cm ²
Suction head	5 m
Maximum particle diameter	10 mm
Maximum air supply pressure	7 kgf/cm ²
Max air consumption	1.5 m ³ /min
Max liquid viscosity	10K centipoises
Max temperature	80 degree Celsius

Material information

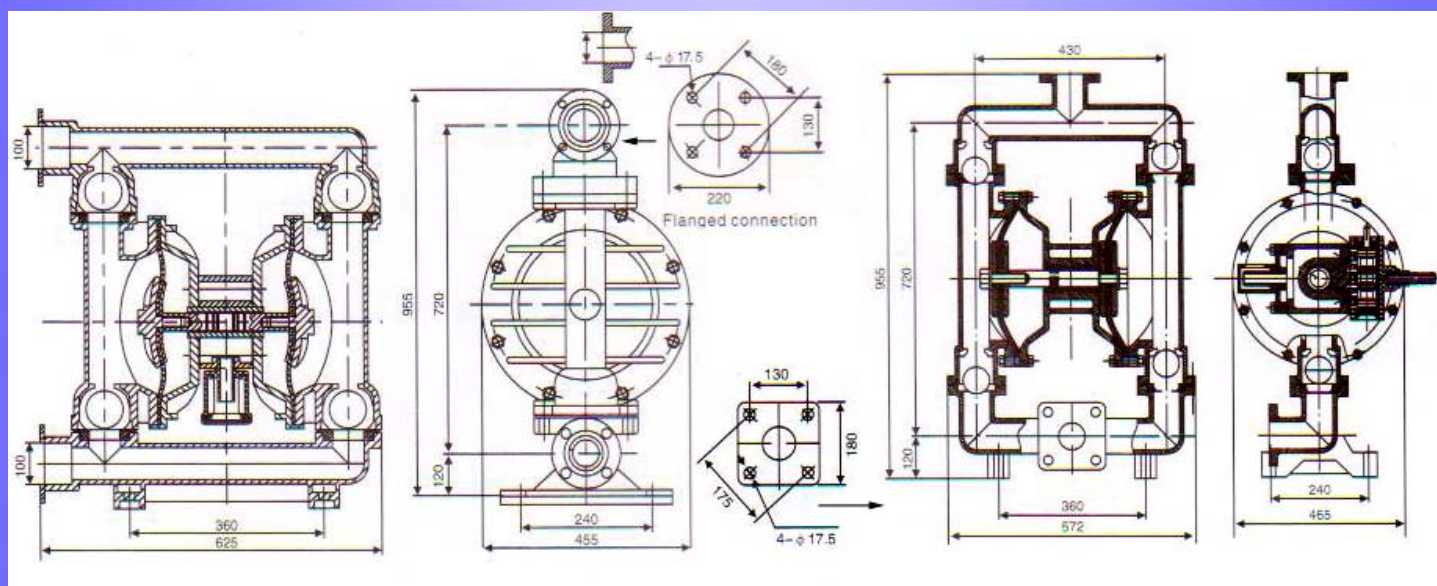
Pump body	Cast iron, Aluminum alloy, Stainless steel
Diaphragm	Nitrile rubber, Neoprene, Fluorubber, Teflon
Sealing ball	Nitrile rubber, Neoprene, Fluorubber, Alumina ceramic, TFF
Ball seat	Nitrile rubber, Neoprene, TFF.

Performance curve



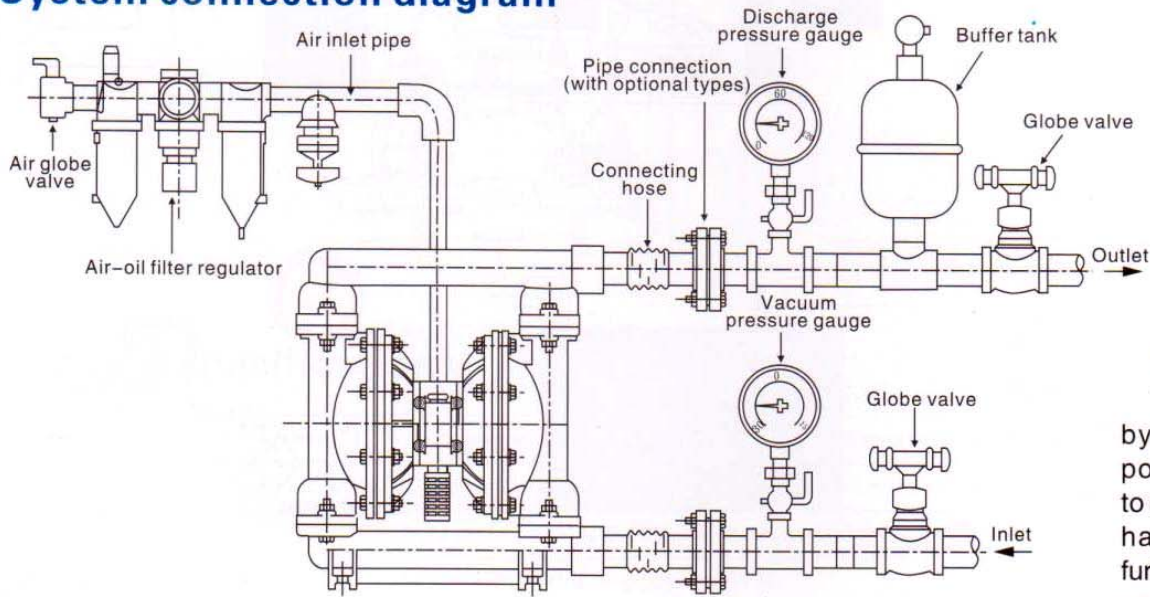
pump spare parts

Installation dimensions(mm)



Pump net weight, cast iron(170kg), aluminum(100kg), stainless steel(130kg).

System connection diagram



Warning

The air discharged by pump may contain pollutants. If it seems to contaminate the fluid handled, move it to a further place for exhaust ventilation.

Installation

Check the tightness of the pump's hardware prior to installation and operation of a new pump. Pump hardware is prone to loosening due to vibration in transportation, expansion and contraction, or the relaxing of materials after they are torqued. It is important that the pump is not under pressure when hardware is being tightened.

This pump comes with a footed base for easy mounting in permanent installations. The pump should be mounted in a vertical position. In permanent installations, the pump should be attached to plant piping using a flexible coupling on both the intake and discharge connections to reduce vibration to the pump and piping. To further reduce vibration, a surge suppressor next to the pump may be used.

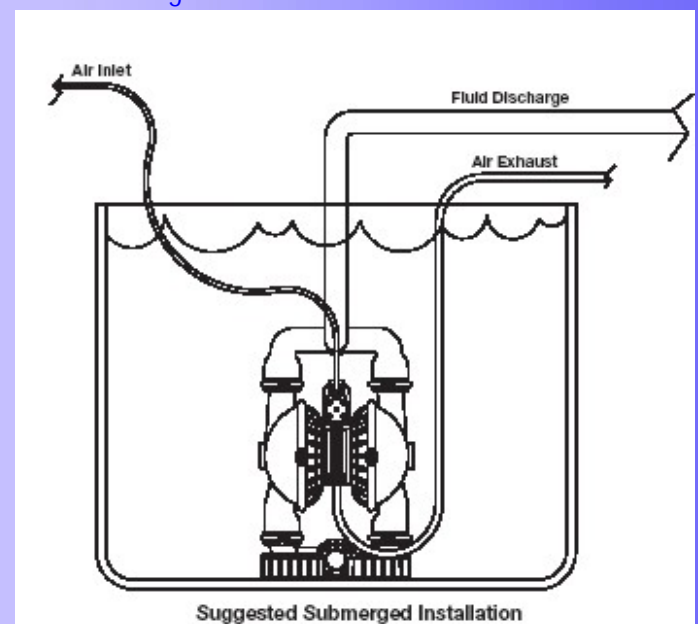
Suction pipe size should be at least 1-1/2 inch in diameter or even larger if highly viscous fluid is to be pumped. If suction hose is used, it must be of a non-collapsible reinforced type. Discharge piping should be at least 1-1/2 inch in diameter. It is critical, especially on the suction side of the pump, that all fittings and connections are airtight or pumping efficiency will be reduced and priming will be difficult.

The air supply line should be at least 3/4 inch in diameter. Make certain the supply line and compressor are capable of supplying the required pressure and

volume of air needed to operate the pump at the desired flow rate. The quality of the compressed air source should be considered. Air that is contaminated with moisture and dirt may result in erratic pump performance and increased maintenance cost as well as frequent process "down time" when the pump fails to operate properly.

Typical Installation model:

a. Submerged installation

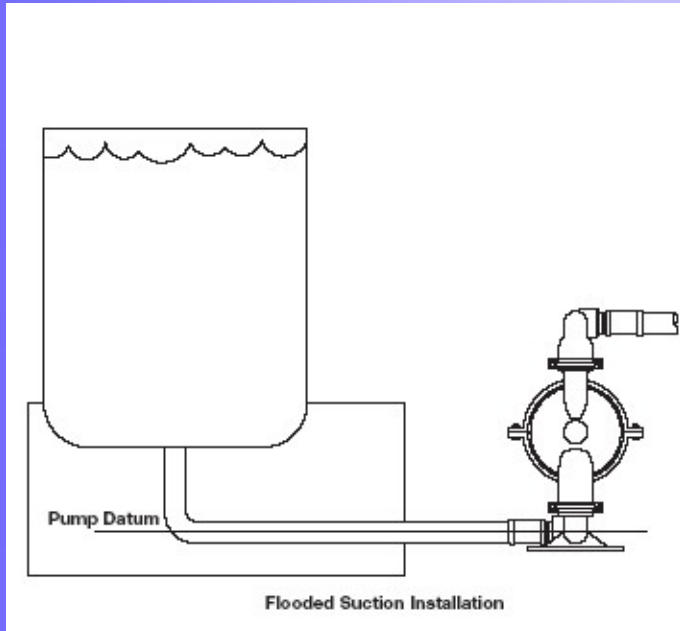


In a submerged application, the air exhaust port of the pump must be ported above the fluid line. Be certain that

Catalouge for QBY air operated double diaphragm pump(AODD)

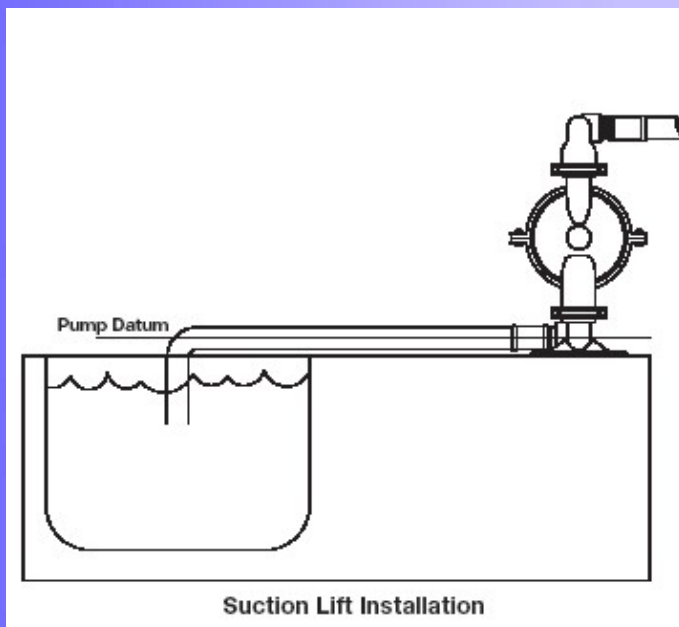
the fluid being pumped is compatible with the materials on both the air side and the wetted side of the pump before the pump is submerged

b. Flooded installation



A flooded suction installation has the pump datum line below the fluid level.

c. Suction lift installation



In suction lift installations, the pump datum is above the fluid line. **IMPORTANT:** each pump has different lift capabilities. Be sure to verify the lift capability of a particular pump before installing it into a system.

Trouble shooting

The pump will not run, or runs slowly:

1. Examine the air inlet screen for debris.
2. Check for a sticking air valve. Remove the air valve from the pump and flush with solvent to remove dirt and/or debris. Check the spool and sleeve for nicks and scratches. If the spool is shiny instead of dull black, the spool and sleeve may be worn out and may need to be replaced. Clean all ports and airways and replace worn out gaskets and o-rings.
3. Check pilot shaft and main shaft for scoring and scratches; replace if needed. Replace the pilot shaft and main shaft o-rings if they are worn, flat or torn.

The pump runs, but little or no material flows:

1. Check for pump cavitations; slow the pump speed down to match the thickness of the material being pumped.
2. Look for sticking ball checks. If the material being pumped is not compatible with the ball material, the elastomer may swell. Replace the balls and seats with a compatible elastomer type.
3. Make sure all the suction line fittings and connections are tight.

Air bubbles in pump discharge:

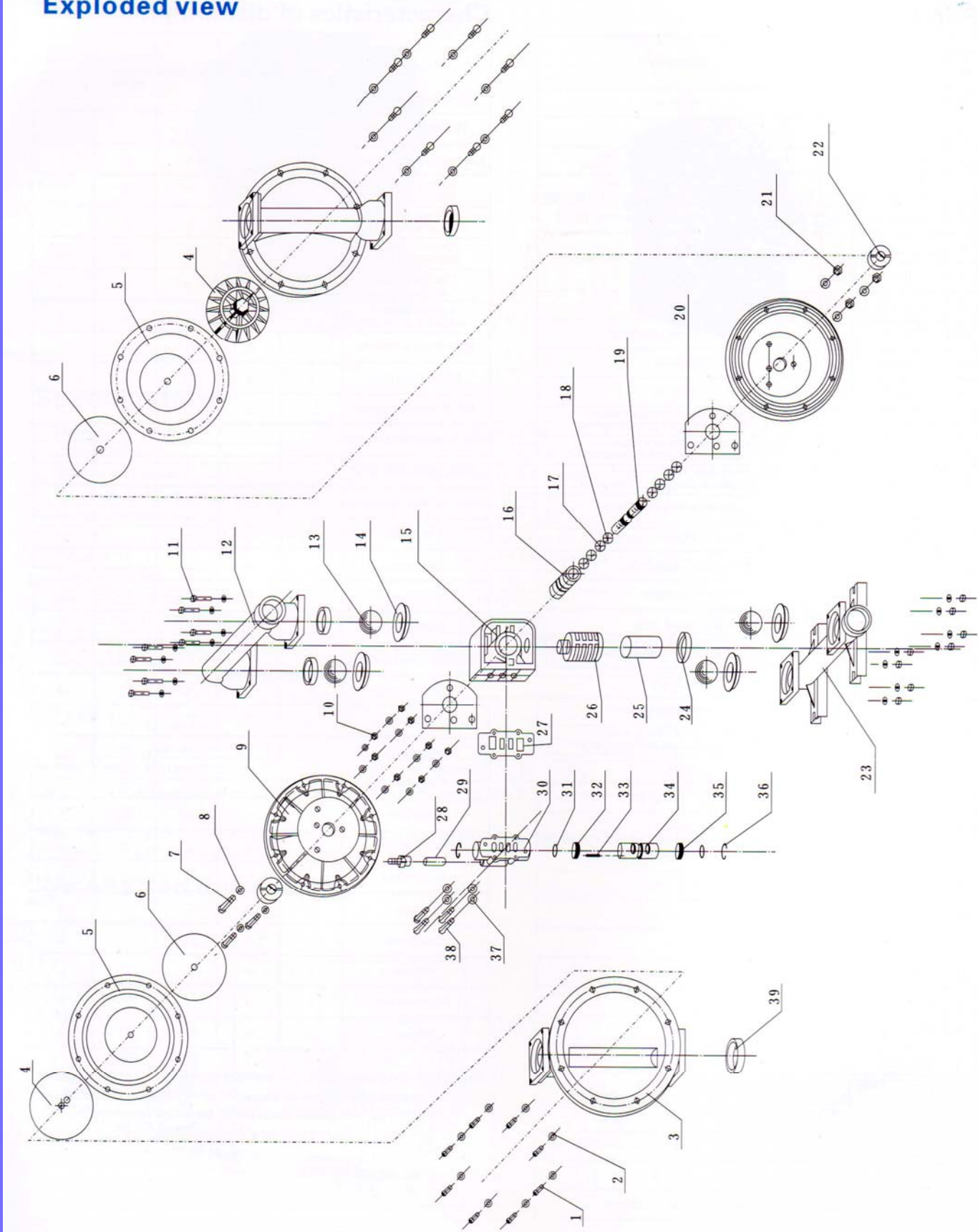
1. Look for a ruptured diaphragm.
2. Check for suction leaks in pump manifolds and piping.

Material comes out of the pump air exhaust:

1. Inspect the diaphragm for rupture.
2. Check the tightness of the diaphragm plates to the pump shaft.



Exploded view



Parts list

Parts No.	Name	Quantity	Material
1	Bolt	16	Q235-A
2	Washer	64	Q235-A
3	Standing post	2	Stainless steel,Aluminium alloy, Cast iron,Reinforced polypropylene
4	External pressure plate	2	Aluminium alloy,Stainless steel, Reinforced polypropylene,Polyvinylidene fluoride
5	Diaphragm	2	Nitrile rubber, Fluorubber, neoprene, Teflon
6	Internal pressure plate	2	Carbon steel
7	Bolt	3	Q235-A
8	Washer	6	Q235-A
9	Baffle	2	Aluminium alloy,Cast iron
10	Nut M10	32	Q235-A
11	Bolt	16	Q235-A
12	Discharge pipe	1	Stainless steel,Aluminium alloy, Cast iron,Reinforced polypropylene
13	Ball	4	Neoprene, Nitrile rubber, Polytetrafluoroethylene, Ceramic
14	Ball seat	4	Neoprene, Nitrile rubber, Polytetrafluoroethylene, Fluorubber
15	Intermediate pump body	1	Aluminium alloy,Cast iron
16	Copper bushing	1	Brass
17	O-ring	4	Polytetrafluoroethylene
18	O-ring	4	Nitrile rubber
19	Intermediate shaft	1	Stainless iron
20	Pump body sealing gasket	2	Oil resistant rubber asbestos sheet
21	Nut	3	Q235-A
22	Locating ring	2	Plastic
23	Suction pipe	1	Stainless steel,Aluminium alloy, Cast iron,Reinforced polypropylene
24	Muffler cover	1	ABS
25	Muffler body	1	QSn6.5-0.1
26	Muffler jacket	1	ABS
27	Valve seal	1	Oil resistant rubber asbestos sheet
28	Air connector	1	Q235-A
29	Air intake filter	1	QSn6.5-0.1
30	Distributing valve	1	Brass
31	O-ring	2	Nitrile rubber
32	Locating baffle	1	Ly12
33	Starting lever	1	H62
34	Piston	1	ZL105
35	Locating baffle	1	Ly12
36	Circlips for hole	2	65Mn
37	Spring washer	4	65Mn
38	Bolt	4	Q235-A
39	Ball seat	4	Reinforced polypropylene

Characteristics of diaphragm material

Types of diaphragm Types of media	Nitrile rubber	Neoprene	Fluorubber	Polytetrafluoroethylene	Fluorinated ethylene-propylene
Fuming nitric acid	x	x	△	△	△
Concentrated nitric acid	x	x	△	△	△
Concentrated sulphuric acid	x	x	○	△	△
Concentrated hydrochloric acid	x	△	△	△	△
Concentrated phosphoric acid	x	△	△	△	△
Concentrated acetic acid	x	x	x	△	△
Concentrated sodium hydroxide	○	○	△	△	△
Anhydrous ammonia	△	△	△	△	△
Dilute nitric acid	x	x	○	△	△
Dilute sulphuric acid	△	△	△	△	△
Dilute hydrochloric acid	x	○	△	△	△
Dilute phosphoric acid	x	x	△	△	△
Dilute sodium hydroxide	○	○	△	△	△
Ammonia	△	△	x		△
Benzene	x	x	○	○	△
Gasoline	○	○	○	○	△
Petroleum	△	x	○	○	△
Carbon tetrachloride	○		○	○	△
Carbon bisulfide	○		x	○	△
Ethanol	○	○	○	○	△
Acetone	x	△	x	○	△
Cresol	x	△	△	○	△
Aldehyde	x	x	△	○	△
Phenylethane	x	x	△	○	△
Acrylonitrile	△	△	x	○	△
Butanol	○	○	○	○	△
Butadiene	○	x	△	○	△
Styrene	x	x	△	○	△
Ethyl acetate	x	x	x	○	△
Ether	x	x	x	○	△

Note: ○--long service life, △--ordinary service life, X--not applicable
This table only focuses on the performance of corrosion resistance.
As PTFE is less elastic than rubber, the actual service life can be different for the reasons of pressure, stroke, impurities, etc.
Fluorinated ethylene-propylene (F46) is relatively of higher elasticity and ductility.