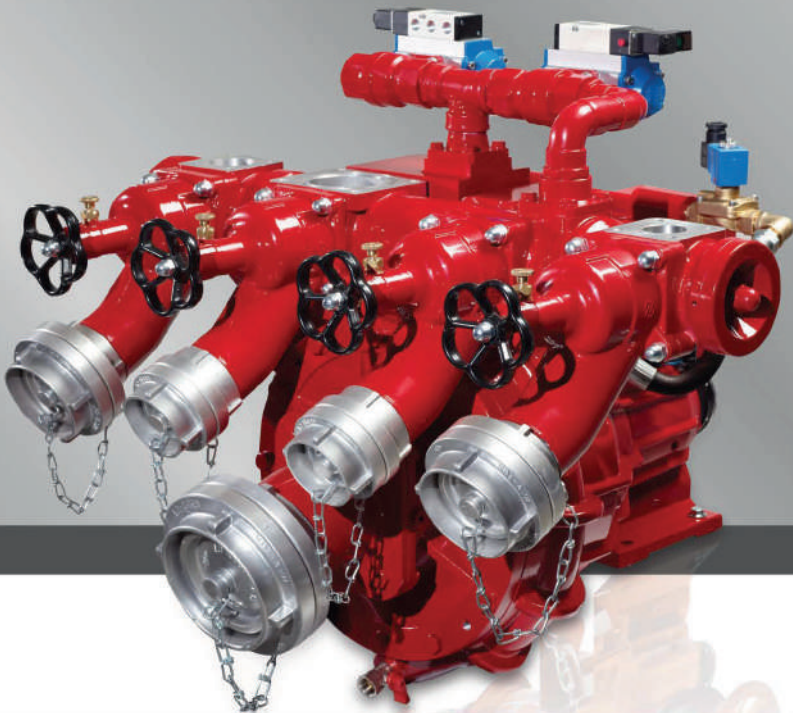


**SP-010-2000 & SP-010-3000
SP-010-2000-040-250 & SP-010-3000-040-250
Water Pump User Manual**



Normal & High Pressure Pump
for Fire Truck

Intended Use:

Centrifugal fire pumps manufactured by KOZMAKSAN are mostly manufactured for traditional fire-fighting services. Due to their design and installation, these centrifugal fire pumps can only be used for the following purposes:

- For fire extinguishing purposes with quenching water, standard and certified fire extinguishing installations and fire extinguisher additives;
- As a support or feed pump in order to increase the pressure for water transmission over long distances;
- As a bilge pump.

Other forms of use shall be counted out of the intended use.

The manufacturer shall not be responsible for any damage caused by unauthorized changes to the device, misuse of the product, or use for any purpose other than its intended use.

If the centrifugal fire pump is used for any purpose other than the one stated above, dangerous situations may arise in terms of property and life safety! Especially, any substance containing mineral, acid or alkali content should not be attempted to be delivered by a centrifugal fire pump! Do not operate the centrifugal fire pump in places where there is a risk of explosion!

The intended use also covers the operating, repair and maintenance conditions specified by the manufacturer. Each person to operate and maintain the pump must read and understand the following:

- User manual
- Safety rules
- Safety instructions under each section and article



WARNING!

To the knowledge of the manufacturer, the centrifugal fire pump has no erroneous or prohibited use.

Operating safety of the device can only be guaranteed only when the device is used for its intended purpose.

The user instructions should be safely stored for future use!

The user / operator should always keep the user instructions in an easily accessible place to avoid any misuse and damage to property and life, and to guarantee the smooth operation of the centrifugal fire pump!

All user instructions should always be available where the pump is used!

**Manufacturer's
Declaration :**

Within the scope of manufacturer's declaration (Applies to European Union countries and Turkey), we wish to draw attention to the following points:

In principle, only the products delivered by KOZMAKSAN at the producer facility are subject to our manufacturer's declaration. Apart from this, any parties or people who would replace a vehicle / device with additions, assemblies or conversions are considered to assume the title of manufacturer themselves.

The customer will be responsible for any sorts of additions and changes, so it will be the customer's (own) responsibility to determine if the vehicle / device complies with EU principles and to issue the necessary documents.

The same provisions will also apply if electrical and electronic systems are added later.

FOREWORD:

You have chosen fire-fighting pumps produced by **KOZMAKSAN**. Thank you for your trust in us.

The fire-fighting pumps produced by KOZMAKSAN are manufactured in a way to provide a safe and continuous operation guarantee under all kinds of working conditions for the highest working efficiency. Our products are not only harbor the highest technical features and the most sensitive production systems they also bear an aesthetic appearance in addition to their durability.

The user manual contains information regarding the installation, use and maintenance of the pump. Before putting the pump into, you must read the user manual and obtain the information in question.

User Manual:

The user manual is an important part of your centrifugal fire pump. In case you sell the pump to another user, do not be careless about giving the user manual to the new pump owner!

Please note that the user manuals of the frame and body panel manufacturers will also contain important instructions for the safe and trouble-free operation of the centrifugal fire pump!

Whatever happens, safety instructions must be strictly adhered to!

Our fire pumps comply with the relevant regulations and standards.

**Compliance and
Regulations:**

It is also necessary to comply with the generally valid guidelines, regulations and conditions, in particular with the fire service training conditions and accident prevention conditions related to the model in question.

Special Accessories:

Special accessories and additional equipment not included within the scope of normal delivery are also mentioned in the user manual.

The scope of delivery will always be determined by your order. So, the equipment and features of your pump may differ slightly from the descriptions and drawings here.

In case your pump has accessories that are not included in this manual, please contact **KOZMAKSAN**. Our customer services will provide you with information on proper use and maintenance.

Spare Parts List: In addition to this manual, a spare parts list suitable for the model of your pump will also be included in the supply of the centrifugal fire pump. You can easily find the necessary spare parts with the help of the diagrams of the parts in the spare parts list. Spare parts can be ordered directly from **KOZMAKSAN**.

Security Precautions

General:

To prevent any type of loss of life and property, read the user manual before starting the pump and learn the correct usage and maintenance methods of the centrifugal fire pump.

The centrifugal fire pump is manufactured with the latest technology and in accordance with the long-established technical safety regulations.

The pump should only be used in perfect working condition, in accordance with its intended use, with utmost attention to safety and risk considerations.

Malfunctions that may adversely affect security should be rectified immediately and, if possible, by way of KOZMAKSAN customer service.

The centrifugal fire pump should only be used by firefighters or similarly trained personnel for fire trucks.

In addition to the training to be provided by experienced and trained firefighters, continuous exercises with centrifugal fire pumps will also increase the possibility of safe use.

Permanent Sound Pressure Level:

The A class equivalent permanent sound pressure level of the pump mainly depends on the engine of the fire truck on which the pump will be installed. Therefore, at this point, a value cannot be given for the permanent sound pressure level.

For this data, kindly refer to the fire truck user manual.

Exhaust Gases:

During the operation of the centrifugal fire pump, toxic exhaust gases are produced by the internal combustion engine of the fire truck. These gases can cause serious health problems!

The centrifugal fire pump should not be operated in closed, unventilated areas.

Risk of death due to carbon dioxide (CO) poisoning!

The exhaust hose must always be connected! Exhaust gases must be disposed of to ensure that the gas releases and hot exhaust hoses do not damage anyone.

The relevant regulations at the application site must be complied with.

Safety Devices:

The centrifugal fire pump should be activated only after all safety devices have been installed and set in safety locations.

Before removing the safety devices, turn off the engine first and then the drive linkage and thus cutting the starter circuit!

Protective Clothing: Use firefighting protective clothing and safety equipment, which are widely accepted in fire brigade services, in order to protect from the dangers encountered during exercises and duties within the scope of fire services.

First things first, personal protective equipment should include the following:

- Protective firefighter outfit
- Firefighter neck protector
- Firefighter gloves
- Protective firefighting boots
- Fire belt (hook belt)

Pump Usage: The pump should only be used by mechanically trained people or other personnel who have gone through a similar training for fire trucks.

Do not operate the centrifugal fire pump unless the operating stages are fully understood. Please read the user manual and safety instructions carefully.

During the exercises, carry out each step of use repeatedly.
One exercise is not enough!

Pump mounting / dismounting should only be performed when the engine idles.

In case you turn it off or on with the flywheel, hold the pressure valves firmly. Do not extend your fingers into the flywheel attachments - risk of injury!

Avoid sudden pressure spikes. Therefore, do not increase the speed in an uncontrolled way and open or close the cutting devices slowly. When the pump is running, open the shutoff valves only if additional lines are added.

Do not operate the pump at high pressure while the pressure outlets are closed.

Otherwise, the pump body and the pumped liquid will become extremely hot.

If the pump is hot only in the application with water, the water should be changed through the tank filling line. When the foam is used, foam renewal should be performed from a consumption point.

When pumping from the open water source, attach the strainer and suction protective basket apparatus to the suction line.

Never try to remove the suction filter on the pump suction connection while the pump is operating.

If the centrifugal fire pump is installed on a sloping ground, a firm stop must be maintained at the pump control point. All operating devices must be easily accessible and all control devices must be easily visible!

The areas of duties and usage should be adequately illuminated and the necessary security measures should be taken.

Check the pipes and hoses in the pump system regularly for damage and to ensure they are firmly seated.

The pump should not be operated when dry. The pump, if operated when dry, can burn the packing and damage it. Water must be added to the pump manually before operating.

The fluid leaking under high pressure can cause serious injury!

Always keep a sufficient safety distance between the extinguishing agent current and the overhead power lines!

Any contact of the current of fire extinguishing agents with the overhead power line may cause death risk!

**Repair and
Maintenance :**

Repair and maintenance works can only be carried out by personnel who understand these works, have expert knowledge of these works and are aware of the safety and accident prevention legislations.

Park the fire truck safely and take the necessary measures to prevent it from skidding!

Turn off the engine of the fire truck and cut the starter circuit during maintenance work!

**Safety
Installation:**

If it is necessary to remove the safety installation and devices for repair and maintenance work, they should be replaced and the function of the replaced installation should be checked as soon as the work is completed.

Please test the centrifugal fire pump through regular visual and functional inspections!

In these inspections, do comply with the maintenance frequency specified in this user manual.

Use only the lubricants and auxiliaries recommended in this manual.

Spare Parts:

If it is necessary to replace parts within the scope of repair and maintenance works to be performed on the centrifugal fire pump, only the original spare parts manufactured by KOZMAKSAN should be used.

The use of spare parts and accessories that are not produced by KOZMAKSAN and that have not been checked and approved by KOZMAKSAN may decrease the usage safety by negatively affecting the design-specific features or operating efficiency of the device. Therefore, for safety reasons, only the spare parts manufactured by KOZMAKSAN should be used.

The reliability, safety and suitability of any parts manufactured by third-parties cannot be assessed by KOZMAKSAN, despite the ongoing market reviews and, even in certain cases, if they are approved by TÜV (technical inspection agency) or by any other official parties.

KOZMAKSAN company will not be held responsible for liabilities related to any loss of property or life resulting from the use of the parts, accessories and attachments made by any third parties.

**Customer
Services:**

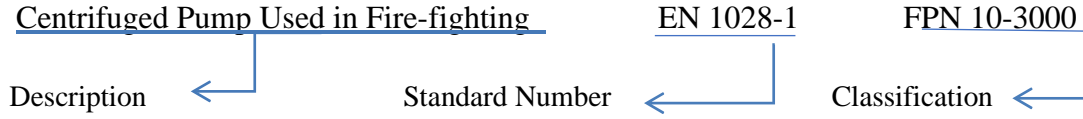
In case any repair or maintenance problem arises during the use of the centrifugal fire pump, please contact our customer service.

**Transport and
Interim Storage:**

A pump mounted on a wooden pallet and covered with four-wall plywood is provided. This protection is suitable for standard handling methods of forklift trucks for transport. More than one pump should not be placed above a pump. The four-walled cardboard box is not suitable for outdoor storage. When leaving the factory, the pump is sprayed internally with a moisture inhibitor. If the pump is stored for a long time (6 months and more), this application is required before use. Full inspection should be made on the receipt of the pump. Should any damage occur, please contact KOZMAKSAN.

Type Illustration:

Illustration in accordance with TS EN 2018



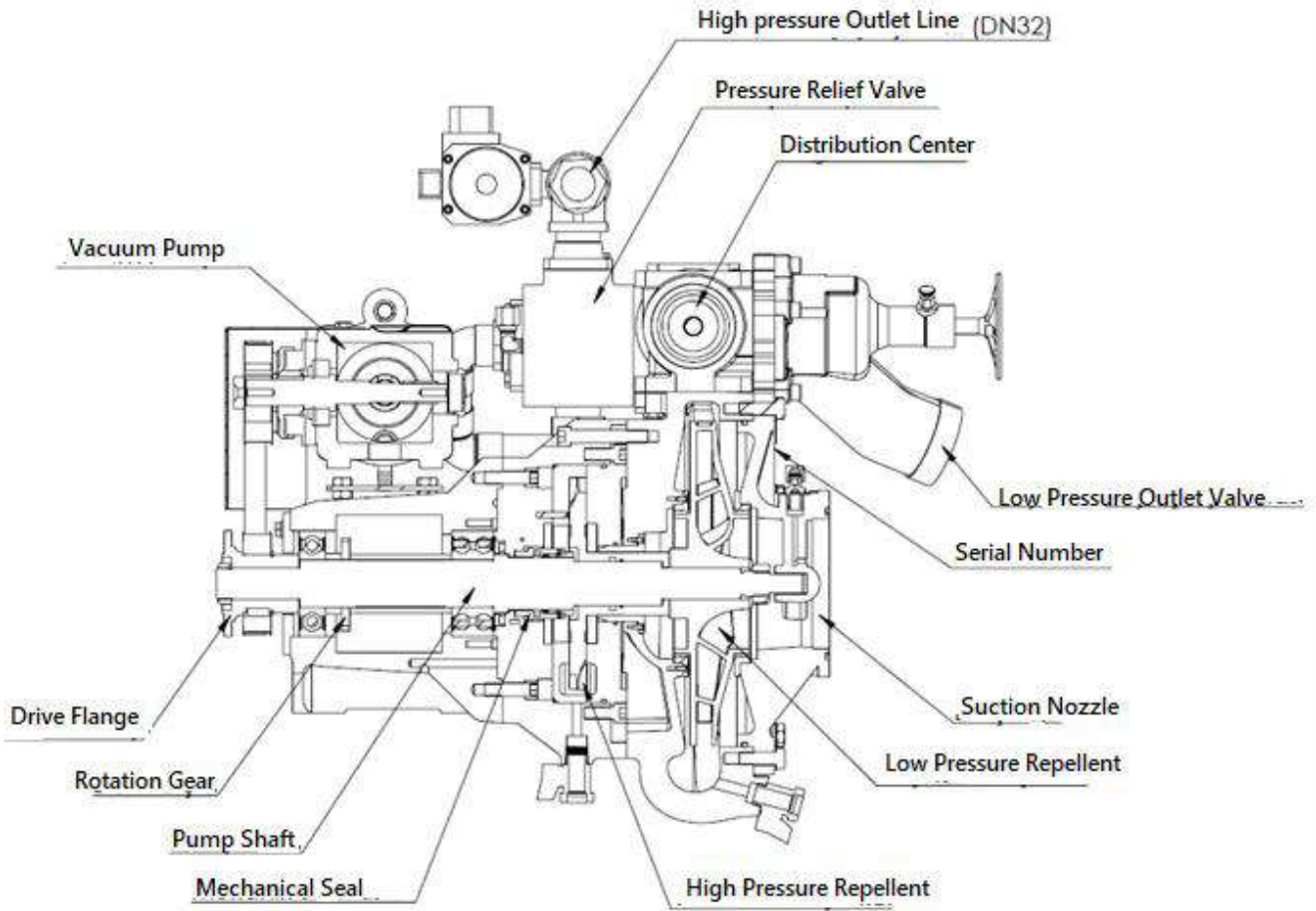
Pump Description:

Specifications:

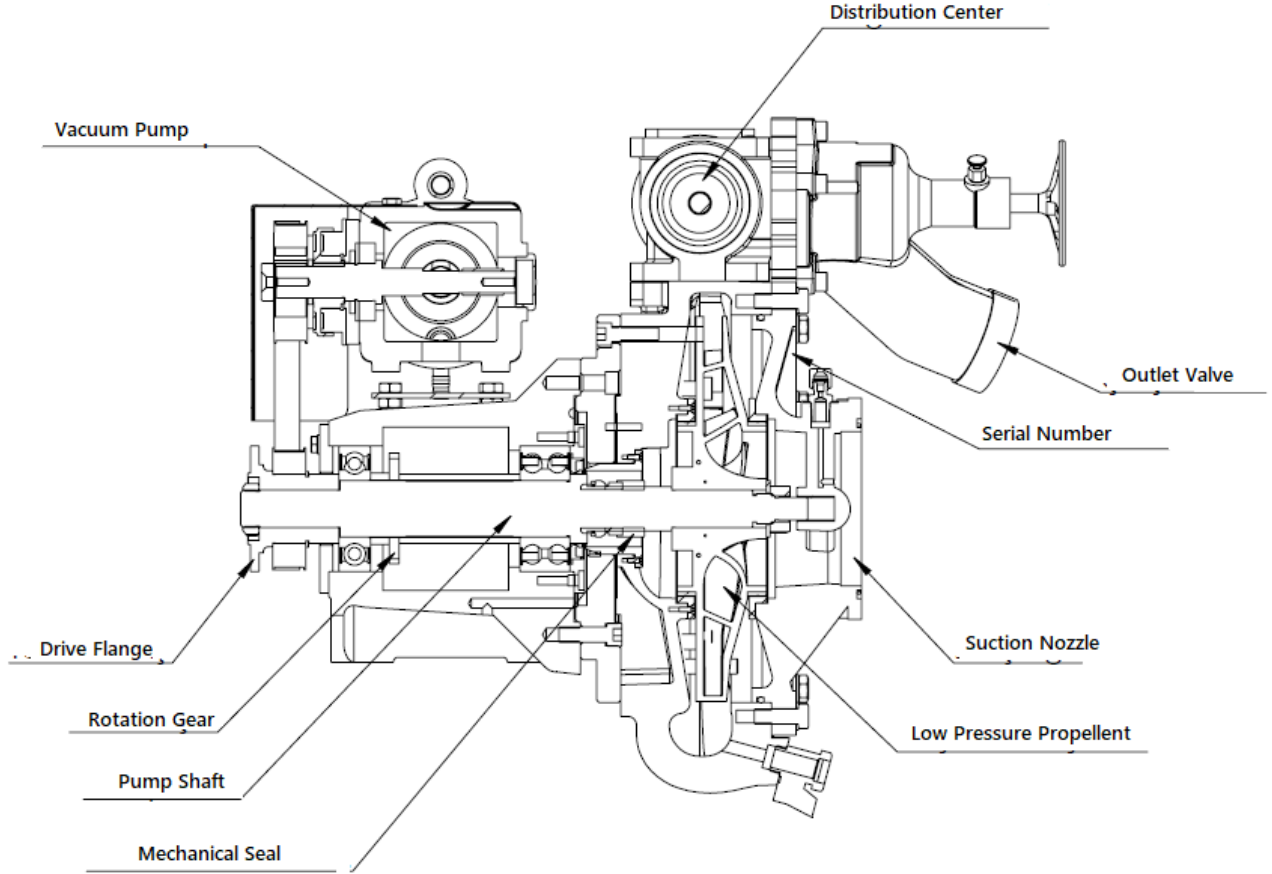
	10-2000	10-2000-040-250	10-3000	10-3000-040-250
Normal Pressure Flow	1900 lt/dk (lpm)		2700 lt/dk (lpm)	
Normal Pressure	10 bar			
Normal Pump Speed	3000 d/dk (rpm)			
Maximum Flow	2200 lt/dk (lpm)		3300 lt/dk (lpm)	
Maximum Pressure	17 bar	55 bar	17 bar	55 bar
Minimum Suction Rate	2500 d/dk (rpm)			
Weight	82 kg	125 kg	82 kg	125 kg
Maximum Pump Speed	3200 d/dk (rpm)			
Suction Rate 7,5 m Depth	30 seconds			
Pump Rotation Direction	Clockwise			
Running Temperature	-15 °C / +55 °C			

Pump Type EN 1028	Rated Distribution pressure PN bar	Rated Distribution speed L/min	Rated speed Min ⁻¹ nN	Dynamic Experiment Pressure Ppbar	Maximum Speed n0 Min ⁻¹	Limit Pressure Palim bar	Closure Pressure Pa0 bar
10-2000	10	2000	3000	10	3200	17	16
10-2000-040-250	10	2000	3000	22,5	3200	17	16
10-3000	10	3000	3000	10	3200	17	16
10-3000-040-250	10	3000	3000	22,5	3200	17	16

SP-010-2000-040-250/ SP-010-3000-040-250 (Normal and High Pressure Pump)



SP-010-2000 / SP-010-3000(Normal Pressure Pump)



MOUNTING

1. Before mounting, check the pump for any damage.
2. Place the pump in the area where you will install it using the mounting holes and connect it to the shaft of the vehicle. While doing this installation, pay attention to the connection angles in the shaft catalog. Any faults in the connection angles will, within time, cause disintegration in the bearings of the pump and the pump will become unusable after this process.
3. Preparation system. Piston conditioner type:

Connect the two flexible pipes (25 mm 1 inch inside) to separate the connection points in each preparator. You can drain the hose by draining it to the ground. If no foam system is used, you can hose the drain back to the main tank or hose it to the separate tank.



Piston preparation outlet - Connect a 25 mm (1 inch) flexible tube. The pipe should be long enough to give the outlet a safe distance from the operator.

Coupling: It is the element that transfers the rotational movement and thus the moment coming from the shaft of the vehicle to the pump.

Pump mounting holes

Separation of the preparer: It is the system that turns off the vacuum pump once the system reaches the desired pressure.



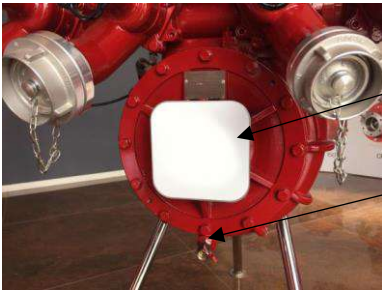
The pressure sensor, which can be adjusted in the range of 0.5-2 bar, sends signals to the solenoid valve and clutch once the system reaches the desired pressure. As a result of the signal it sends, the vacuum is disabled.
Note: This cable is provided separately, not plugged in.

4. Suction System, Tank Connection:

For pumps with SP-010-2000/SP-010-3000 ve SP-010-2000-040-250/ SP-010-3000-040-250 standards for suction mouth 5", installation of 5" stainless steel pipe should be preferred. Connections to be made for the pump to fill the main tank and to draw water from the main tank must be made in a way that would not damage the pump. In order to prevent foreign substances from entering the suction nozzle of the pump, a filtering system should be made in the suction part. Otherwise, you may damage the pump.

5. Pump discharge:

½" mini ball valve is used for pump discharge. When the pump is not working, pay close attention not to leave any water in it. ½" mini ball valve can be used for the discharge of water.



5" suction inlet

Rp ½ inch:
Drainage valve and pipe
can be installed

6. Filter:

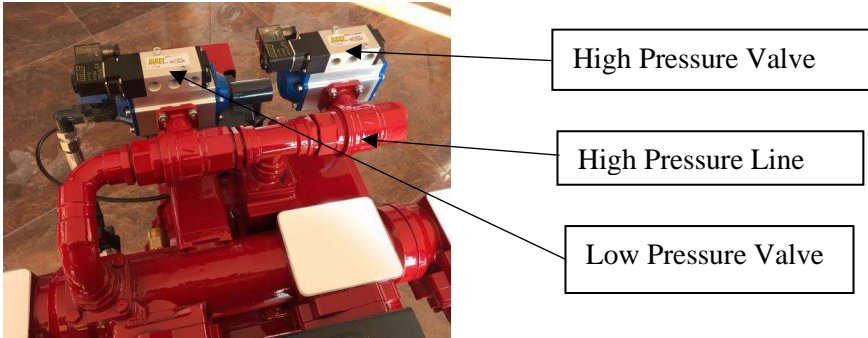
The water entering the high-pressure line must pass through a fine filter. Otherwise, the fan and the mechanical seal in the high-pressure line can be damaged.



High pressure filter
38 mm A/F (1 1 / 4 inches)

7. High Pressure Pneumatic Valve with Actuator

The valves at the top of the system operate in reverse proportion to each other. The valve in the low-pressure line is open while the valve in the high-pressure line is closed. The same is true for the otherwise, as well. When the low-pressure line is closed, high pressure is activated. The outlet in the high-pressure line is 1 ¼” according to EN 1028 standards. However, this outlet can be changed using a record and the number of outlets can be increased.



8. Control Panel - Optional Feature

It is possible to see all desired values on the optional control panel. These values are as follows:



- Low Pressure Indicator Gauge
- High Pressure Indicator Gauge
- Vacuum Indicator Gauge
- Emergency Stop Button
- Rotation Indicator Gauge
- Water Level Indicator
- Foam Level Indicator
- Start / Stop Button
- Vacuum Button
- Gas +/- Button
- High Pressure Button

Only normal pressure (non-high pressure) pumps do not have high pressure gauge clock and high-pressure button due to lack of high-pressure line.

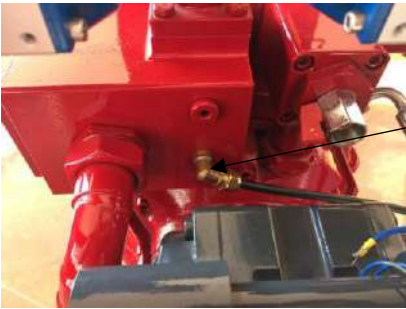
9. Pressure Meter:

Low Pressure: When the high-pressure line is disabled, the water continues its movement in the low-pressure line. The pressure of the water in this line can be easily controlled with the help of the record connection points on the collector part. Pressure control can be done with the help of glycerin manometers.



Normal Pressure
Measuring Point

High Pressure: The determination of the pressure of the water in the high-pressure line can be made thanks to the record connection on the pressure safety file. Pressure control can be done by connecting the other end of the hose to the glycerin manometer.



Normal Pressure
Measuring Point

Vacuum: The vacuum pump acts as a pioneer in the first movement of the pump suction. When the vacuum pump sucks the system, a record connection has been made to the suction cover to ensure pressure control.



Normal Pressure
Measuring Point

10. Thermal Valve: The high temperature water entering or forming in the system must be drained so as not to damage the system. This valve has a 3/4" record connection. The installation should be pulled away from the operator, as high temperature water can create a hazard. If foam is not used, it can be given to the main tank. Our pump uses a thermal valve to open fully at 70 ° C.



Normal Pressure
Measuring Point

11. Speed Sensor: The working speed of the pump is 3000 rpm. It can be operated at a maximum of 3200 RPM. In order to control the speed, a speed gear is placed on the shaft bearing body. As shown in the figure, speed detection can be made by placing the speed sensor on the 1/2" record connection part on the body. The speed sensor must be connected to a separate tachometer.



Speed Sensor
Connection Point

12. Pressure Safety File: The pump has 40 bar working pressure at high pressure. The maximum pressure is 55 bar. A pressure above 40 bar can damage not only the pump but also the operator. In order to prevent loss of life and property, high pressure pumps have pressure safety logs. The file sends the water back to the scroll at pressures above 40 bar. The water to the snail enters the system again.



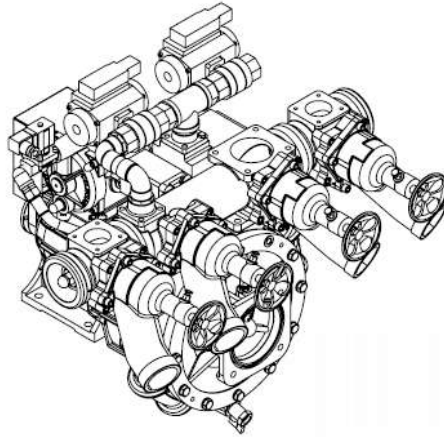
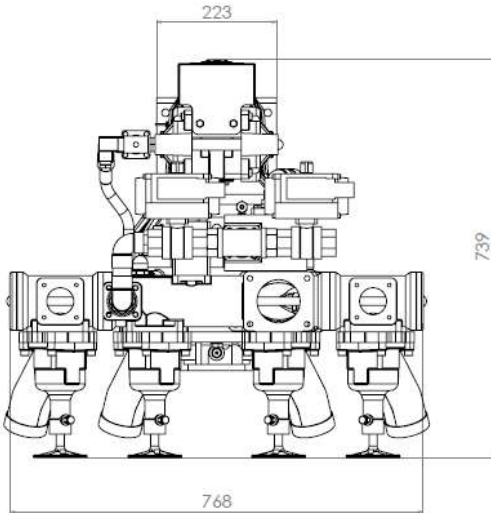
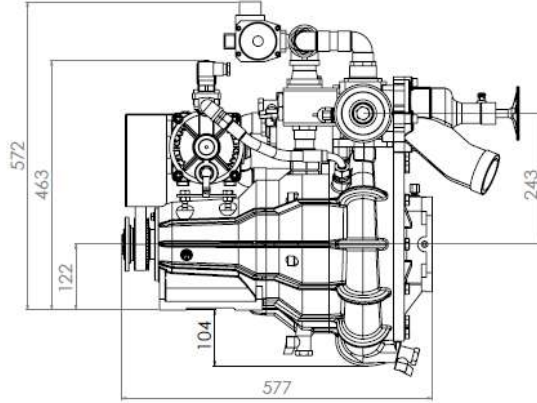
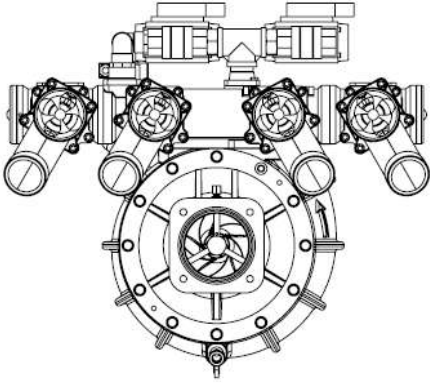
Pressure Safety File

High Pressure Discharge Line

13. Pump Collector Outlet: The outlet of the pump's low-pressure distributor (collector) is taken with the help of 2 ½" valves. These valves are available as angular, straight or double flanged. In addition, there are options with 2 or 4 outlets. There are also record connection options for our valves that can adapt to all kinds of record connections.

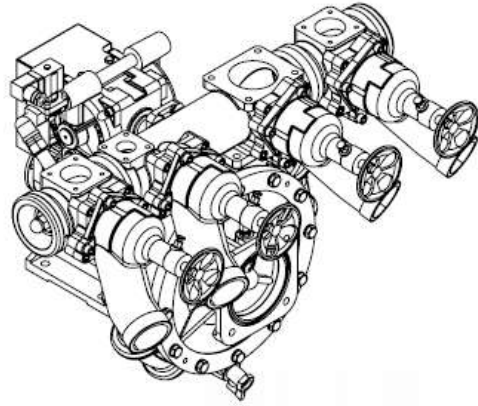
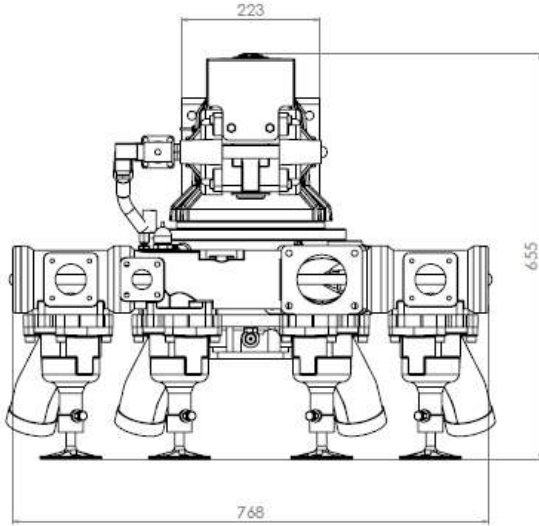
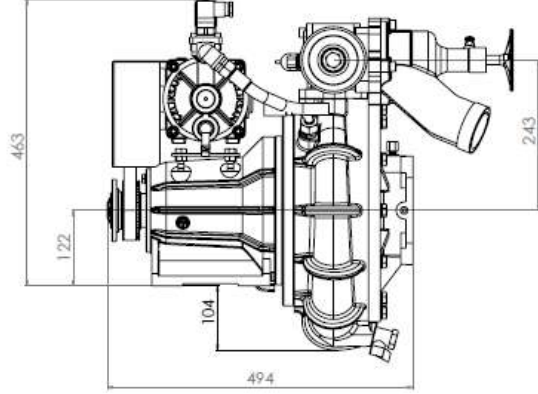
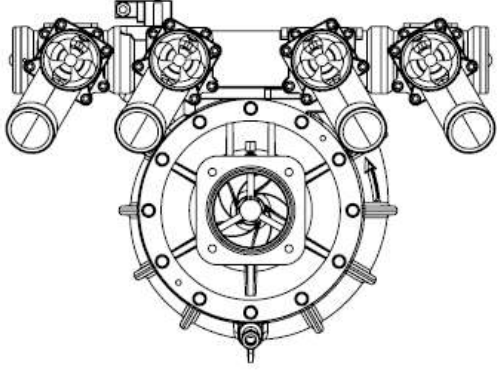


SP-010-2000-040-250/ SP-010-3000-040-250



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SP-010-2000/ SP-010-3000



ACTIVATION

Make sure the system is safe after completing the installation by following the installation instructions. Check that all piping is connected and secure.

Make sure that the pump is not out in the open and the system is not vented. Otherwise, there will be no pressure in the pump.

Turn off the shunt valves on the distributor (collector) line.

Make sure there is water and it is connected.

Make sure there is power and it's connected.

Check the electricity and air in the system. Make sure the electrical parts are working properly.

Make sure that the indicator gauges are installed correctly.

If the system will make a vacuum from an outside tank, make sure that the tank to be vacuumed is below the suction nozzle level of the pump. Otherwise, it will not vacuum.

Start the vehicle, activate the power take-off, and start the pump.

Manual Preparation:

Press the vacuum button to activate the preparative. When the vacuum button is pressed, the vacuum pump is activated with the help of the clutch. After the vacuum pump discharges the air in the system, it starts the process of vacuuming the water.

NOTE: If the preparation is successful, the preparators will leave on their own.

If the pressure value specified in the pressure switch is not available in the system, the vacuum button is pressed until the pump pressure rises above the desired value in the pressure switch.

If it falls below the desired value, the preparators will not be activated unless the vacuum button is pressed.

Preparation is not required if there is water supplied from the pressurized source.

NOTE: Pay attention to the suction lift. Do not exceed 7.5 meters maximum.

High Pressure Process:

Press the high-pressure button to activate the high-pressure line. Leave the pump at low pressure if no need rises. This pump will reduce power demand and burn less fuel. In addition, absorption and noise will be reduced.

Turn-off

Return to idle speed before the pump is disconnected. Disable the power take-off and stop the pump. Use 1/2" mini ball valves to discharge the water from the pump.

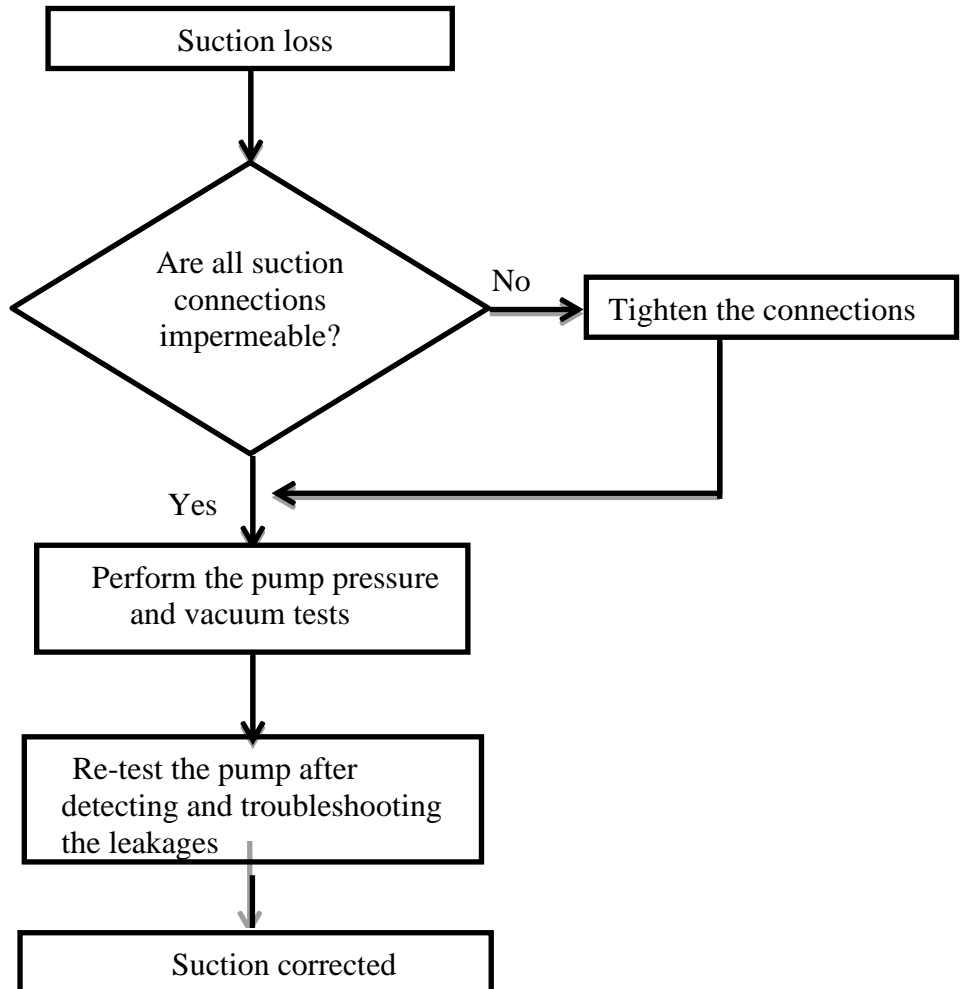
MAINTENANCE

MAINTENANCE PLACE	MAINTENANCE INTERVAL	MAINTENANCE METHOD
Pump Body	After each use	Spray the pump with clean water
Pump Body	After each use	Drain the water in the pump
Suction Nozzle Filter	15 Days	Clean the filter by spraying clean water
Pump Shaft Front Bearing	1 Month	Lubricate with grease
High Pressure Filter	1 Month	Remove the filter from the bed and clean it by spraying with clean water.
Pins and Cap Nut	1 Month	Check tightness
Shaft Coupling	1 Month	Check tightness
Vacuum Pump	1 Month	Check for leaks with a dry vacuum test

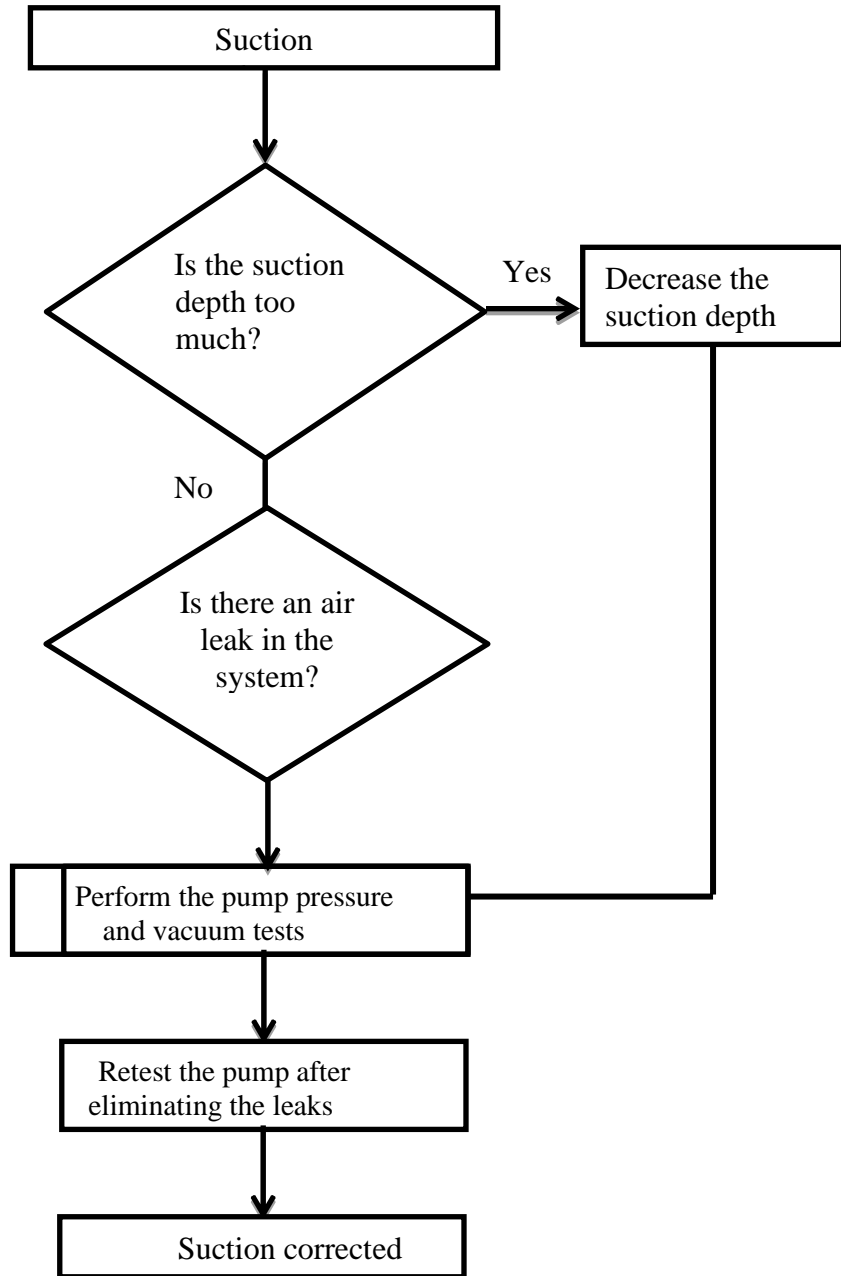
TROUBLESHOOTING

The following scenarios can take place:

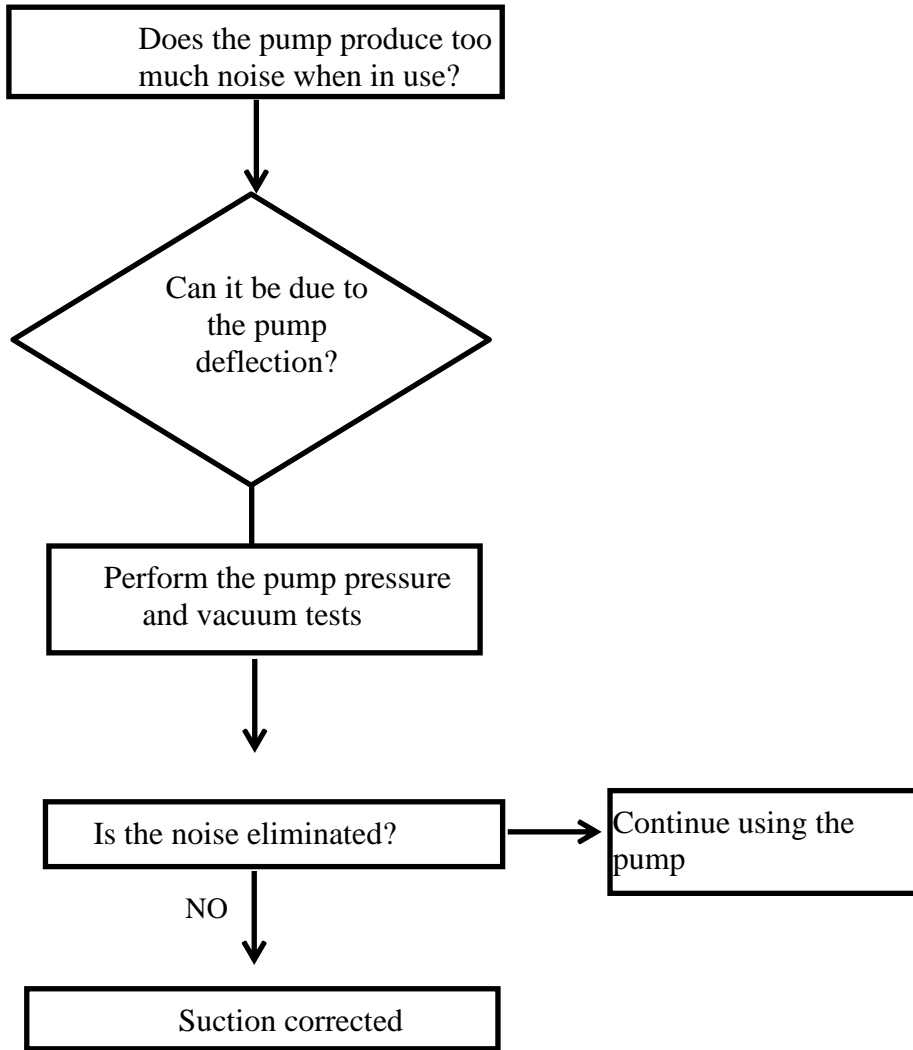
Suction Loss



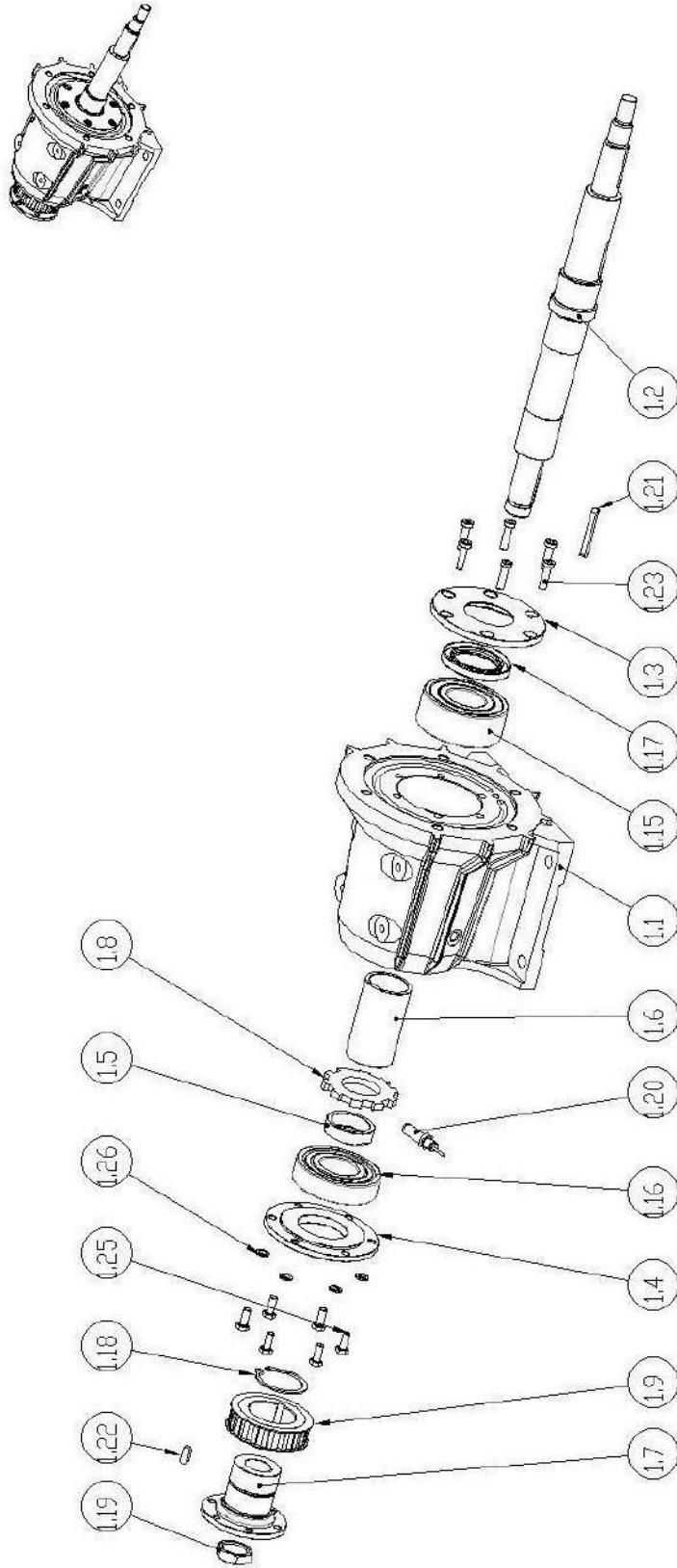
Suction Loss

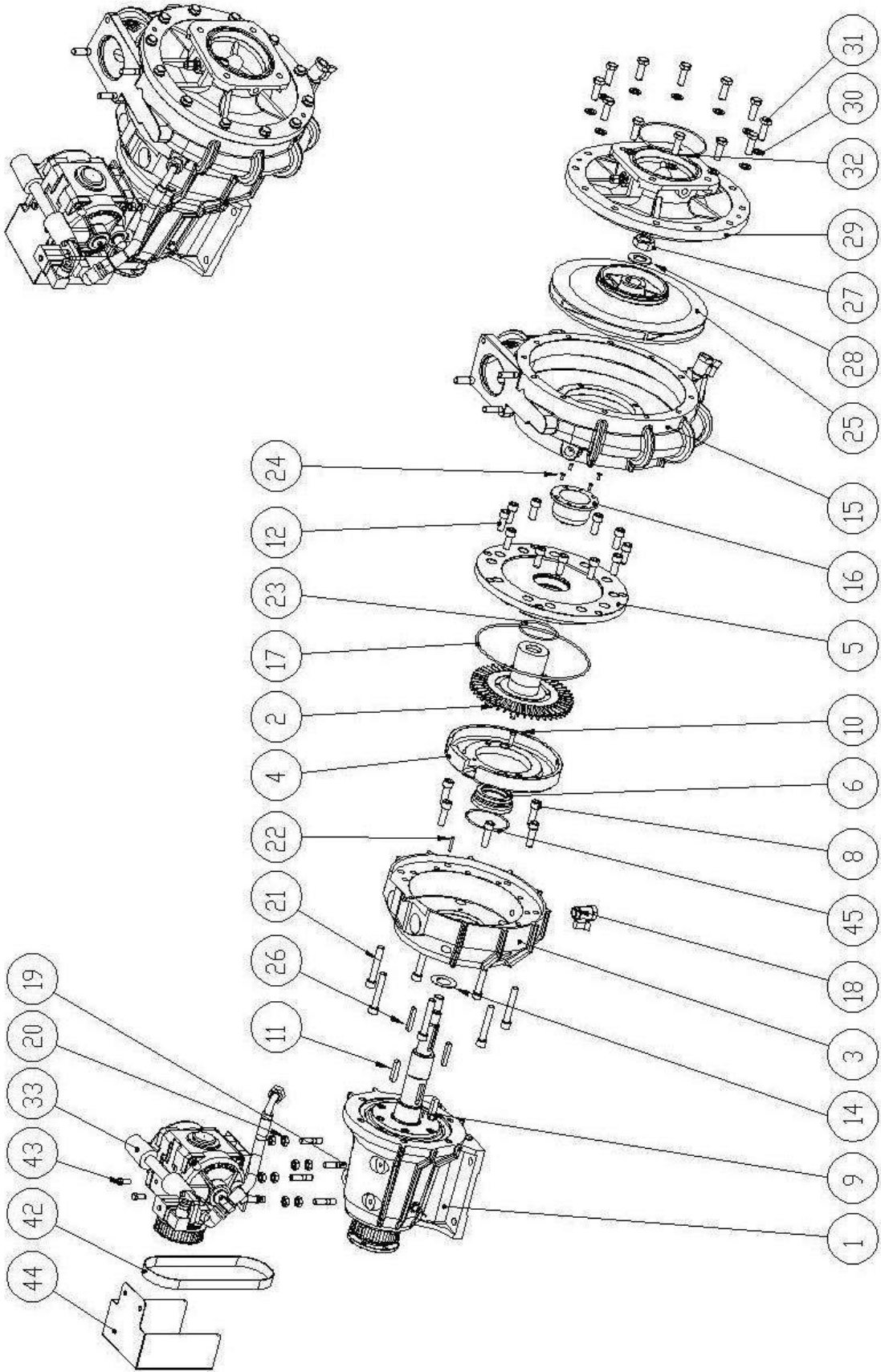


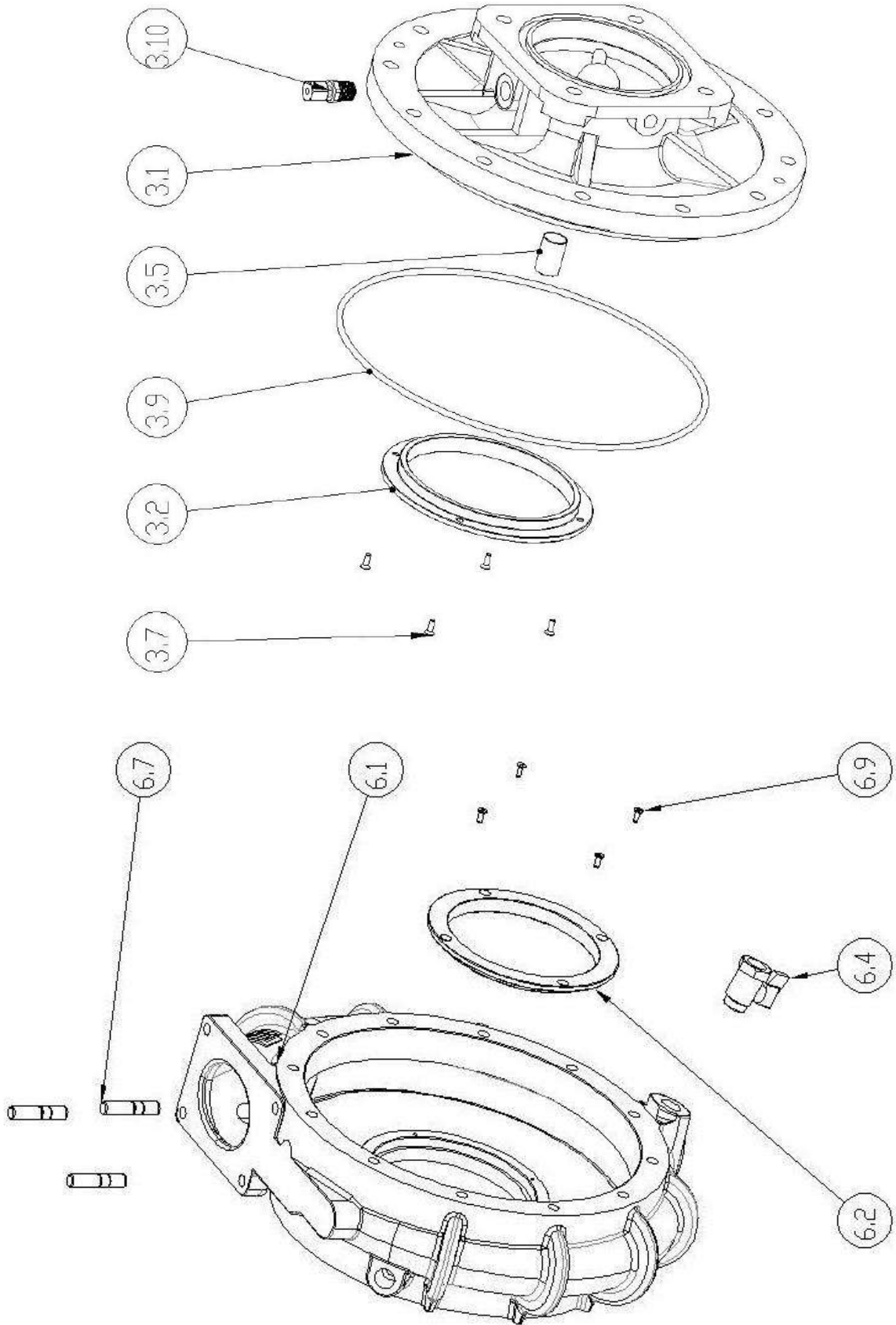
Deflection

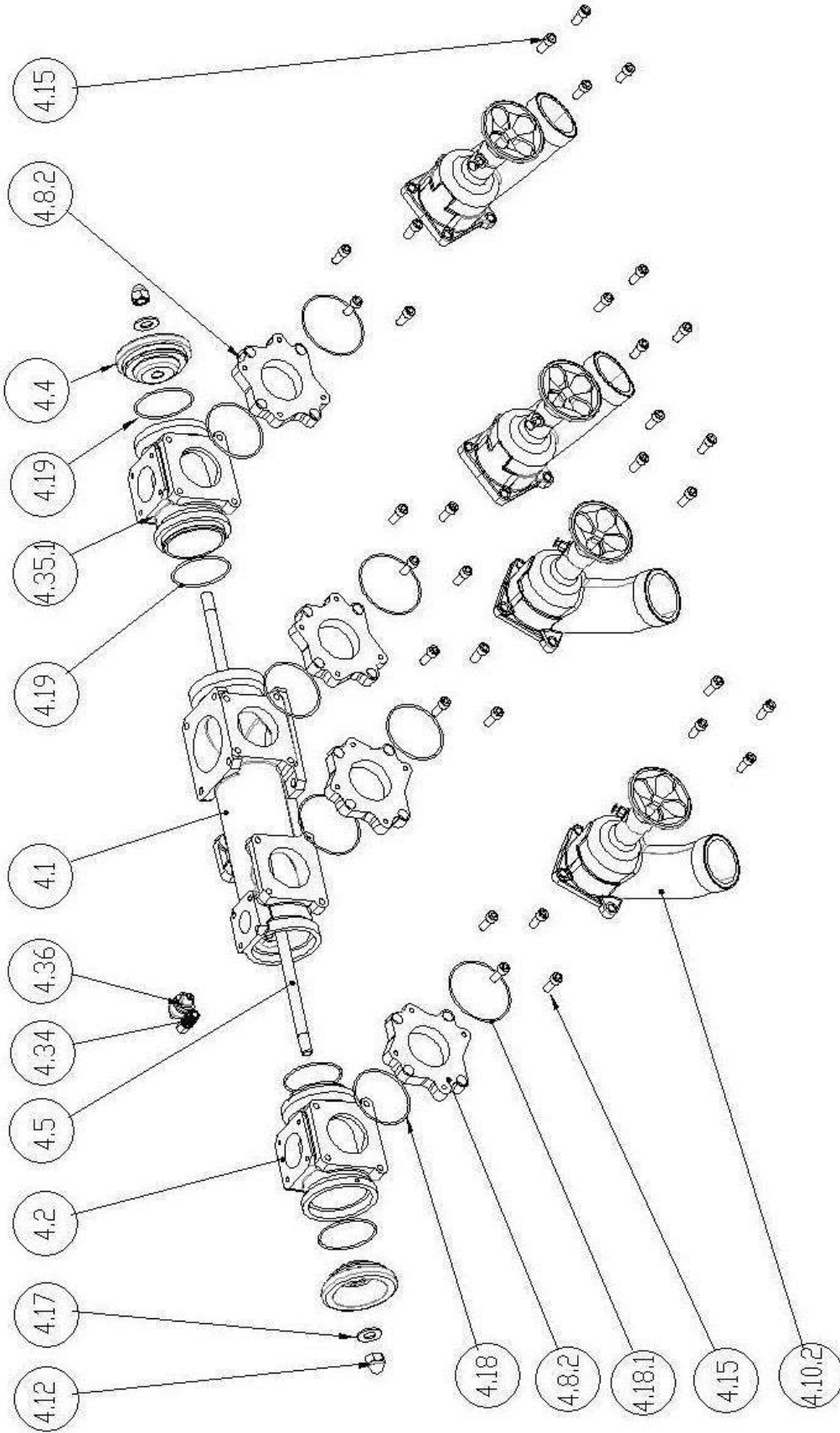


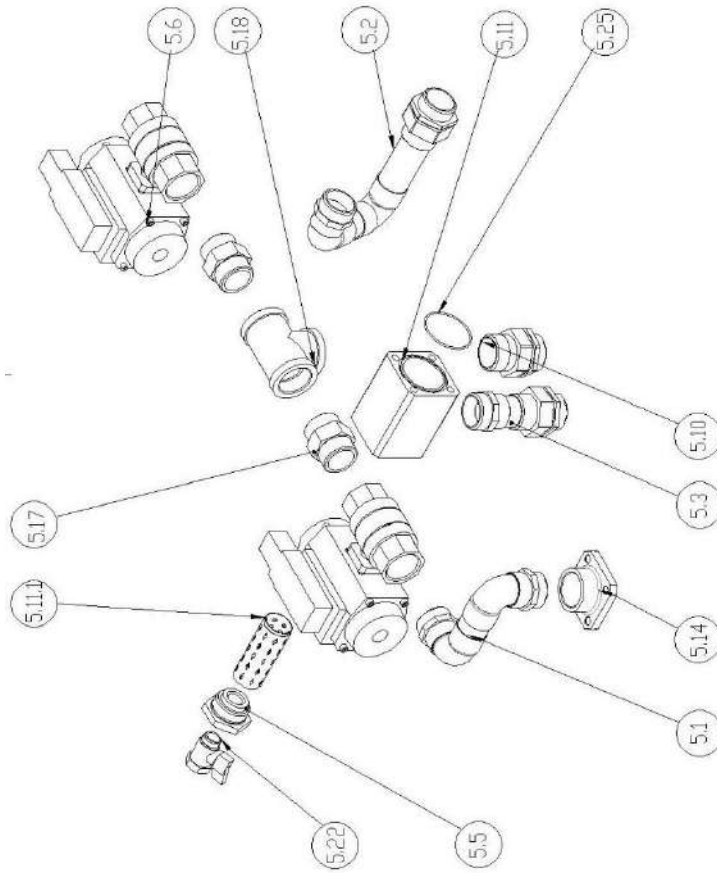
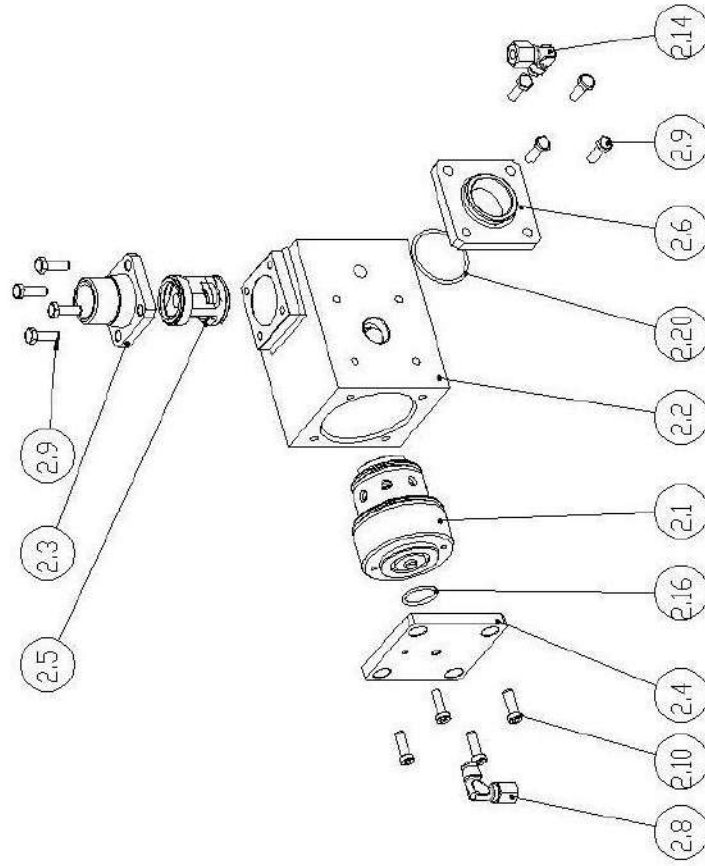
SP-010-2000 / SP-010-3000 Spare Parts List

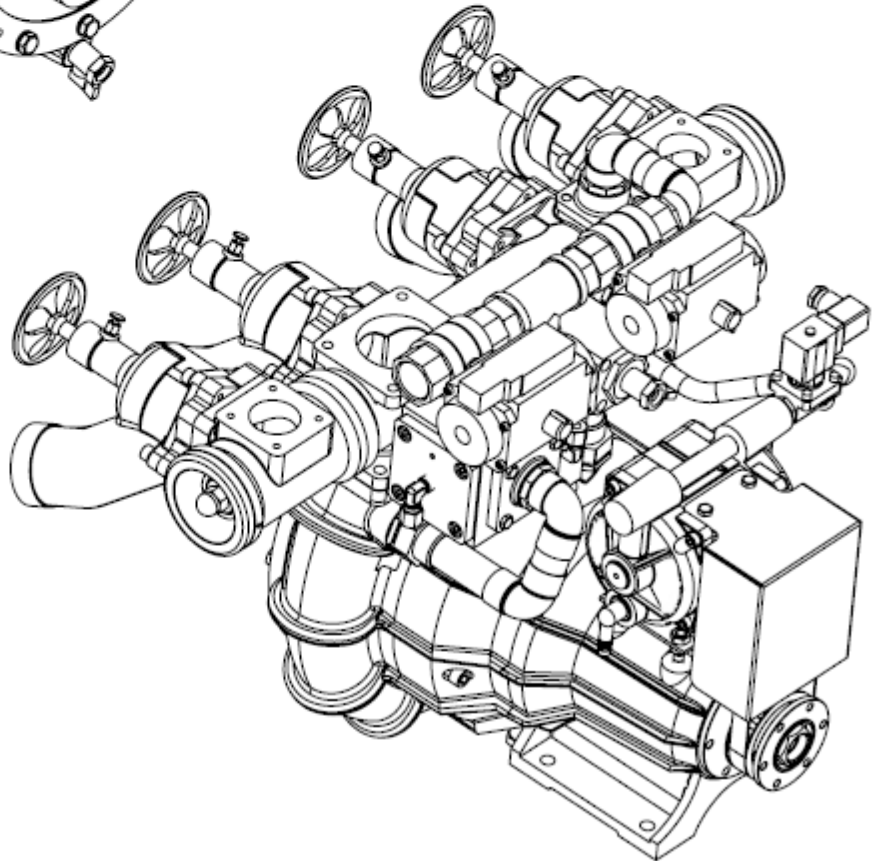
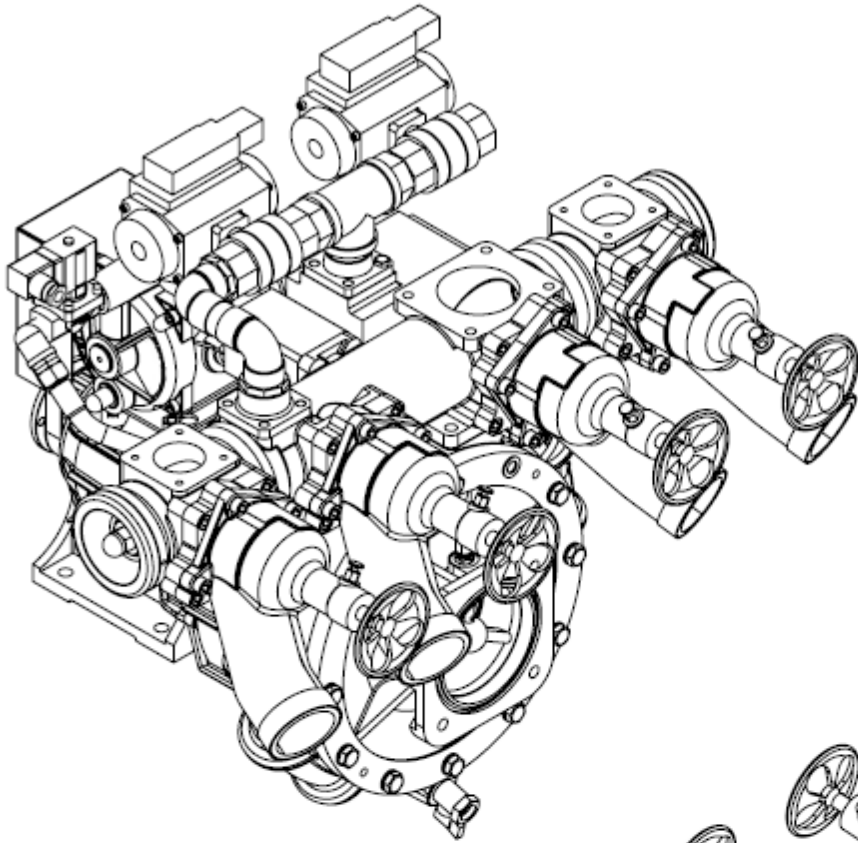












SP-010-2000-040-250/ SP-010-3000-040-250 Spare Parts List

Number	Part Name	Piece(s)
1	Body	1
2	High Pressure Fan	1
3	High Pressure Body	1
4	High Pressure Flange	1
5	High Pressure Flange 2	1
6	Mechanical Seal	1
8	M10x40 Allen screw	6
9	Seal Pin	1
10	M8x35 Allen screw	2
11	Wedge	2
12	M12x30 Allen screw	12
14	Adjusting Shim	1-3
15	Scroll	1
16	Chrome Bedding	1
17	O-Ring	1
18	½” Mini Ball Valve	1
19	M10x50 Tap Bolt	4
20	M10 Ring Nut	8
21	M12x80 Allen screw	7
22	Pin	1
23	O-Ring	1
24	M4x16 Philips Head Screw	4
25	Normal Pressure Fan	1
26	Wedge	2
27	M24 Ring Nut	1
28	M24 Washer	1
29	Suction Cover	1
30	M12 Washer	12
31	M12x40 Knurled-head screw	12
32	O-Ring	1
33	Vacuum Pump	1

42	Timing Belt	1
43	M8x20 Knurled-head Screw	2
44	Vacuum Cover Sheet	1
45	O-Ring	1

Number	Part name	Piece (-s)
1.1	Body	1
1.2	Axle	1
1.3	Lock plate for ball bearing	1
1.4	Lock plate for ball bearing	1
1.5	Small Spacer	1
1.6	Big Spacer	1
1.7	Coupling	1
1.8	Rotation Gear	1
1.9	Timing axle-pulley	1
1.15	3309 Ball bearing	1
1.16	6309 Ball bearing	1
1.17	Oil Seal	1
1.18	Snap ring	1
1.19	M30 Ring nut	1
1.20	Speed Sensor	1
1.21	Wedge	1
1.22	Wedge	1
1.23	M6x25 Allen screw	6
1.25	M8x35 Allen screw	6
1.26	M8 Washer	6

Number	Part Name	Piece (s)
2.1	Pressure Safety Valve	1
2.2	Pressure Safety File	1
2.3	Check Valve Cover	1
2.4	Safety Valve Cover	1
2.5	Check valve	1
2.6	Safety file outlet cover	1
2.8	¼” Pipe Bend	1
2.9	M8x25 Knurled-head screw	8
2.10	M8x25 Allen screw	4
2.14	¼” Pie Bend	1
2.16	O-Ring	1
2.20	O-Ring	1

Number	Part name	Pieces
3.1	Suction Cover	1
3.2	Centering Flange	1
3.5	Pap Bushing	1
3.7	M4x16 Philips Head Screw	4
3.9	O-Ring	1
3.10	¼” Nipple	1

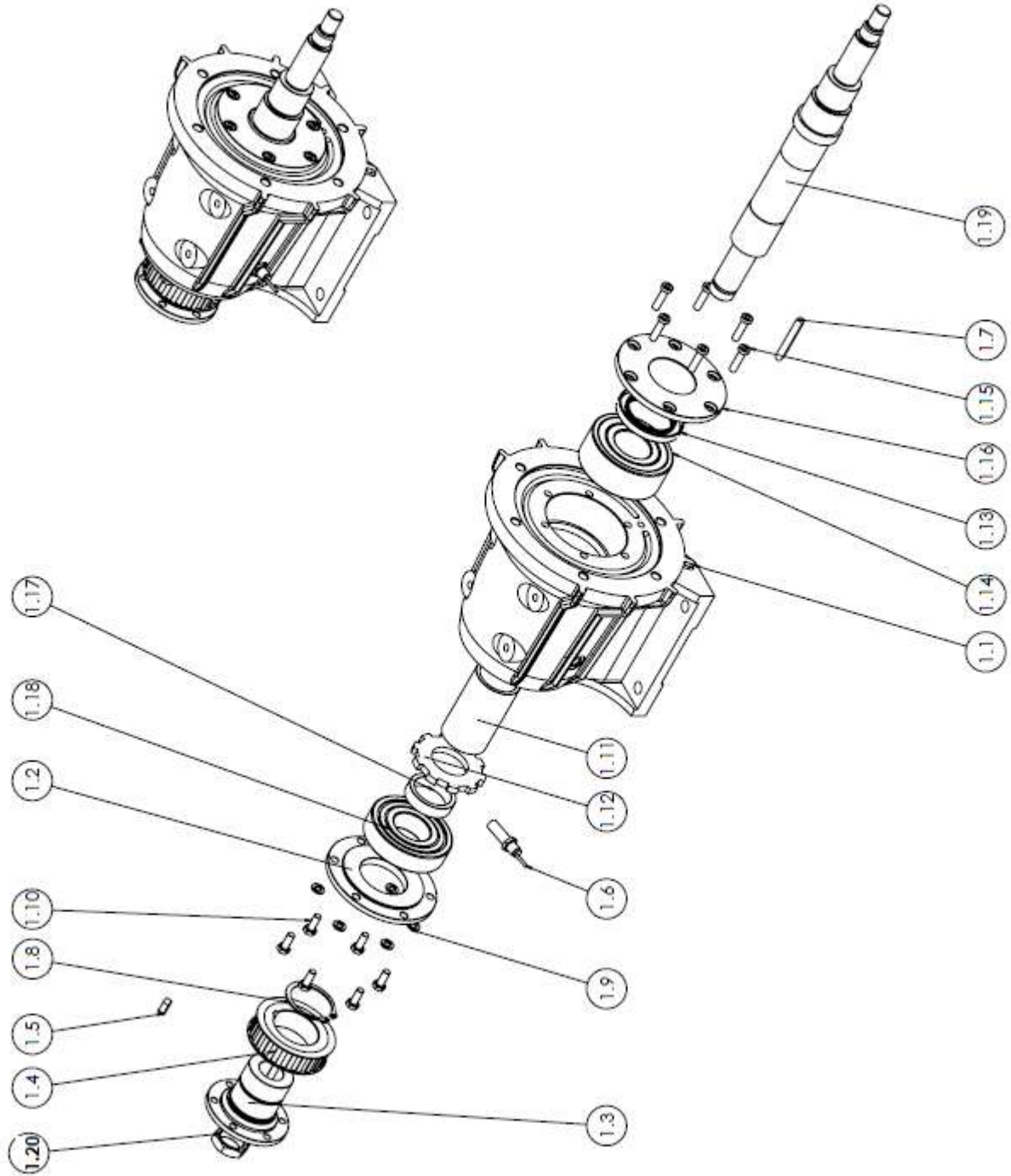
Number	Part Name	Piece(-s)
4.1	Collector	1
4.2	Collector Head	1
4.4	Collector Cover	2
4.5	Collector Peg	1
4.8.2	A piece of Angle Valve	4
4.10.2	Angle Valve	4
4.12	M16 Blind Nut	2
4.15	M10x25 Allen screw	32
4.17	M16 Washer	2
4.18	O-Ring	4
4.18.1	O-Ring	4

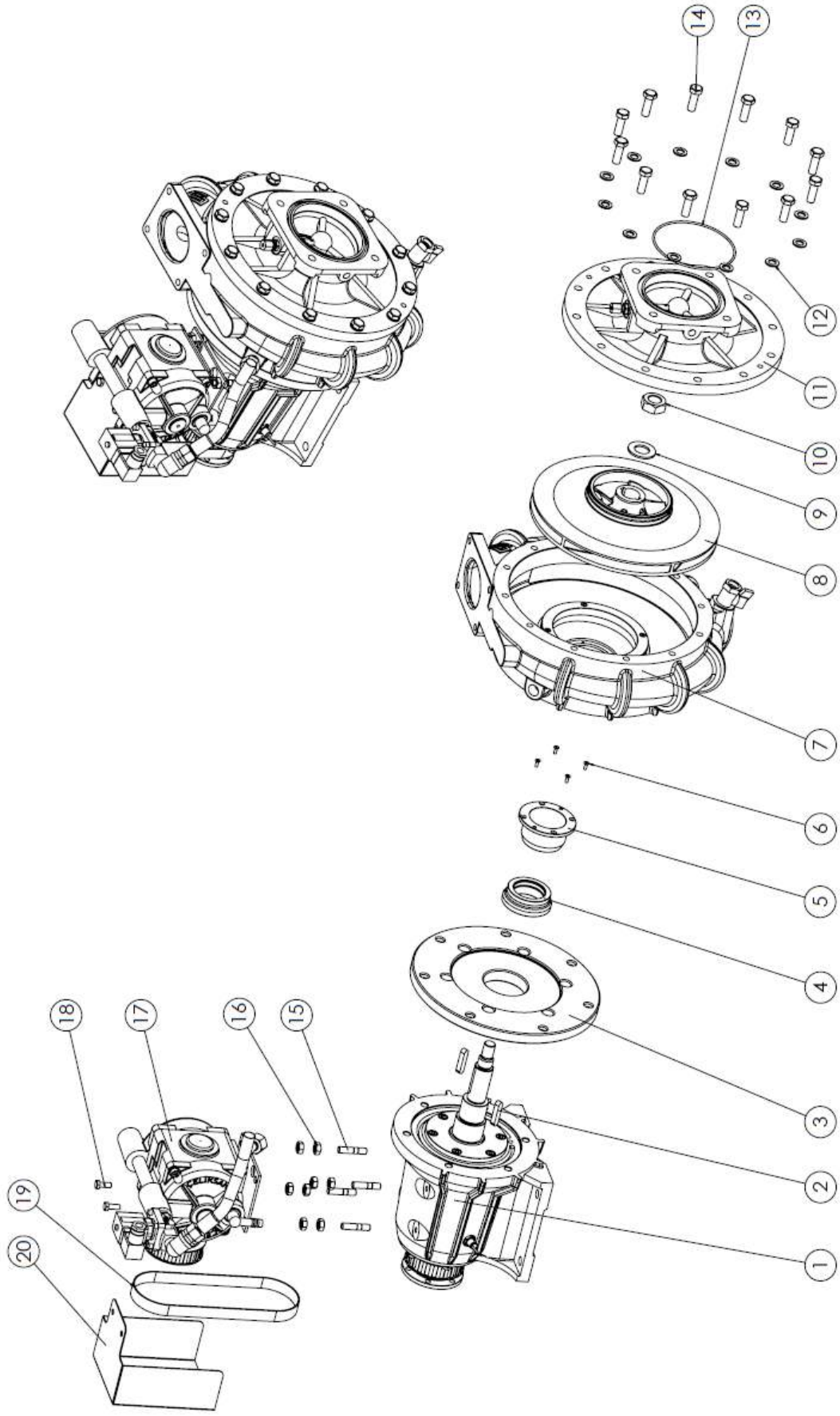
4.19	O-Ring	4
4.34	¼” Nipper	1
4.35.1	Collector Head	1
4.36	Pressure Switch	1

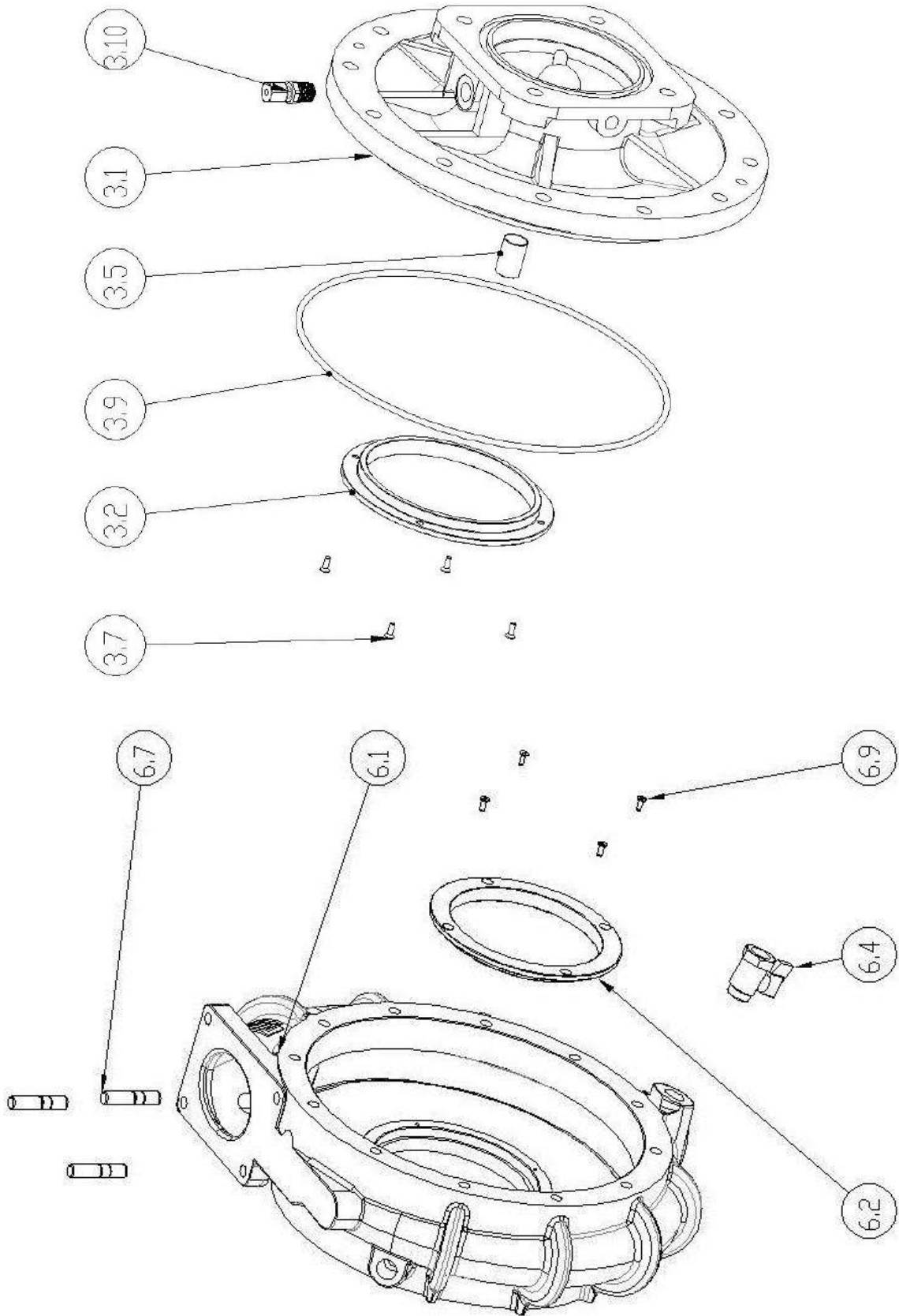
Number	Part Name	Piece (s)
5.1	Copper Pipe	1
5.2	Copper Pipe	1
5.3	Copper Pipe	1
5.5	Filter Coupling	1
5.6	Ball Valve with Actuator	2
5.10	Brass Coupling	1
5.11	Filter File	1
5.11.1	Filter	1
5.14	Discharge Flange	1
5.17	1 ¼” Nipple	2
5.18	1 ¼” Te	1
5.22	Ball Valve	1
5.25	O-Ring	1

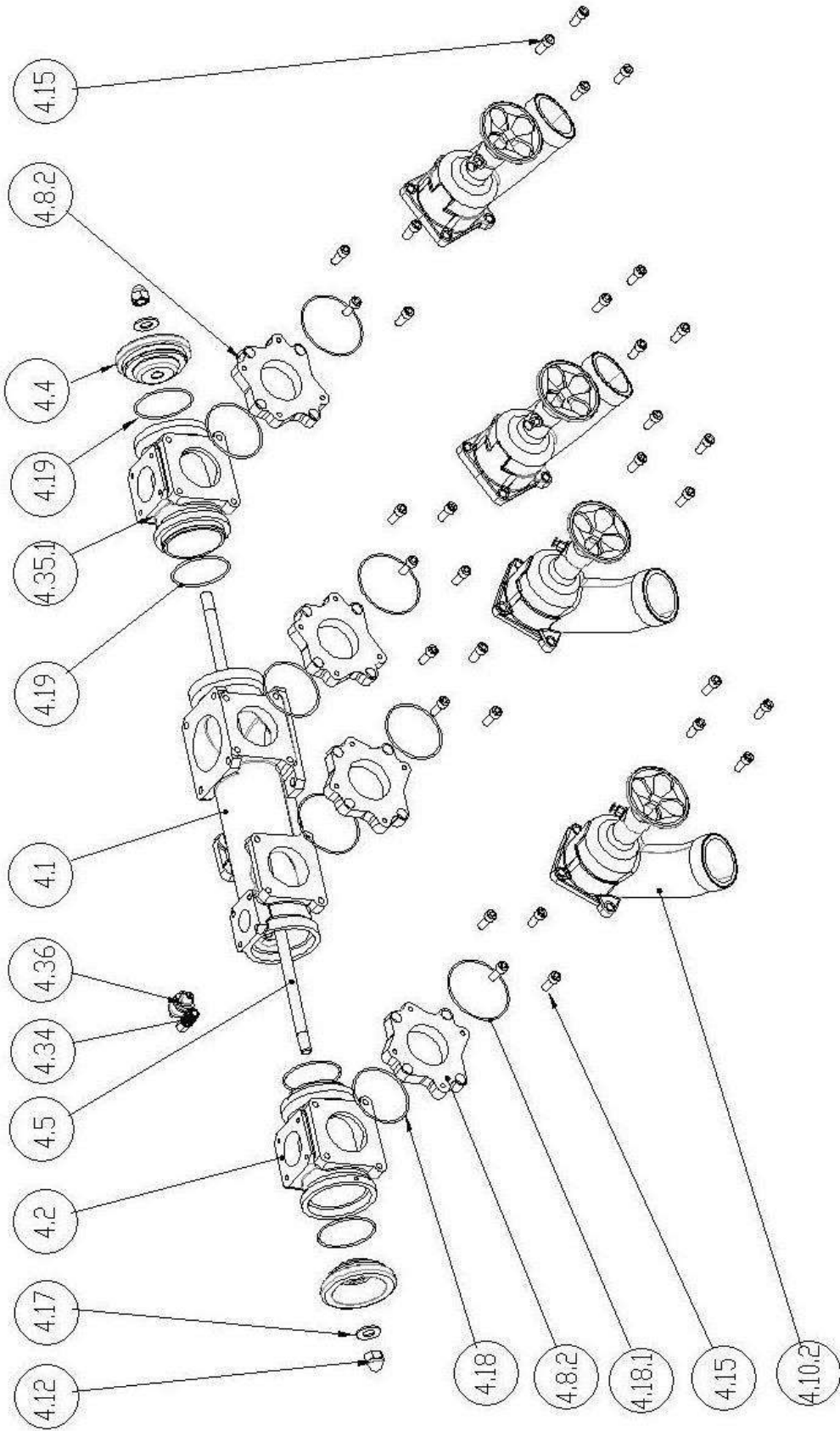
Number	Part Name	Piece (s)
6.1	Scroll Case (Spiral)	1
6.2	Centering Flange	1
6.4	½” Mini Ball Valve	1
6.7	M10x60 Peg	4
6.9	M4x16 Philips Head Screw	4

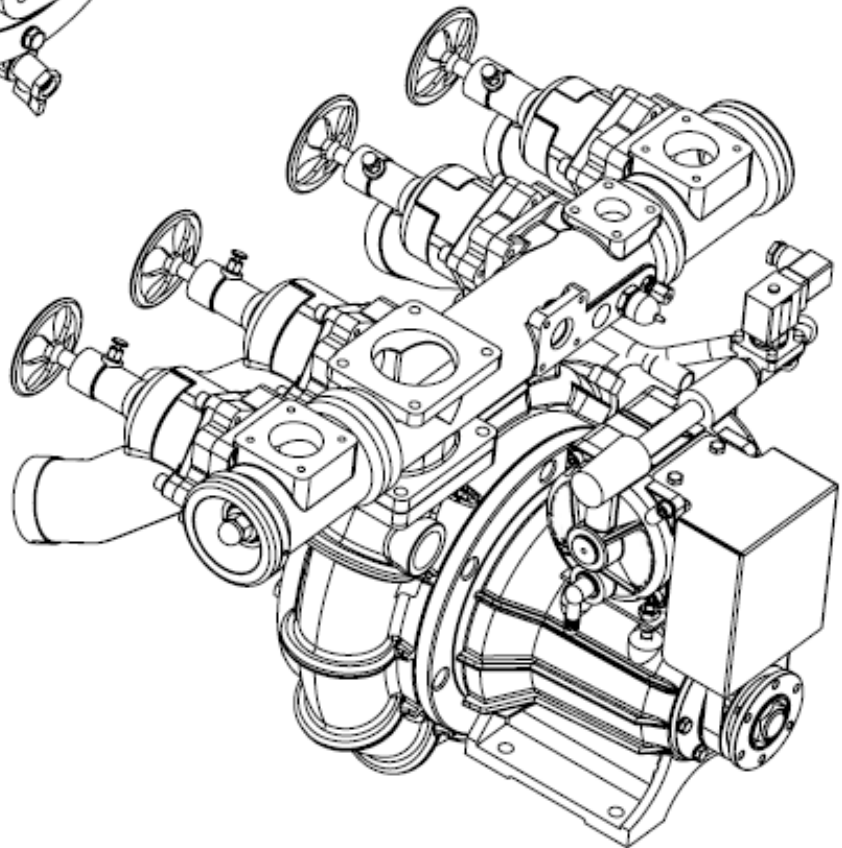
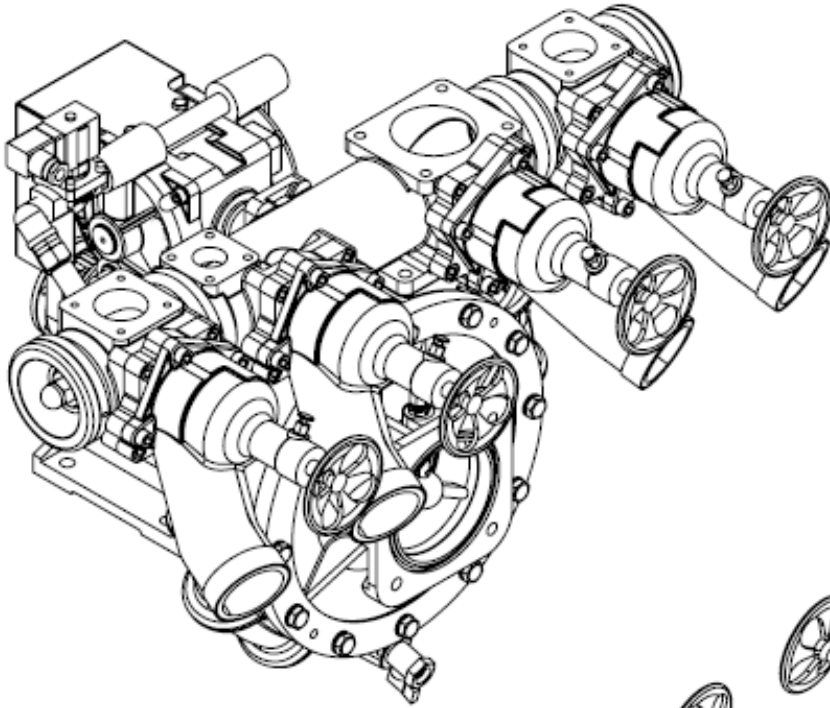
SP-010-2000/ SP-010-3000 Spare Parts List











SP-010-2000/ SP-010-3000 Spare Parts List

Number	Part Name	Piece(s)
1	Body	1
2	Wedge	2
3	Intermediate Flange	1
4	Mechanical Seal	1
5	Chrome Bedding	1
6	M4x16 Philips Head Screw	4
7	Spiral	1
8	Normal Pressure Fan	1
9	M24 Washer	1
10	M24 Nut	1
11	Suction Cover	1
12	M12 Washer	12
13	O-Ring	1
14	M12x40 Knurled-Head Screw	12
15	M10x50 Peg	4
16	M10 Nut	8
17	Vacuum Pump	1
18	M8x20 Knurled-Head Screw	2
19	Timing Belt	1
20	Vacuum Cover Sheet	1

Number	Part Name	Piece(s)
1.1	Body	1
1.2	Lock Plate for Ball Bearing	1
1.3	Coupling	1
1.4	Timing Pulley	1
1.5	Wedge	1
1.6	Speed Sensor	1
1.7	Wedge	2
1.8	Segment	1
1.9	M8 Washer	6

1.10	M8x35 Knurled-Head Screw	6
1.11	Big Spacer Bushing	1
1.12	Speed Gear	1
1.13	Sealing Ring	1
1.14	3309 Bearing	1
1.15	M6x25 Allen Screw	6
1.16	Sealing Ring	1
1.17	Small Spacer Bushing	1
1.18	6309 Bearing	1
1.19	Pin	1
1.20	M30 Nut	1

Number	Part Name	Piece(s)
3.1	Suction Cover	1
3.2	Centering Flange	1
3.5	Pap Bushing	1
3.7	M4x16 Philips Head Screw	4
3.9	O-Ring	1
3.10	¼” Nipple	1

Number	Part Name	Piece(s)
4.1	Collector	1
4.2	Collector Head	1
4.4	Collector Cover	2
4.5	Collector Peg	1
4.8.2	A piece of Angle Valve	4
4.10.2	Angle Valve	4
4.12	M16 Blind Nut	2
4.15	M10x25 Allen Screw	32
4.17	M16 Washer	2
4.18	O-Ring	4
4.18.1	O-Ring	4
4.19	O-Ring	4
4.34	¼” Nipper	1
4.35.1	Collector Head	1

4.36	Pressure Switch	1
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Number	Part Name	Piece(-s)
6.1	Scroll Case (Spiral)	1
6.2	Centering Flange	1
6.4	½” Mini Ball Valve	1
6.7	M10x60 Peg	4
6.9	M4x16 Philips Head Screw	4

