



50 CFM DIAPHRAGM VACUUM PUMP

Maintenance Manual

Pioneer – Cornell – Selwood & compatible

Index

1- Introduction.....	3
2- Warnings.....	4
3- Vacuum generator system.....	5
4- Maintenance.....	6
4.1- Disassembly.....	6
4.1.1- Upper part.....	6
4.1.1.1- Disassembly of the inlet and outlet nozzle.....	7
4.1.1.2- Disassembly of the actuator and covers.....	8
4.1.1.3- Detail of the disassembly of the actuator.....	9
4.1.2- Lower part.....	10
4.1.2.1- Disassembly of the lower part.....	11
5- General Warnings for reassembly.....	13
5.1 – Reassembly of the excentric shaft assembly.....	14
5.2 – Reassembly of the vacuum pump base.....	15
5.3 – Reassembly of the pedestal.....	16
5.4 – Detail of the actuator mounting position.....	17
5.5 – Detail of the mounting position of the lower housing.....	17
5.6 - Reassembly of the lower housing and pedestal assembly.....	18
5.7 – Detail heating of the actuator disc.....	19
5.8 – Detail of the reassembly of the actuator disc and central valve.....	19
5.9 – Reassembly of the actuator disc and central valve.....	20
6- Periodic maintenance.....	21

1- Introduction:

We at **BrPumpParts** thank you for your preference in purchasing our 50 CFM vacuum pump parts, we are sure that all expectations and goals will be achieved with the services of our product.

Our VAC-50 diaphragm vacuum pump is equivalent to Pioneer, Cornell and Selwood pumps, and all parts are interchangeable.

When your pump needs maintenance or repairs, count on our maintenance parts kits where the parts are of high quality and will guarantee a longer life for your equipment.

The kits contents are strategically separated to better meet the average demand for 3 levels of service needs. Light, medium and heavy maintenance need.

Contact us through the website **brpumpparts.com**.

Purpose and scope of this manual:

The purpose of this manual is to provide and instruct our customers and technicians in the maintenance of the **50 CFM Diaphragm vacuum pump**. We advise that the instructions and information be used by experienced technicians in the handling and use of the necessary tools so that installations and maintenance are done in the safest and most effective way.

2- Warnings:



Attention: The information contained in this manual is for the installation and maintenance of the **50 CFM vacuum pump**, keep technicians and operators aware and trained with the information contained herein, always demand a lot of attention and care in handling the equipment so that there is a safe and efficient work.



Attention: Always make sure that the parts used in maintenance and repairs are original **BrPumpParts**. We have all parts available and separated in strategic kits to meet all maintenance and repair demand.



Attention: It is extremely important to take care of the handling of the equipment, both in installation, operation and maintenance so that there is no type of accident or damage to technicians and operators, **BrPumpParts** has as a principle the safety of all those involved with its products.

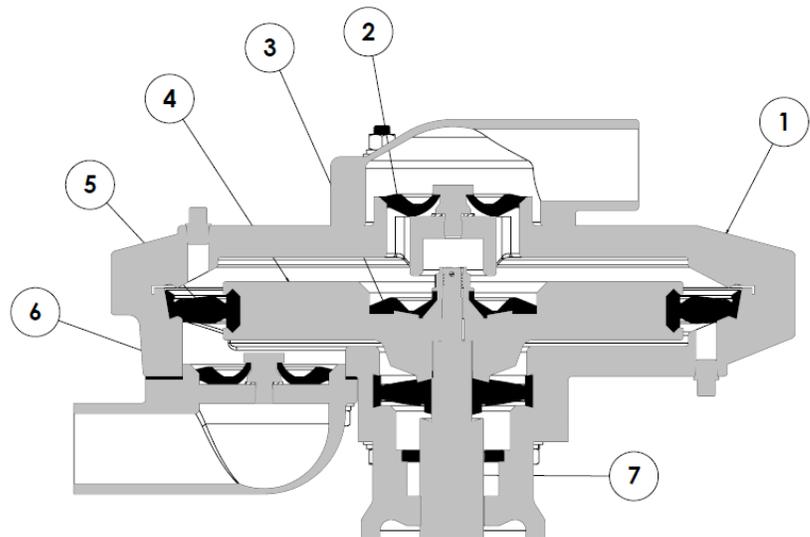


Attention: When in doubt, ask!

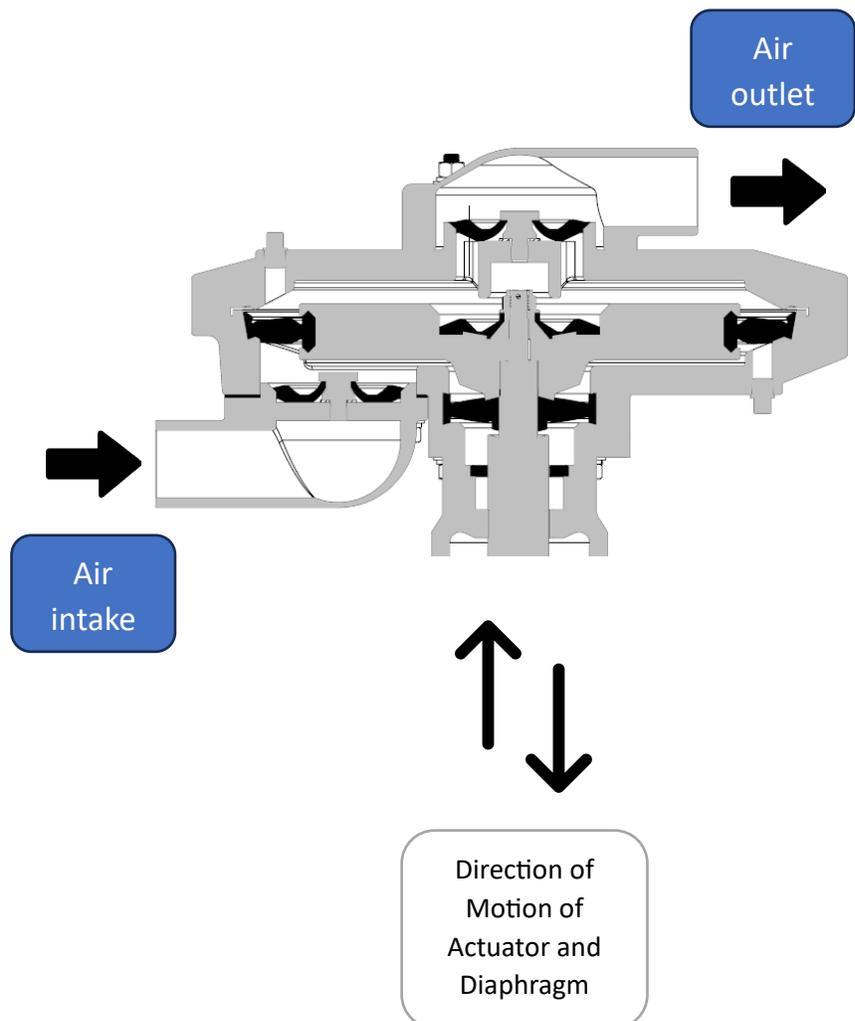
3- Vacuum Generation System:

Main items of the System:

- 1- Aluminum housing.
- 2- Inlet valve (rubber).
- 3- Central Valve (rubber).
- 4- Actuator.
- 5- Diaphragm (rubber).
- 6- Outlet valve (rubber).
- 7- Actuator shaft assembly.



The 50 CFP diaphragm vacuum pump is a 2-chamber positive displacement pump (upper and lower) isolated by flexible rubber valves. At each cycle of vertical oscillation of the actuator + diaphragm assembly, the air is propelled from the lower chamber to the upper chamber, with the opening of the central valve in the downward and sealing in the upward movement, successively and continuously. Flexible valves allow for intermittent air passage by drawing out and reducing the air content and pressure of an isolated volume.

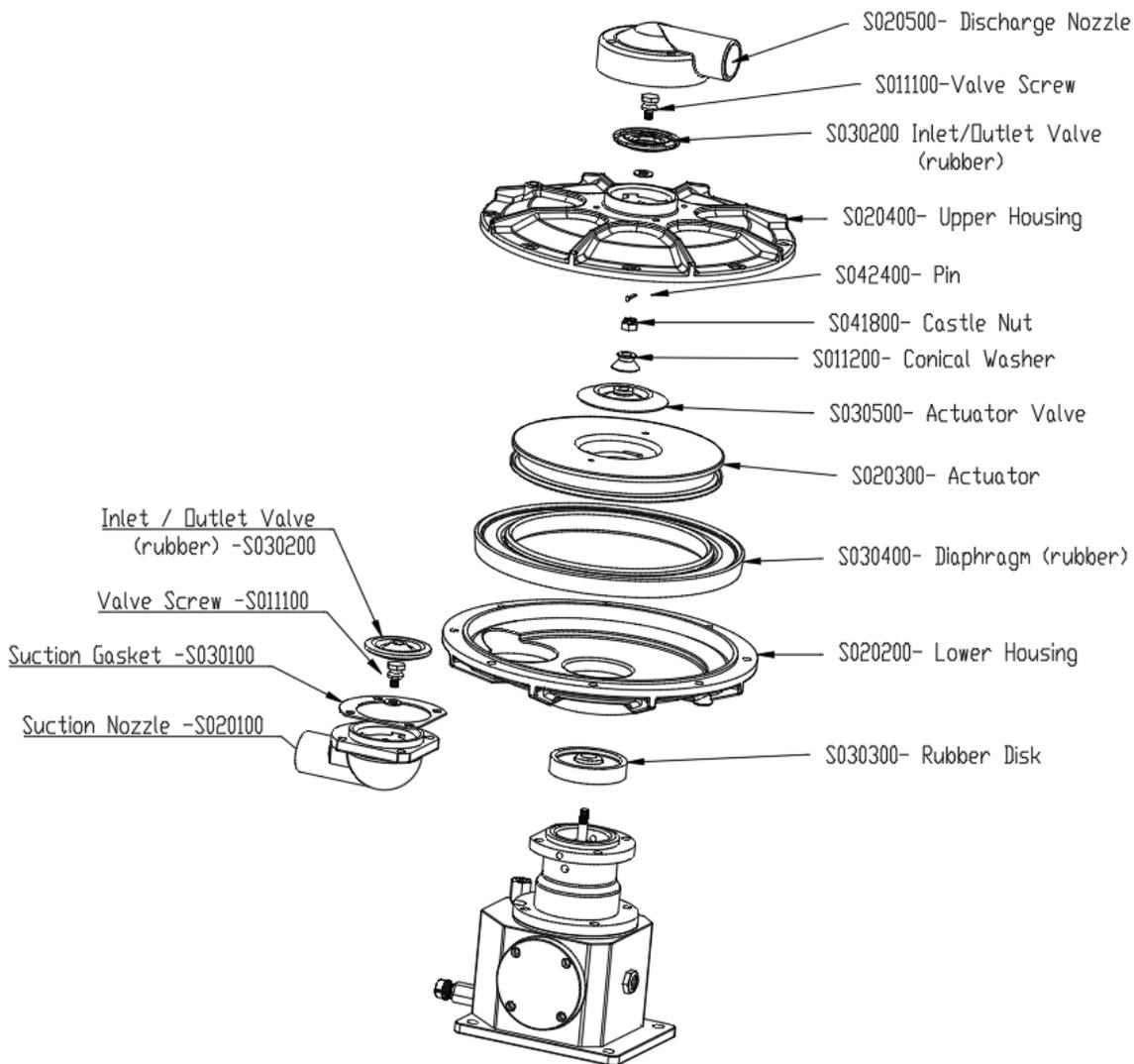


4- Maintenance:

4.1- Disassembly:

The disassembly of the vacuum pump is done in two parts, first from the top and then from the bottom.

4.1.1- Upper part:

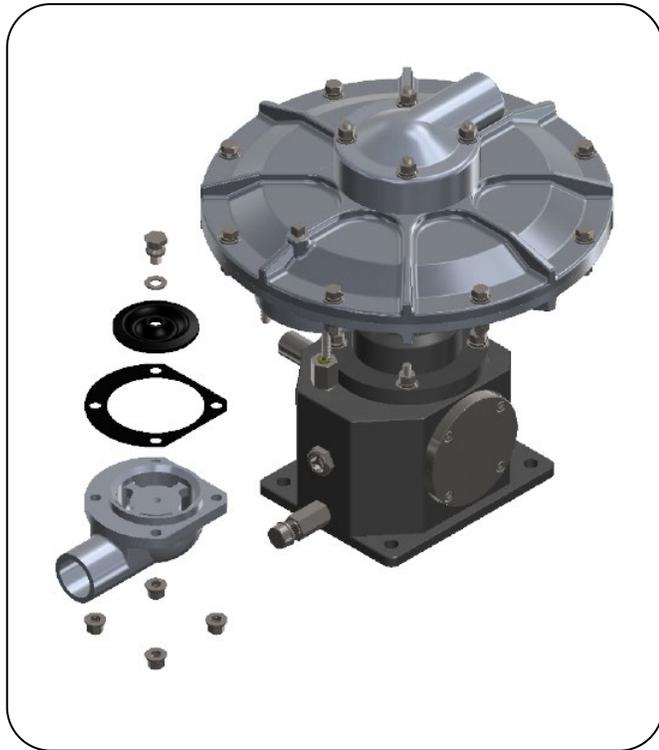


Disassembly Top

4.1.1.1- Disassembly of the inlet and outlet nozzle:



1- Disassembly of the outlet nozzle.



2- Disassembly of the inlet nozzle.

Instructions:

- 1- Remove the outlet nozzle attachment nuts **[S020500]**, if the inlet/outlet valve **[S030200]** needs to be changed, remove the vacuum pump inlet and outlet screw **[S011100]**.
- 2- Remove the inlet nozzle attachment nuts **[S020101]**, if the inlet valve **[S030200]** needs to be changed, remove the vacuum pump inlet and outlet screw **[S011100]**.

4.1.1.2- Disassembly of the actuator and covers:



3- Disassembly of the top cover.



4- Disassembly of the actuator.

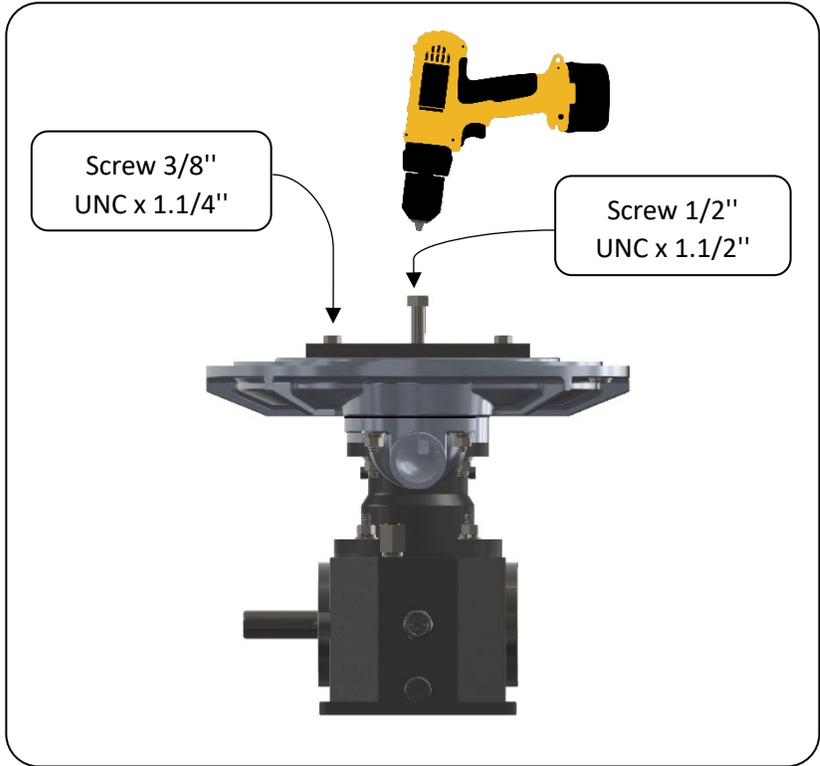
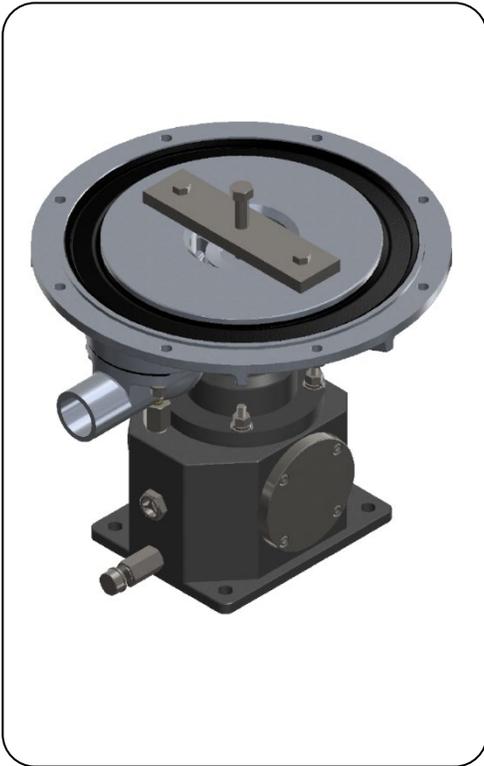


5- Disassembly of the bottom cover.

Instructions:

- 3- Remove the bolts and nuts that secure the top cover **[S020400]** the bottom cover **[S020200]**, it is not necessary to remove the studs that fix the outlet nozzle.
- 4- Remove the cotter pin **[S042400]** that locks the bonnet nut **[S041800]** to the actuator shaft **[S010900]**, remove the center valve, castle nut, pin and the tapered washer, remove the actuator **[S020300]** mounted with the diaphragm **[S030400]**. See details of the disassembly of the actuator in Item 6.
- 5- Remove the rubber disc **[S030300]** from the bottom cover and actuator shaft, then remove the nuts and washers that lock the bottom cover to the pedestal.

4.1.1.3- Detail of Actuator Disassembly:

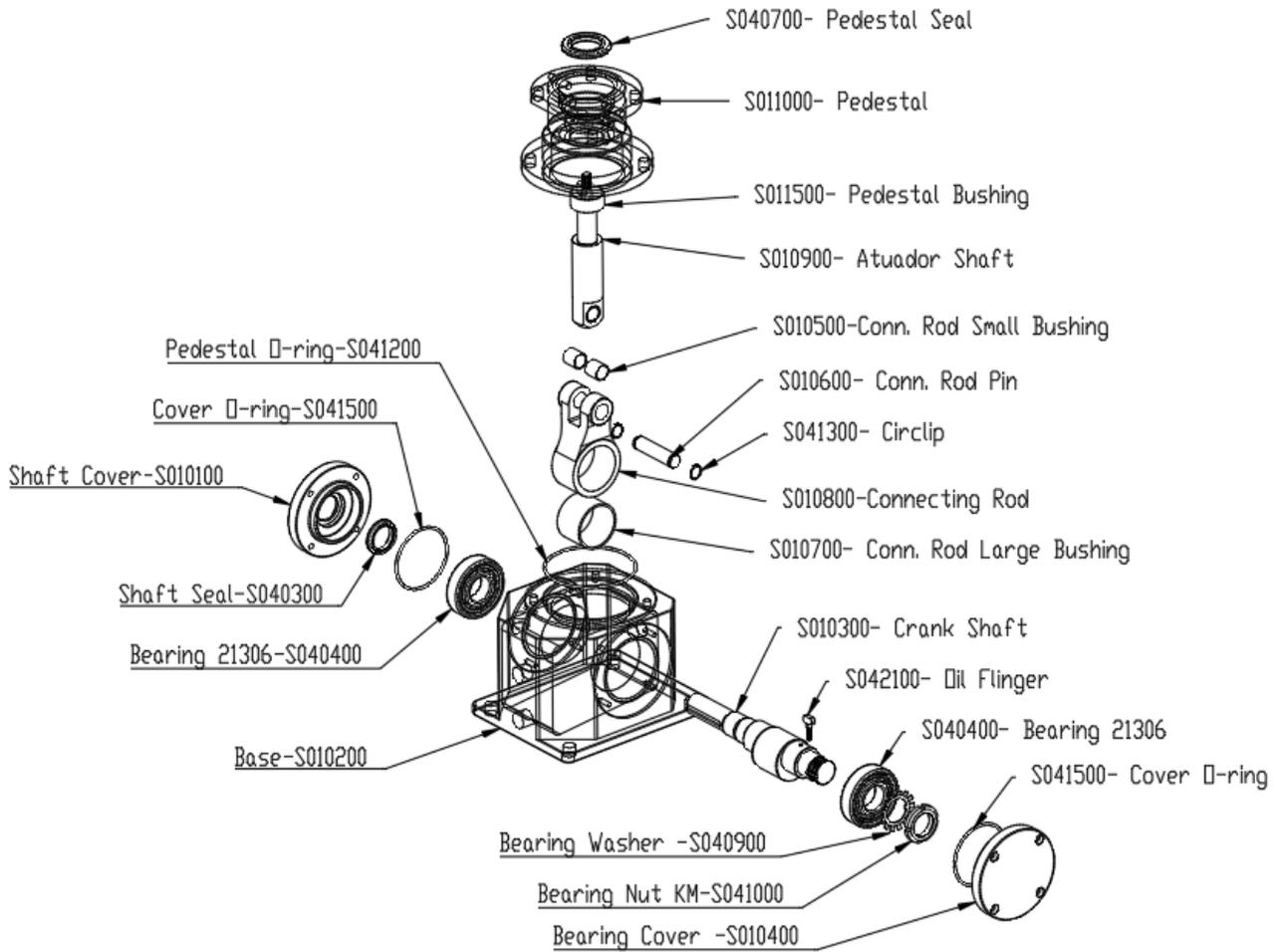


6- Detailed disassembly of the actuator

Instructions:

6- Position the disassembly device on the upper face of the actuator, then insert the 3/8" screws into the actuator threads and tighten until tight, and finally, insert the 1/2" screw into the central thread of the device and tighten until the actuator detaches from the shaft. If required, the actuator drawing device is manufactured and supplied by **BRPUMPparts.**

4.1.2- Lower part:

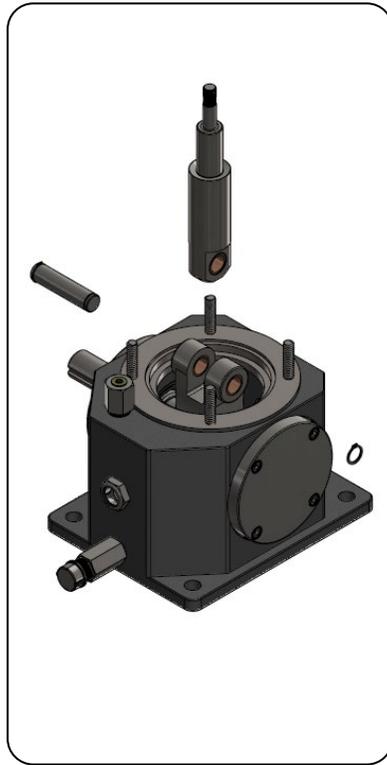


Bottom Disassembly

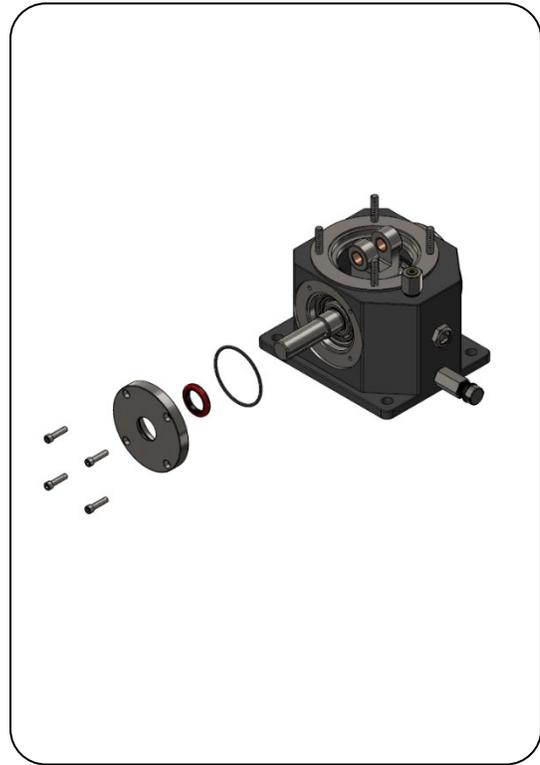
4.1.2.1- Bottom disassembly:



7- Disassembly of the pedestal.



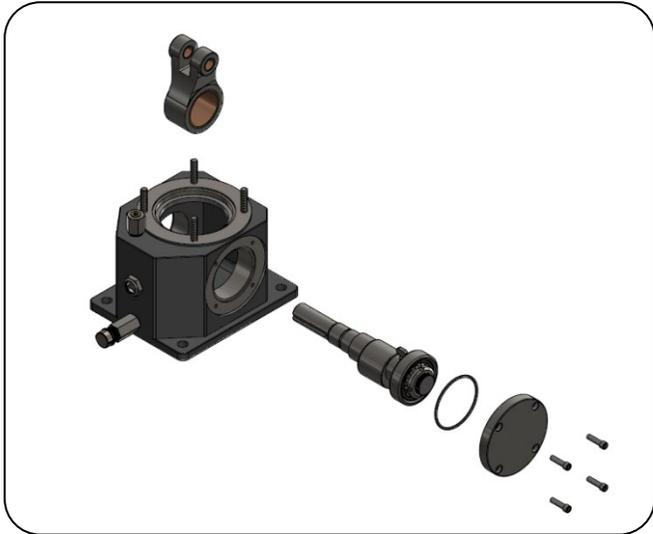
8- Disassembly of the actuator shaft.



9- Disassembly of the axle cover.

Instructions:

- 7- Remove the nuts securing from the pedestal **[S011000]**, detach the pedestal from the base of the vacuum pump, and remove the O-ring **[S041200]**.
- 8- Remove one of the snap rings **[S041300]** that lock the actuator pin **[S010600]**, remove the pin from the junction between the actuator shaft **[S010900]** and the connecting rod **[S010800]**.
- 9- Remove the bolts from the shaft cover, then remove the retainer **[S040300]**, O-ring **[S041500]**, and bearing.



10- Disassembly of the eccentric shaft.



11- Disassembly of the eccentric shaft assembly.

Instructions:

10- Remove the bolts from the bearing cover, then remove the O-ring **[S041500]**, pull the eccentric shaft assembly.

11- Remove the KM nut **[S041000]** from the eccentric shaft, then the KM washer **[S040900]**, the bearing **[S040400]**.

5- General warnings for reassembly:



Attention: When starting the reassembly of the *vacuum pump – VAC 50*, make sure that all components are in their proper places and positioned correctly.



Warning: Make sure that all the flat and lock washers are attached to the bolts and studs, tighten the bolts and nuts correctly, to ensure that there is no loosening in operation due to the vibration of the vacuum pump.



Warning: Make sure that all cable ties or any items that connect to other equipment connected to the vacuum pump inlet nozzle are tightened, so that there is no leakage and partial or total loss of efficiency of the *vacuum pump – VAC 50*.



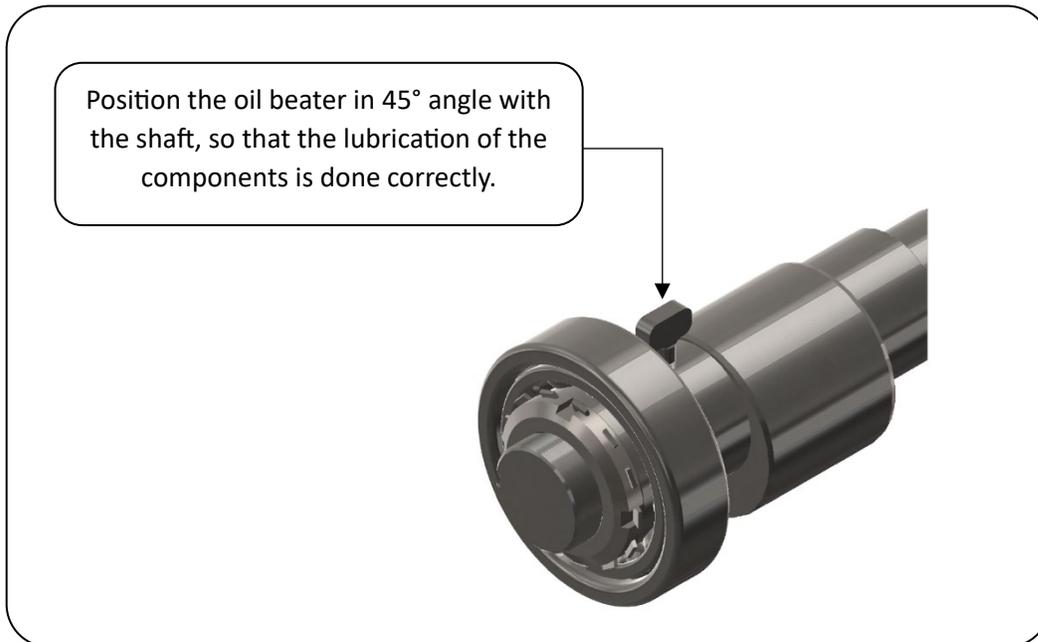
Attention: Make sure that all gaskets, O-RING'S and rubber valves are assembled, paying attention to the correct positions of these items.

-



Attention: Make sure that the oil level is correct on the display at the base of the vacuum pump, the lubrication of the components is essential for the correct operation and efficiency of the equipment.

5.1- Reassembly of the eccentric shaft assembly:

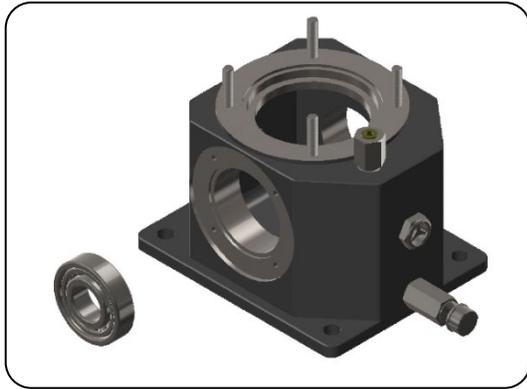


1- Reassembly of the eccentric shaft assembly.

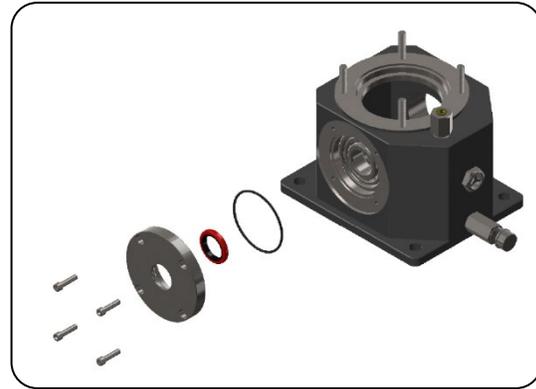
Instructions:

- 1- Insert the bearing into the end of the eccentric shaft, then position the KM washer, touching the outer face of the bearing leaving the washer's bent flap to the opposite side of the bearing. To change the set, thread the KM nut on the shaft thread until it touches the KM washer, tighten well so that there is no loosening in the operation and lock, press the shoulder into a recess of the nut.

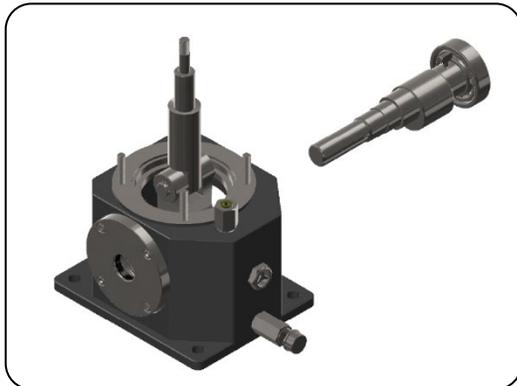
5.2- Reassembly of the vacuum pump base:



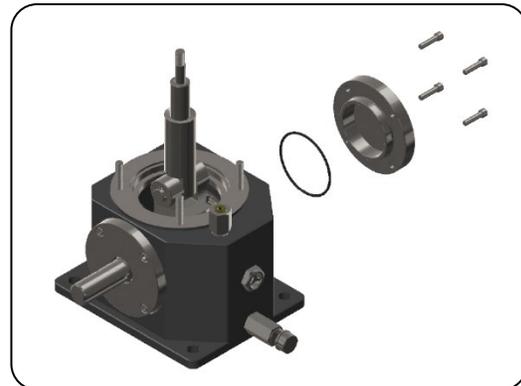
2- Reassembly of the bearing on the driving side.



3- Reassembly of the axle cover.



4- Reassembly of the eccentric shaft assembly at the base.



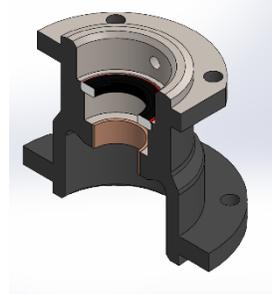
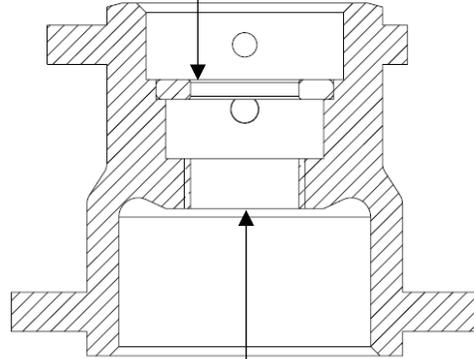
5- Reassembly of the bearing cover

Instructions:

- 2- Install the driving side bearing on the base of the vacuum pump.
- 3- Reassemble the shaft cover, coupling the seal and the sealing O-ring, finally tighten the screws on the base of the vacuum pump.
- 4- Leave the connecting rod assembly inside the base, then insert the eccentric shaft assembly passing through the connecting rod and the bearing drive side.
- 5- Insert the O-ring seal into the bearing cover, attach the cover to the base, and finally tighten the screws into the base of the vacuum pump.

5.3- Reassembly of the pedestal:

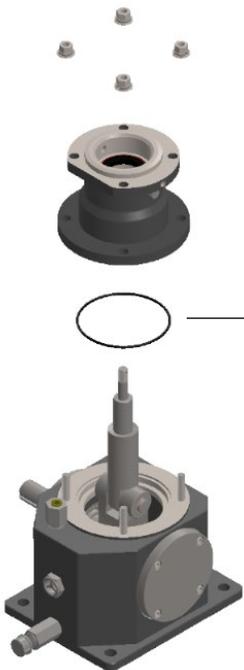
Inspect the seal, if necessary, make the



Inspect the pedestal bushing, if necessary, make the exchange.

Instructions:

- 6- Insert O-ring into the vacuum pump channel, then assemble the pedestal with the base attaching to the studs, lubricate the shaft for mounting on the bushing and retainer and finishing with the correct tightening of the nuts.

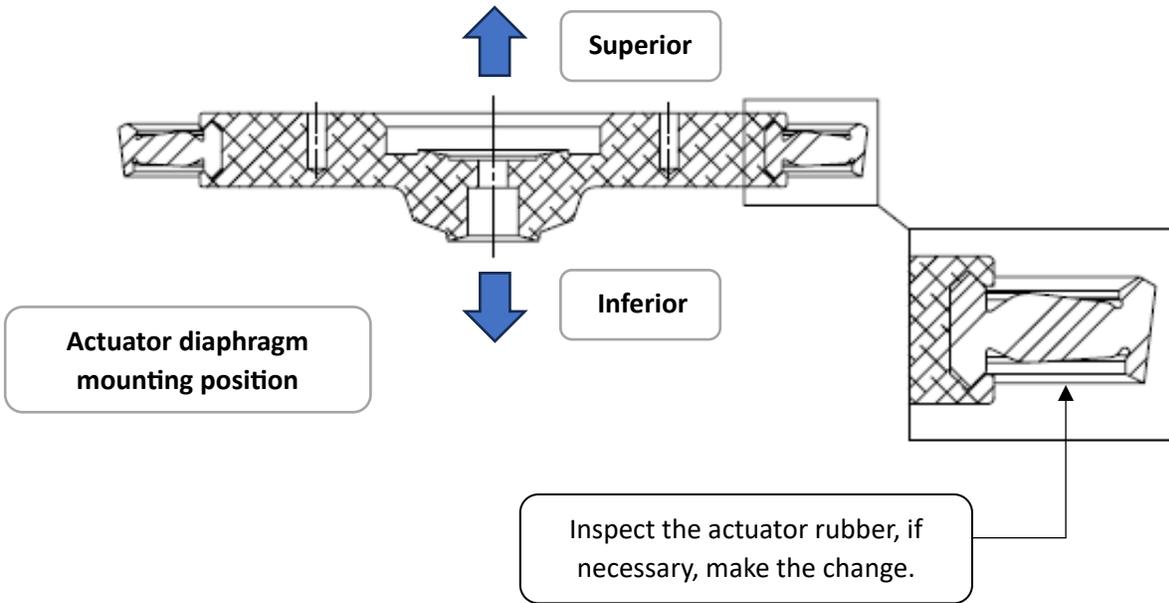


Attention!

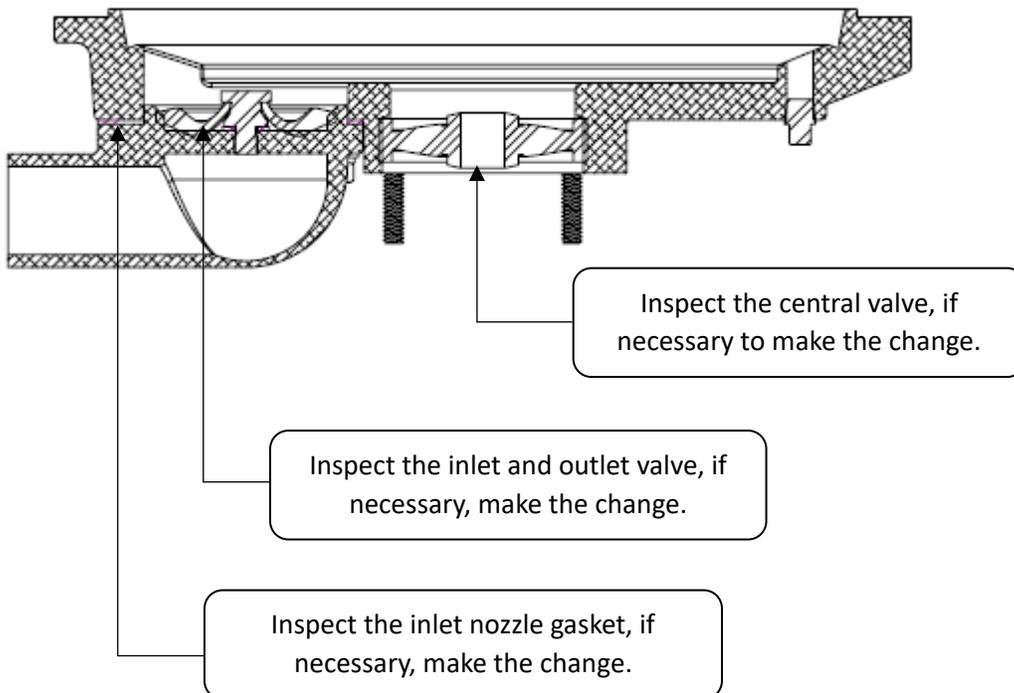
Insert O-ring, before assembling, inspect if it needs replacement

6- Reassembly of the pedestal

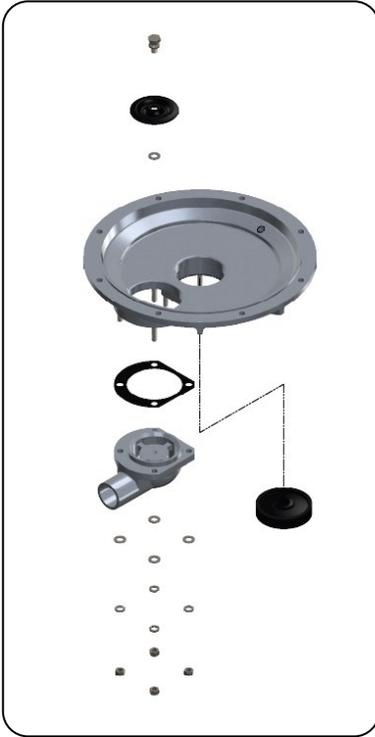
5.4- Detail of the actuator mounting position:



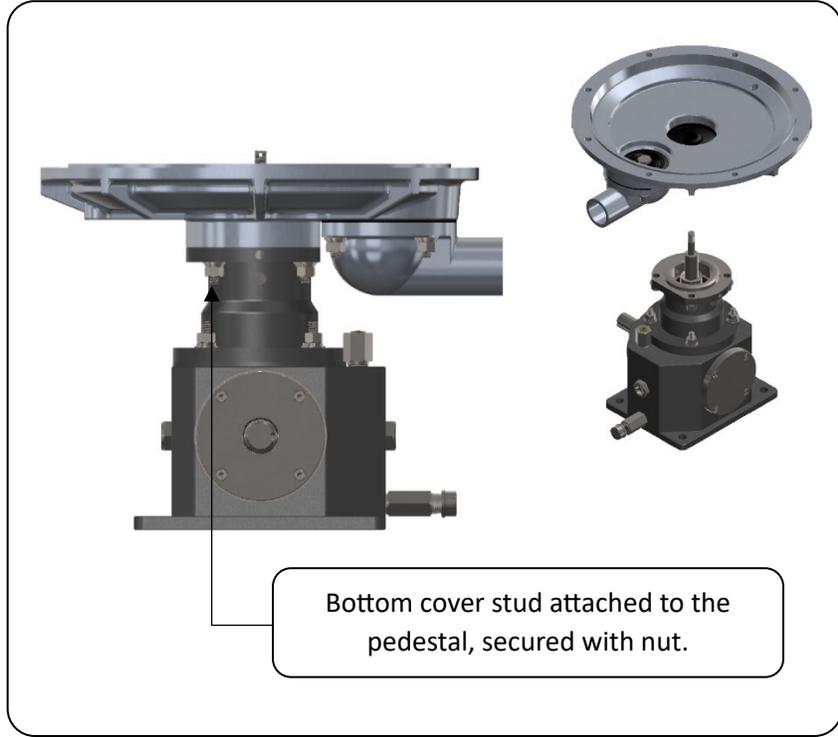
5.5- Detail of the mounting position of the bottom cover:



5.6- Reassembly of the lower cover assembly to the pedestal:



7- Reassembly of the bottom cover assembly



Bottom cover stud attached to the pedestal, secured with nut.

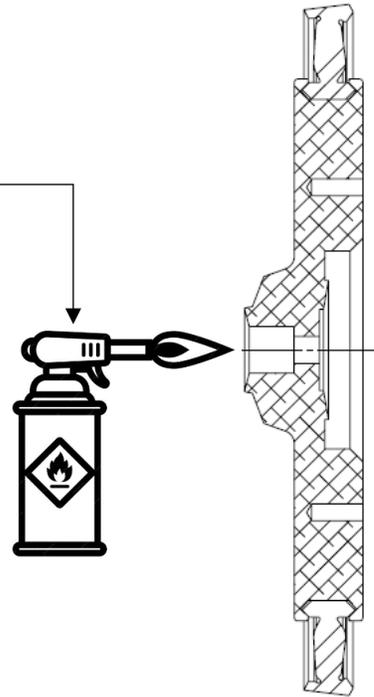
8- Reassembly of the bottom cover assembly

Instructions:

- 7- Position the washer and inlet and outlet valve on top of the inlet nozzle, then tighten the valve screw onto the thread of the inlet nozzle. Position the inlet nozzle gasket and mount the entire assembly on the bottom cover, tighten the nuts on the studs already on the cover. To finish, attach the rubber disc to the bottom cover.
- 8- Assemble the lower cover assembly to the pedestal, coupling the studs to the pedestal and tightening the nuts.

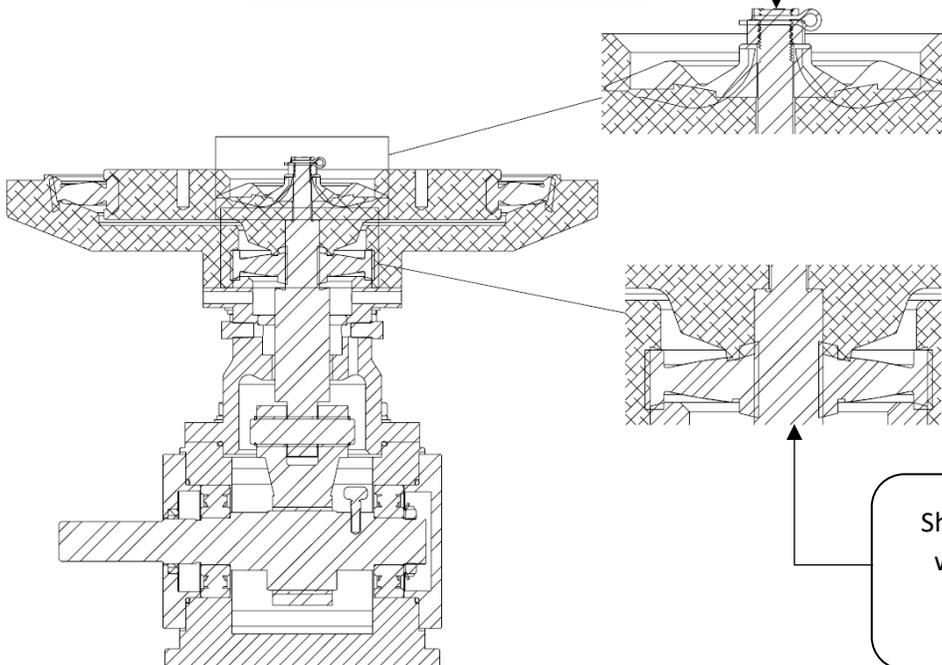
5.7- Detail heating of the actuator disc:

Heat the central hole until the actuator shaft can be engaged.



5.8- Detail of the reassembly of the actuator disc and central valve:

Detail of the final assembly of the central valve.



Shaft coupled after heating, when cooling, the shaft is locked by interference.

5.9- Reassembly of the actuator disc and central valve:



9- Reassembly of the actuator disc and central valve.



10- Reassembly of the top cover.



11- Reassembly of the outlet nozzle.

Instructions:

- 9- After following the procedure in **item 6.7**, insert the actuator assembly into the end of the actuator shaft, then house the tapered washer, put the central valve on the tapered washer, thread the castle nut on the shaft and finish by locking with the cotter pin.
- 10- Reassemble the top cover by screwing into the bottom cover, tighten the bolts and nuts correctly.
- 11- Reassemble the inlet/outlet valve onto the I/O valve screw, position on the top cover, and thread onto the cover. To finish, reassemble the outlet nozzle on the studs of the top cover and tighten with the nuts.

6- Periodic maintenance:



Attention: Change the oil every 500 hours, use 800ml of 10W40 oil.



Attention: Inspect the rubbers every 2000 hours.



Attention: Check seals and bearings in all maintenance.



Attention: Check the O-rings seal.



Attention: Make sure that all bolts and nuts are properly tightened, so that there is leakage and loss of efficiency of the equipment.