EKİN ENDÜSTRİYEL

Air Operated Pump
Installation and User Guide

MIT

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EKİN ENDÜSTRİYEL
Isıtma-Soğutma San. Tic. Ltd. Şti.

The first condition of innovation is to question. And the first condition of sustainable innovation is to question constantly.

The journey of innovation has started with a question for us too: “How can we develop value-added technologies in Turkey?”. First turning point in this long journey was the birth of MIT (Made in Turkey) brand. MIT made us the first plate heat exchanger producer of Turkey and it’s founding vision was not to become a local alternative, it was to build a high-quality brand that can compete on a global level.

While we are working towards this goal in the past 15 years, our products and processes deemed worthy for documentation by many national and international quality assessment institutions such as ISO, TSE, CE, GOST and many more. This was the natural outcome of our constant questioning of the status-quo and our desire to outperform ourselves.

New Generation Engineering

With our engineering approach that focuses on the process, not the problem, we do not just specialize in a product, we consider the entire ecosystem of that product. Ergo, we produce all the other components of a system in addition to plate heat exchangers and we focus on the constant development of engineering staff required to provide an end-to-end application.

We provide a “solution” rather than a product with our business development, presales, sales and after sales services provided by our expert engineers.

In our 15th year, we continue to grow as a solution partner for projects that need high technology in more than 60 countries with our internationally approved high-quality plate heat exchangers; components such as accumulation tanks, boilers, industrial pumps and installation materials that completes these exchangers to form a system; and complementary services provided by our expert engineer staff.

ISO CE GOST CERTIFICATE 799 33 13 TSE-HYB TURQUM® TURKISH QUALITY OF MACHINERY

APPLICATION FIELDS

HEAT TRANSFER PRODUCTS

• Gasketed Plate Heat Exchangers • Brazed Heat Exchangers • Shell & Tube Heat Exchangers • Air Fan Oil Cooler • Economizers • Coils and Radiators

PRESSURE VESSELS

• Water Heater Tanks • Water Storage Tanks • Buffer Tanks • Expansion Tanks • Stainless Steel Process Tanks • Balance Tanks / Dirt Separators / Air Separators • Vapour Separator • Pressured Air Tanks • Neutralization Tanks • Air Tubes • Steel IBC Tanks with ADR

COMPLETE SYSTEMS UNITS

• Heat Stations • Steam Package Systems
• Special Designed Systems • Dosing Systems
• Substations • Thermoregulators

FOOD GRADE SYSTEMS

• Pasteurizers with plate heat exchangers • Hygienic Pasteurizers with Shell & Tube Heat Exchangers
• Cheese and Whey Systems • UHT - Sterilization Systems
• CIP Systems • Hygienic Storage and Process Tanks
• Homogenizers • Standardization Systems • Evaporators
• Turn-key Projects

FLUID TRANSFER PRODUCTS

• Lobe Pumps • Hygienic Centrifuge Pumps • Turbo / Roots / Centrifuge Blowers • Drum Pumps • Acid Pumps
• Dosing Pumps • Monopumps • Air Operated Double Diaphragm Pumps (AODD)

FLOW CONTROL UNITS

• Butterfly Valves • Ball Valves • Globe Valves • Knife Gate Valves • Actuators • Check Valves • Strainers
• Thermoplastic Valves • Plastomatic Valves

ENERGY SYSTEMS

• Boiler Systems
• Solar Collectors
• Water Heater Tanks For Solar

CONTENTS

SAFETY

The User's Manual booklet includes user and instructions and you should absolutely read it before using diaphragm pump. Manufacturer company does not accept any responsibility regarding damage of the pump due to improper use.

It is proposed that Ekin Endüstriyel service makes the entire service and maintenance of the pump. **444 35 46** (EKIN)

The User's Manual should be considered as an integral part of the pump and you should keep it around you to apply whenever you want.

Manufacturer company does not accept any responsibility regarding damage of the pump due to improper use.

Manufacturer can change product characteristics, technical dimensions and informations and diagrams without notice. Any information provided on this page may not be copied or used without the permission of the manufacturer. The manufacturer cannot be held responsible for technical information and diagrams.

Equipment Misuse Hazard

- Fluid to be transferred by the diaphragm pump is notified to authorized dealer or main dealer. The dealer determines pump that is compatible for fluid. Consult to Ekin Endüstriyel before pumping any other fluid than notified fluid transfer. **444 35 46** (EKIN)
- Working pressure of the diaphragm pump is (max.) 7 bars. These pressure values should not be exceeded. Otherwise, diaphragm pump may be damaged or is not included within the scope of warranty.
- Use noise preventive ear plugs, protection goggles and gloves while installing the diaphragm pump for the first time or is put into use and as long as it continues to operate.
- While diaphragm pump is in operation and under pressure, do not lift the pump.
- Comply with necessary fire instructions and electricity and security instructions. (Local, National and Regional)
- Do not make any alteration on parts of the diaphragm pump. Use always (OEM) original spare parts.
- If you used flexible hose while installing the diaphragm pump, pay attention not to bend this hose during transfer.
- Hose in suction part should not be flexible during or after installing the diaphragm pump. Flexible hoses may be bended during suction and stop suction.
- Fluid to be transferred by the pump and pump body and elastomer (parts manufactured from rubber) materials should be compatible. If you do not sufficient information whether they are compatible or not, consult to Ekin Endüstriyel. **444 35 46** (EKIN)

- If the company producing fluid for fluid to be transferred with the diaphragm pump has any warning, please consider these warnings.
- Control diaphragm pump body, its diaphragms and other equipment each day. If any wear and tear is observed, immediately replace the part. When the diaphragm pump stops to operate and removed from line, if there is risk that fluid in it freezes, clean inside with a fluid compatible with this fluid. Otherwise, material freezing in the diaphragm pump may damage the body and diaphragms.
- Do not transfer trichloroethane, methylene chloride, other halogen hydrocarbon solvents or fluids containing such solvents in aluminum equipment that operate under pressure with these pumps. Use of these fluids may cause chemical reaction and their explosion possibility is high.
- Compliance of fluid to be transferred with pump body and elastomer parts should be determined while selecting diaphragm pump. Under improper situations, pump may be damaged, even there may be injury and death risk. If fluid to be transferred and pump body is improper, the manufacturer company is not responsible for all the damages that may occur in case Ekin Endüstriyel did not make this selection.
- Make diaphragm pump connections at original inlet and outlet size. When inlet and outlet sizes are changed or are made smaller, the pump may be damaged and some parts become deformed. In case of this situation, the manufacturer company is not responsible for malfunctions and part losses in the pump and pump malfunctions shall not be included within the scope of warranty.

Toxic Fluid Hazard

If toxic fluid or fume contacts with eyes or any part of the body during transfer, there may be permanent damages and may cause death risk.

- You should know features of the fluid to be transferred with the diaphragm pump. Take precautions preventing contact of toxic or harmful fluid with environment in parallel with this information.
- Do not move, remove and remove when the diaphragm pump is under pressure in dangerous and toxic fluid transfers.
- Keep dangerous fluid in approved container that fluid will not damage.
- Approach fluid transferred next to diaphragm pump in toxic and dangerous fluid transfers with compatible protective apron, clothes, gloves, goggles and mask.
- Notify absolutely that pumps sent to Ekin Endüstriyel and authorized dealer for repair make toxic or dangerous fluid transfer.
- Relieve exhaust air (pressure outlet) of the pumps making toxic fluid transfer to areas that will not damage anything. When diaphragms are exploded, toxic fluid or gas in the pump shall be taken out from pressure outlet.
- Make pipe connections of the pump to which dangerous fluid shall be transferred in a controlled manner.
- Clean these fluids with the fluids that can clean them before transferring toxic, acidic and explosive fluids beforehand and empty fluid in the pump.
- These marks were attached on them while dispatching the pump.

Fire and Explosion Hazard

Installation in non-ventilated environments and proper grounding of the pumps that are used in transfer of fluids having fire and explosion danger may cause dangerous situations. In this case, there may be serious injuries or even deaths.

- The pumps transferring inflammable and flammable fluids should be grounded against static electricity (see page 4, figure 1).
- Do not transfer non-conductor inflammable fluids with non-conductor pump body materials (polypropylene, PVDF).
- If you encounter any electric shock or sparks while using the pump and equipment, stop the pump. Do not operate the pump without being sure that problem was resolved.
- If fluid transfer is made to the diaphragm pump and it is in a closed environment, ventilate the environment.
- Carry air outlet to a secure environment with pipe. In case of diaphragm explosion, since flammable material will move out with pressurized air, some accidents will be prevented (see page 7, figure 3).
- Do not smoke in an area where pump is installed and do not use lighter, do not weld .
- The pipe, connected to suction line during inflammable and explosive fluid transfer in diaphragm pump, should not be flexible. Otherwise, vacuum created by the diaphragm pump during suction may cause that pipe bends and it may also stop fluid suction. Besides, there may be tears in the pipe whose surfaces stick together due to vacuum. These tears may cause that inflammable and explosive fluid leaks outside.
- Use protective clothes, protective goggles and face mask in installation or repair of the pump making inflammable and explosive fluid transfer.
- Take necessary safety precautions when inflammable and explosive fluid transfer will be made with the diaphragm pump or transfer fluid temperature is 80°C and above.

The pump is delivered to user without equipment. The user is obliged to supply protective equipment and transfer equipment.

Internal parts of the pumps sent to the manufacturer company or authorized dealer for service should be emptied in a way not to damage environment and package. The manufacturer or authorized dealer should be notified about fluid when pumps via which dangerous, explosive, and inflammable fluid hazardous on human health is transferred. The company using pump is responsible for injuries and even deaths that may occur.

INSTALLATION

General Information

Installation of the diaphragm pump is easy. However, if installation characteristics recommended by the manufacturer company are considered, working life of the pump shall be long and have high efficiency. (see page 4, figure 1). It should be paid attention that there is no leak and flow from thread connections when air or fluid connection components (hoses, pipes, fittings material and etc.) are interconnected while installing the diaphragm pump. All connection components should be pressurized well. If necessary, fluid seal should be used.

- All bolt and nut connections should be controlled before installing the diaphragm pump and it necessary it should be re-tightened. There may be loosening in these connections due to vibrations that the pump suffered during carrying.
- If there is pressure difference more than 25% between air pressure entering in the diaphragm pump and outgoing fluid pressure, the pump operates inefficiently. Transferred fluid is very dense. This situation may be prevented by increasing weights of balls used as check valve or by using stainless steel marbles.
- Rubber wedge should be placed under pump stands in a place where installation is made while installing the diaphragm pump. This is recommended by the manufacturer company. Rubber wedge decreases tensions to pump, prevents dissolution of bolts from vibration and also prevents material fatigue.
- Diaphragm pump installation should be made to fluid to be transferred at a close distance as far as possible.
- Suction line length and fittings number should be kept at a minimum during installation.
- Diameter of suction line of the installed pump should not be decreased to smaller diameters.
- If pipe line is not flexible in a place where diaphragm pump was installed, flexible hose should be positioned between pipe line and pump.

1	Aodd Pump
2	Fluid Relief Valve
3	Fluid Shutoff Valve
4	Flexible Fluid Outlet Loine
5	Manometer
6	Rubber Wedge
7	Ball Valve (To Control Air Flow)
8	Manometer (Air Pressure Measurement)
9	Air Filter / Regulator Assembly
10	Air Supply Line
11	Pump Ground Wire
12	Grounding Wire
13	Fluid Drain Valve

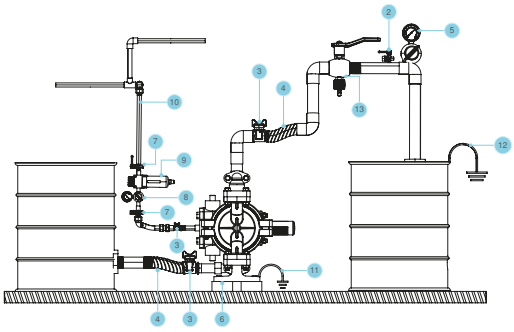


Figure 1

The following (Figure 1) installation type is to give user company enlightening information about how installation should be made and to guide. Consult to Ekin Endüstriyel or authorized dealer for more information and document. **444 35 46** (EKIN)

Safe Operation Temperature For Body

Material	Max.
Polypropylene	65 °C
Aluminium	85 °C
Stainless Steel	85 °C
PVDF	85 °C
Cast Iron	85 °C
Glass Fiber Reinforced Polypropylene	85 °C
Sheet Stainless Steel	85 °C

Safe Operation Temperature For Elastomer Parts

		Max.	Min.
Neoprene	Its resistance to vegetable oils are very good. Its resistance to abrasion is high. It is preferred to be used in neutral chemicals, grease oils and some solvents. Since Acids, Esters and Ketones damage to material structure, they are unpreferable transfer fluids.	80 °C	23 °C
Buna-n	It is generally used in oils. Its use resistance in water and hydraulic oil transfer is high. It can be used easily in fuel and derivatives.	80 °C	23 °C
EPDM	Its resistance to chemicals is good. It cannot resist very much towards oil and solvents. Its resistance in alcohols and ketons is at medium level.	85 °C	23 °C
PTFE	It is generally used in heavy chemicals and acids. It has great resistance. It is very compatible for fluid transfers in high temperatures.	85 °C	37 °C
Viton	Many of solvents and oils have great chemical resistance. It is preferred in hot water and hot solutions in some acids in animal and vegetable oils.	85 °C	0 °C
Santoprene	It has good resistance to acids and oils. Its mechanical flexibility and flexibility life is long. Abrasion resistance is high.	85 °C	23 °C

Temperature values of materials whose operation temperatures are given above are stated by considering use conditions of the diaphragm pump.

Air Line

Pressure from the air line connected to the pump should not exceed 7 bar. Install the air line with a pipe that will not have less size than the connection size so that the pump operates at demanded efficiency. Air line connection size is 1/4 in MIT 160 type pump. Install air line of the pump as shown in page 4, figure 1. Pay attention that air line between the master air line and pump is flexible. Place a cut-off valve (ball valve) before the air line coming to the pump. Close air inlet from this valve when necessary or if pump air is cut off.

- Make air line connection as shown in page 4, figure 1. Connect accessories to the wall or to a fixed place. Make sure that air line conducts electricity.
- Place conditioner (air regulator) before air line of the diaphragm pump. Water in pressurized air line may cause frosting or outlet air freezing. This may cause that pump operates in an unbalanced way or it stops completely. Moisture and water in the pressurized air from the compressor may be decreased by being used with water retainer that may be used in addition to air drying unit of user. This will prevent that polluted air enters in this pump. Besides, it will decrease or prevent freezing in outlet line by keeping a sum of water within line.
- Open air valve approximately between 1/2" and 3/4" to operate the pump. After the pump operates, air flow may be given to air valve at demanded degree. If valve opening increases change frequency but does not increase flow speed, it means that fluid formed a cavitation within suction line. In this case, air coming to valve is decreased and the pump is activated slowly. Thus, cavitation is prevented.
- Fluid flow in the diaphragm pump is controlled in two ways either by controlling pressurized air line entering in the pump with a pressure regulator, ball valve or solenoid valve or by controlling fluid outlet line of the pump with a pressure regulator, ball valve or solenoid valve.

Air pressurized between air line connected to the diaphragm pump (shown with 3 in figure 1) should be relieved. Otherwise, pressurized air provides that the pump acts in an unexpected way. This situation may cause accidents and intoxications due to moving parts.

Suction Line

Connection of the pump to master suction line after suction nozzle should be made with flexible hoses. This situation prevents that some parts of the pump are broken during knocking and that bolts are loosened.

- Place cut-off valve before the suction line during installation of the pump. The valve shall provide that pump is removed easily at repair and maintenance times.
- You can observe whether there is regular fluid flow in section line of the pump or not via manometer placed on the line.
- Flexible and master line pipes to be connected to suction line should be conductive. Ground the pipes if you did not use conductive pipes.
- Diaphragm life becomes shorter in fluid inlet pressure higher than 1 bar. The most distinct characteristic of this is that diaphragm life of the diaphragm pumps connected under high tonnage tanks is short due to tank pressure.
- The suction is from the bottom by construction in top check valve diaphragm pumps.
- Compression line should be connected to master line with a flexible hose just like suction line so that pipes in the pump are not exposed to knocking, bolts are not dissolved and pump parts are not damaged.
- Place ball cut-off valve before the compression line in a way to be close to the pump (see figure 1).
- Place manometer before the compression line to be able to read the pressure (see figure 1).
- Flexible and master line pipes to be connected to suction line should be conductive. Ground the pipes if you did not use conductive pipes (see figure 1).

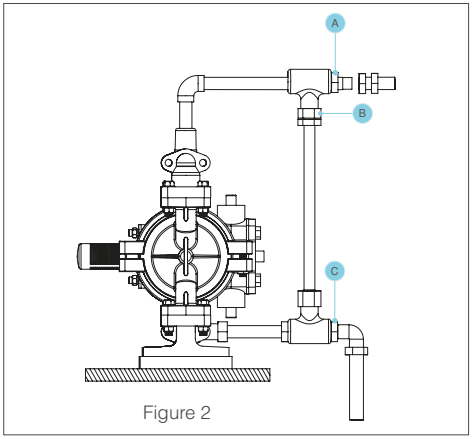


Figure 2

A	Connect fluid outlet line here.
B	Install valve between fluid inlet and outlet holes.
C	Connect fluid inlet line.

- Place fluid relieve valve or valve to be able to relieve pressure on the compression line.
- This valve prevents that harmful fluids are splashed to eyes or skin during relieve of fluid.
- It prevents serious injuries. These injuries may cause death.

Do not tighten connection parts with excessive specified torque during installation. This situation may damage the pump.

Relief Valve for Fluid Pressure

Expansion of the fluid in compression line by getting heated causes increase of pressure within the line. This situation can be observed in long compression lines with sun effect or environmental factors. Besides, this may occur when valves do not perform their duties in high pressure pumps supported with the diaphragm pump. In these cases, it is recommended to set up pressure relief mechanism as it is seen in page 7, figure 2 (by-pass line).

It is recommended to use pressure relief valve in systems where pressure is used in the highest way. This by-pass system will prevent excessive increase of pressure or hose breakdown.

Outlet Air Relief

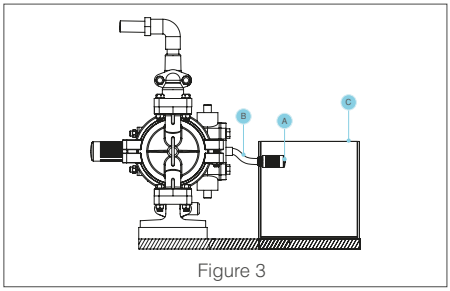


Figure 3

A	Muffler.
B	Electrically conductive air exhaust hose.
C	Container for remote air exhaust.

Environment should be ventilated properly according to system installation type. If the fluid transferred by the pump is toxic, inflammable or explosive, air outlet should be kept off from human, other creatures, areas where food manufacturing is made and all inflammable environments.

- Excessive limit of the air outlet causes ineffective and unbalanced operation of the pump.
- Installation should be made in a way to gather air outlet in a container by considering diaphragm explosion. You can see this in figure 3.

Grounding of The Pump

Ground the diaphragm pump as shown below (page 8, figure 4). Surfaces that contact with fluid in the diaphragm pump should be grounded with metal stainless wire or power cable. Suction and compression lines should be selected from the conductive materials while transferring inflammable and explosive fluids. Grounding should be made just like in the pump in two lines. Do not use nonconductive polypropylene and PVDF bodies in inflammable and explosive fluid transfer. All equipment should be grounded to prevent sparks and fires that may occur due to static electricity and to decrease risks (pump, air and fluid hoses, air compressor, inflammable matter buckets, fluid supply container and etc.).

- Clips should be also grounded in clip type pumps.
- Fluid pressures should be less than $2x10^{12}$ ohm centimeters in the diaphragm pumps.

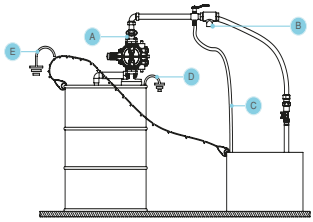


Figure 4

A	Pump
B	Fluid Relief Valve
C	Fluid Drain Line
D	Grounding Strip (Grounding Screw)
E	Container Grounding Cable

Diaphragm pump should be grounded against the static electricity.

Grounding cable section should be minimum 6,5 mm in exproof pumps. Besides, HFFR (Halogen free flame retardant) cable should be used instead of standard cable. Place to which cable to be used in the pump will be connected was stated with a special mark on the pump. The customer supplies this cable.

Washing and Cleaning The Pump

The diaphragm pump to be installed was exposed to pressure and leakage test with water by the Ekin Endüstriyel. If any food product will be transferred with this pump or any fluid transfer to react will be made in case of contact with water, wash the pump with a compatible solvent or compatible fluid before commissioning the pump.

Commissioning of The Pump

Connection of the diaphragm pump is very easy. The fluid is absorbed inside the pump from the bottom inlet pipe having suction nozzle and transfer fluid is pressed to outside from the pump from top outlet pipe having pressure nozzle. Diaphragm pumps have a knocking flow. One of the ways to prevent knocking flow is to install flexible hose before inlet and outlet line of the pump in installation place. Another flow regulation is to place damping volume (balance tank, tranquilizer) before the compression line.

Manometer and valves are placed to inlet and outlet line to determine pressure values that may occur in inlet and outlet of the pump and to be able to make flow adjustments. When one valve or both valves are closed, the pump does not operate. When both valves are opened, the diaphragm pump continues to operate. The diaphragm pump is not damaged in the meantime. Pressurized air is needed so that diaphragm pump operates. Air inlet hose should have the same diameter with air inlet line so that the pump operated with full capacity. It is recommended by the manufacturer company to place conditioner before the air inlet line. The conditioner controls pressure adjustments and lubricates air diverter valve. Fluid flow rate is adjusted by controlling air flow with valve to be placed before the air inlet line.

Subjects to be considered while installing the diaphragm pump;

- The diaphragm pump should be close to fluid to be transferred as much as possible.
- Suction line length and elbow number in the suction line should be kept minimum as much as possible.
- Inlet - outlet dimension of the diaphragm pump should not be different from connection size in a place where installation was made.
- Pipe connections should be made flexible in a place where the diaphragm pump was installed.
- If the pump does not pull when it is operated, it means cavitation occurred.
- Cavitation causes that diaphragm life becomes shorter. Control suction height.
- Do not operate the pump fast, control suction line diameter. They may cause cavitation.
- Control all threaded connections and air connections against leakage and leaks during first commissioning of the pump. If there is any leak, its entering in inflammable, explosive or acidic fluid environment may constitute risk.
- Damping tanks should be used to prevent knocking in the pipe line in long push distances.

Discharging Of Pressurized Equipment

The pump and equipment are under pressure until pressure in the pump is relieved. While the pump is at this stage, the user may be damaged from material to be sprayed, poured or splashed accidentally from the pump or equipment. Apply pressure relief procedure to decrease damage and risks that may be occurred.

Situations when pressure relief procedure is applied:

- When you should relief pressure.
- When you stop the pump.
- When you control, clean or maintain any system equipment.

How Should It Be Made?

- Close the air line entering in the pump from the valve. Open air pressure relief valve for relieving pressure air remaining between air line valve and pump.
- Close the valve in the push line. Open the valve by opening a compatible container under fluid pressure relief valve. Empty remaining fluid in the container. Remove outlet hose from the pump.

How Is The Fluid Remaining In The Pump Drained?

- Wear clothes compatible for fluid transferred by the pump.
- Close valve, if any, in suction part of the pump.
- Use a compatible container to keep the fluid that will flow or drop from the suction hose.
- Remove the suction hose from suction nozzle. Remove it if it is connected to ground (see page 10, figure 5).

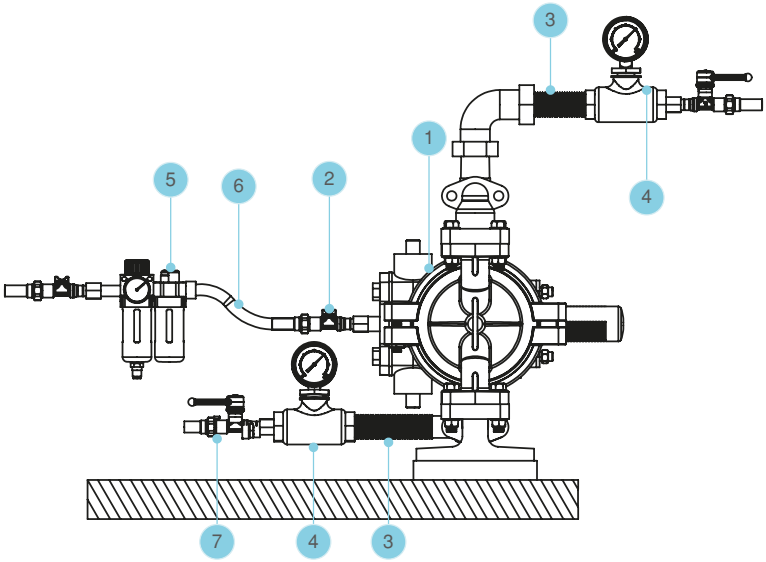
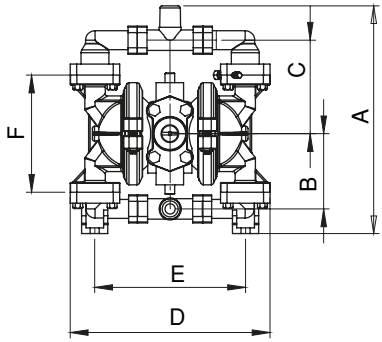


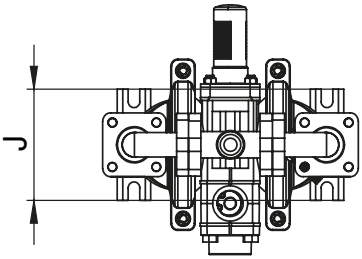
Figure 5

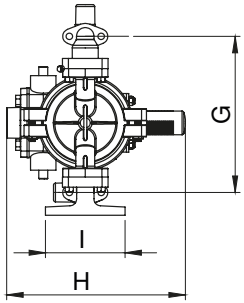
1	Diaphragm Pump.
2	Fluid Cut-Off Valve (Ball Valve).
3	Flexible Hose.
4	Manometer (Fluidization Measurement).
5	Lubricator
6	Pressure Line
7	Fluid Cut-Off Valve (Ball Valve).

MIT 160 Technical Information

Plastic Body





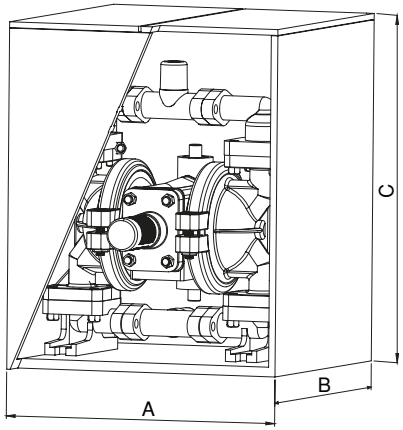


A	B	C	D	E	F	G	H	I	J
212	70	87	186	140	109	157	180	80	80

Packaging Sizes and Weights

As it is seen in the following figure, the diaphragm pump is connected to pump fixing board from its stands via bolt and nut. Lean of the pump is prevented during transport.

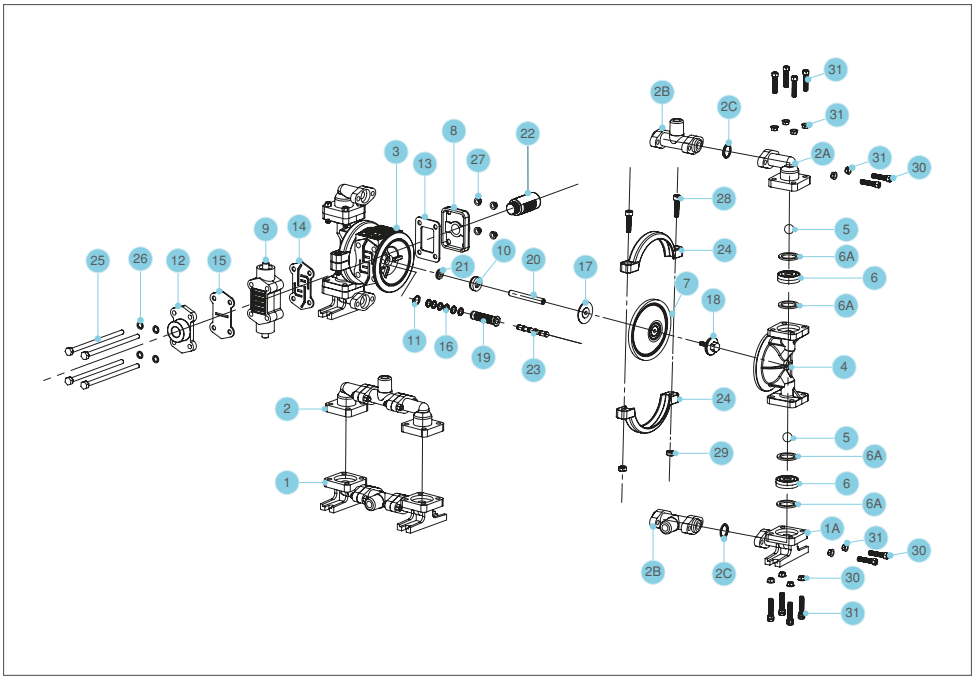
Scaling With Plastic Body



Pump Weight	Package Weight	Gross Weight
1.650 kg	250 kg	1.900 kg

A	B	C
190	150	230

Spare Part Drawing (Plastic)

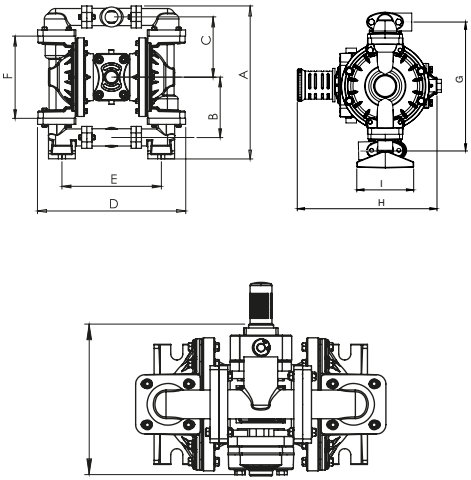


Item No	Desctription	Piece
1	Suction Line	1
1A	Elbow, Suction	2
2	Discharge Line	1
2A	Elbow, Discharge	2
2B	Manifold, Vertical	2
2C	Seal, Manifold	8
3	Main Body	1
4	Chamber Outher	2
5	Ball, Check	4
6	Ball Seat	4
6A	Gasket, Ball Seat	8
7	Diaphragm	2
8	Cap, Air Inlet Exhaust	1
9	Air Valve Body	1
10	Bumper	1
11	Ring Retaining, For Pilot Valve	1
12	Cap, Air Inlet	1
13	Gasket, Air Discharge	1

Item No	Desctription	Piece
14	Gasket, Intermediate Bracket	1
15	Gasket, Valve Body	6
16	O-Rings, Pilot Valve Case	2
17	Plate, Inner Diaphragm	2
18	Plate, Outher Diaphragm	2
19	Sleeve, For Pilot Valve	1
20	Srod, Diaphragm	1
21	Oil Seal	2
22	Muffler	1
23	Spool, Pilot Valve	1
24	Clamp	2
25	Capscrew Hex Head M6x115	4
26	Washer M6 Stainless	4
27	Nut Hex Flange M6 Stainless	4
28	Capscrew Soc Head M6x115 Stainless	4
29	Nut Hex M6	4
30	Capscrew M5x25 Stainless	24
31	Nut Hex M5 Stainless	24

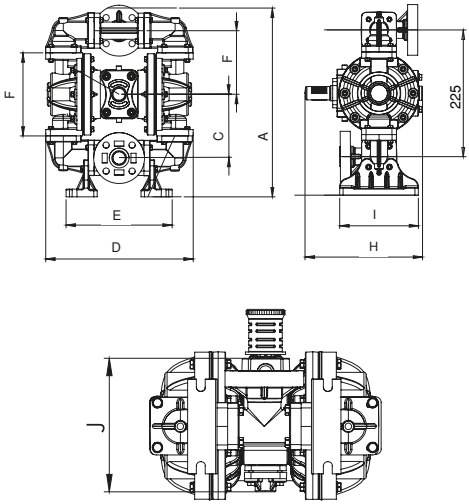
MIT 550 Technical Information

Metal Body



A	B	C	D	E	F	G	H	I	J
279	110	110	270	181	150	220	209	130	163

Plastic Body

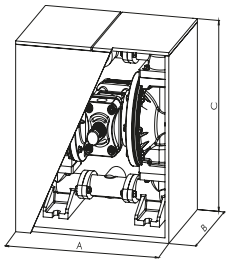


A	B	C	D	E	F	G	H	I	J
340	112	112	262	188	147	225	210	140	152

Packaging Sizes and Weights

As it is seen in the following figure, the diaphragm pump is connected to pump fixing board from its stands via bolt and nut. Lean of the pump is prevented during transport.

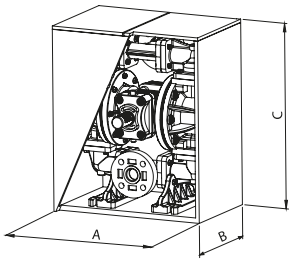
Scaling With Metal Body



Pump Weight	Package Weight	Gross Weight
5.9 kg	0.6 kg	6.5 kg

A	B	C
300	150	230

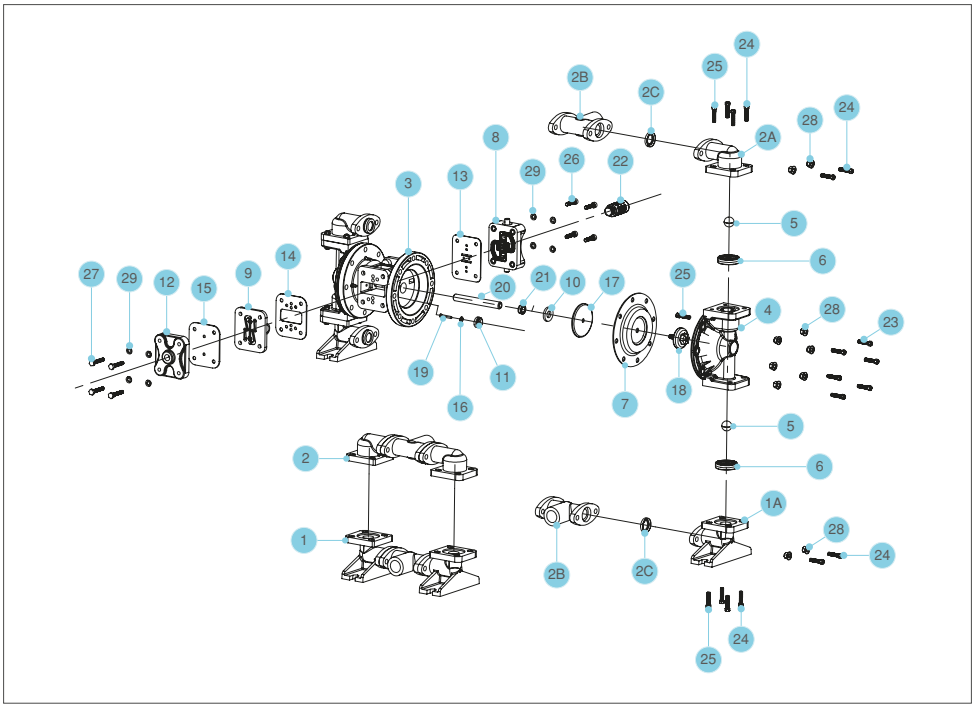
Scaling With Plastic Body



Pump Weight	Package Weight	Gross Weight
4.4 kg	0.6 kg	5 kg

A	B	C
300	200	400

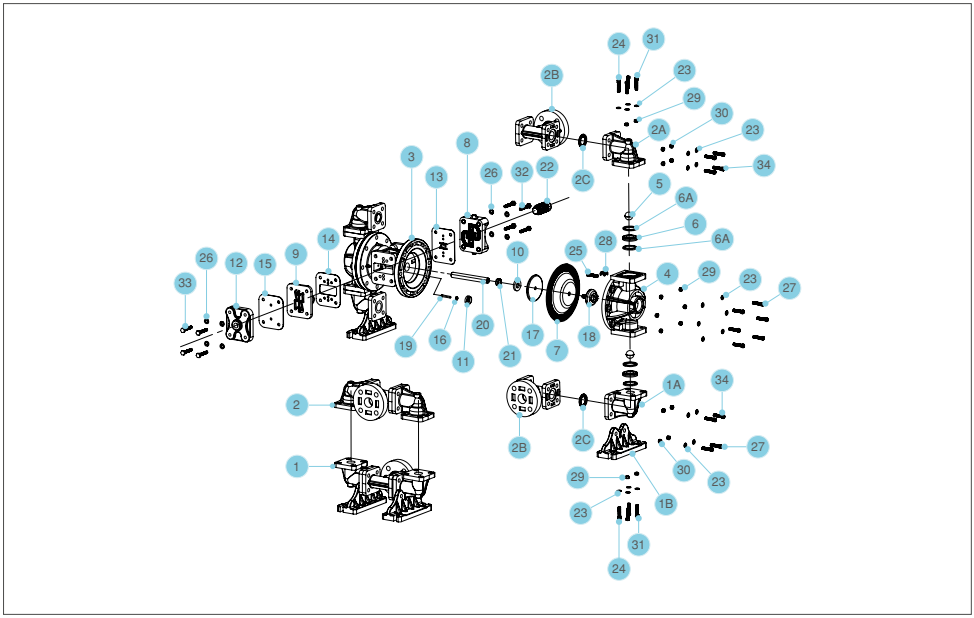
Spare Part Drawing (Metal)



Item No	Desctription	Piece
1	Suction Line	1
1A	Elbow, Suction	2
2	Discharge Line	1
2A	Elbow, Discharge	2
2B	Manifold	2
2C	Seal, Manifold	8
3	Main Body	1
4	Chamber Outhor	2
5	Ball, Check	4
6	Ball Seat	4
7	Diaphragm	2
8	Air Valve Kit	1
9	Pilot Valve Kit	1
10	Bumper	2
11	Bushing, Plumber	2
12	Cap, Air Inlet	1
13	Gasket, Air Discharge	1

Item No	Desctription	Piece
14	Gasket, Intermediate Bracket	1
15	Gasket, Valve Body	1
16	O-Rings, For Pin	1
17	Plate, Inner Diaphragm	2
18	Plate, Outher Diaphragm	2
19	Plunger, Actuator	2
20	Srod, Diaphragm	1
21	Oil Seal	2
22	Muffler	1
23	Capscrew M8x35	12
24	Capscrew M8x30	16
25	Capscrew M8x25	12
26	Capscrew Soc Head M6x35 Stainless	4
27	Capscrew M6x35 Stainless	4
28	Nut Hex Flange M6	20
29	Washer M6 Stainless	8

Spare Part Drawing (Plastic)

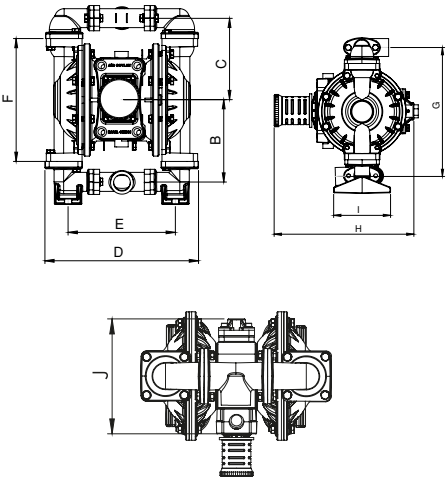


Item No	Desctription	Piece
1	Suction Line	1
1A	Elbow, Suction	2
1B	Bracket, Mounting	2
2	Discharge Line	1
2A	Elbow, Discharge	2
2B	Manifold	2
2C	Seal, Manifold	8
3	Main Body	1
4	Chamber Outhor	2
5	Ball, Check	4
6	Ball Seat	4
6A	Gasket, Ball Seat	8
7	Diaphragm	2
8	Air Valve Kit	1
9	Pilot Valve Kit	1
10	Bumper	2
11	Bushing, Plunger	2
12	Cap, Air Inlet	1
13	Gasket, Air Discharge	1
14	Gasket, Intermediate Bracket	1

Item No	Desctription	Piece
15	Gasket, Valve Body	1
16	O-Ring, For Pin	1
17	Plate, Inner Diaphragm	2
18	Plate, Outher Diaphragm	2
19	Plunger, Actuator	2
20	Srod, Diaphragm	1
21	Oil Seal	2
22	Muffler	1
23	Washer M8 Stainless	100
24	Capscrew M8x30 Stainless	8
25	Capscrew M8x25 Stainless	4
26	Wasyer M6 Stainless	8
27	Capscrew M8x40 Stainless	16
28	Square Washer M6 Stainless	8
29	Nut Hex Fiber M6 Stainless	20
30	Nut Hex M8 Stainless	16
31	Capscrew M8x35 Stainless	16
32	Capscrew Soc Head M6x35 Stainless	4
33	Capscrew M6x35 Stainless	4

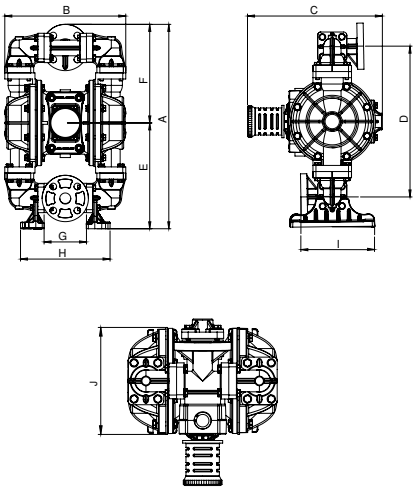
MIT 1500 Technical Information

Metal Body



A	B	C	D	E	F	G	H	I	J
356	146	146	274	191	220	293	312	130	220

Plastic Body

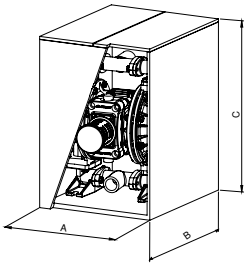


A	B	C	D	E	F	G	H	I	J
480	315	286	356	250	139	218	172	200	265

Packaging Sizes and Weights

As it is seen in the following figure, the diaphragm pump is connected to pump fixing board from its stands via bolt and nut. Lean of the pump is prevented during transport.

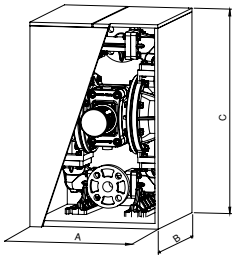
Scaling With Metal Body



Pump Weight	Package Weight	Gross Weight
9.41 kg	0.390 kg	10 kg

A	B	C
280	260	400

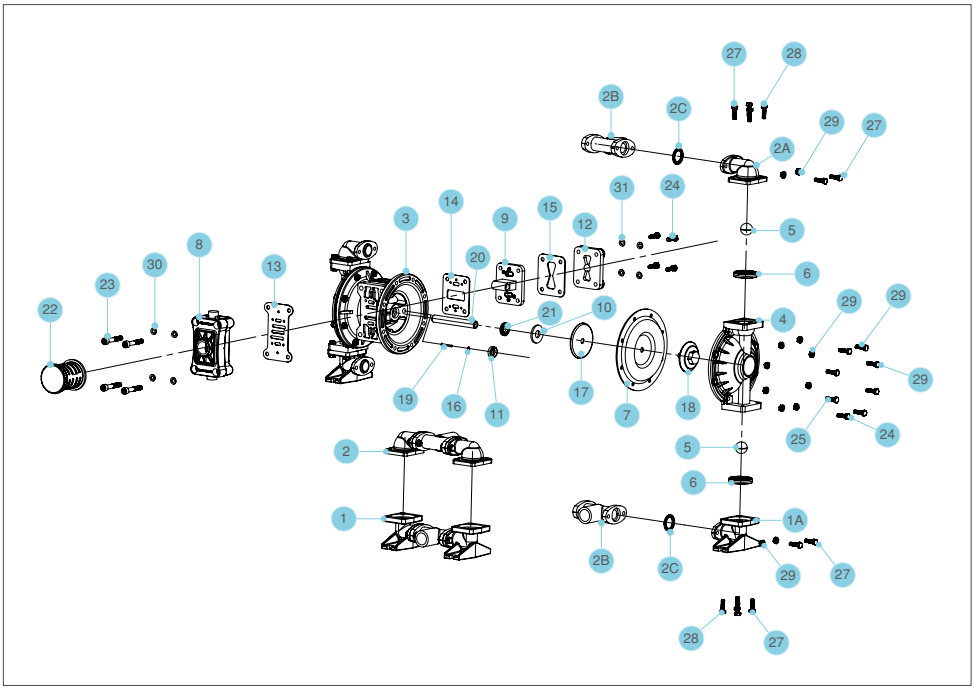
Scaling With Plastic Body



Pump Weight	Package Weight	Gross Weight
8.280 kg	0.72 kg	9 kg

A	B	C
280	320	520

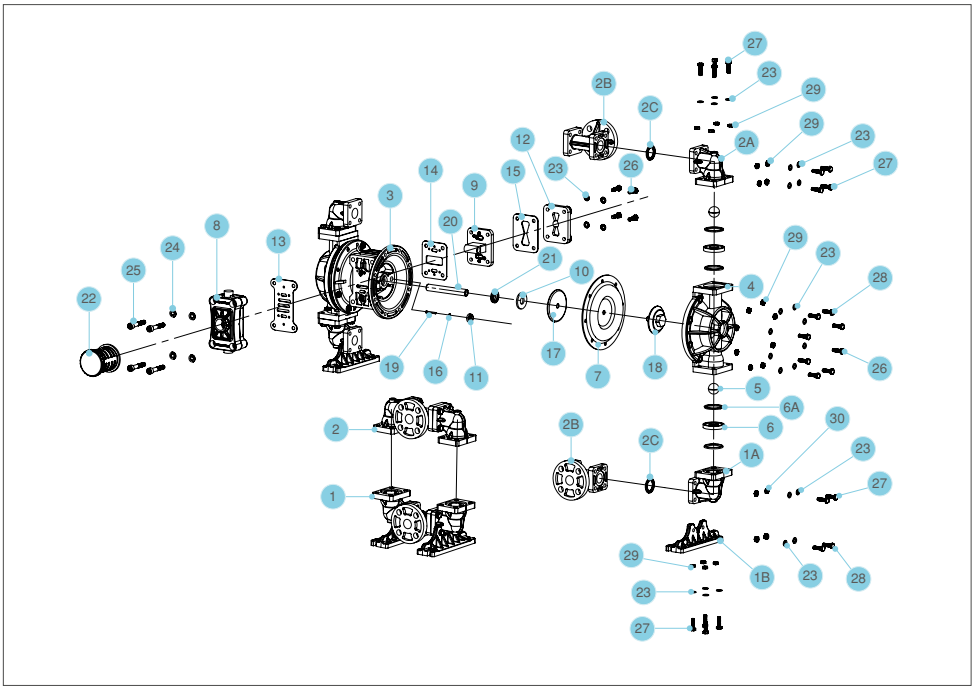
Spare Part Drawing (Metal)



Item No	Description	Piece
1	Suction Line	1
1A	Elbow, Suction	2
2	Discharge Line	1
2A	Elbow, Discharge	2
2B	Manifold	2
2C	Seal, Manifold	4
3	Main Body	1
4	Chamber Outhor	2
5	Ball, Check	4
6	Ball Seat	4
7	Diaphragm	2
8	Air Valve Kit	1
9	Pilot Valve Kit	1
10	Bumper	2
11	Bushing, Plunger	2
12	Cap, Air Inlet	1
13	Gasket, Air Discharge	1
14	Gasket, Intermediate Bracket	1

Item No	Description	Piece
15	Gasket, Valve Body	1
16	O-Ring, For Pin	1
17	Plate, Inner Diaphragm	2
18	Plate, Outher Diaphragm	2
19	Plunger, Actuator	2
20	Srod, Diaphragm	1
21	Oil Seal	2
22	Muffler	1
23	Capscrew Soc Head M10x60 Stainless	4
24	Capscrew 8x45	12
25	Capscrew 8x40	4
26	Capscrew 8x35	4
27	Capscrew 8x30	16
28	Capscrew 8x25	8
29	Nut Hex Flange M8	24
30	Washer M10 Stainless	4
31	Washer M8 Stainless	4

Spare Part Drawing (Plastic)

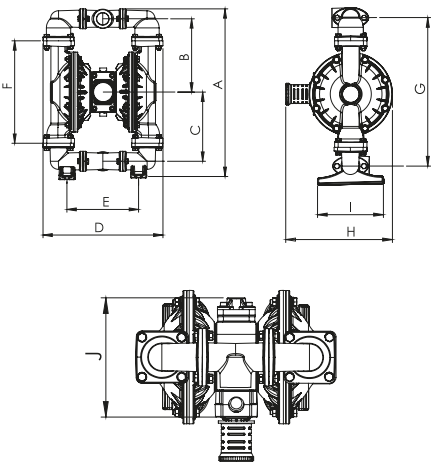


Item No	Description	Piece
1	Suction Line	1
1A	Elbow, Suction	1
1B	Bracket, Mounting	2
2	Discharge Line	1
2A	Elbow, Discharge	2
2B	Manifold	2
2C	Seal, Manifold	8
3	Main Body	1
4	Chamber Outhor	2
5	Ball, Check	4
6	Ball Seat	4
6A	Gasket, Ball Seat	8
7	Diaphragm	2
8	Air Valve Kit	1
9	Pilot Valve Kit	1
10	Bumper	2
11	Bushing, Plunger	2
12	Cap, Air Inlet	1

Item No	Description	Piece
13	Gasket, Air Discharge	1
14	Gasket, Intermediate Bracket	1
15	Gasket, Valve Body	1
16	O-Ring, For Pin	1
17	Plate, Innet Diaphragm	2
18	Cap, Air Inlet	2
19	Plunger, Actuator	2
20	Srod, Diaphragm	1
21	Oil Seal	2
22	Muffler	1
23	Washer M8 Stainless	100
24	Washer M10 Stainless	4
25	Capscrew Soc Head M10x60 Stainless	4
26	Capscrew 8x45 Stainless	8
27	Capscrew 8x40 Stainless	28
28	Capscrew 8x50 Stainless	16
29	Nut Hex M8 Stainless Fiber	32
30	Nut Hex M8 Stainless	16

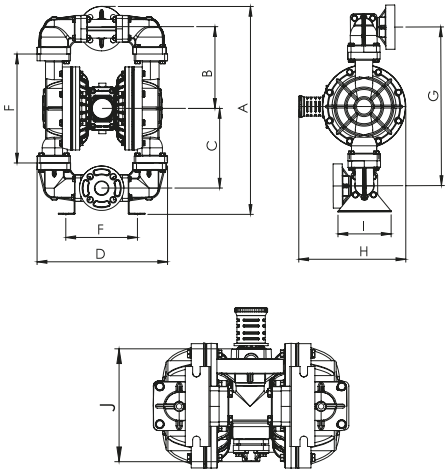
MIT 4000 Technical Information

Metal Body



A	B	C	D	E	F	G	H	I	J
605	260	245	425	253	363	505	363	224	253

Plastic Body

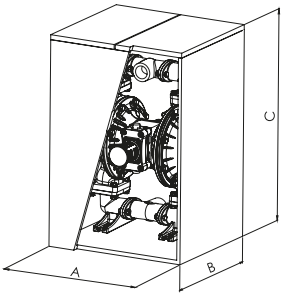


A	B	C	D	E	F	G	H	I	J
703	276	269	440	242	368	538	363	180	254

Packaging Sizes and Weights

As it is seen in the following figure, the diaphragm pump is connected to pump fixing board from its stands via bolt and nut. Lean of the pump is prevented during transport.

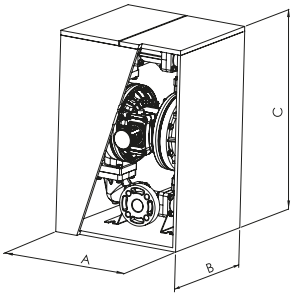
Scaling With Metal Body



Pump Weight	Package Weight	Gross Weight
24,3 kg	2 kg	26,3 kg

A	B	C
440	340	740

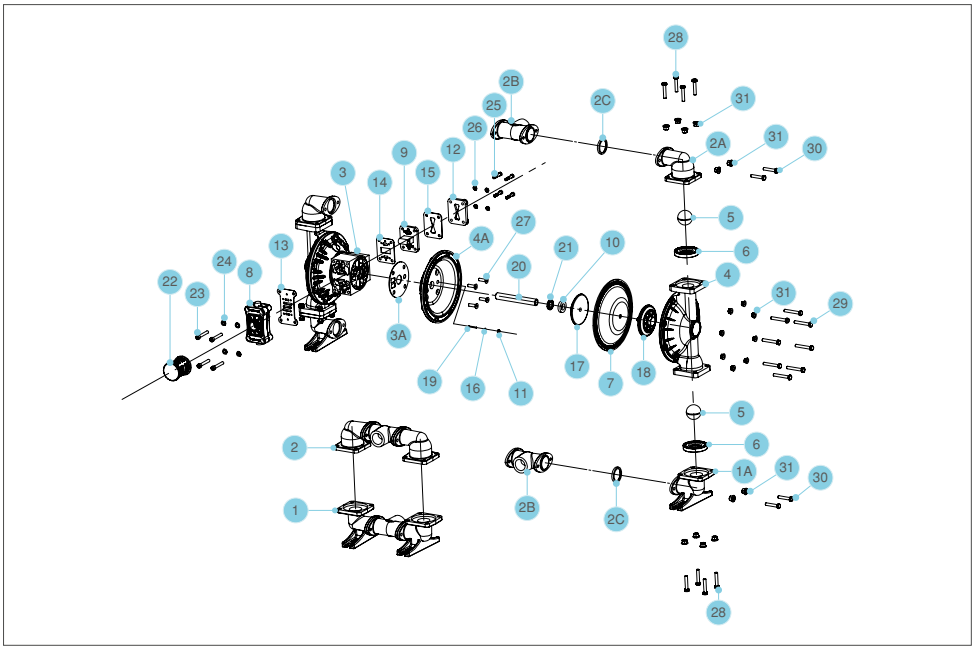
Scaling With Plastic Body



Pump Weight	Package Weight	Gross Weight
19,68 kg	2 kg	21,68 kg

A	B	C
440	340	740

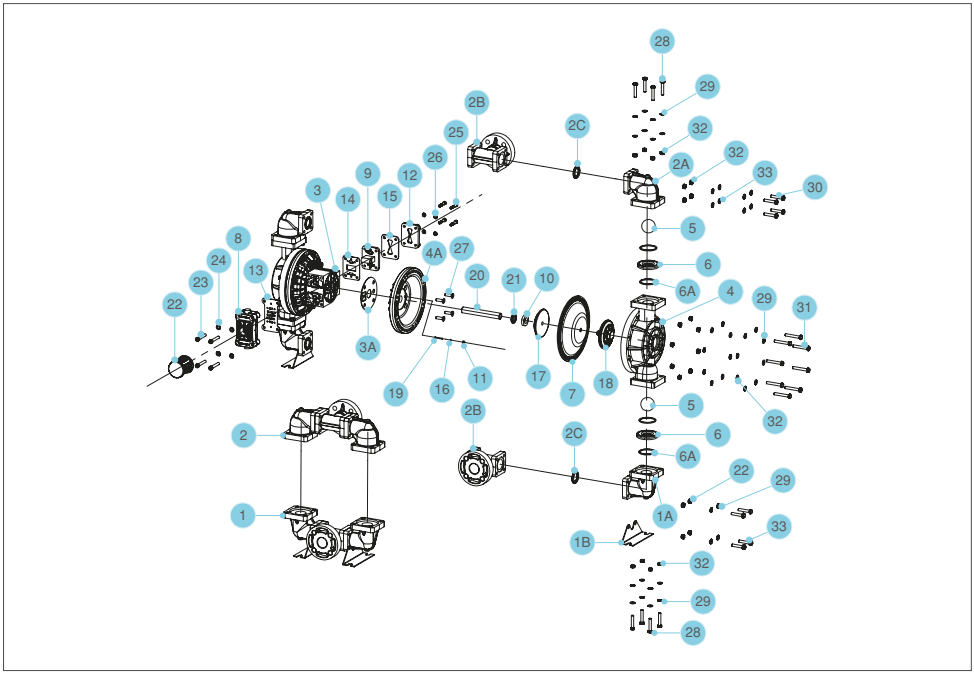
Spare Part Drawing (Metal)



Item No	Desctription	Piece
1	Suction Line	1
1A	Elbow, Suction	2
2	Discharge Line	1
2A	Elbow, Discharge	2
2B	Manifold	2
2C	Seal, Manifold	4
3	Main Body	1
3A	Gasket, Inner Chamber	2
4	Chamber Outhor	2
4A	Chamber, Inner	2
5	Ball, Check	4
6	Ball Seat	6
7	Diaphragm	8
8	Air Valve Kit	1
9	Pilot Valve Kit	1
10	Bumper	2
11	Bushing, Plunger	2
12	Cap, Air Inlet	1
13	Gasket, Air Discharge	1

Item No	Desctription	Piece
14	Gasket, Intermediate Bracket	1
15	Gasket, Valve Body	1
16	O-Ring, For Pin	1
17	Plate, Inner Diaphragm	2
18	Plate, Outher Diaphragm	2
19	Plunger, Actuator	2
20	Srod, Diaphragm	1
21	Oil Seal	2
22	Muffler	1
23	Capscrew Soc Head M10x60 Stainless	4
24	Washer M10 Stainless	4
25	Capscrew M8x45	4
26	Washer M8 Stainless	4
27	Capscrew Soc Head M10x25 Stainless	8
28	Capscrew M10x50	16
29	Capscrew M10x45	16
30	Capscrew M10x30	8
31	Nut Hex Flange M8	40

Spare Part Drawing (Plastic)

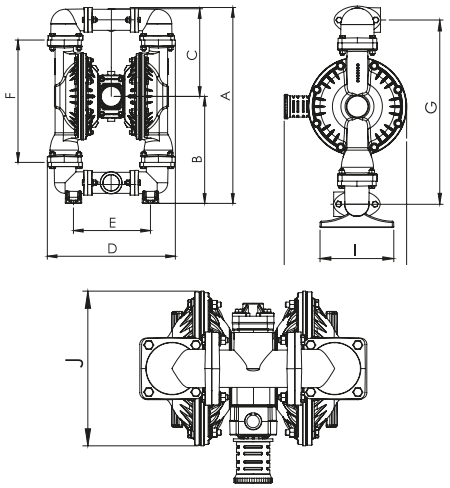


Item No	Desctription	Piece
1	Suction Line	1
1A	Elbow, Suction	2
1B	Bracket, Mounting	2
2	Discharge Line	1
2A	Elbow, Discharge	2
2B	Manifold	2
2C	Seal, Manifold	4
3	Main Body	1
3A	Gasket, Inner Chamber	2
4	Chamber Outhor	2
4A	Chamber, Inner	2
5	Ball, Check	4
6	Ball Seat	4
6A	Gasket, Ball Seat	8
7	Diaphragm	2
8	Air Valve Kit	1
9	Pilot Valve Kit	1
10	Bumper	2
11	Bushing, Plunger	2
12	Cap, Air Inlet	1
13	Gasket, Air Discharge	1

Item No	Desctription	Piece
14	Gasket, Intermediate Bracket	1
15	Gasket, Valve Body	1
16	O-Ring, For Pin	1
17	Plate, Inner Diaphragm	2
18	Cap, Air Inlet	2
19	Plunger, Actuator	2
20	Srod, Diaphragm	1
21	Oil Seal	2
22	Muffler	1
23	Capscrew Soc Head M10x60 Stainless	4
24	Washer M10 Stainless	4
25	Capscrew M8x45	4
26	Washer M8 Stainless	4
27	Capscrew Soc Head M10x25 Stainless	8
28	Capscrew M10x50 Stainless	16
29	Washer M10 Stainless	94
30	Capscrew M10x55 Stainless	16
31	Capscrew M10x57 Stainless	16
32	Nut Hex M10 Stainless Fiber	32
33	Nut Hex M10 Stainless	16

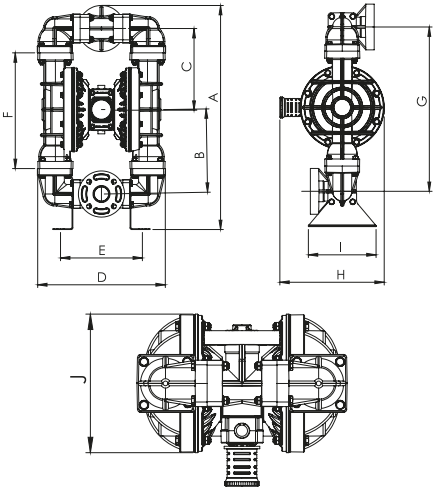
MIT 5600 Technical Information

Metal Body



A	B	C	D	E	F	G	H	I	J
669	365	299	438	263	418	556	370	223	298

Plastic Body

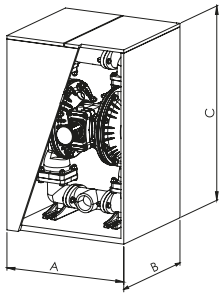


A	B	C	D	E	F	G	H	I	J
790	294	288	450	288	408	584	370	240	298

Packaging Sizes and Weights

As it is seen in the following figure, the diaphragm pump is connected to pump fixing board from its stands via bolt and nut. Lean of the pump is prevented during transport.

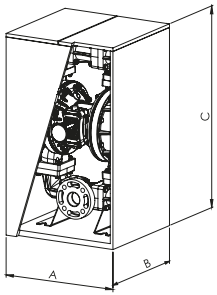
Scaling With Metal Body



Pump Weight	Package Weight	Gross Weight
31,266 kg	2 kg	33,266 kg

A	B	C
475	475	755

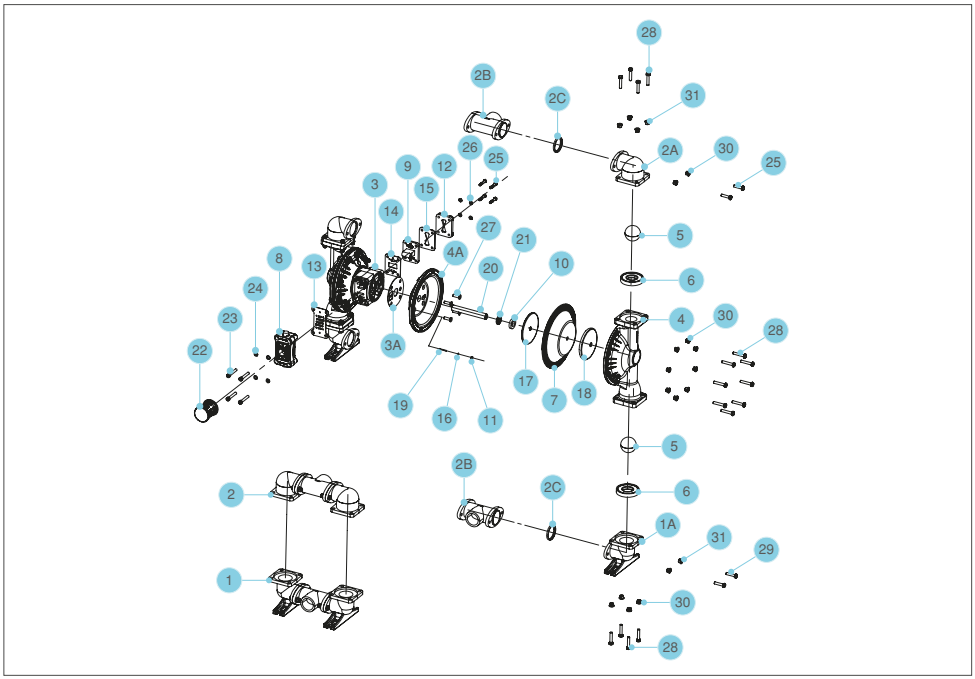
Scaling With Plastic Body



Pump Weight	Package Weight	Gross Weight
25,33 kg	2 kg	27,33 kg

A	B	C
350	450	830

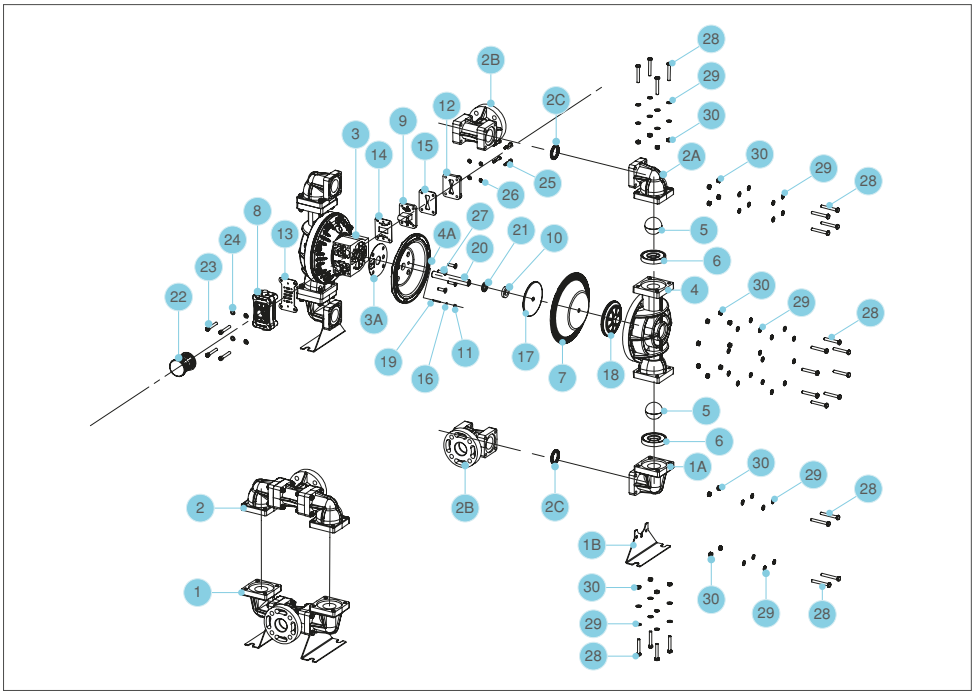
Spare Part Drawing (Metal)



Item No	Desctription	Piece
1	Suction Line	1
1A	Elbow, Suction	2
2	Discharge Line	1
2A	Elbow, Discharge	2
2B	Manifold	2
2C	Seal, Manifold	4
3	Main Body	1
3A	Gasket, Inner Chamber	2
4	Chamber Outhor	2
4A	Chamber, Inner	2
5	Ball, Check	4
6	Ball Seat	4
7	Diaphragm	2
8	Air Valve Kit	1
9	Pilot Valve Kit	1
10	Bumper	2
11	Bushing, Plunger	2
12	Cap, Air Inlet	1

Item No	Desctription	Piece
13	Gasket, Air Discharge	1
14	Gasket, Intermediate Bracket	1
15	Gasket, Valve Body	1
16	O-Ring, For Pin	1
17	Plate, Inner Diaphragm	2
18	Plate, Outher Diaphragm	2
19	Plunger, Actuator	2
20	Srod, Diaphragm	1
21	Oil Seal	2
22	Muffler	1
23	Capscrew Soc Head M10x60 Stainless	4
24	Washer M10 Stainless	4
25	Capscrew 8x45	4
26	Washer M8 Stainless	4
27	Capscrew Soc Head 10x25 Stainless	8
28	Capscrew 10x50	32
29	Capscrew 10x545	8
31	Nut Hex Flange M10	40

Spare Part Drawing (Plastic)

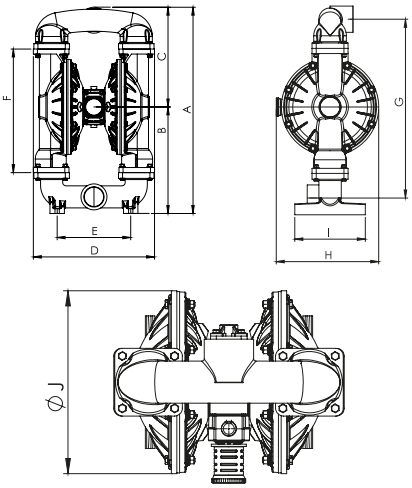


Item No	Desctription	Piece
1	Suction Line	1
1A	Elbow, Suction	2
1B	Bracket, Mounting	2
2	Discharge Line	1
2A	Elbow, Discharge	2
2B	Manifold	2
2C	Seal, Manifold	4
3	Main Body	1
3A	Gasket, Inner Chamber	2
4	Chamber, Outhor	2
4A	Chamber, Inner	2
5	Ball, Check	4
6	Ball Seat	4
7	Diaphragm	2
8	Air Valve Kit	1
9	Pilot Valve Kit	1
10	Bumper	2
11	Bushing, Plumber	2
12	Cap, Air Inlet	1
12	Cap, Air Inlet	1

Item No	Desctription	Piece
13	Gasket, Air Discharge	1
14	Gasket, Intermediate Bracket	1
15	Gasket, Valve Body	1
16	O-Ring, For Pin	1
17	Plate, Inner Diaphragm	2
18	Cap, Air Inlet	2
19	Plunger, Actuator	2
20	Srod, Diaphragm	1
21	Oil Seal	2
22	Muffler	1
23	Capscrew Soc Head M10x60 Stainless	4
24	Washer M10 Stainless	4
25	Capscrew 8x45 Stainless	4
26	Washer M8 Stainless	4
27	Capscrew Soc Head 10x25 Stainless	8
28	Capscrew 10x70 Stainless	48
29	Washer M10 Stainless	96
30	Nut Hex M10 Stainless Fiber	48

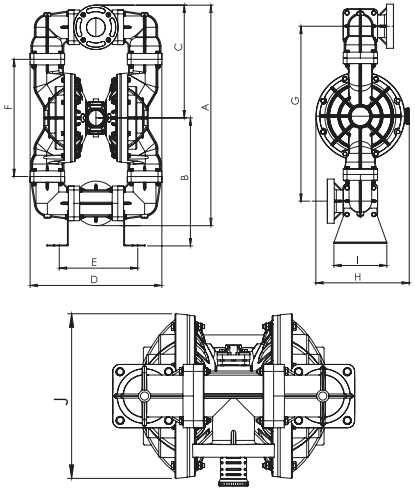
MIT 8900 Technical Information

Metal Body



A	B	C	D	E	F	G	H	I	J
858	443	415	504	306	514	735	421	290	40

Plastic Body

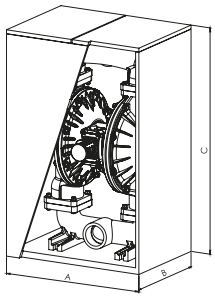


A	B	C	D	E	F	G	H	I	J
995	576	508	594	353	528	794	424	240	404

Packaging Sizes and Weights

As it is seen in the following figure, the diaphragm pump is connected to pump fixing board from its stands via bolt and nut. Lean of the pump is prevented during transport.

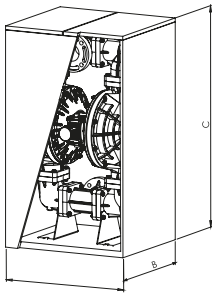
Scaling With Metal Body



Pump Weight	Package Weight	Gross Weight
54,83 kg	2,5 kg	57,33 kg

A	B	C
540	460	930

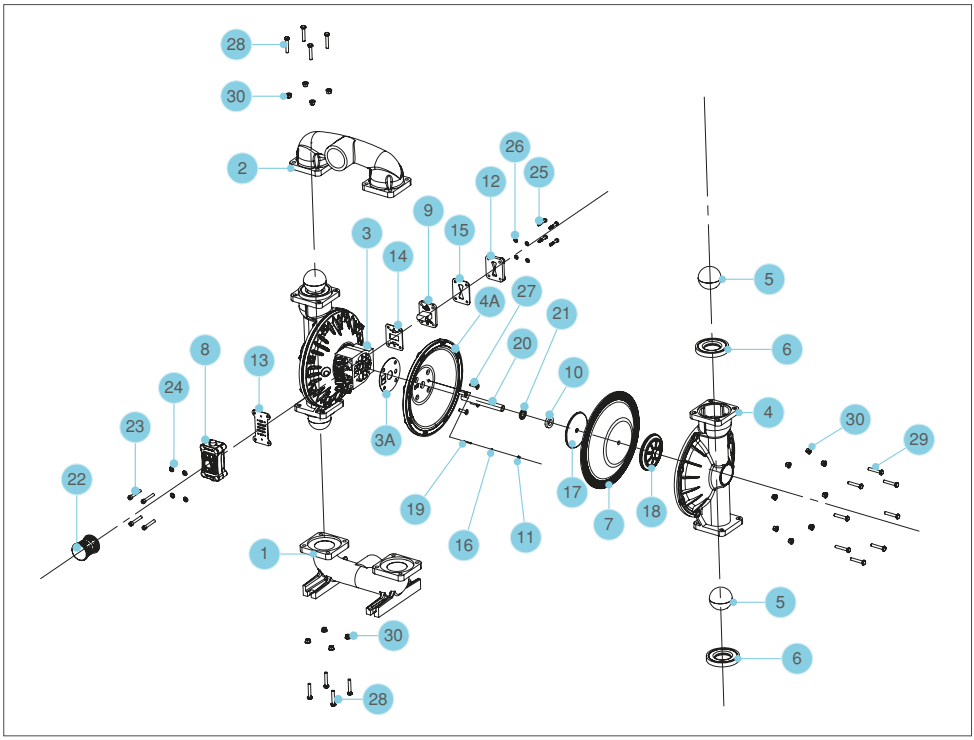
Scaling With Plastic Body



Pump Weight	Package Weight	Gross Weight
49 kg	2,5 kg	51,5 kg

A	B	C
600	450	1130

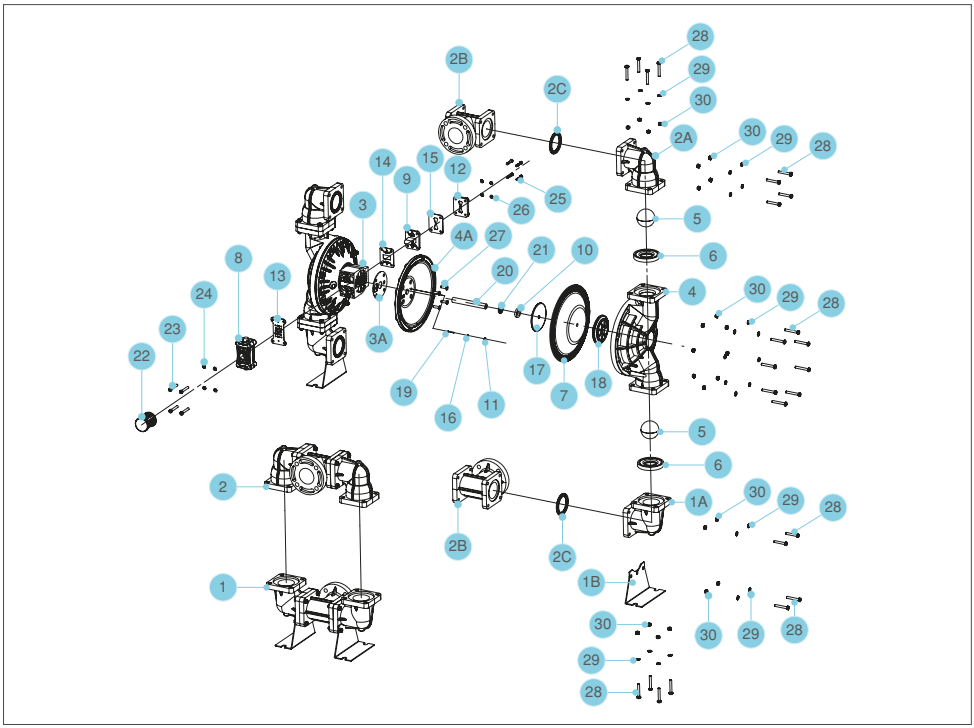
Spare Part Drawing (Metal)



Item No	Desctription	Piece
1	Suction Line	1
2	Discharge Line	1
3	Main Body	1
3A	Gasket, Inner Chamber	2
4	Chamber, Outhor	2
4A	Chamber, Inner	2
5	Ball, Check	4
6	Ball Seat	4
7	Diaphragm	2
8	Air Valve Kit	1
9	Pilot Valve Kit	1
10	Bumper	2
11	Bushing, Plumber	2
12	Cap, Air Inlet	1
13	Gasket, Air Discharge	1
14	Gasket, Intermediate Bracket	1

Item No	Description	Piece
15	Gasket, Valve Body	1
16	O-Ring, For Pin	1
17	Plate, Inner Diaphragm	2
18	Plate, Outher Diaphragm	2
19	Plunger, Actuator	2
20	Srod, Diaphgram	1
21	Oil Seal	2
22	Muffler	1
23	Capscrew Soc Head M10x60 Stainless	4
24	Washer M10 Stainless	4
25	Capscrew 8x45	4
26	Washer M8 Stainless	4
27	Capscrew Soc Head 10x25 Stainless	8
28	Capscrew 10x50	16
29	Capscrew 10x545	16
30	Nut Hex Flange M10	32

Spare Part Drawing (Plastic)



Item No	Desctription	Piece
1	Suction Line	1
1A	Elbow, Suction	2
1B	Bracket, Mounting	2
2	Discharge Line	1
2A	Elbow, Discharge	2
2B	Manifold	2
2C	Seal, Manifold	4
3	Main Body	1
3A	Gasket, Inner Chamber	2
4	Chamber Outhor	2
4A	Chamber, Inner	2
5	Ball, Check	4
6	Ball Seat	4
7	Diaphragm	2
8	Air Valve Kit	1
9	Pilot Valve Kit	1
10	Bumper	2
11	Bushing, Plumber	2
12	Cap, Air Inlet	1

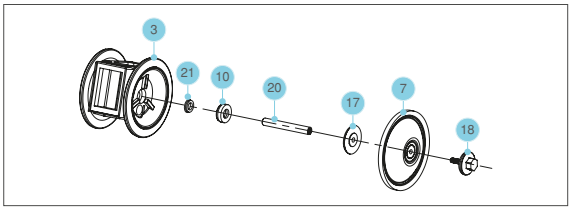
Item No	Desctription	Piece
13	Gasket, Air Discharge	1
14	Gasket, Intermediate Bracket	1
15	Gasket, Valve Body	1
16	O-Ring, For Pin	1
17	Plate, Inner Diaphragm	2
18	Cap, Air Inlet	2
19	Plunger, Actuator	2
20	Srod, Diaphragm	1
21	Oil Seal	2
22	Muffler	1
23	Capscrew Soc Head M10x60 Stainless	4
24	Washer M10 Stainless	4
25	Capscrew 8x45 Stainless	4
26	Washer M8 Stainless	4
27	Capscrew Soc Head 10x25 Stainless	8
28	Capscrew 10x70 Stainless	48
29	Washer M10 Stainless	48
30	Nut Hex M10 Stainless Fiber	48

MAINTENANCE

Clean the pump with a compatible cleaning fluid before starting maintenance, if the fluid transferred by the pump has drying and frosting characteristics. Otherwise, pump maintenance will be more expensive and difficult. Control bolt connections in each use. Tighten loose connections with a suitable wrench. Replace required connections.

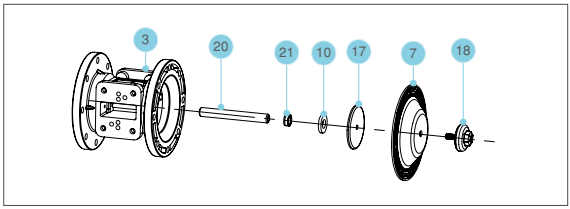
Diaphragm Maintenance

MIT 160



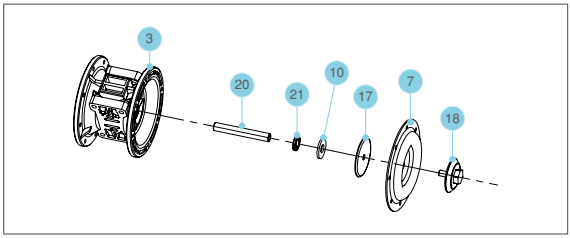
3	Main Body
20	Oil Seal
21	Bumper
10	Srod, Diaphragm
17	Plate, Inner Diaphragm
7	Diaphragm
18	Plate, Outher Diaphragm

MIT 550



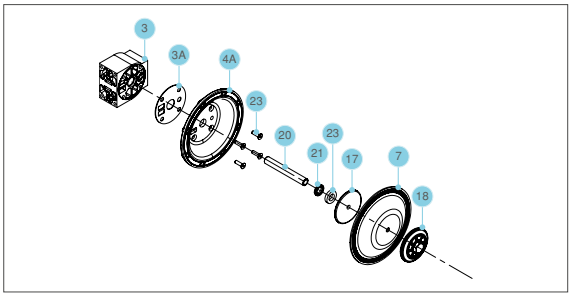
3	Main Body
20	Srod, Diaphragm
21	Oil Seal
10	Bumper
17	Plate, Inner Diaphragm
7	Diaphragm
18	Plate, Outher Diaphragm

MIT 1500



3	Main Body
20	Srod, Diaphragm
21	Oil Seal
10	Bumper
17	Plate, Inner Diaphragm
7	Diaphragm
18	Plate, Outher Diaphragm

MIT 4000 / MIT 5600 / MIT 8900



3	Main Body
3A	
4A	
23	Capscrew Soc Head M10x60
20	Srod, Diaphragm
21	Oil Seal
10	Bumper
17	Plate, Inner Diaphragm
7	Diaphragm
18	Plate, Outher Diaphragm

Double diaphragm is used with options of teflon diaphragm pump. The rubber diaphragm used before the teflon increase the service life of the teflon diaphragm by improving its breakage and fatigue strength.

Relieve pressure in the pump after closing pressure air and remove the pump from air inlet line. Drain the fluid in the pump. See pump installation figures and diaphragm maintenance schemes. Remove suction and discharge lines. Remove the ball and ball seats. Then, remove external covers of the pump.

Dismantle of the Diaphragms

MIT 160

Remove external diaphragm fastener by turning it counter-clockwise via use of 12 socket wrench to remove diaphragm group from diaphragm shaft. One of the diaphragm shall be removed with internal and external diaphragm fastener and the other shall be removed in a way to be connected to shaft. Firstly, connect the internal diaphragm fastener to clamp to remove the diaphragm between internal and external diaphragm fastener and tighten it, and remove it by turning it counter-clockwise via use of 12 socket wrench.

MIT 550

Remove external diaphragm fastener by turning it counter-clockwise with a 19 socket wrench to remove diaphragm group from diaphragm shaft. One of the diaphragms shall be removed with internal and external diaphragm fastener and the other shall be removed as connected to the shaft. First, place the internal diaphragm fastener on a vice to remove the diaphragm between internal and external diaphragm fastener and tighten it, and remove it by turning it counter-clockwise with a 19 socket wrench

MIT 1500

Remove the outer diaphragm holder using the M16 wrench to remove the diaphragm assembly from the diaphragm shaft counterclockwise. After this operation, one of the diaphragms the holder will be removed with the other attached to the shaft. To remove the diaphragm between the inner and outer diaphragm holder, first tighten the inner diaphragm holder in a vise and unscrew it by turning it anti-clockwise using the M16 wrench.

MIT 4000 / MIT 5600 / MIT 8900

Remove external diaphragm fastener by turning it counter-clockwise with a 34 socket wrench to remove diaphragm group from diaphragm shaft. One of the diaphragms shall be removed with internal and external diaphragm fastener and the other shall be removed as connected to the shaft. First, place the internal diaphragm fastener on a vice to remove the diaphragm between internal and external diaphragm fastener and tighten it, and remove it by turning it counter-clockwise with a 34 socket wrench. Fasten the shaft connected to other diaphragm to the clamp loosely and remove it with the wrench. Repeat the same steps to remove the other diaphragm. Check the diaphragm for cut, puncture, wear and chemical exposure. Replace the diaphrams when necessary.

Installation of the Diaphragm

MIT 160

Fasten external diaphragm to fastener and push from central hole of the diaphragm to inside. Tighten the internal diaphragm to the shaft clockwise by installing bolt. Re-install loose group to the clamp. Tighten diaphragm group with 12 socket wrench.

MIT 550

Fasten external diaphragm to fastener and push from central hole of the diaphragm to inside. Tighten the internal diaphragm to the shaft clockwise by installing bolt. Re-install loose group to the vice. Tighten diaphragm group with 19 socket wrench.

MIT 1500

Insert the M16 bolt into the outer diaphragm holder and push it through the center hole of the diaphragm. Internal diaphragm tighten the shaft clockwise by attaching the bolt to the holder. Put the loose rolled group back to clamp. Tighten the diaphragm assembly together with M16 wrench.

MIT 4000 / MIT 5600 / MIT 8900

Fasten external diaphragm to fastener and push from central hole of the diaphragm to inside. Tighten the internal diaphragm to the shaft clockwise by installing bolt. Re-install loose group to the vice. Tighten diaphragm group with 34 socket wrench.

Installation of The Diaphragms To The Pump

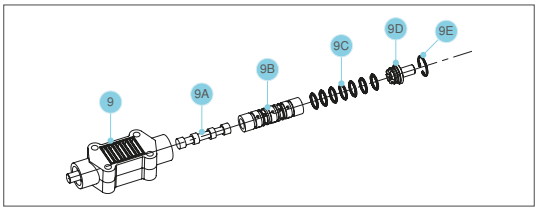
Make sure that ram was installed on the diaphragm shaft. Tighten a diaphragm group shaft until it comes to same line with shaft end of internal diaphragm plate to threaded hole on diaphragm end clockwise. Install the shaft to the pump. Align bolt holes in the diaphragm with bolt holes of internal chamber. Connect external chamber to the pump by using bolts and nuts. Pull the diaphragm shaft from the other end of the pump. Ensure that nose is installed on diaphragm shaft. Tighten open shaft of the diaphragm group to the diaphragm shaft clockwise as much as possible, and leave a gap to allow alignment of the bolt holes on the diaphram with the bolt holes of the internal chamber. Install the external chamber to the pump by using bolts, nuts and washers. Connect the suction and discharge lines to the pump by using bolts, nuts and washers. The pump is ready to be re-fastened and used.

Air Valve Kit Types and Maintenance

Air valves are lubricated with special greases, and require no more greasing. Disconnect the air inlet to the pump once 1 or 2 weeks if additional lubrication is needed. Add 4 - 5 pumps of machine oil through the air inlet of the pump.

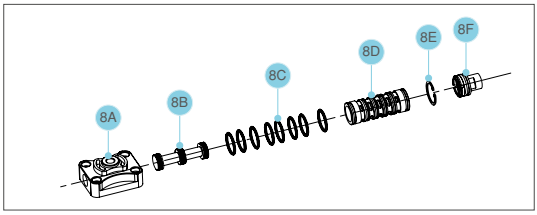
Air Valve Repair Kit

MIT 160



9	Air Valve Body
9A	Spool, for Air Valve
9B	Sleeve, for Air Valve
9C	O-Rings, for Air Valve
9D	Cap, End
9E	Ring, Retaining

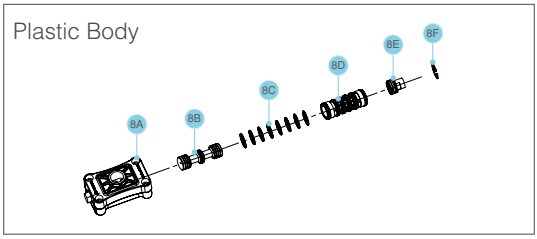
MIT 550



8A	Air Valve Body
8B	Spool, for Air Valve
8C	O-Rings, for Air Valve
8D	Sleeve, for Air Valve
8E	Ring, Retaining
8F	Cap, End

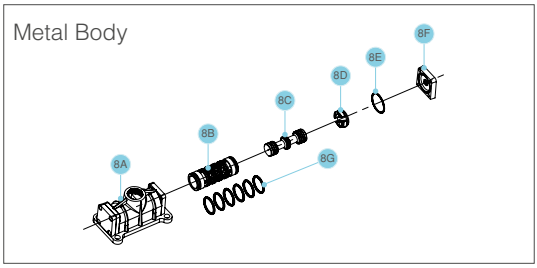
MIT 1500

Plastic Body



8A	Air Valve Body
8B	Spool, for Air Valve
8C	O-Rings, for Air Valve
8D	Sleeve, for Air Valve
8E	Cap, End
8F	Ring, Retaining

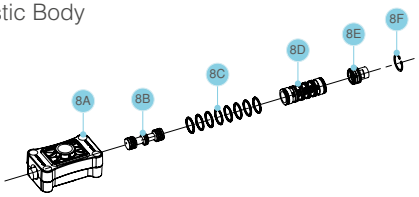
Metal Body



8A	Air Valve Body
8D	Sleeve, for Air Valve
8B	Spool, for Air Valve
8C	Cap, End
8E	O-Rings, for Air Valve
8F	Cap, for Air Valve
8G	O-Rings, for Air Valve

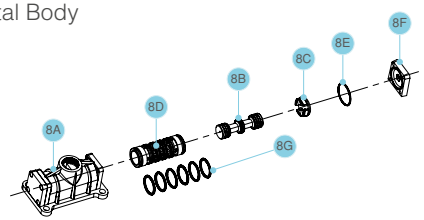
MIT 4000 / MIT 5600 / MIT 8900

Plastic Body



8A	Air Valve Body
8B	Spool, for Air Valve
8C	O-Rings, for Air Valve
8D	Sleeve, for Air Valve
8E	Cap, End
8F	Ring, Retaining

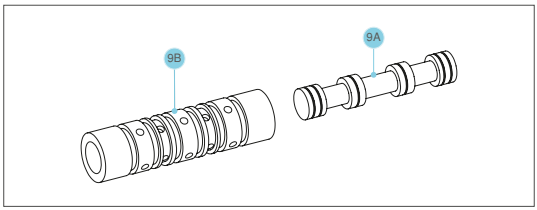
Metal Body



8A	Air Valve Body
8D	Sleeve, for Air Valve
8B	Spool, for Air Valve
8C	Cap, End
8E	O-Rings, for Air Valve
8F	Cap for, Air Valve
8G	O-Rings, for Air Valve

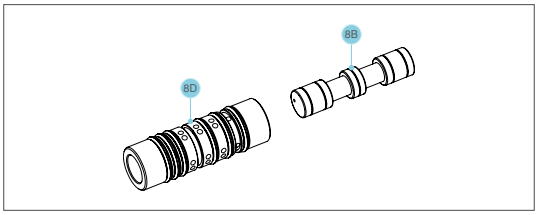
Sleeve - Spool Set

MIT 160



9A	Spool, for Air Valve
9B	Sleeve, for Air Valve

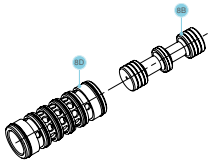
MIT 550



8D	Sleeve, for Air Valve
8B	Spool, for Air Valve

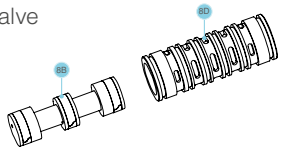
MIT 1500

Friction Air Valve



8D	Sleeve, for Air Valve
8B	Spool, for Air Valve

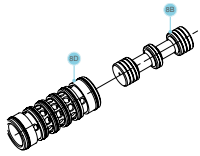
Segmented Air Valve



8D	Sleeve, for Air Valve
8B	Spool, for Air Valve

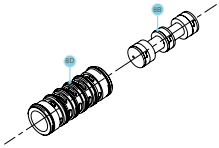
MIT 4000 / MIT 5600 / MIT 8900

Friction Air Valve



8D	Sleeve, for Air Valve
8B	Spool, for Air Valve

Segmented Air Valve



8D	Sleeve, for Air Valve
8B	Spool, for Air Valve

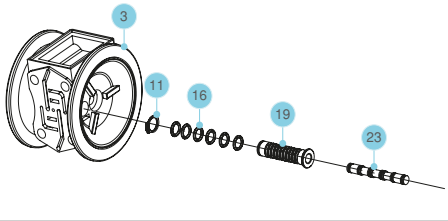
Do not lubricate the pump excessively while making extra lubrication. This may cause mess and even malfunction.

Pilot Valve Repair Kit Types and Maintenance

Close suction and push line of the pump before starting valve maintenance. Cut pressure air inlet and relieve pressure in the pump. Relieve fluid in the pump.

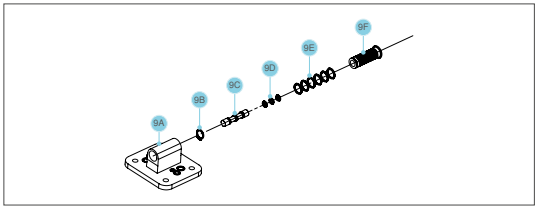
Pilot Valve Repair Kit

MIT 160



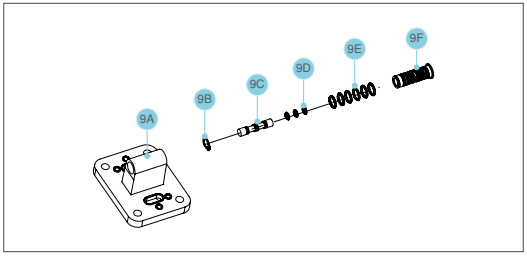
3	Main Body
11	Ring Retaining, for Pilot Valve
16	O-Rings, for Pilot Valve Case
19	Sleeve, for Pilot Valve
23	Spool, Pilot Valve

MIT 550



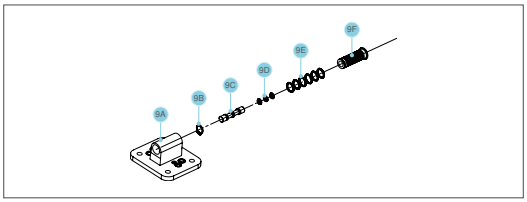
9A	Pilot Valve Body
9B	Ring Retaining, for Pilot Valve
9C	Spool, Pilot Valve
9D	O-Ring, for Pilot Valve Piston
9E	O-Rings, for Pilot Valve Case
9F	Sleeve, for Pilot Valve

MIT 1500



9A	Pilot Valve Body
9B	Ring Retaining, for Pilot Valve
9C	Spool, Pilot Valve
9D	O-Ring, for Pilot Valve Piston
9E	O-Rings, for Pilot Valve Case
9F	Sleeve, for Pilot Valve

MIT 4000 / MIT 5600 / MIT 8900



9A	Pilot Valve Body
9B	Ring Retaining, for Pilot Valve
9C	Spool, Pilot Valve
9D	O-Ring, for Pilot Valve Piston
9E	O-Rings, for Pilot Valve Case
9F	Sleeve, for Pilot Valve

See pump installation figures. Remove four bolts by using wrench or socket. Remove air inlet cover and air inlet gasket. Pilot valve group can be removed for control and maintenance.

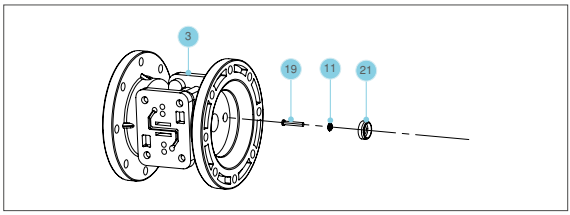
You can remove pilot valve kit before removing the pump completely. Remove pilot valve piston. Clean and control piston and o-rings for dirt, cut and wear. When necessary, replace o-rings and piston with new ones. Remove the segment from case end and case from the valve body and clean. Control case and o-rings for dirt, cut and wear.

When necessary, replace o-rings and case with new ones.Lubricate external surface and o-rings of the case abundantly. Then place the ca se in valve body carefully. Pay attention that o-rings are not cut while placing the case. Install the segments in case. Lubricate external surface and o-rings of the case abundantly. Then place the case in valve body carefully.

Pay attention that o-rings are not cut while placing the case. Pay attention that pilot valve ends are adjusted between piston pins while reinstalling pilot valve group to intermediate space gap. Reinstall gasket, air inlet cover and bolts. Connect air inlet to the pump. The pump is ready to be used.

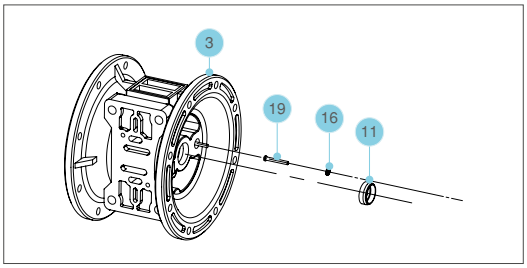
Actuator Plunger Maintenance

MIT 550



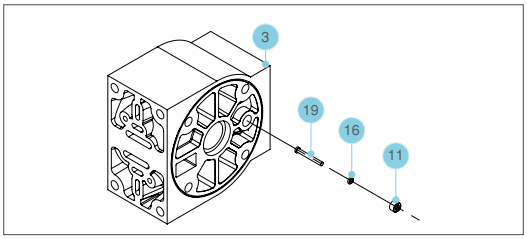
3	Main Body
11	Plunger, Actuator
19	O-Ring, For Pin
21	Bushing, Plunger

MIT 1500



1	Main Body
2	Plunger, Actuator
3	O-Ring, For Pin
4	Bushing, Plunger

MIT 4000 / MIT 5600 / MIT 8900



3	Main Body
19	Plunger, Actuator
16	O-Ring, For Pin
11	Bushing, Plunger

If the nose pin is damaged while operating under high pressure, and the problem insists when the pin is replaced, replace with a pin with larger cross section.

Close suction and discharge line of the pump before starting nose pin maintenance. Cut pressure air inlet, and relieve the pressure in the pump. Drain the fluid in the pump.

See pump installation diagrams. Remove four bolts by using a wrench or socket. Remove air inlet cover and air inlet gasket. Pilot valve group can be removed for control and maintenance.

Check the nose pins. Refer to the figure. Nose pins can be accessed through the opening among the pilot valve group. Remove the pins from the bushings on both sides of the pins. Check o-rings for dirt, cut and wear. Replace the o-rings when necessary. Apply a thin layer of grease on each o-ring, then place the pins on bushings. Push the pin forward. Pay attention that pilot valve ends are adjusted between piston pins while reinstalling pilot valve group to intermediate space gap.

Install the gasket, air inlet cover and bolts. Connect the air inlet to the pump. The pump is ready for use.

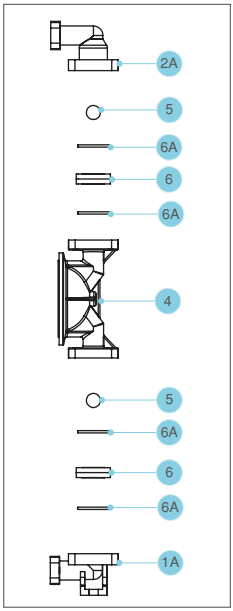
Plastic and Metallic Body Pump Check Valve Maintenance

Close suction and discharge line of the pumps before starting check valve maintenance. Cut pressure air inlet, and relieve the pressure in the pump. Drain the fluid in the pump.

Remove the bolts in fluid inlet and fluid outlet lines in section shown in the figure to access the ball valve. Check spherical surfaces of the balls for wearing, abrasion or cuts.

Ball slots should be controlled in terms of potential materials adherent on internal and external surfaces for cut and wear. Ball surfaces should be placed completely on surfaces of the ball seats. This affects the efficiency of the pump. Replace worn and damaged parts when necessary. Regroup check valve parts.

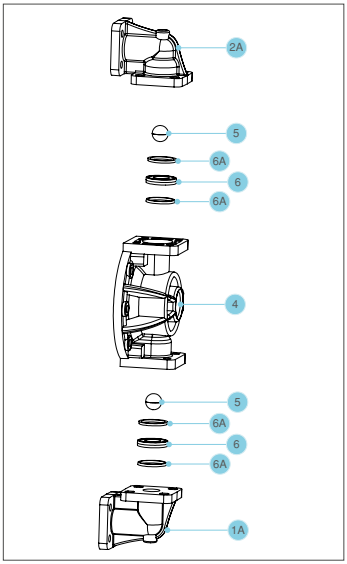
MIT 160



1A	Elbow, Suction
6A	Gasket, Ball, Seat
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2A	Elbow, Discharge

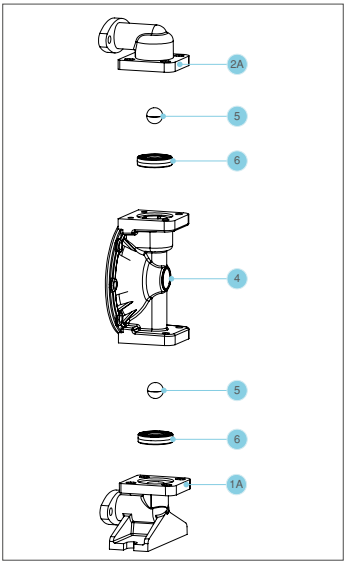
MIT 550

Plastic Body



1A	Elbow, Suction
6A	Gasket, Ball, Seat
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2A	Elbow, Discharge

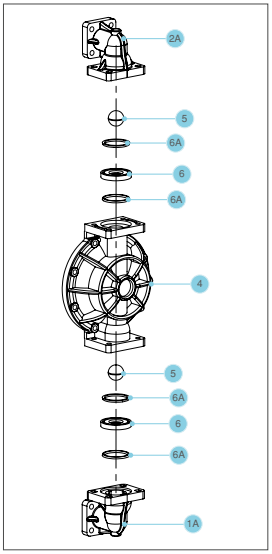
Metal Body



1A	Elbow, Suction
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2A	Elbow, Discharge

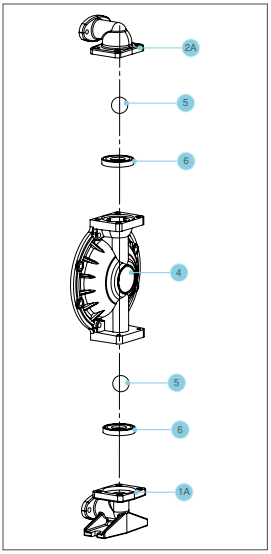
MIT 1500

Plastic Body



1A	Elbow, Suction
6A	Gasket, Ball, Seat
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2A	Elbow, Discharge

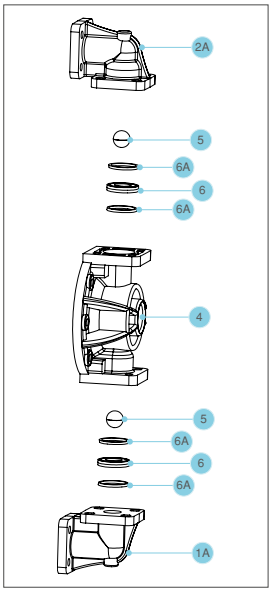
Metal Body



1A	Elbow, Suction
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2A	Elbow, Discharge

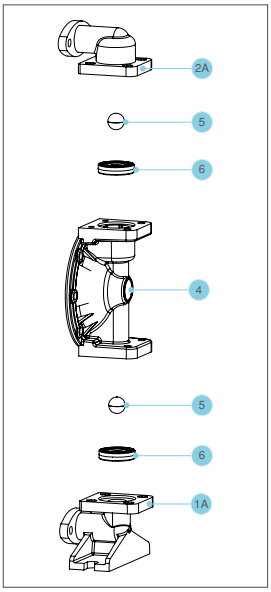
MIT 4000

Plastic Body



1A	Elbow, Suction
6A	Gasket, Ball, Seat
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2A	Elbow, Discharge

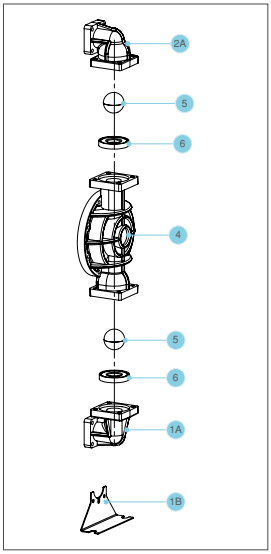
Metal Body



1A	Elbow, Suction
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2A	Elbow, Discharge

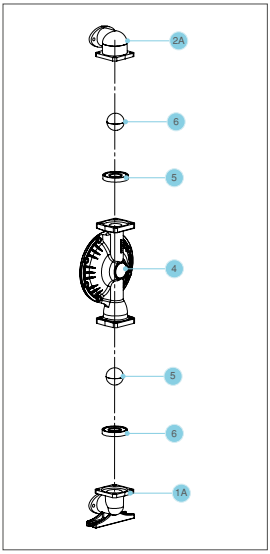
MIT 5600

Plastic Body



1B	Elbow, Suction
1A	Bracket, Mounting
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2A	Elbow, Discharge

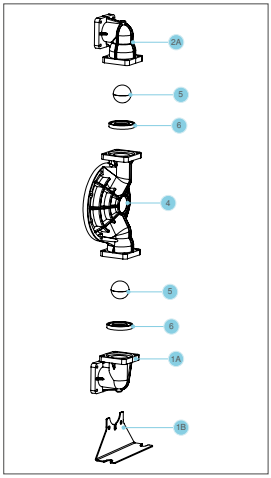
Metal Body



1A	Elbow, Suction
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2A	Elbow, Discharge

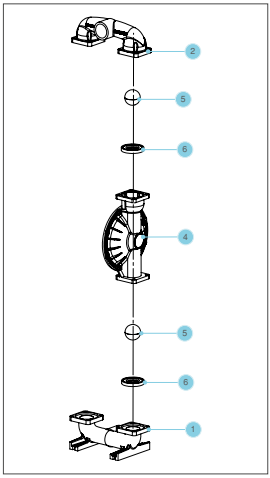
MIT 8900

Plastic Body



1B	Elbow, Suction
1A	Bracket, Mounting
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2A	Elbow, Discharge

Metal Body



1	Elbow, Suction
6	Ball Seat
5	Ball, Check
4	Chamber Outher
2	Elbow, Discharge

Feeders in external cover and outlet manifolds should be controlled in abrasive fluid transfers during ball valve change. The fluid can cause rupture of balls by corroding feeders.

Problems That May Occur In The Pump and Their Solutions

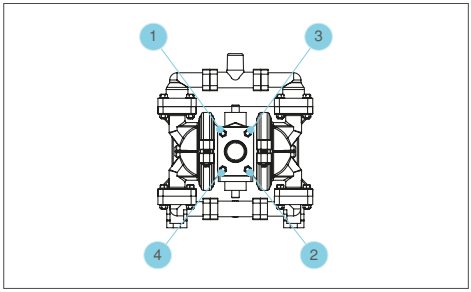
If pressure air comes to the pump and pump does not operate, air directly gets out from the exhaust.	The case piston may be stuck. Air coming to the pump should be clean.	Remove and clean air valve.
If the pump operates but does not suction.	Parts may be pressurized between ball and ball slot.	Clean ball valves expecially in suction section.
If the pumps operates but fluid capacity is low.	Air coming from the compressor may be less. Ball and ball slots may be abraded.	Control and if necessary replace with the new ones.
If pump transfer is unbalanced.	Pilot valve may be malfunctioned.	Replace with the new one.
If there are bubbles in fluid coming from the pump.	Suction line may be loose.	Compress.
	Diaphragm may be perforated.	Replace.
	Diaphragm retainers may be loose.	Compress.
If liquid comes from the exhaust air.	Diaphragm may be perforated.	Replace.
	Diaphragm retainers may be loose.	Compress.
	Compressor air is excessively moist.	Clean compressor tank.

Torque Line In Plastic and Aluminium Body Pumps

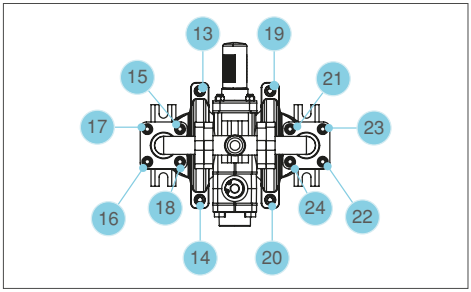
Civataları aşağıda belirtilen torklarla sıkınız. Civata sıkma sırasına mutlaka uyulmalıdır.

MIT 160 (Plastic Body)

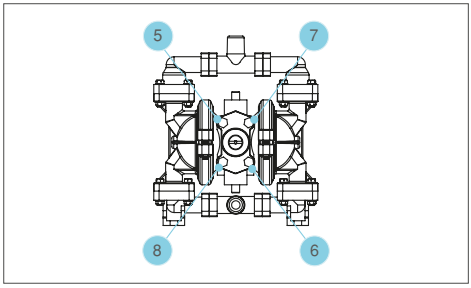
Air Valve Cover (6N.m_9N.m)



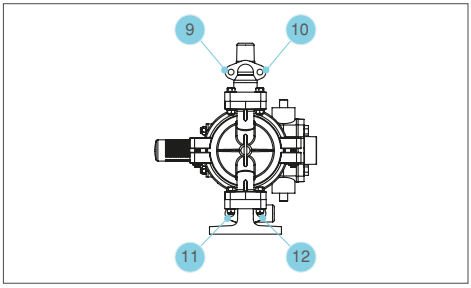
T Elbow Part (6N.m_10N.m)



Pilot Valve Cover (6N.m_9N.m)

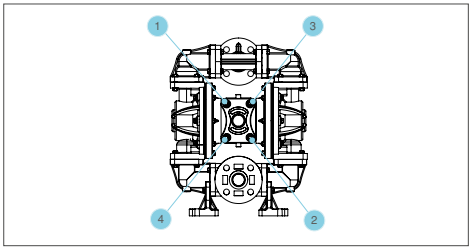


Right Left Fluid Cover (6N.m_10N.m)

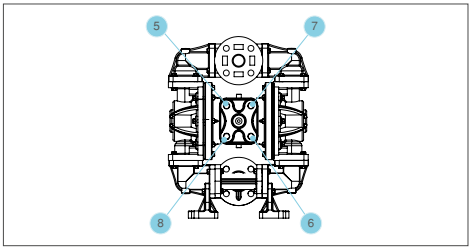


MIT 550 (Plastic Body)

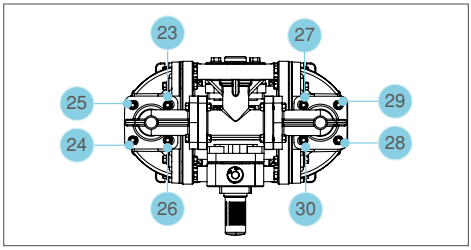
Air Valve Cover (8N.m_10N.m)



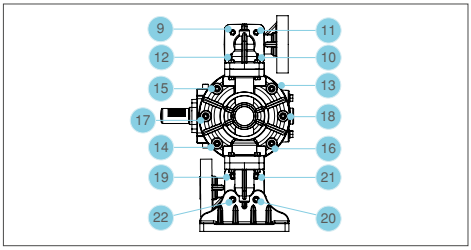
T Elbow Part(8N.m_10N.m)



Pilot Valve Cover (10N.m_13N.m)

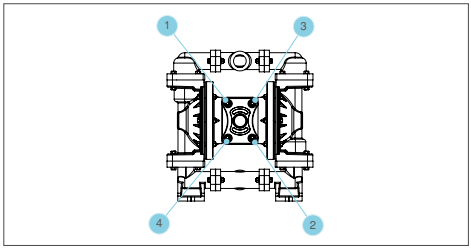


Right Left Fluid Cover (10N.m_13N.m)

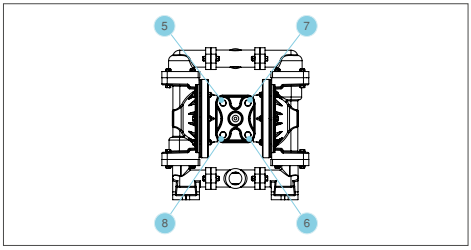


MIT 550 (Aluminium Body)

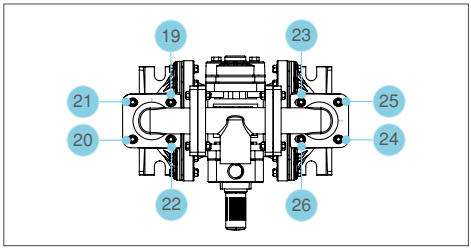
Air Valve Cover (8N.m_10N.m)



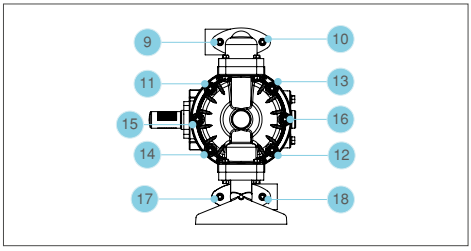
T Elbow Part (8N.m_10N.m)



Pilot Valve Cover (13N.m_15N.m)

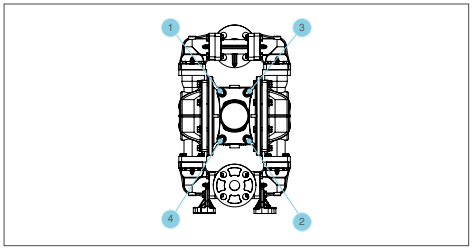


Right Left Fluid Cover (13N.m_15N.m)

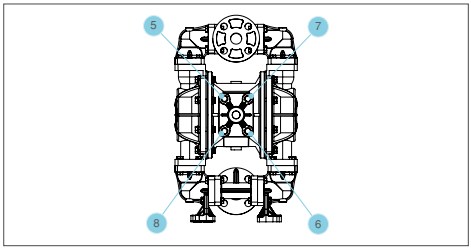


MIT 1500 (Plastic Body)

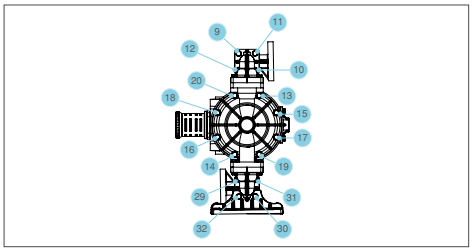
Air Valve Cover (21N.m_23N.m)



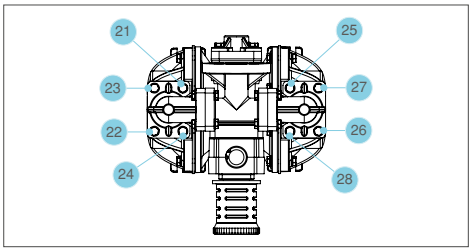
T Elbow Part (22N.m_25N.m)



Pilot Valve Cover (21N.m_23N.m)

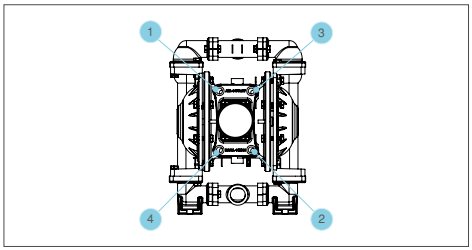


Right Left Fluid Cover (19N.m_21N.m)

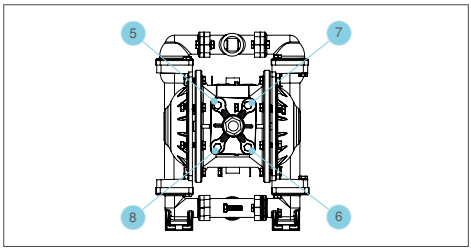


MIT 1500 (Aluminium Body)

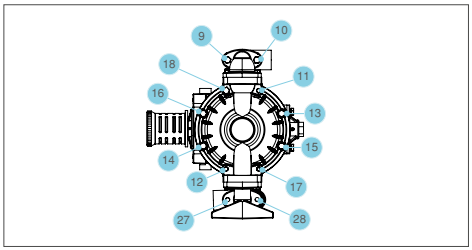
Air Valve Cover (21N.m_23N.m)



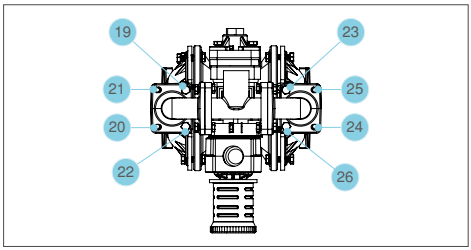
Pilot Valve Cover (22N.m_25N.m)



T Elbow Part (20N.m_22N.m)

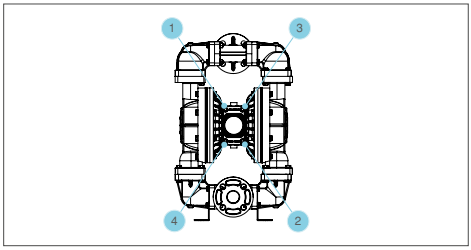


Right Left Fluid Cover (20N.m_22N.m)

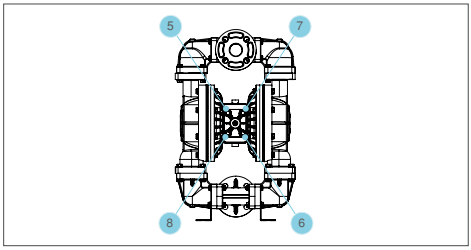


MIT 4000 (Plastic Body)

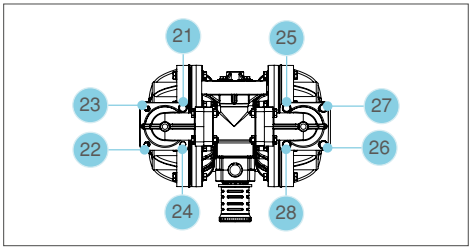
Air Valve Cover (27N.m_30N.m)



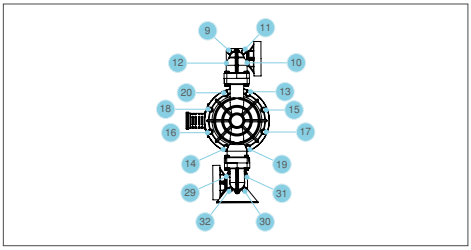
Pilot Valve Cover (27N.m_30N.m)



T Elbow Part (27N.m_30N.m)

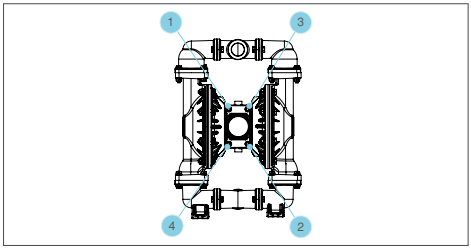


Right Left Fluid Cover (29N.m_32N.m)

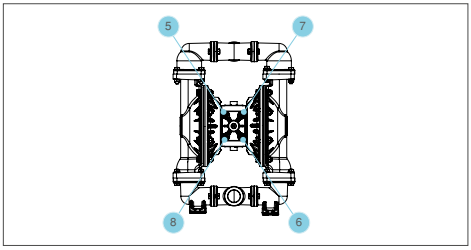


MIT 4000 (Aluminium Body)

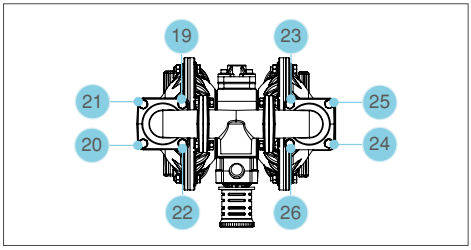
Air Valve Cover (28N.m_31N.m)



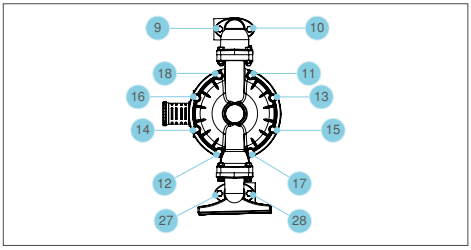
Pilot Valve Cover (28N.m_31N.m)



T Elbow Part (28N.m_31N.m)

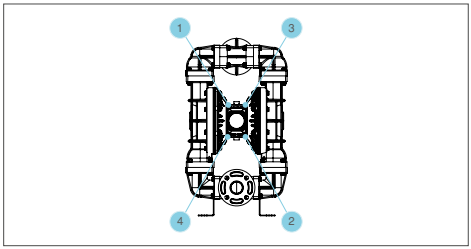


Right Left Fluid Cover (29N.m_33N.m)

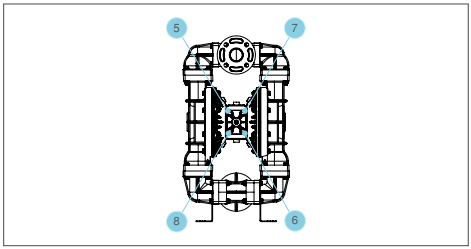


MIT 5600 (Plastic Body)

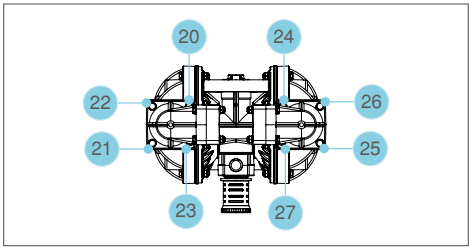
Air Valve Cover (28N.m_31N.m)



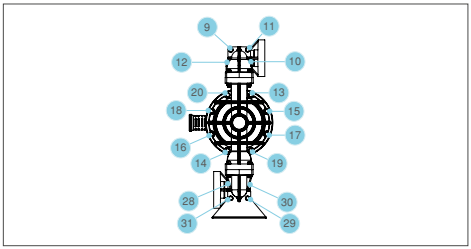
Pilot Valve Cover (28N.m_31N.m)



T Elbow Part (28N.m_31N.m)

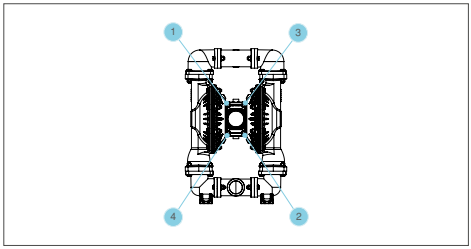


Right Left Fluid Cover (29N.m_32N.m)

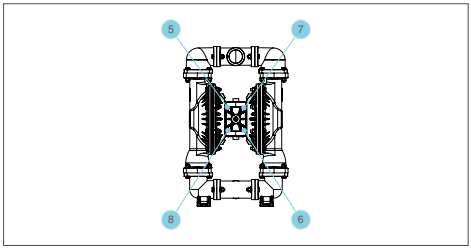


MIT 5600 (Aluminium Body)

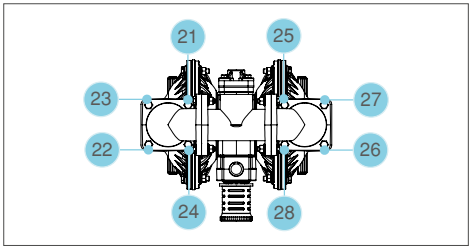
Air Valve Cover (28N.m_31N.m)



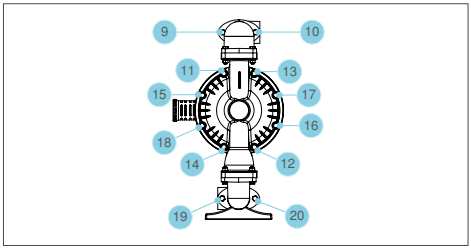
Pilot Valve Cover (28N.m_31N.m)



T Elbow Part (28N.m_31N.m)

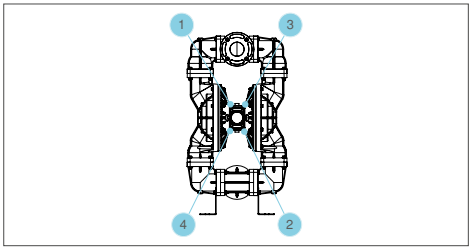


Right Left Fluid Cover (30N.m_33N.m)

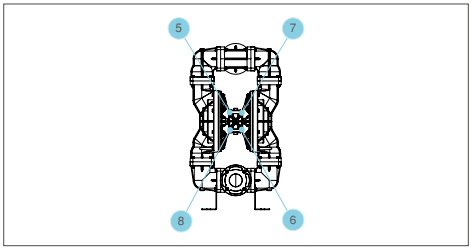


MIT 8900 (Plastic Body)

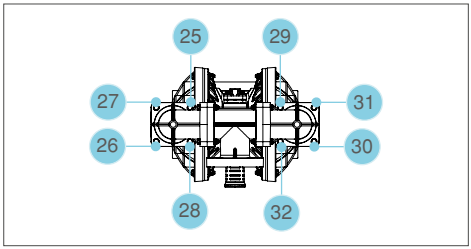
Air Valve Cover (27N.m_30N.m)



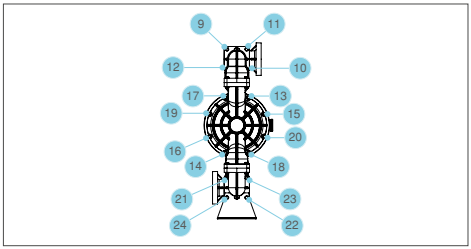
Pilot Valve Cover (27N.m_30N.m)



T Elbow Part (27N.m_30N.m)

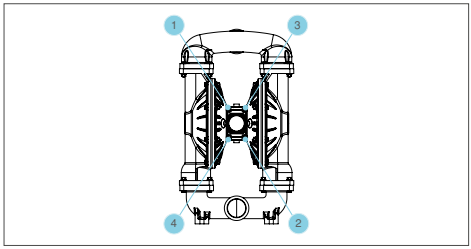


Right Left Fluid Cover (28N.m_30N.m)

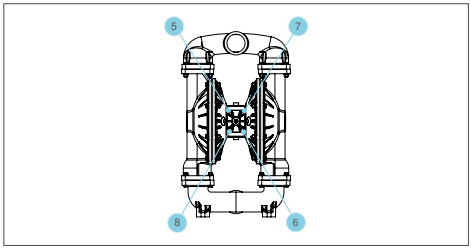


MIT 8900 (Aluminium Body)

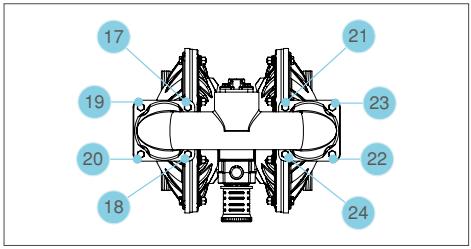
Air Valve Cover (28N.m_32N.m)



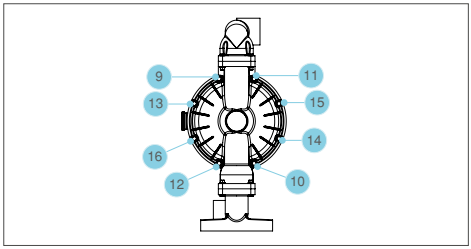
Pilot Valve Cover (28N.m_32N.m)



T Elbow Part (28N.m_32N.m)



Right Left Fluid Cover (28N.m_32N.m)



WARRANTY

Ekin Endüstriyel gives warranty to remove material and workmanship defects arising from production as of the date when pumps with MIT brand that it produces are sold to final user. This warranty applies only when the equipment is installed, operated and maintained in accordance with Ekin Endüstriyel's written recommendations.

This warranty does not include general wear and tear and Ekin Endüstriyel / MIT general wear and tear or faulty installation, faulty application, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, unconscious maintenance or equipment not included within warranty of Ekin Endüstriyel / MIT: (hoses, connection components, pneumatic regulator.) diaphragms having consumables, check valve balls, ball slots and all the bolts (o-ring, z-ring) are not within the scope of warranty.

It does not give any warranty for accessories and equipment which are sold by Ekin Endüstriyel but not produced by it and rejects warranties fitting for all old merchantability and a definite purpose.

In no event, Ekin Endüstriyel / MIT accepts any compensation, loss, damage and injury responsibility under no circumstances, does not accept any responsibility, liability, cost or expenditure that are directly or indirectly related to or occur due to use or non-functionality of any product or Ekin Endüstriyel / MIT does not accept any responsibility or liability regarding direct, special, criminal or successive results including but not limited to sales loss, profit loss, pumped material loss, work slowdown, production loss, contract loss, reputation or good will injury whether Ekin Endüstriyel / MIT is aware of or notified about potential damages.

This warranty is conditioned upon sending the pump inner as completely emptied and cleaned in a way not to damage the environment and package by paying transportation fee to Ekin Endüstriyel or authorized distributor to verify equipment stated to be defective and notified malfunction.

Equipment shall be returned to final user as prepaid transportation fee. If there is no material or labor fault as a result of equipment examination, repair operation shall be made against a reasonable price that may include part, labor and transport costs.

Ekin Endüstriyel / MIT website, introduction marketing and technical literature and declarations and data on materials are not intentional for defining performance under real use conditions of any product or at a time when it was used in special applications, they do not define warranty, and these declarations and data should not relied in determination of compliance of the products for performance or special applications under real use conditions.

All decisions on inefficiency reason depend only on Ekin Endüstriyel Pompa's determination. Prior approval should be received from Ekin Endüstriyel to give back any product so as to make evaluation on scope of the warranty.

In any case, Ekin Endüstriyel / MIT responsibility regarding any single product shall be limited to original price paid for the product.

No Ekin Endüstriyel / MIT authorized distributor or any other person is authorized to make any amendment on product warranty and expose Ekin Endüstriyel / MIT apart from those submitted here expressly to any responsibility or liability.

Extended Product Warranty

Pumps, produced with Ekin Endüstriyel / MIT pump brand, are warranted against labor and fabrication faults for 2 years as of invoice date.

Repair period of the pumps is 20 business days, our company is not responsible for the products not delivered within 60 days. Period elapsed in repair is within the warranty period.In case of

conflict, consumer has liability to prove.

5 years: Ekin Endüstriyel gives warranty on spare part and labor supply.

5 -10 years: Ekin Endüstriyel gives only warranty on supplying spare part.

All written and visual data in this document reflect last product information current while they were printed. Ekin Endüstriyel reserves the right to make amendment without making prior notification at any time.

CERTIFICATES

EKİN ENDÜSTRİYEL

CERTIFICATE OF WARRANTY

The Document's Comfirmation Date And Number:
The use of this document has been authorized by T.C. Sanayi Ticaret Bakanlığı İl Müdürlüğü in accordance with the Law No 4077 on the Protection of Consumers and the Communiqué on the Implementation of the Guarantee Certificate put into effect based on this Law.

WARRANTY CONDITIONS

1. Warranty period starts from the delivery date of the goods.
2. All parts of the goods are covered by our company's warranty.
3. In case of malfunction of the goods within the warranty period, the time spent in the repair is added to the warranty period. The repair period of the goods is maximum 30 working days. This period starts from the date of notification to the service station of the defect goods. In the absence of service station, this period starts from the date of notification to the seller, dealer, agent, representative, importer,or manufacturer of the goods.
4. In case of malfunction of the goods within the warranty period due to material, workmanship or assembly defects, the goods will be repaired at no cost and no additional cost will be asked from the buyer under the name of changed part price or any other name.
5. Malfunctions arising from the use of the product in contravention of the provisions in the user manual are not covered by the warranty.
6. For the problems that may arise in relation to the warranty certificate can be applied to the Sanayi ve Ticaret Bakanlığı Tüketicinin ve Rekabetin Korunması Genel Müdürlüğü.

For the product that was sold to ..... LTD. ŞTİ. / AŞ / Legal Entity on ...../...../20..... with stated model, brand and serial number, all kinds of manufacturing and material defects are covered by the warranty of our company for two years.

Brand: _____

Model : _____

Serial No : _____

SELLER **DEALER** **END USER**

NOT: User mistakes are not covered by warranty.

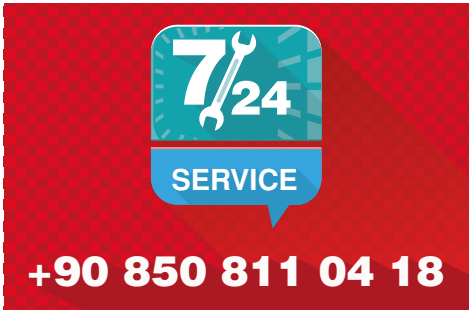
www.ekinendustriyel.com

Please keep this certificate!

PROFESSIONAL SYSTEM SOLUTION CENTER

From our MIT professional system solution center, you can get help with your problems with your pumps, heat exchangers and your system. Our solution center consisting of expert mechanical engineers will be happy to help you.

- Domestic hot water installations.
- Central and district heating systems.
- Milk, yoghurt, heating, cooling and pasteurization systems.
- Industrial cooling and heating systems.
- Oil cooling systems.
- Energy recovery systems.
- Pool heating systems.
- Steam installations.



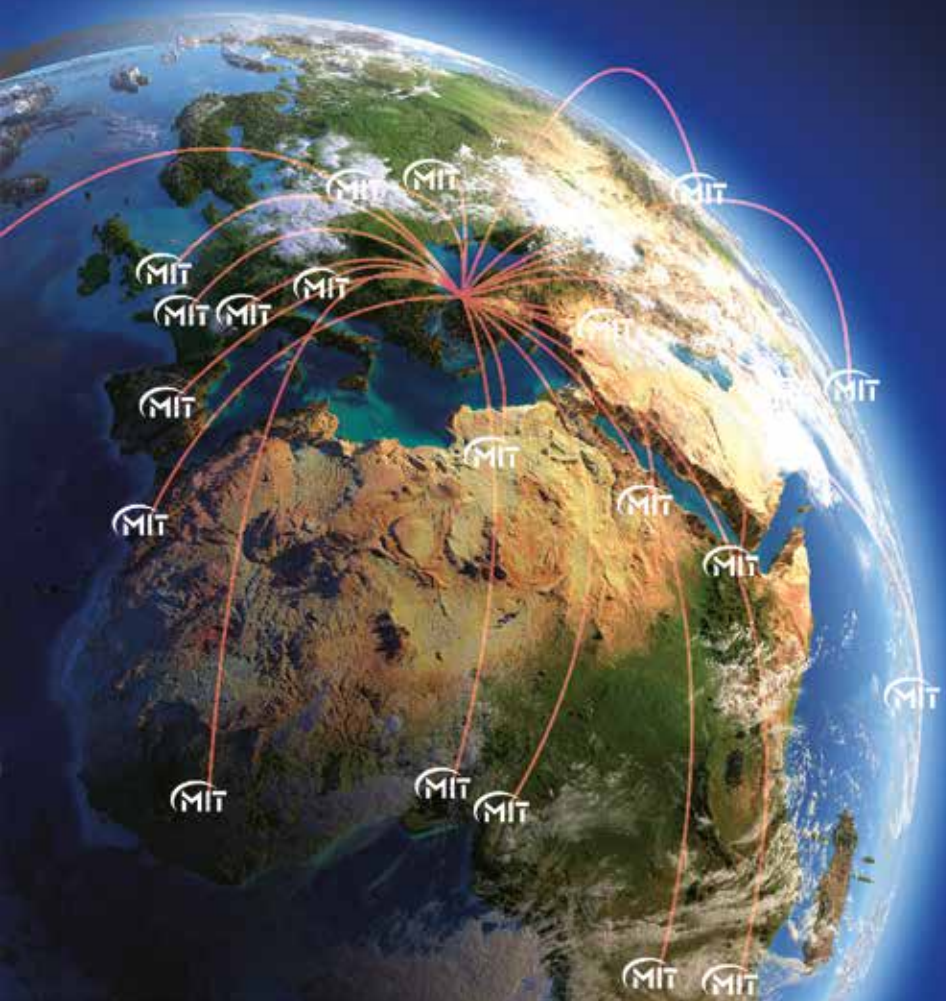
It is vital for your system to be designed and implemented correctly in the first installation in order to be able to operate at the desired capacity, smoothness and long life. For this reason, you can get first-hand the technical support you need during the installation phase of your system and the problems that may arise in the business; You can reach us **24 hours +90 (216) 232 24 12 in 7 days**.

We would like to reiterate that we will be happy to share our knowledge accumulated over many years with our valued customers in order for your system to work correctly and performance. Ekin will continue to be the best solution partner for you in all applications with all kinds of heating and cooling applications.

/ekinendustriyel

Follow us on social media...

Today; **135 points** in the world.



444 EKİN 3546

EKİN ENDÜSTRİYEL
Isıtma-Soğutma San. Tic. Ltd. Şti.

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