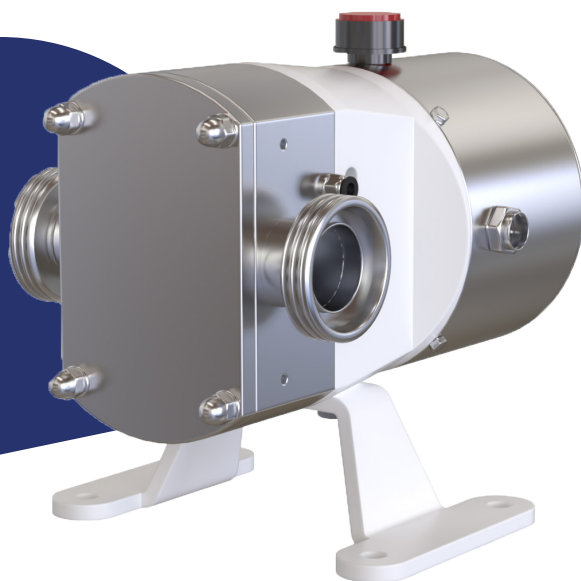


SLA ECO LOBE PUMP



INSTRUCTION MANUAL

TMXFLOW[®]
let it flow

READ AND UNDERSTAND THIS MANUAL IN ORDER TO INSTALL, OPERATE OR SERVICE TO TMXFLOW SLA PUMPS.

TMXFLOW recommends users of Lobe Pumps and its designs follow the latest Industrial Safety Standards. At a minimum, these should include the industrial safety requirements established by:

- 1-Safety and Health Administration (OSHA)
- 2-Occupational National Fire Protection Association (NFPA)
- 3-National Electric Code (NEC)
- 4-American National Standards Institute (ANSI)

Severe injury or death can result from electrical shock, burn or unintended actuation of equipment. Recommended practice is to disconnect and lockout industrial equipment from power sources, and release stored energy, if present. Before putting TMXFLOW equipment into operation, the operator shall analyze the application for all foreseeable risks, their likelihood to occur and the potential consequences of the identified risks as per ISO 31000 and ISO/IEC 31010 in their actual current version.

Locking and Interlocking Devices: These devices should be checked for proper working condition and capability of performing their intended functions. Make replacements

only with the original renewal parts or kits. Adjust or repair in accordance with the manufacturer's instructions.

Periodic Inspection: Equipment should be inspected periodically. Inspection intervals should be based on environmental and operating conditions and adjusted as indicated experience. At a minimum, an initial inspection within 3 to 4 months after installation is recommended.

Replacement Equipment: Use only replacement parts and devices recommended by the manufacturer to maintain the integrity of the equipment.

WARNINGS

1- Read the instructions before installing the pump and starting it up. Always follow the guidelines for assembly in order to achieve optimum operational reliability.

2- Always check that the specifications of the motor and the motor control unit are correct, particularly in operating environments where there may be a risk of explosion.

3- Pumps should only be installed, disassembled, repaired and assembled by personnel trained in servicing pumps.

4- Always ensure that all electrical installation is carried out by qualified staff.

5- Never hose down or clean the electric motor directly with water or cleaning fluid. If the motor will be used in a wash-down environment a washdown designed motor must be used.

6- Never dismantle the pump before the motor has been disconnected from the power supply. Remove the fuses and disconnect the cable from the motor terminal box.

7- Never dismantle the pump until the isolating valves on the suction and discharge side have been closed.

8- Always ensure that all pipe connections have been fitted and tightened properly before the pump is started. If the pump is used for hot/or hazardous fluids, special precautions must be taken. In such cases follow the local regulations for personal safety when working with these products.

9- Always wear personal protective equipment according to the requirements.

10- Make sure product lines and power cables are laid in suitable guides/trays.

11- Always ensure that no debris of any kind is present in the pump.

12- Always ensure that the pump and the motor shaft Lobe are properly aligned.

13- Always ensure that suction and discharge valves isolating the pump are fully open before starting the pump.

14- Never close or obstruct the outlet of the pump as the pressure in the system will increase above the specified maximum pressure of the pump and cause damage to the pump.

15- Never put hands or fingers into a pump while it is in operation since there are rotating parts in the pump.

16- The pump components and piping may contain sharp edges. Handle the screws carefully since they may be sharp. Wear gloves while installing and servicing the pump to help avoid injuries from these hazards.

17- Never touch the gear case during operation. The surface temperature of the gear case can get above 70 °C when running at 1000-3500 RPM. The pump cover and the body may be cold or hot depending on the product.

18- Never touch the motor and the motor shroud (if supplied) during operation, it may be very hot.

19- Never drop parts on the floor.

20- Make sure to keep the work area clear of machine parts, tools, product lines, foreign materials, and power cables to avoid potential hazards.

CONTACT

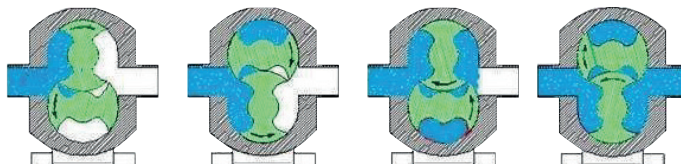
1. PUMPTYPES AND DESCRIPTION	4
a. EQUIPMENT DESCRIPTION	4
b. ACTIVITY AREA	4
c. PROPER US	4
2. MANUAL CONTENT	4
a. LEGAL CONTENT	4
b. WARRANTY	5
c. SECURITY	5
3. LOGISTICS	5
a. MOVE	5
b. STORAGE	5
4 INSTALLATION	6
a. LOCATION	6
b. ELECTRIC CONNECTIONS	6
5. STARTING UP AND MAINTENANCE	7
a. STARTING UP	7
b. MAINTENANCE	7
c. POSSIBLE ERRORS AND SOLUTIONS.....	8
d. MATERIAL TRANSFORMATION	9
6. ASSEMBLY and DISASSEMBLY	9
a. THINGS TO PAY ATTENTION	9
b. HOUSING DISASSEMBLY	9
c. GEAR BOX DISASSEMBLY	12
d. LOBE ASSEMBLY DETAILS	15
e. MOTOR.....	15
7. TECHNICAL DETAILS	16
8. MODEL TYPE	17
9. LOBE PUMP PART LIST	18
10. LOBE PUMP OPTION PART LIST	19

1. PUMP TYPES AND DESCRIPTION

a. Equipment Description

The lobe pumps in SLA ECO series are widely contained in positive displacement rotary pumps used for viscous liquids. The use of this equipment for the food, cosmetics and chemical industries issuitable. The Lobe pump range meets

the robustness, reliability and hygienic requirements in the industries mentioned above. The modular design makes it suitable for part replacement between different pumps.



When the lobes return, one lobe begins to move away from the other, resulting in a partial vacuum and moving towards the liquid pumping room. Lobes continue to spin with successive movements and continue to move forward. It is important to note that the small gaps between

the lobes and the gaps between the lobes and the pump body are quite closed. The pump body is fully filled and the liquid flows into the lobes, hitting the empty walls and completing the pump.

b. Activity Area

The biggest advantage of flussmann lobe pumps is that it has a variety of capacities for viscous liquids from 1 mPa.s to 10000 mPa.s. In addition, the capability of this pump is minimal deterioration in liquid products that need careful use and liquids with soft solids in it.

Design & Capacity	Discharge Capacity Per. 100rpm 100 (rev/litres)	Discharge Capacity Per. 100rpm 100 (rev/litres)
	Trilobe	Winglobe
SLA 1-25	18	21
SLA 1-40	20	23
SLA 1-50	25	29
SLA 2-40	32	37
SLA 2-50	40	46
SLA 2-65	43	59
SLA 3-65	87	100
SLA 3-80	102	118
SLA 3-100	125	144
SLA 4-100	195	225
SLA 4-125	244	281

*SLA ECO LOBE PUMP ROTATION SPEED OF PUMP LOBES

c. Proper Use

- 1 . It is used for use in machines and industrial enterprises.
2. It should only be used for defined and confirmed purchases.
3. It should only be used for the specified job.
4. It should only be used at corresponding dust limits.
5. Only the defined operation should be used in temperature and pressures.

2. MANUAL CONTENT

a. Legal Content

TMXFLOW does not take responsibility for impairments and damages caused by specified causes;

- 1 . Inappropriate use.
2. System modification by the non-authorized manufacturer.
3. Inappropriate operation of the pump system.
4. It's an inaccurate process.
5. Non-observation in the technical document.

b. Activity Area

The use of spare parts not provided by TMXFLOW, the opening of the machine by third parties without TMXFLOW written consent, and the failure to take into account the instructions in this manual eliminate TMXFLOW warranty liability.

b. Security

The use of spare parts not provided by TMXFLOW, the opening of the



Electrical studies should be carried out by qualified personnel.



The driver system poses a danger to the life and environment of staff working in specified situations:

- The staff working with the driver system are not qualified personnel.
- The driver system is not used correctly.
- If appropriate measures are taken, there will be no material damage when there is a mistake in the operation of the driver system.
- When a fault is detected, the driver system should never be run.
- No parts should be touched during the operation of the pump and cannot be operated without any part of the pump. Because each part has its own function.
- The pump should never be operated without revised that all components and connections are correct.
- No parts should be touched during the operation of the pump and cannot be operated without any part of the pump. Because each part has its own function.
- Particular attention should be paid to the liquid contained during pump repair. This liquid may be harmful to health or at high temperature. You must disconnect all electrical currents before disassembly.

3. LOGISTIC

a. Move

SLA ECO pumps and pump units are very heavy for manual transport. For this purpose, it must be carried with the appropriate tools. The weights of the models are given in the table below.

Pump Models	Pump Weight (kg)
SLA+ 1-25	23
SLA+ 1-40	22
SLA+ 1-50	24
SLA+ 2-40	38
SLA 2-50	38
SLA 2-65	38
SLA 3-65	72
SLA 3-80	75
SLA 3-100	75
SLA 4-100	170
SLA 4-125	172
SLA 4-125	180

*SLA ECO PUMP WEIGHT WITH BARE SHAFT TYPE

If the pump is not used immediately, appropriate storage conditions must be ensured. There is no need to take special precautions in dry environments for one-year periods, it should be protected from dust and light.

- Electrical current connections must be disconnected from the pump to prevent the motor from running during the disassembly or when the washing process begins.
- When the liquid temperature inside the equipment is high, the equipment should be cooled until it arrives at room temperature.
- The valves of the fluid absorption and thrust are closed, fluid is discharged from the pipe and pump.
- Necessary precautions should be taken for each pumped liquid.
- After leaving the fluid pump, the pump must be cleaned.



A qualified personnel should do the dismantling of the pump and the assembly of the pump, the pump can be broken in the wrong process.



If lubrication is performed before the installation of the ring and shaft arms of the pump, the mounting process can be made more easily.

4. INSTALLATION

a.Location Piping

The pump and pump unit is located close to the suction tank (see 'Pump installation' section.), and if the liquid level in the corresponding tank is lower than the level of static manometer absorption head is at maximum. Minimal levels of elbow and fittings are used in suction and discharge pipes to reduce friction losses. In this way, the suction conditions are improved and maximum efficiency is achieved from the pump.

Accessibility

The pump is placed accordingly to the driver unit in order to perform inspections and revisions. For the necessary inspections, gaps around the pump and pump unit should be left, and for repair operations, the pump must be separated from other units. The necessary cavities are left in front and behind to remove the SLA ECO pumps. If the total mass does not exceed 22 kilograms, pump and pump units are placed caviar to remove the equipment. The pump and pump unit are placed close to the drainage floor.

Setting up in an external environment,

External installation is done only with special installations if there are implicit systems allowed. Consult TMXFLOW before installation.

Setting up indoors

Place the pump with proper ventilation. Start the pump to be prepared according to the instructions provided by the manufacturer.



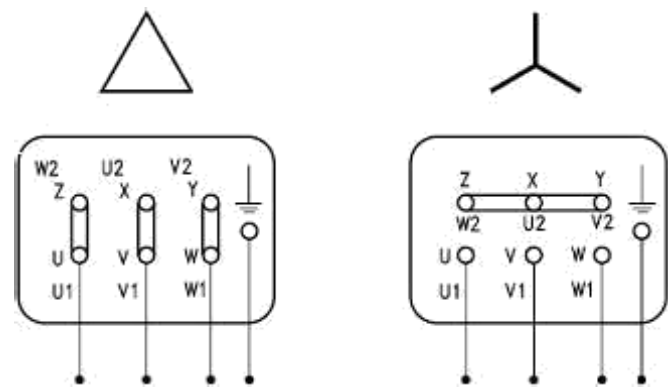
When a flammable and explosive liquid is pumped, an appropriate connection should be used. By connecting the grounding wire to the components of the unit, damage caused by static electricity is reduced.

Use explosion-resistant motors in accordance with local regulations. Provide appropriate merge protections and appropriate connections.

a.Electric Connections



A qualified element performs electrical connections. Take steps to avoid errors in wiring and connections.



Electrical Connections

	Conetction U=...	
	3x220	3x380
motor		
280/380	Δ	Y
380	-	Δ

Connection

Refer to the supplier's instructions before connecting the motor to the power supply. Use pumps with increased initial torque for single-phase motors. Provide high enough start torque for motorized pumps with a frequency converter and provide the necessary cooling at high speeds. Set up an independent fan if necessary.



Electrical equipment, terminal and control system components can carry electrical current when disconnected. If you have any contact with them, the operator's life may be in danger and can cause irreparable damage to the material.

5. STARTING UP AND MAINTENANCE

a.Starting Up

- Fully open the insulation valves on the suction and discharge line.
- During the washing process of the mechanical seal, fluid flow and pressure should be adjusted.
- The pump's suction line must be filled with liquid. Arrangements must be made for this.



it should never be operated when the pump is empty. Washing should be provided if necessary.

- If there is heating or cooling jacket at the pump, the insulation valves are opened to absorb the heating and cooling agents. The liquid inside the pump and pump is expected for about 15 minutes to reach the required service temperature.
- A few manual changes are made to the pump shaft and ensure that the pump is not blocked.
- Open the insulation valves that enter the mechanical seal washing unit.
- Check to see if the pump is working safely.
- Start the pump.
- Check if absolute input pressure is sufficient, there should be no absorbed steam inside the pump.
- Look at the minimum pressure curve required above the steam pressure.
- Check the drain pressure



A closing valve mounted on the suction pipe should not be used to regulate the flow rate. This should be completely open during the operation of the pump.

- Check the installed fluid flow.
- Check for mechanical seals and connections.



When there is no fluid flow from the pump, when leakage occurs and excessive noise occurs, the pump should be stopped immediately. The pump must be checked without running. If abnormal reactions continue, you should contact the pump manufacturer or contacts immediately and ask for service.

- Set up the security valves

a.Maintenance



Incomplete and incorrect repairs, errors occur in the operation of the pump, causing high repair costs and long-term deterioration. Therefore, attention should be paid to the instructions in this section. During maintenance on the pump, preventive maintenance and installation movement should be monitored according to the instructions. If these instructions are not followed, the pump and pump unit is in serious danger at the operator. Only qualified personnel should perform the repair process. Protective clothing should be worn to protect against possible hazards, corrosive substances and high temperature. The staff should read the instructions of the department on the work it will do. TMXFLOW assumes no responsibility for any accidents and damages that occur if the instructions specified here in are not followed.

c.Possible Errors and Solutions

Possible errors	Overload of motors	Insufficient discharged flow rate	Pressure on the draining side absence	Irregular discharge flow rate or pressure	Noise and vibration	Pump blockage	Overheating of the pump	Abnormal wear	Mechanical seal leakage
Possible causes	1		x						
	2	x	x	x	x				
	3		x						
	4	x		x	x			x	
	5	x		x	x			x	
	6		x	x	x				
	7	x	x		x		x		
	8	x	x		x	x	x		
	9	x	x	x	x	x	x		
	10		x						
	11		x		x	x	x	x	
	12	x		x	x		x		
	13		x		x				
	14		x						
	15				x			x	
	16	x				x	x	x	
	17								x
	18								x
	19				x	x		x	
	20	x			x	x	x		
	21	x			x	x	x		
	22	x			x	x	x		
	23	x			x		x		
	24	x			x	x	x	x	
	25				x	x		x	
	26	x			x	x	x		
	27								x

*SLA ECO PUMP OPERATION PROBLEMS

	Possible Causes	Solutions
1	Wrong turn direction	Reverse the direction of rotation
2	Inadequate NPSH	Increase to the appropriate NPSH: • Upgrading the suction tank • Pump • Reduce speed • Increasing the diameter of the suction pipe • Shorten the suction pipes and Simplify
3	Failure to clean the pump	Clean the pump
4	Cavitation	Increase the suction pressure.
5	Pump air sucking	The suction pipe and the whole to check their connections.
6	Blockage of the suction pipe	The suction pipe and, if applicable to control the filters.
7	Incorrect setting of security valve	Check security valve settings To.
8	Too high discharge pressure	If necessary, the diameter of the drain pipe will increase and the head side reduce loss.
9	The viscosity of liquidity is too high	• Reduce pump speed • Reducing viscosity, for example, by heating the liquid.
10	Very low liquid viscosity	• Increasing pump speed • Increasing viscosity, for example, increasing the liquid by cooling
11	The temperature of the liquid is too high	By cooling the liquid, the temperature Reducing.

	Possible Causes	Solutions
12	Very high pump speed	Reducing pump speed.
13	Attrition of the lobes	Changing lobes.
14	Very low pump speed	Increasing pump speed.
15	Being a very corrosive product	Hardened lobe hubs Use.
16	Worn bearings	Change the bearings to the pump check.
17	Worn or damaged mechanical sealing Part	Mechanical sealing part Change.
18	No use of O-rings suitable for liquid	Suitable O-ring forms control with the supplier.
19	Worn gears	Change gears or reapply.
20	Insufficient oil level in lubrication	Fill with oil.
21	Use of oil not suitable for lubrication	Using the appropriate oil.
22	Friction of lobes	• Reduce the temperature. • Lower the drain pressure. • Set the transaction.
23	Slip-on-link shifts	Fix the connection.
24	Voltage in the pipeline	Free of tense pipelines connecting to the pumps.
25	Having foreign bodies in liquidity	Inserta a filter into the suction pipe.
26	The pump and the electric motor are not fixed on the base	Tightening ensures that the pipelines are not stretched and that the connections checking their alignment.
27	The spring tension of the mechanical seal is very low it being.	Set the adjustment specified in this guide Make.

*SLA ECO PUMP POSSIBLE CAUSES AND SOLUTIONS



If these problems continue to last, stop the pump immediately. Contact the pump manufacturer or contact.

c. Material Transformation



To protect the environment, help recycle all materials, according to local regulations enacted by each region.

- The procedures are as follows.
- Disconnect and comply with hydraulic technical standards.
- Clean all components in the pump without sending it to the separator

6. ASSEMBLY AND DISSASSEMBLY

a. Things to Pay Attention

There are a number of factors to consider before starting pump disassembly: Shafts and surfaces must be protected with an anticorrosive primer.

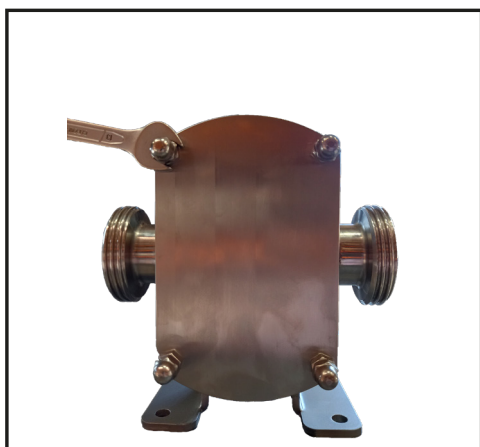
If the pump is used for a long time and then taken to the tank; After the process in the pump is finished, all the substances in it must be cleaned



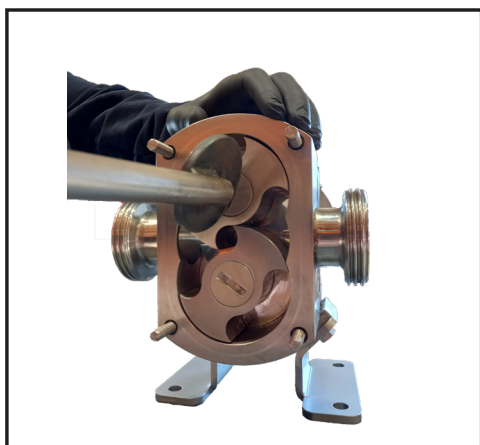
it should never be operated when the pump is empty. Washing should be provided if necessary.

b. Housing Disassembly

1-Open the cover

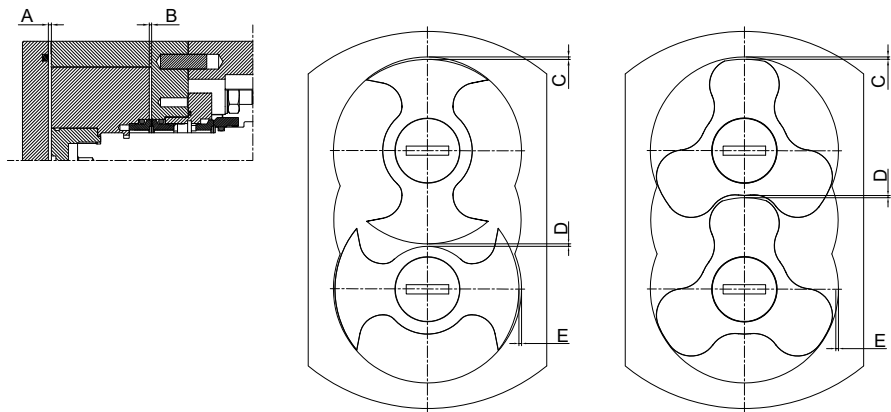


2- Remove the lobe nuts



c.Lobe Assembly Details

Settings must be made first before new lobes are connected.



	A	B	C	D	E
SLA 1-25	0,2	0,15	0,2	0,2	0,4
SLA 1-40					
SLA 1-50					
SLA 2-40	0,25	0,2	0,25	0,25	0,5
SLA 2-50					
SLA 2-65					
SLA 3-65	0,35	0,25	0,35	0,35	0,65
SLA 3-80					
SLA 3-100					
SLA 4-100	0,40	0,40	0,45	0,55	0,95
SLA 4-125					
SLA 4-150					

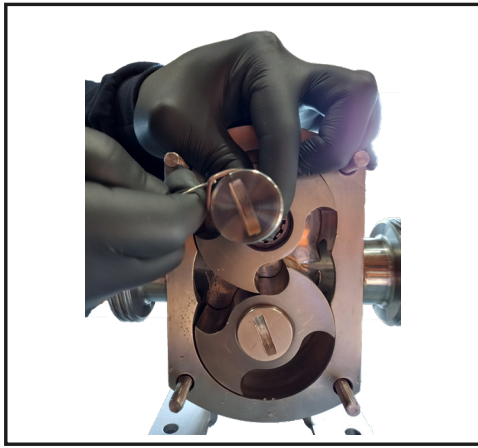
*SLA ECO LOBE PUMP ROTATION SPEED OF PUMP LOBES

d.Motor

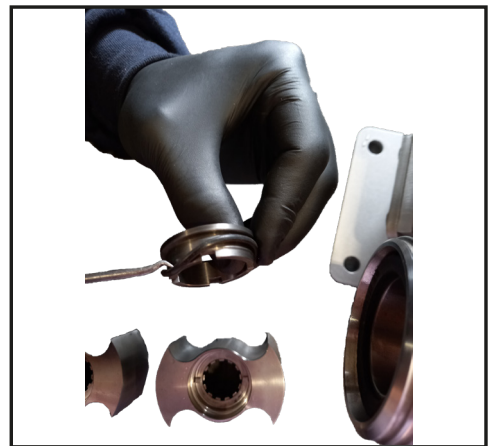
Disassembly: First, the back cover and shaft are taken. After these parts are taken, the motor is taken from the mounting support section

Assembly: The motor is installed on the mounting support so that the equipment shaft slides over the motor shaft. Finally, the back cover is placed appropriately.

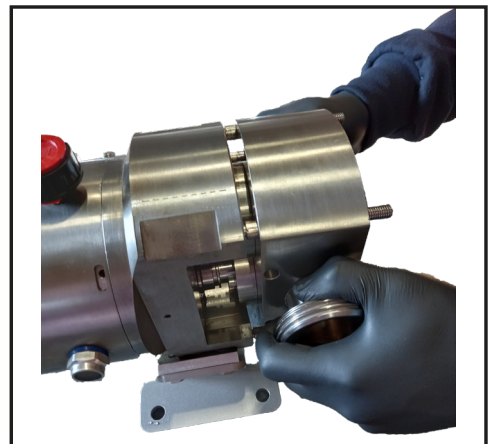
3- Remove o-ring from screw



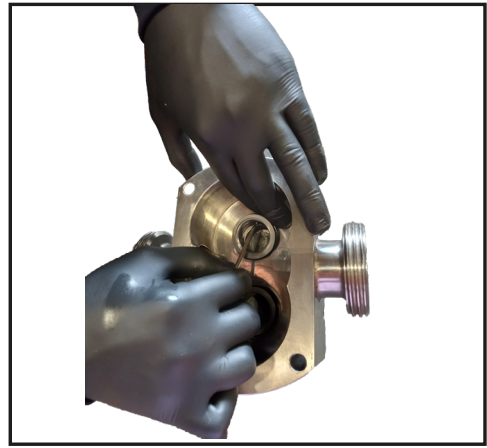
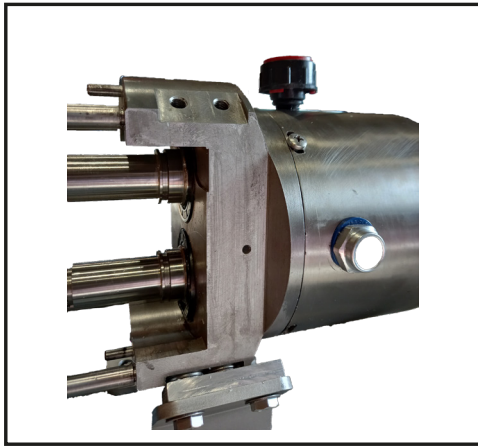
4- Remove packing and o-rings



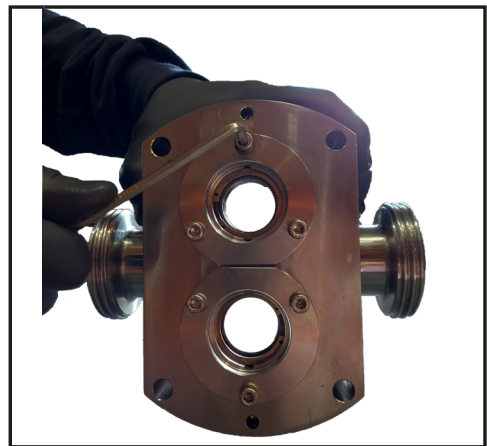
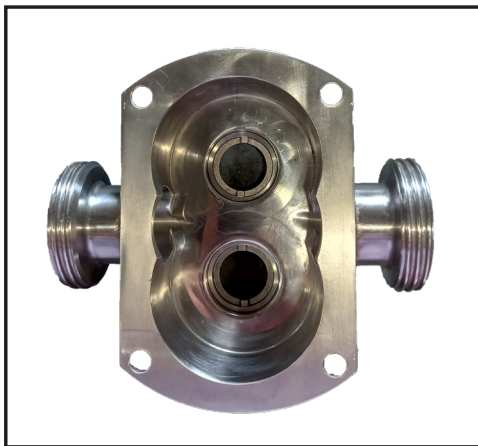
5- Remove the housing



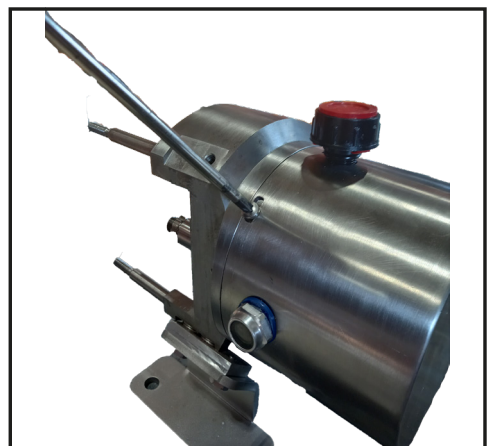
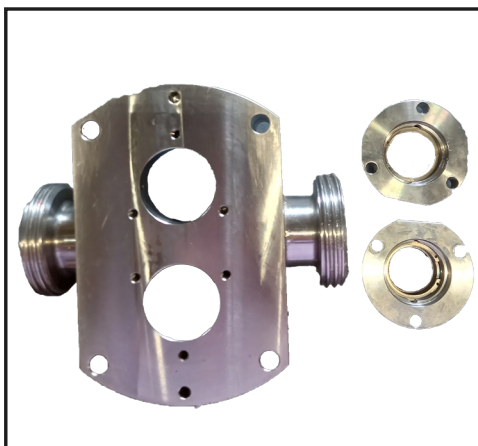
6-The seal stop is being dismantled



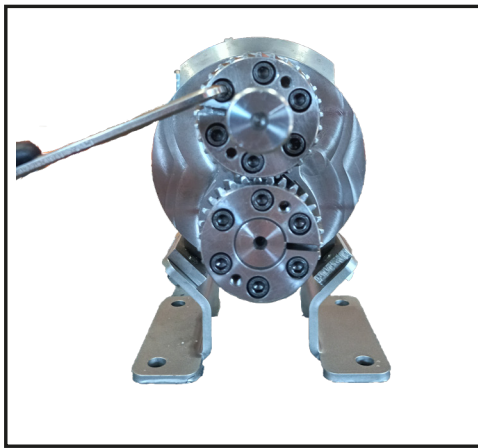
7- Mechanical Seal is removed



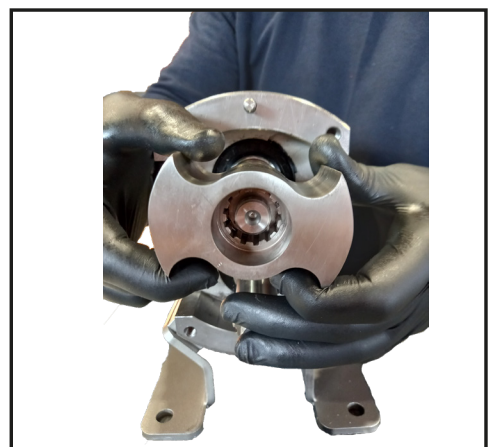
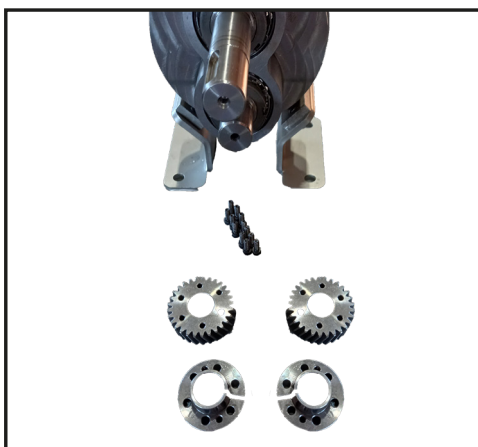
8. Gear Box cover is being removed



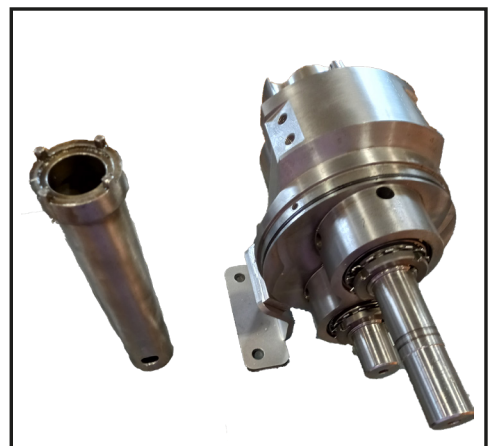
10- Geat bolts removed



11- Shaft are fixed



12- Shaft are fixed



14- Shafts are removed with the help of wedges



13-Lobe nuts are installed to prevent damage to the gears

