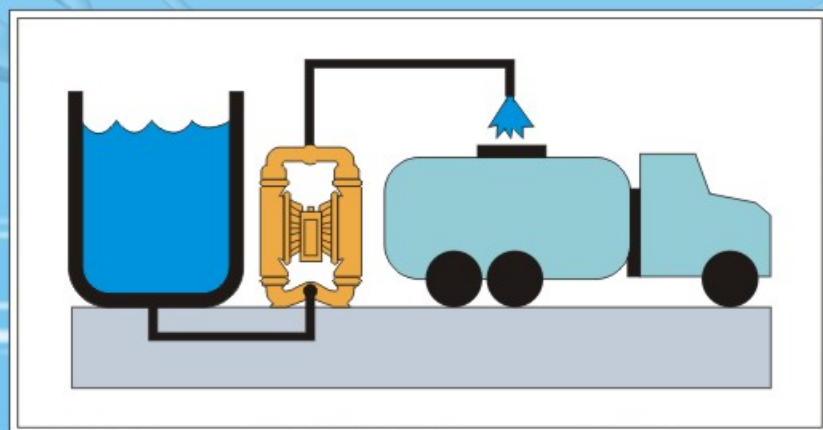
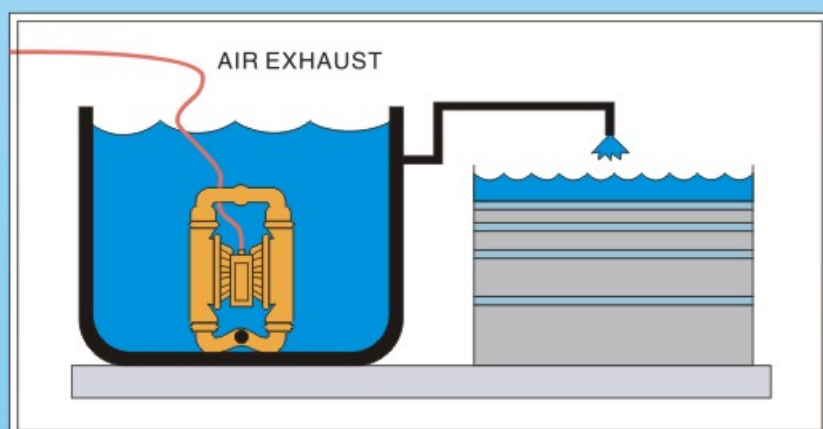
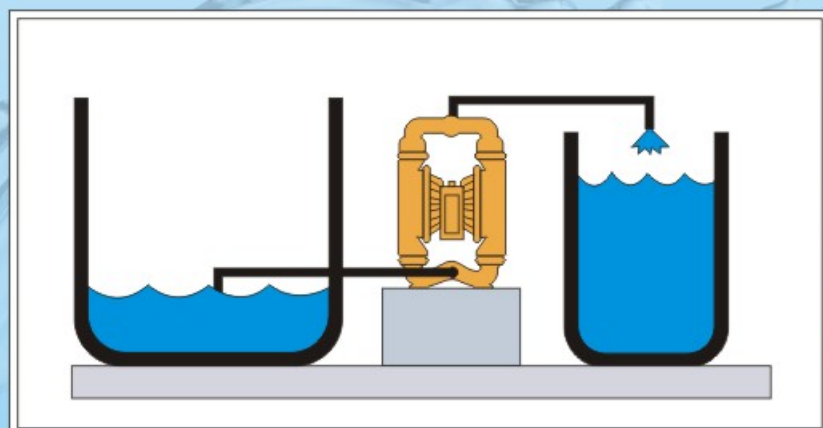




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BUIL-IN PNEUMATIC DIAPHRAGM PUMP

Product Selection Guide
Use Specification



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Usage scope

The pneumatic diaphragm pumps of our company have been applied to the most fields widely.:

- Petrochemical industry—Oil tank cleaning, petroleum sludge, petroleum, transport of petroleum volatile gasoline.
- Chemicals—Acid, alkali, latex, solvent, electroplating.
- Paint and ink.
- Mining—Sewage cleaning, coal sludge, magma mud.
- Pulp and paper industry—Printing ink, paper pulp.
- Food and pharmaceutical—Syrup, alcohol, glycerine, ointment, tablets paste, oil product.
- Resin and adhesive.
- As a front—stage pressure supply device for various solid—liquid separation devices.
- Utilities—Sewage treatment, contaminated liquids.

Main characteristics

- No lubrication
- The medium and the moving parts of the pump are completely separated. When toxic and corrosive medium are transported, no leakage will occur.
- Low energy consumption and low air leakage.
- Low cost and less parts need to be replaced during maintenance.
- Long service life, high temperature resistance.
- Safe operation of the bolt connection structure.

Advantage

- No electric spark, idling without damage, self—starting, easy to operate and control.
- A variety of pump body materials and diaphragm materials for choice, can transport a variety of liquids, even some dangerous goods.
- No bearings, no mechanical seal, no pipes, easy to maintain.
- The flow and lift can be adjusted by the size of the valve opening.
- The suction distance can be controlled by pressure.
- High viscosity and low viscosity liquids can be extracted.
- Generally don't need to be filled with water, the suction distance is up to 7 meters, and the lift is up to 60 meters.
- It works in a medium.

Operating principle

The pneumatic diaphragm pump is powered by compressed air and is designed according to a 1:1 pressure ratio. The pneumatic diaphragm pump has two air chambers and two working chambers, and the diaphragms are respectively installed between the two air chambers and the working chambers, and are connected to each other through the intermediate shaft. When the diaphragm pump is ventilated, the gas first enters into a gas chamber. At this time, the diaphragm suddenly expands outwards, and the space of the working chamber on the side becomes instantaneously smaller. Therefore, begin to do the squeeze movement, and the liquid is discharged out of the working chamber. At the same time, the diaphragm on the other side is contracted due to the pulling force of the intermediate shaft, and the space on the other side becomes instantaneous, which generates suction and draws liquid into the working chamber. After continuous air exchange and exhaust of the directional valve and gas distribution valve, the diaphragm has been doing this reciprocating movement, thus to achieve the function of pumping liquids.

The conversion of air is achieved through the piston inside the valve. When the piston moves to one end, the air is drawn to one end, and when it moves to the other end, the air is drawn to the other end. This is a continuous action to achieve the purpose of ventilation, and with the one—way valve ball and ball seat, complete the one—way flow of liquid together.



AM BUIL-IN PNEUMATIC DIAPHRAGM PUMP

Installation

Keep the pump as close to the extracted liquid as possible to minimize the length of the inlet water pipe and the quantity of joints, and be careful not to reduce the diameter of the inlet water pipe.

If the inlet and outlet pipes are hard, they should be connected to the pump with soft and flexible connectors, as this can reduce and slow down the vibration of the whole system.

Air source

The air supply pressure must not exceed 7 kg. Connect the air inlet of the diaphragm pump valve to a device that can provide sufficient supply pressure. When the air supply pipe is relatively hard, a section of hose should be used in connection with valve. The length should be at least 13mm. The diameter of the hose should be between the inlet of the valve and the air supply pipe. The inlet air pipe and the air filter and pressure regulator in the middle must be fixed or supported. Otherwise, the diaphragm pump may be damaged. At least one pressure regulating valve should be installed to ensure that the air supply pressure doesn't exceed the upper limit of the pressure required by the water pump.

Lubrication of air distribution valve

The factory default mode of gas distribution valve doesn't need to be lubricated. It is another matter, if the user would like to lubricate it, or the air source quality is poor. However, the supplied air must be properly lubricated. When the pump is working, it consumes 9.4 liters of gas per drop of oil. But there should be no detergent in the oil. The oil can enter the air pipe through the air source triplex piece and reach to the air distribution valve.

Moisture of the air pipe

The moisture in the compressed air can cause a series of problems, such as freezing or freezing of the discharged gas, which can cause the diaphragm pump fail to work. Therefore, it is necessary to install a drying device in the air supply system, which will reduce the problem of freezing.

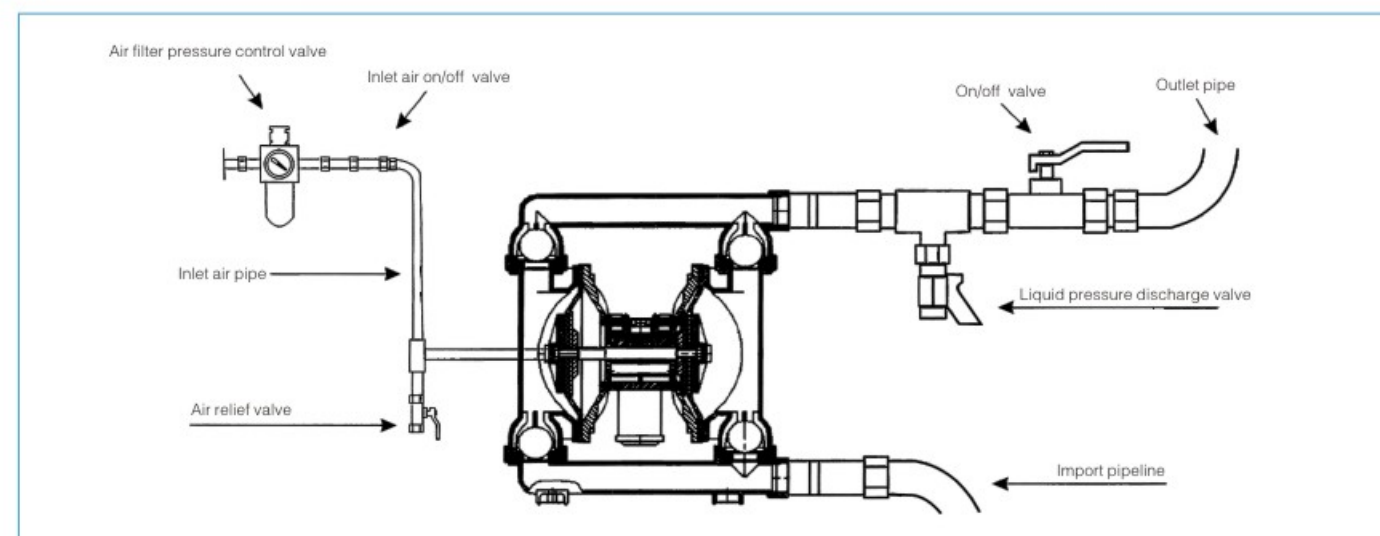
Inlet air and start

Before starting, slowly open the air valve switch approximately with 1/2 to 3/4 turn. Once the pump start to work, continue to increase the required inlet air volume. If the inlet air volume increases, the flow rate doesn't increase, certainly "cavitation" was created, and then we should slowly turn of the air valve until we get the best ratio of air flow and liquid flow.

Cleaning and maintenance

When pumping liquid is easy to solidify, the pump should be rinsed clean after each use, otherwise it will cause damage to the pump (the material inside the pump may dry or precipitate, which will hinder the movement of the ball and diaphragm.). And when under the easy freezing humidity conditions, the user must also flush the pump and drain the water or frozen ice after use or before use.

Installation method-Typical installation



AM BUIL-IN PNEUMATIC DIAPHRAGM PUMP

Faults and solution

Possible failures:

The pump doesn't work

The pump works but doesn't discharge water.

The pump works but is not stable.

The pump works, but it vibrates a lot.

Reason checking	Solutions
The system has a high suction distance.	When the suction travel is more than 6m, in most cases, the pump cavity needs to be filled with water.
In the system, the suction distance in the water is too high.	When the liquid is extracted from the water and the suction distance is more than 3 m, a backpressure device needs to be installed.
The required lift is too high and the air supply pressure is too low.	To increase the inlet pressure and the pressure ratio of most diaphragm pumps at zero flow is designed with 1:1.
The required lift is too low and the air supply Pressure is too high.	Reduce the inlet pressure until it matches the data on the performance curve, and the pump pumps the fluid through a quick cycle.
Inlet water pipe is too small.	Adjust the inlet water pipe to be equal to or greater than the recommended size indicated on the dimension diagram.
Inlet air pipe is too small.	Install a larger inlet air pipe or joint.
Check the outside gas distribution equipment of the pump	Open and check the valve to see if it is blocked and reinstall.
The connecting pipe to the pump is too hard.	Replace with a softer connecting pipe.
The muffler is plugging.	Open the muffler, clean or remove ice, and reinstall.
The pump cavity is blocked.	Open and check the pump cavity, remove and flush the plug.
The muffler contains the pumped fluid.	Open the pump cavity, check that the diaphragm is ruptured and then open the diaphragm assembly and replace the diaphragm.
The pump has air leakage, especially the inlet water pipe.	Visually inspect the gasket at the inlet and pipe connection.
The ball movement is blocked.	Remove the top and bottom cover to remove the obstructions that affect ball movement.
The ball and socket are worn out or not aligned.	Adjust the position of the ball and socket, and change the ball and socket if necessary.
The inlet water pipe is blocked.	Remove or flush the plug, check the filter at the inlet and replace the filter.
The outlet water pipe is blocked.	Check whether there is any plug in the water pipe or outlet valve and remove it.
The pump cavity is blocked	Open and check the pump cavity, remove and flush the plug.
One pump cavity and two pump cavities produce air or steam resistance	Drain off the pump cavity pressure. Please note that this operation has certain risk. Before implementation of this operation, please contact the manufacturer of technical personnel. Pressure can be vented trough the pressure relief valve near the pump inlet or outlet.

If you are still not satisfied with the pump, please consult your local dealer or factory's technical department.

Most parts of pneumatic diaphragm pumps from our factory can be recycled. We encourage the users to recycle used pumps or accessories as much as possible. However, if this pump is used for dangerous goods, it must be thoroughly rinsed before the use.



Important security information

 **Important**

Before use and install the pump, please read the safety warnings and instructions in this manual carefully. The purchaser has the responsibility to keep this manual as a reference. The factory will not be responsible for any damage of the pump caused by not using under the instruction of this manual.

 **Be careful**

Before installing, please carefully check if the bolts and gaskets are loosen. If so, tighten them again to prevent the leakage.

 **Warning**

Before maintenance and repairing, firstly close the compressed air source and disconnect the pump's air way, and release the pressure in the airway and the pipe

 **Warning**

If the diaphragm is broken, the liquid in the pump may enter into the gas source assembly and release to the air. If the liquid is dangerous and toxic, it must be discharged to a safe area for the treatment.

 **Warning**

Prevent from electrostatic sparks possibly resulting in fire and explosion, especially when there is flammable liquid pumped into the pump. The pumps, pipes, valves, containers and other equipment must be with grounded device.

 **Warning**

Before maintenance and repairing, firstly close the compressed air source and disconnect the pump's air way, and release the pressure in the airway and the pipe

 **Warning**

If the liquid is toxic or corrosive, it must be cleaned before the disassembly.

 **Warning**

Prior to any maintenance, it is necessary to drain off import and export pressure for the pump cavity connecting pipe and other connecting parts, turn off the air source at the same time, make it no work, ensure the people around the pump have taken measures to protect the eyes and the body. Otherwise, without such measures, it will definitely result in injuries and even death.

 **Warning**

Particles and noise are dangerous. Please protect your eyes and ears.



Diaphragm material properties

Medium type	Nitrile rubber	Neoprene	Fluorine rubber	Ptfe material
Fuming nitric acid	×	×	△	△
Concentrated nitric acid	×	×	△	△
Concentrated sulfuric acid	×	×	○	△
Concentrated hydrochloric acid	×	△	△	△
Concentrated phosphoric acid	×	△	△	△
Concentrated acetic acid	×	×	×	△
Concentrated sodium hydroxide	○	○	△	△
Nhydrous ammonia	△	△	△	△
Dilute nitric acid	×	×	○	△
Dilute sulfuric acid	△	△	△	△
Hydrochloric	×	○	△	△
Dilute phosphatic acid	×	×	△	△
Dilute sodium hydroxide	○	○	△	△
Ammonia	△	△	×	
Benzene	×	×	○	○

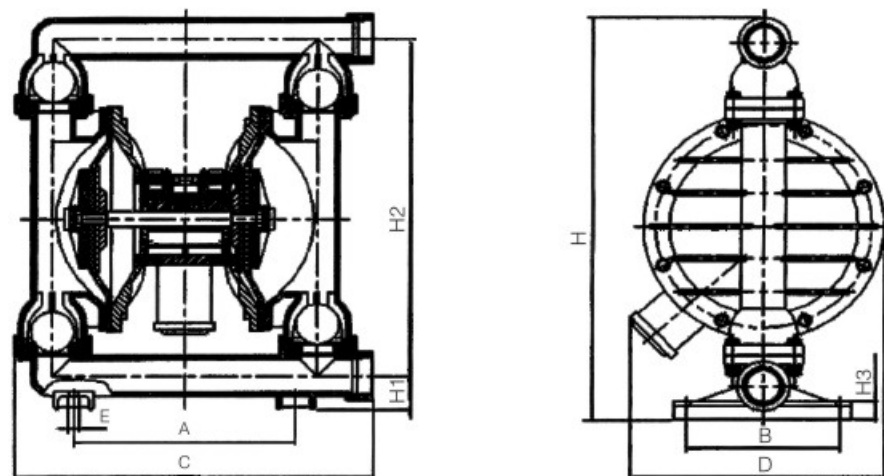
Medium type	Nitrile rubber	Neoprene	Fluorine rubber	Ptfe material
Petrol	○	○	○	○
Petroleum	△	×	○	○
Carbon tetrachloride	○		○	○
Bisulfide	○		×	○
Acetaldehyde	○	○	○	○
Acetone	×	△	×	○
Cresol	×	△	△	○
Butanol	×	×	△	○
Ethyl benzene	×	×	△	○
Acrylonitrile	△	△	×	○
Ethanol	○	○	○	○
Butadiene	○	×	△	○
Styrene	×	×	△	○
Ethyl acetate	×	×	×	○
Ether	×	×	×	○

Longer service life, common service life, not available, this table only considering the corrosion-resistant, because of PTFE elasticity worse than rubber, so the actual service life is subject to pressure, pump travel, impurities and other factors which affect the resistance, food grade rubber professionally for food and beverage industry



AM BUIL-IN PNEUMATIC DIAPHRAGM PUMP

The main dimension



The main size table

Model	Material	A	B	C	D	E	H1	H2	H3	H	Screw thread	Flange	
											NPT/BSPT	ANSI	DIN
AM10.15	Stainless steel	124	50	218	144	10	29	184	8	238	3/8"–1/2"	–	–
	Aluminum alloy	135	50	218	144	12	34	176	10	226			
	PP plastic	124	80	205	144	8	33	202	8	260			
AM25	Stainless steel	239	125	381	245	12	42	370	10	440	1"	–	–
	Aluminum alloy	219	150	381	245	10	46	370	18	445			
	PP plastic	236	160	410	245	10	50	408	18	570			
AM40	Stainless steel	239	125	381	245	12	42	370	10	440	1½"	–	–
	Aluminum alloy	219	160	381	245	10	46	370	18	445			
	PP plastic	236	150	410	245	10	50	408	18	510			
AM50	Stainless steel	320	164	525	345	12	55	533	10	630	2"	●	●
	Aluminum alloy	320	220	518	345	14	50	521	27	609			
	PP plastic	148	150	500	345	12	98	500	10	660			
AM65	Stainless steel	320	164	525	345	12	55	533	10	630	2½"	●	●
	Aluminum alloy	320	220	518	345	14	50	521	27	609			
	PP plastic	148	150	500	345	12	98	500	10	660			
AM80	Stainless steel	425	240	570	405	14	96	656	20	870	3"	●	●
	Aluminum alloy	360	240	570	405	14	96	656	30	870			
	PP plastic	360	240	570	405	14	96	656	30	870			
AM100	Stainless steel	425	240	570	405	14	120	660	20	880	4"	●	●
	Aluminum alloy	360	240	570	405	14	120	660	30	880			
	PP plastic	360	240	570	405	14	120	660	30	880			



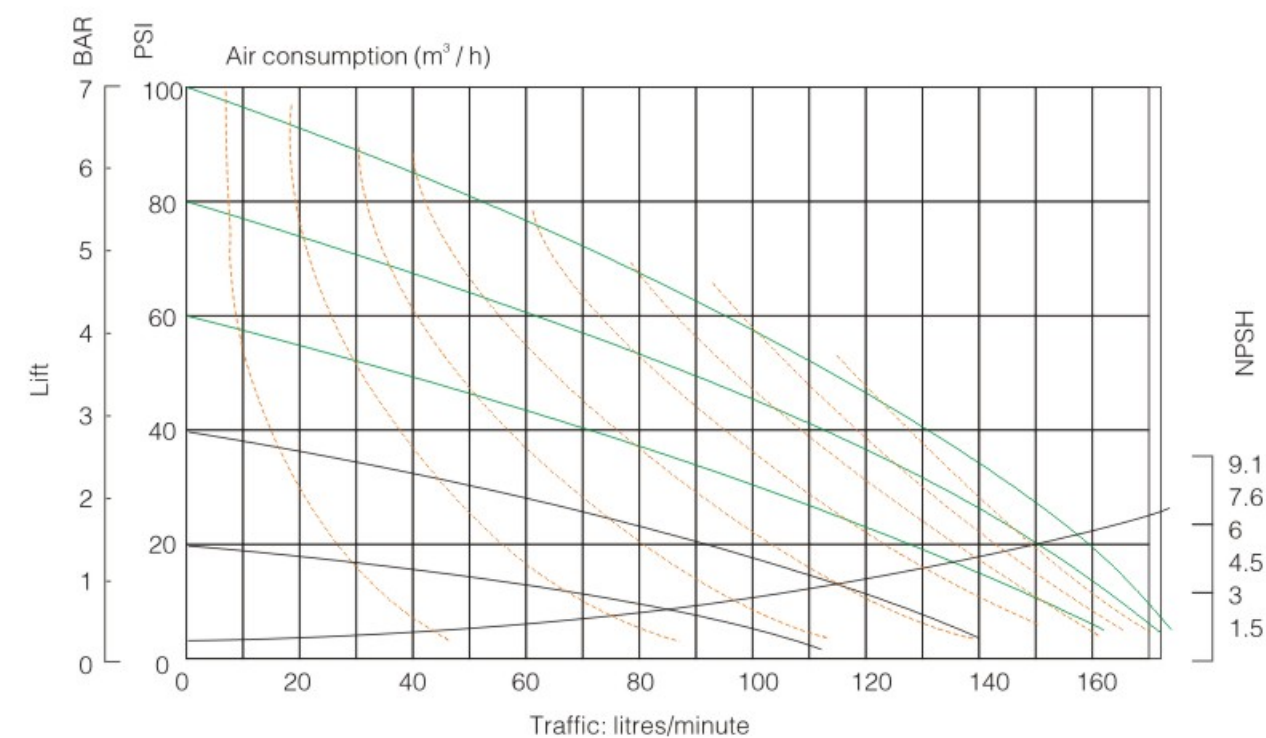
AM BUIL-IN PNEUMATIC DIAPHRAGM PUMP

The performance parameters

model	traffic (m³/h)	lift (m)	Outlet pressure (kgf/cm²)	Suction (m)	The maximum allowable grain diameter (mm)	The maximum air supply pressure (kgf/cm²)	The largest air consumption (m³/min)	Normal air consumption (m³/min)	Materials				
									Aluminum Z104	Stainless steel 1Cr18Ni9Ti	Cast iron HT200	Increase of polypropylene	Filter part lining fluoride F45(EFP), PO
AM8	0 ~ 0.8	0 ~ 50	6	5	1	7	0.6	0.3	★	★	★	★	/
AM10/15	0 ~ 1	0 ~ 50	6	5	1	7	0.6	0.3	★	★	★	★	/
AM25	0 ~ 2.4	0 ~ 50	6	7	2.5	7	1.7	0.6	★	★	★	★	★
AM40	0 ~ 8	0 ~ 50	6	7	4.5	7	1.7	0.6	★	★	★	★	★
AM50	0 ~ 12	0 ~ 50	6	7	8	7	4.9	1.7	★	★	★	/	★
AM65	0 ~ 16	0 ~ 50	6	7	8	7	4.9	1.7	★	★	★	/	★
AM80	0 ~ 24	0 ~ 50	6	7	10	7	9.1	3	★	★	★	/	/
AM100	0 ~ 30	0 ~ 50	6	7	10	7	9.1	3	★	★	★	/	/

Note: ★-Yes have /-No without

Performance curve





AM BUIL-IN PNEUMATIC DIAPHRAGM PUMP

Parts sections

Guiding type ventilation structure
Built-in valve all-in-one



AM BUIL-IN PNEUMATIC DIAPHRAGM PUMP

Parts list

No.	Name	Number	Material
1	Middle body	1	Aluminium Alloy
2	Cavity	1	Aluminium Alloy,Cast Iron
3	Body	2	Stainless Steel, Cast Iron, Al. Alloy, Plastic, Internally lining PTFE
4	Outlet Pipe	2	Stainless Steel, Cast Iron, Al. Alloy, Plastic, Internally lining PTFE
5	Inlet Pipe	1	Stainless Steel, Cast Iron, Al. Alloy, Plastic, Internally lining PTFE
6	Diaphragm	2	PTFE
7	Diaphragm	2	NBR,Neoprene,EPDM
8	Sealing washer for middle body	2	NBR
9	Starter Bushing	2	Plastic
10	Connecting Rod Bushings	2	Plastic
11	Piston Bushing	2	Plastic
12	Piston	2	Plastic
13	Sliding block	1	Al. Alloy
14	Sliding block	1	Chromed plating steel
15	Sealing slide ring	1	Plastic
16	Starter Block	1	Plastic
17	Cover	1	Al. Alloy
18	Cover Pad	1	Rubber
19	Muffler	1	Plastic
20	Sealing Ball Seat	4	NBR
21	Sealing Ball Seat	4	PTFE
22	Inner Retainer	4	Al.Alloy, Carbon Steel
23	Connecting Axle	1	Stainless Steel
24	Starter Sliding Spring	1	Magnetic
25	Starter Axle		Stainless Steel
26	Starter Axle Seal Ring	2	Rubber
27	Y type O ring	4	Rubber
28	Outer Retainer	1	Al.Alloy,Stainless Steel, Plastic
29	Butterfly O ring	1	Rubber
30	Inlet Air Spray	1	Copper
31	Sealing Ball	4	Rubber
32	Sealing Ball	4	Stainless Steel, Ceramic,PTFE