

SCROLLVAC plus

Minor Service Manual

Tip Seal and Exhaust Valve Replacement

Operating Instructions 300680362_002_C0

Spare Part Kit Numbers

EK117141000 Minor Service Kit SC 7-15

EK117141001 Minor Service Kit SC 18

EK117141002 Minor Service Kit SC 7-15 C

EK117141003 Minor Service Kit SC 18 C

for Pump Part Numbers

1410xxVxx

1411xxAxx



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Original operating instructions.

Safety Information

Obligation to Provide Information

Before installing and commissioning the pump, carefully read these Operating Instructions and follow the information so as to ensure optimum and safe working right from the start.

The Leybold **SCROLLVAC plus** has been designed for safe and efficient operation when used properly and in accordance with these Operating Instructions. It is the responsibility of the user to carefully read and strictly observe all safety precautions described in this section and throughout the Operating Instructions. Moreover, observe the information in all additionally supplied Operating Instructions for switches or valves, for example. The pump must only be operated in the proper condition and under the conditions described in the Operating Instructions. It must be operated and maintained by trained personnel only. Consult local, state, and national agencies regarding specific requirements and regulations. Address any further safety, operation and/or maintenance questions to our nearest office.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE is used to notify users of installation, operation, programming or maintenance information that is important, but not hazard related.

We reserve the right to alter the design or any data given in these Operating Instructions. The illustrations are not binding.

Retain the Operating Instructions for further use.

NOTICE



DANGER



WARNING



CAUTION



NOTICE



Safety Information

0 Important safety information

0.1 Mechanical hazards

- 1 Heavy object. Risk of physical injury. Use suitable lifting equipment.

0.2 Electrical hazards

- 1 Do not operate the pump with any parts of the enclosures removed or damaged as there may be a risk of an electric shock.

0.3 Thermal hazards

- 1 Risk of burns. Do not touch the pump inlet or exhaust ports whilst the pump is running since the temperatures of these parts could be high enough to cause harm. Elevated temperatures could remain after the pump has stopped.

0.4 Hazards caused by materials and substances

- 1 If within the system toxic substances or gases are being used, then the operator will be responsible for ensuring that the corresponding safety precautions are introduced!
- 2 If the pump has previously pumped hazardous gases take the appropriate safety measures before opening the intake or exhaust ports. Use gloves, a breathing mask or protective clothing to avoid skin contact with toxic or highly corrosive substances. Work under a fume hood.
- 3 Contaminated parts can be detrimental to health and environment. Before beginning with any work, first find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

WARNING



DANGER



CAUTION



DANGER



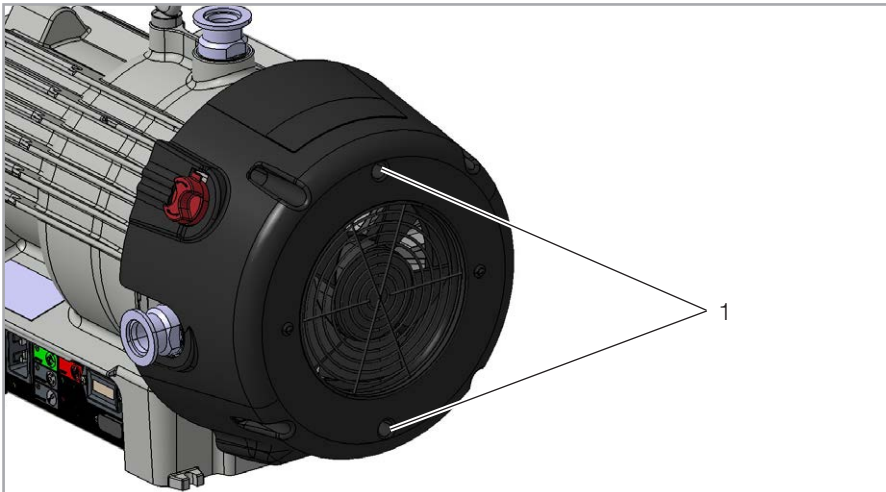


Figure 1 - Fan cowl removal

1 Replace the tip seals

Replace the tip seal as described below. Prepare the pump by running on gas ballast control for one hour to remove any process gases.

1. Switch off the pump and isolate from the electrical supply.
2. Using a 4 mm Allen key, undo the two screws (Figure 1, item 1) which secure the fan cowl and remove.
3. Disconnect the motor fan lead from the controller (figure 2, item 1).

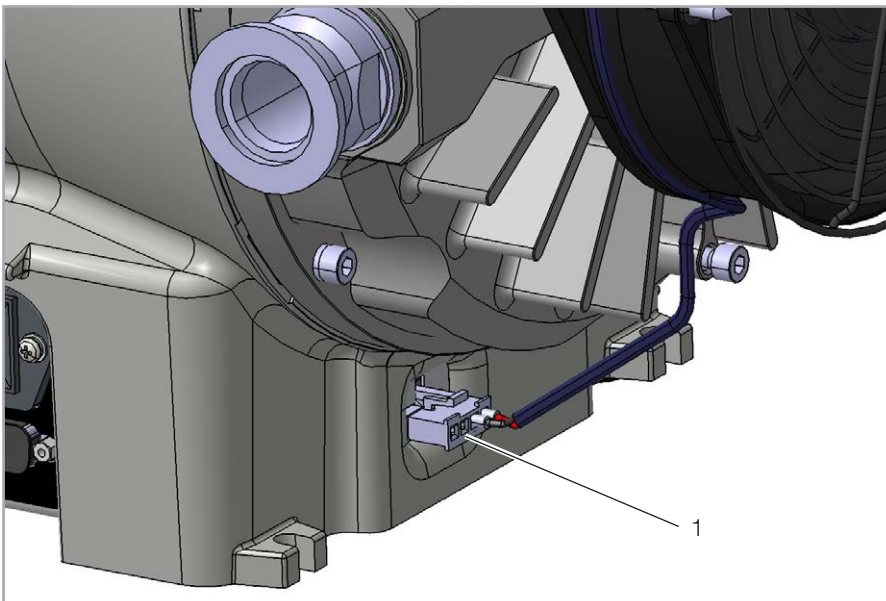


Figure 2 - Motor fan lead connector

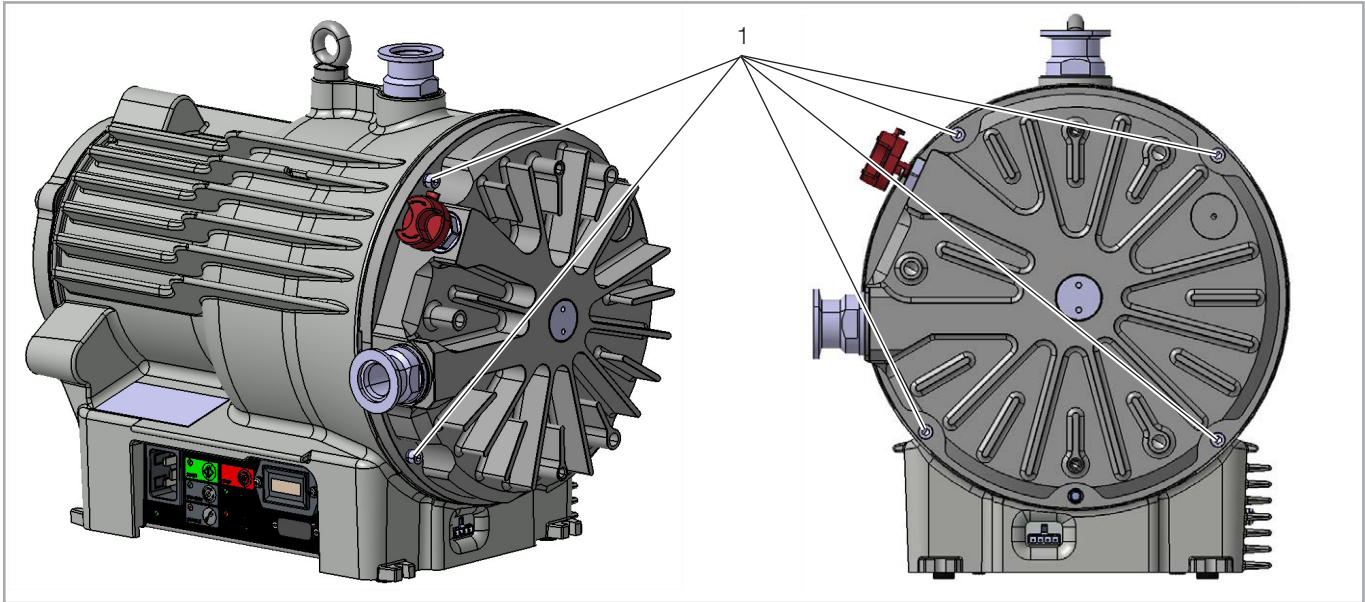


Figure 3 - Remove the fixed scroll assembly

4. Using a 4 mm Allen key, undo the four screws (Figure 3, item 1) which secure the fixed scroll assembly to the housing assembly.
5. Carefully separate the fixed scroll assembly from the housing assembly using a suitable lever in the slots provided (Figure 4).

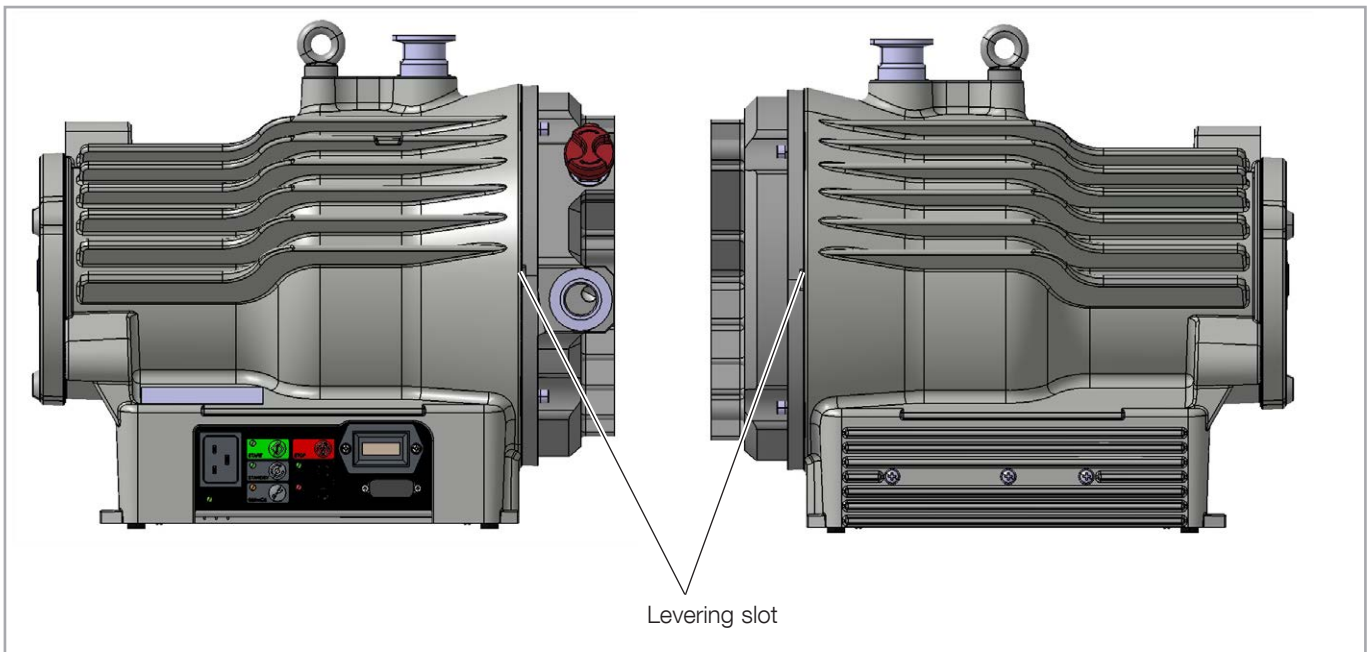


Figure 4 - Pump side views

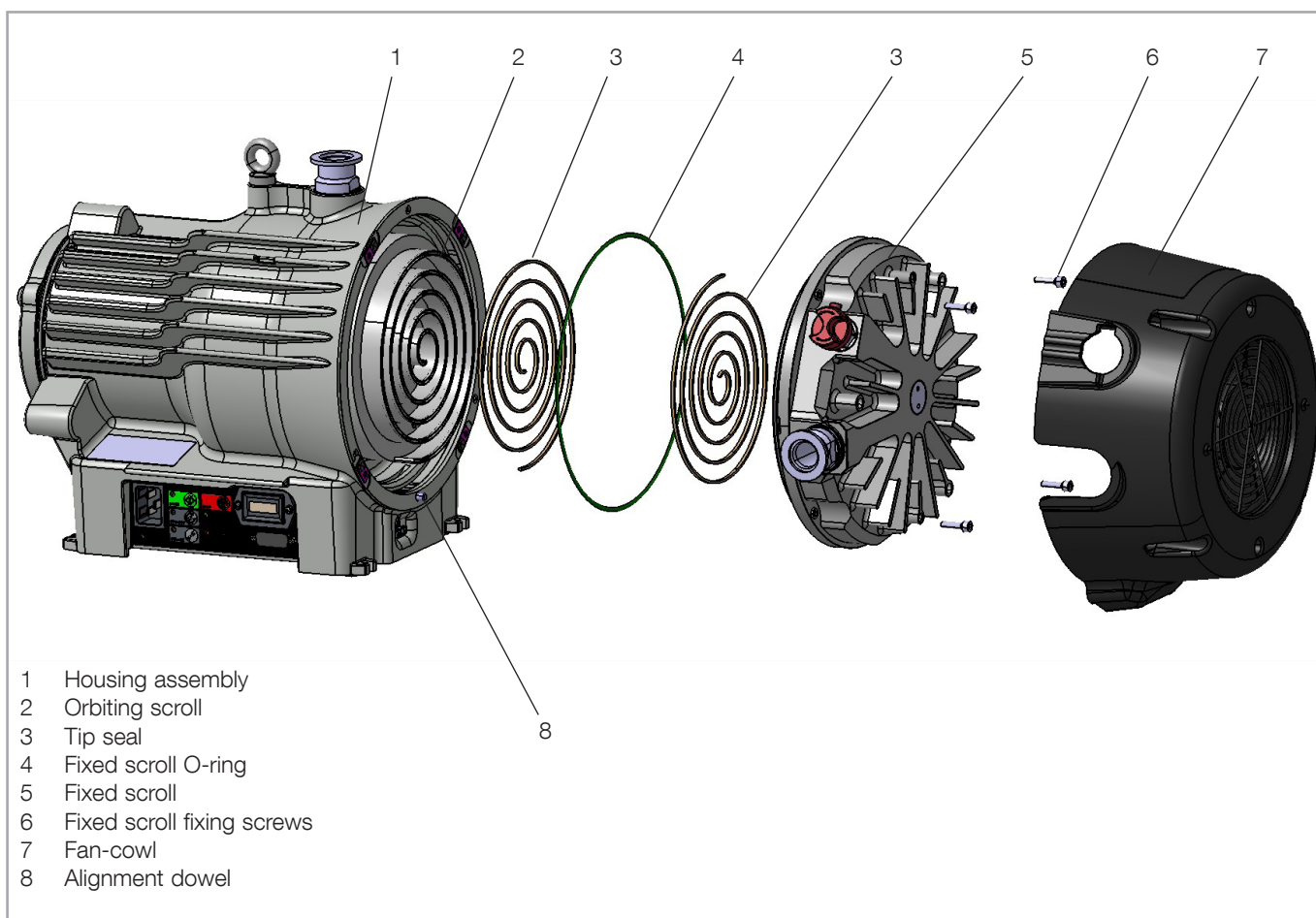


Figure 5 - Replacing the tip seals

6. Starting from one end, remove the tip seal from the fixed scroll. Repeat this operation for the orbiting scroll (Figure 5, item 3). Remove the fixed scroll O-ring (Figure 5, item 4). Dispose of all used items that have been removed following this operation.

Note: Avoid damaging the fixed scroll O-ring groove when removing the O-ring.

7. Using a clean dry lint-free cloth and IPA, remove all dust and process debris from the scroll forms and grooves. Heavier process debris can be removed with Green Scotch Brite® only.
8. Taking a new tip seal, fit it using the following technique in both the orbiting scroll and the fixed scroll:

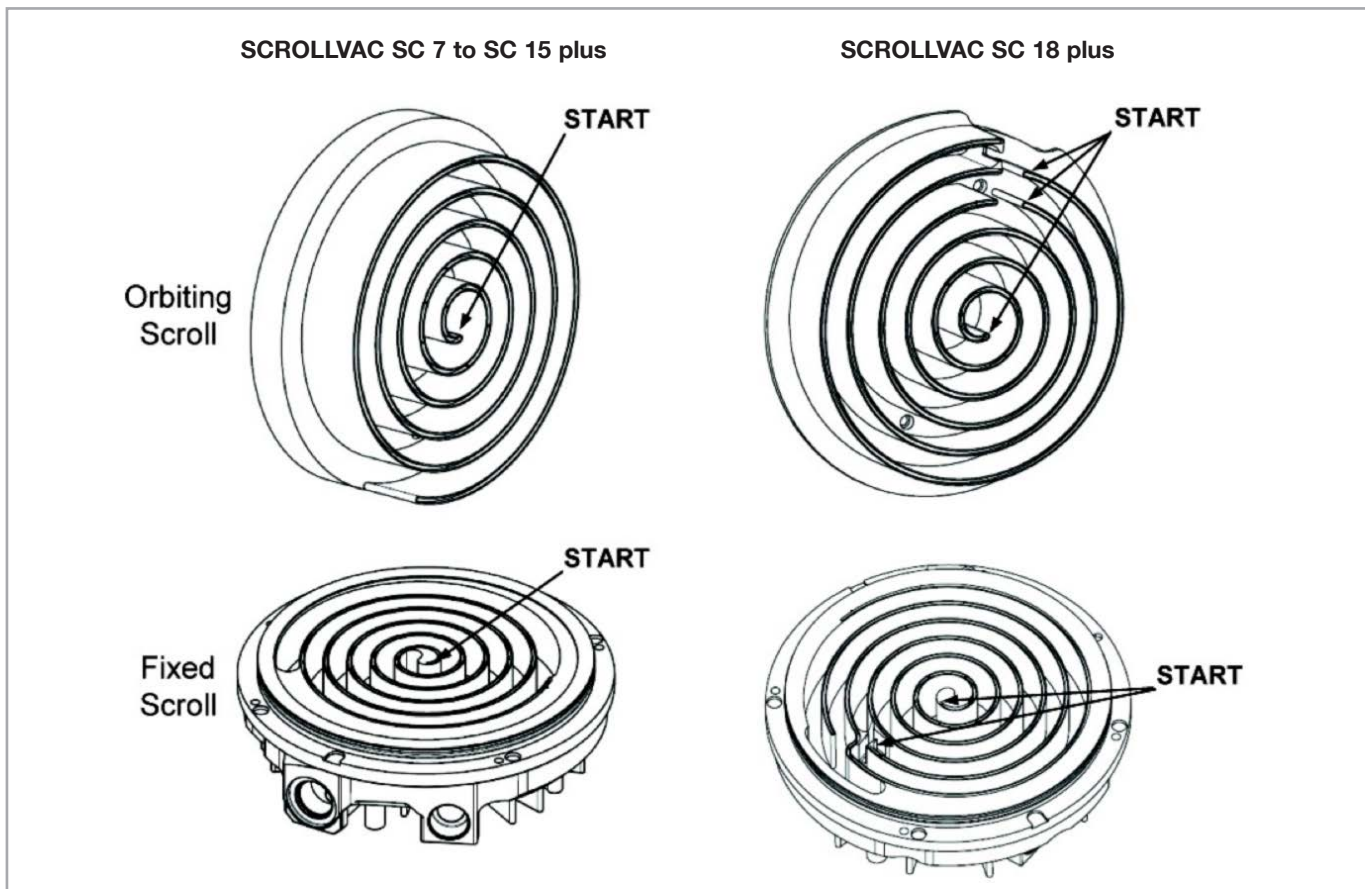


Figure 6 - Tip seal fitting

Starting at the centre of the scroll form, insert the tip seal into the tip seal channel. Ensure that each tip seal starts as close as possible at the start of the scroll channel. (Figure 6).

Note: The SCROLLVAC 18 plus has multiple tip seal starts in both the Orbiting and Fixed scrolls.

Continue to push the tip seal into the tip seal channel while working your way around the channel profile until you have reached the end. Ensure the tip seal is pressed squarely and fully home at each pinch point, these are located closer to the centre of the scroll.

Cut short the tip seal at the end of the scroll channel. There should be at least 10 mm between the end of the channel and the tip seal, this is to allow for expansion.

Note: A mark is provided at the end of all the tip seal channels to indicate where to cut the tip seal (Figure 7).

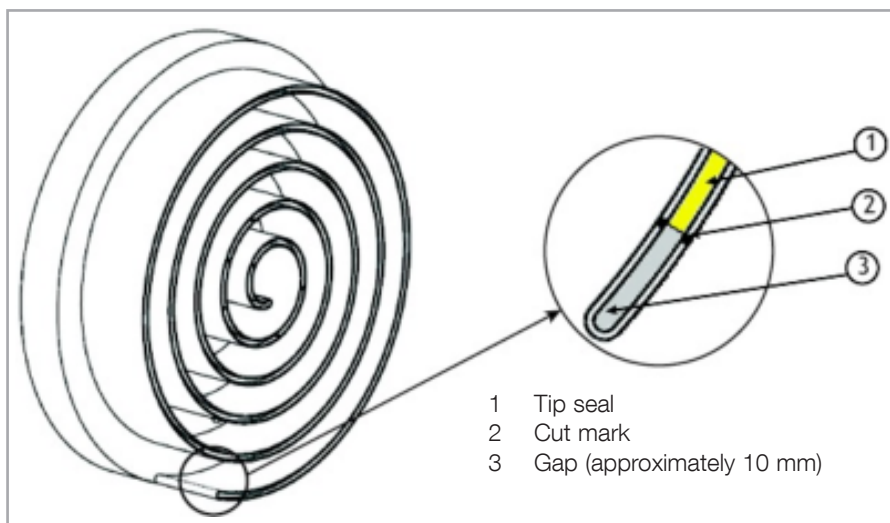


Figure 7 - Tip seal finish mark

Remove any tip seal debris which may have been produced while inserting the new tip seals.

9. Fit the new O-ring (Figure 5, item 4) onto the fixed scroll (Figure 5, item 5). The O-ring may be moistened with water (H₂O) only, to aid assembly.
10. Assemble the fixed scroll assembly up to the housing assembly (figure 5, item 1). Be careful and do not damage the O-ring. Check that the alignment dowel (Figure 5, item 8) in the housing assembly lines up with the hole in the fixed scroll. Ensure that the fixed scroll is fitted squarely onto the housing assembly.
11. Tighten the fastening screws (Figure 5, item 6) in small increments using a 4 mm Allen key and pull-up evenly the fixed scroll assembly onto the housing assembly. Torque each screw to 9 Nm. Do not start by assembling one side first.

Note: Do not to damage or trap the O-ring (figure 5, item 4).

12. Reconnect the fan-cowl as described on page 11 (unless you want to replace valves in addition).
13. When operating your pump following a tip seal change, ensure the fan is operating correctly.

Note: The pump tip seals may take a few hours to bed-in before full performance is restored.

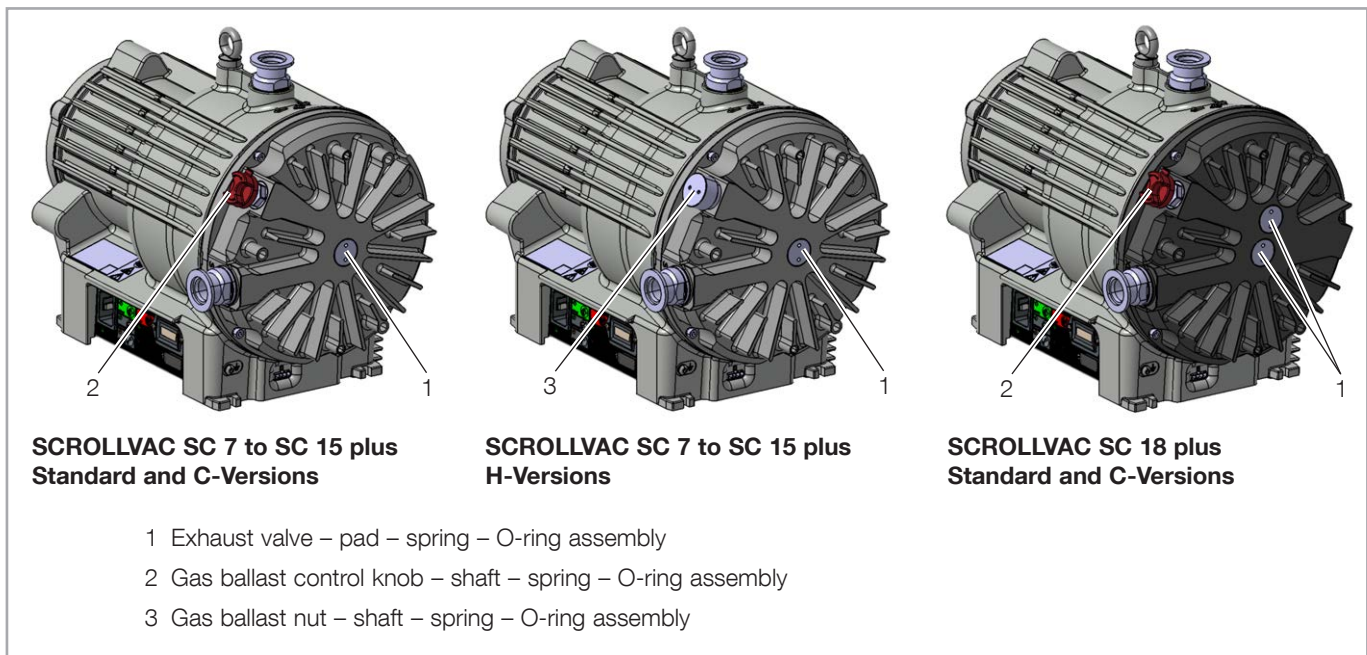


Figure 8 - Remove the valve assemblies

2 Exhaust valve and gas ballast valve replacement

Prepare the pump and disconnect the fan cowl as shown on page 5.

Exhaust valve(s)

1. Using an adjustable pin spanner remove the exhaust valve – pad – spring - O-ring assembly (Figure 8, item 1)
2. Dispose of all used items that have been removed following this operation: spring, pad and O-ring (figure 9, items 1, 2 and 3) and replace with new items.
3. Ensure all surfaces are clean before assembling the exhaust valve assembly including O-ring.

Note: Do not damage or trap the O-ring (figure 9, item 3). Do not use any oil or lubricant during the assembly

4. Assemble to the top of the fixed scroll using an adjustable pin spanner. Torque each screw to 6 Nm. If no torque tool is available closest to the exact torque is acceptable.

Gas ballast valve

5. Using a 22 mm AF spanner (Figure 8, item 2) or adjustable pin spanner (figure 8, item 3) remove the control knob - gas ballast nut – shaft – spring - O-ring assembly (figure 10).

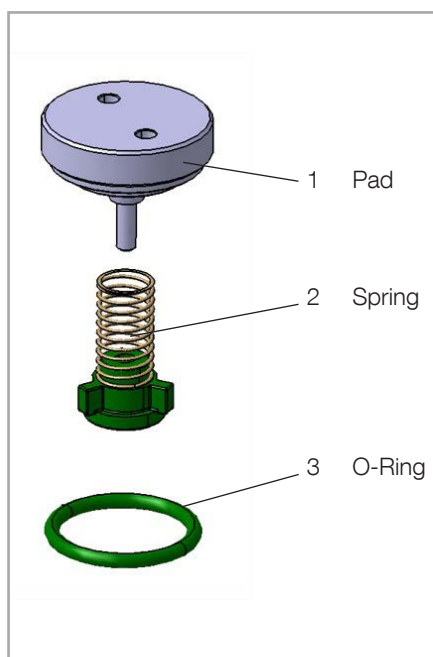


Figure 9 – Exhaust valve assembly

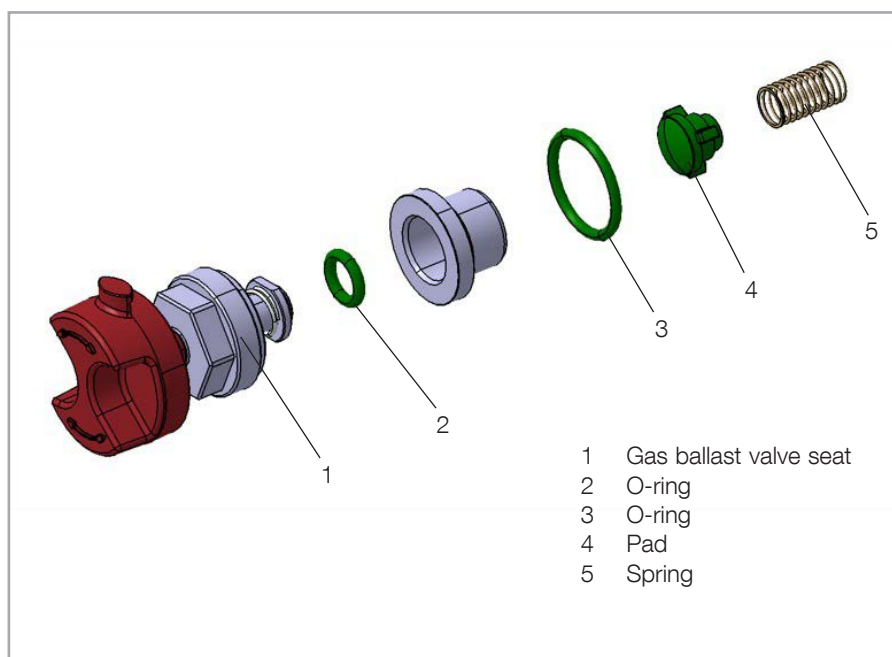


Figure 10 – Gas ballast knob and valve assembly

6. Remove the gas ballast valve seat (figure 10, items 1) from spring, valve pad and O-rings (figure 10, items 2, 3, 4 and 5).
7. Dispose of all used items that have been removed following this operation: spring, pad and O-rings (figure 10, items 2, 3, 4 and 5) and replace with new items.
8. Ensure all surfaces are clean before assembling the gas ballast valve assembly including O-ring.
9. Assemble the gas ballast assembly valve components back.

Note: Do not to damage or trap the O-ring (figure 10, item 2 and 3). Do not use any oil or lubricant during the assembly

10. Assemble knob and exhaust valve assembly to the side of the fixed scroll using a 22 mm AF spanner (Figure 8, item 2) or adjustable pin spanner (figure 8, item 3). Torque each screw to 6 Nm. If no torque tool is available closest to the exact torque is acceptable.

Reconnect the fan-cowl

11. Connect the motor fan lead into the mating connector at the controller (figure 2, item 1).
12. Assemble the fan-cowl assembly onto the housing assembly by hand using even downward pressure.
13. Tighten the fastening screws in small increments.
14. Reinstall your pump in accordance with Section 3 of the SCROLLVAC plus manual.
15. When operating your pump following a valve replacement, ensure the fan is operating correctly.

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