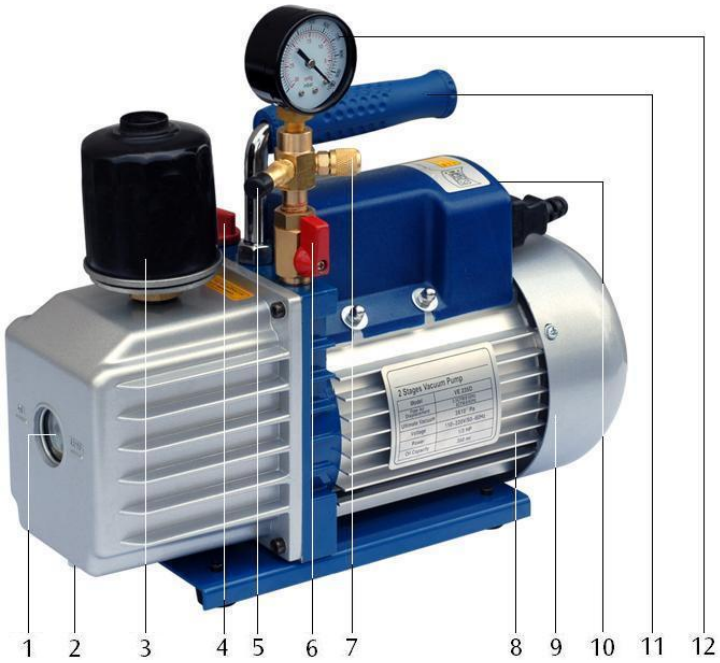
Rotary-Vane Vacuum Pump, Two-Stage 1003317

Instruction sheet

05/18 ALF



1 Oil sight glass
2 Oil drain cap
3 Exhaust filter
4 Oil fill cap
5 Hose nipple
6 Stopcock
7 Ventilation valve
8 Motor
9 Fan cover
10 Power switch and voltage selector switch
11 Carrying handle
12 Manometer

1. Safety instructions

The rotary-vane pump 1003317 is in accordance with the following applicable European directives and standards:
89/336/EEC Electromagnetic Compatibility
73/23/EEC Low Voltage Directive
EMC: EN55014-1 (2000) + A2 (2002),
EN55014-2 (1997) + A1 (2001)
LVD: EN60034-1 (1998) + A11 (2002)

Safe operation of the pump is guaranteed, provided it is used correctly. However, there is no guarantee of safety if the equipment is used in an improper or careless manner.

The pump may only be used for its intended use. Any other use is to be considered improper.

The manufacturer cannot be held responsible for damages caused by improper use of the pump.

Under no circumstance must the pump be altered or tampered with.

In case of tempering the manufacturer declines any responsibility for the functioning and safety of the pump.

If it may be assumed for any reason that non-hazardous operation will not be possible (e.g. visible damage), the pump should be switched off immediately and secured against any unintended use.

In schools and other educational institutions, the operation of the pump must be supervised by qualified personnel.

- Before setting up and using the pump for the first time, read the manual carefully.
- Confirm that the voltage selector switch is set to the local mains voltage.
- The pump may only be connected to the mains via a socket that has an earth connection.
- The pump may only be opened/repaired by qualified and trained personnel. Always disconnect the pump by pulling the mains plug before proceeding to any of the mentioned operations.
- In case of power failure during operation, turn the pump off for safety reasons.

2. Description

The rotary-vane pump 1003317 must only be used in vacuum experiments to depressurize vacuum containers. It is not designed for commercial use.

The pump is a high performance, compact, two-stage, oil-sealed rotary vane pump. It is protected against thermal overload and equipped with an exhaust filter to reduce oil mist, a manometer and a ventilation valve.

For reasons of transport the pump is delivered with no oil in the reservoir. In the package you should find a bottle of oil, sufficient for the first filling.

The pump is equipped with a voltage selector switch (refer to fig. 1), so that it can be operated with mains voltages of 110 V or 230 V plus or minus 10 %.

3. Technical data

Power supply:	110 – 120 V, 60 Hz 220 – 240 V, 50/60 Hz
Suction capacity:	100 l/min
Final pressure:	0.003 hPa
Motor power:	245 W
Oil capacity:	350 ml
Manometer:	0 – 1000 mbar
Hose nipple:	10 mm dia.
Dimensions:	approx. 335x138x250 mm^3
Weight:	approx. 11 kg
Ambient temperature:	approx. 5° – 40° C
Storage temperature:	-20…70°C
Relative humidity:	<85% with no condensation
Degree of pollution:	2
Protection type:	IP20
Fuse:	20 A, fast

4. Operation

4.1 General information

- After unpacking, please place all parts of the package (bags, boxes, polystyrene sides) away from the reach of children.
- Check the presence of the data label on the hosing. If the label is not present, do not use the pump and inform the supplier.
- In case you need to send back the pump to the distributer (e.g. repair) drain the oil.
- For the disposal of the oil adhere to the local regulations.

4.2 Before operating the pump

- Place the pump horizontally on a stable support.
- Do not connect the pump yet to the mains voltage.
- Check that the voltage selector switch is set to the local mains voltage and ensure that the power switch is in the OFF position before connecting the pump to a power source.

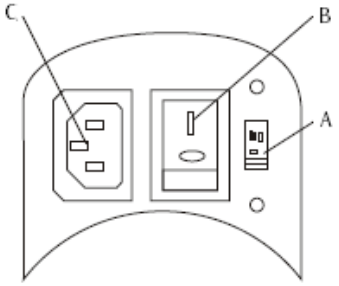


Fig. 1 A voltage selector switch, B power switch, C socket

- Remove the oil fill cap and add oil until it shows at the bottom of the sight glass. Refer to the technical data for the correct oil capacity of the pump.
- Screw back the oil fill cap, remove the cap from the hose nipple and open the stopcock.
- Turn the motor switch to ON position.
- When the pump runs smoothly put the cap back onto the hose nipple and close the stopcock. This may take 2 to 30 seconds depending on the ambient temperature.
- After the pump operates for approximately one minute, check the sight glass for proper oil level, which should be aligned with the sight glass oil level line. Refill oil if necessary.

Note: Insufficient oil filling will result in poor vacuum performance. Excessive oil can result in overflowing of oil from the exhaust fitting.

4.3 To shut off the pump after use

To prolong life span of the pump and a smooth start-up, these procedures to shut off the pump should be followed.

- Close the stopcock.
- Remove the hose from the hose nipple.
- Switch off the pump and open the stopcock for a few seconds to relieve any vacuum inside the pump.
- Place the cap on the hose nipple to prevent any contamination or foreign particles from entering it.

4.4 Pumping out vapours which may potentially condense

If gases or vapours which have the potential to condense are pumped out, they will tend to mix with the oil, as will any condensate formed from them. This has an adverse effect on the technical parameters for the pump.

If the composition of a gas being pumped out is unknown and it is not impossible that condensation may arise in the vacuum pump, then the pump should be operated with the ventilation valve open.

4.5 Maintenance

4.5.1 Vacuum pump oil

The condition and the type of oil used in any high performance vacuum pump are extremely important in determining the ultimate attainable vacuum. It is recommended to use the high performance vacuum pump oil, which is specifically blended to maintain maximum viscosity at normal running temperatures and to improve cold weather start up.

4.5.2 Oil change

- Ensure that the pump is warmed up.
- Pull the mains plug.
- Remove the oil drain cap and drain the contaminated oil into a container. Take care not lose the oil drain gasket.
- Dispose of the oil adhering to the local regulations.

Oil can also be removed from the pump by opening the stopcock and partially blocking the exhaust with a cloth while the pump is running. Do not operate the pump for more than 20 seconds using this method.

- When the drainage of oil completed, tilt the pump forward to remove the residual oil.
- Screw in the oil drain cap.
- Remove the oil fill cap and fill the oil reservoir with new vacuum pump oil until oil is seen at the bottom of the sight glass.
- Ensure that the stopcock is closed before turning on the pump.
- Allow it to run for one minute before checking the oil level.
- If the oil level is below the sight glass oil level line, fill oil slowly (with the pump running) until the oil reaches the oil level line.
- Place back the oil fill cap, ensure the stopcock is closed and the oil drain cap is closed tightly.

If the oil is badly contaminated with sludge that forms during operation, you may use the following method to remove the oil from the pump reservoir.

- Leave the pump running until it is warmed up.
- While the pump is still running, remove the oil drain cap. Take care not lose the oil drain gasket.
- Restrict the exhaust slightly.

This will back-pressure the oil reservoir and force out the sludge.

- Turn off the pump when the oil stops flowing.
- Repeat this procedure as required until the contaminants are removed.
- Screw in the oil drain cap and refill the oil reservoir to the proper oil level with clean vacuum pump oil.

4.5.3 Removing moisture from pump oil

Condensates may accumulate within the pump under following circumstances:

  - When the pump is new.
  - When the pump has been out of use for long periods
  - When the pump's capacity for dealing with water vapour has been exceeded.

- The pump should then be allowed to run for about 30 minutes with the intake opening closed and the ventilation valve open.

5. Troubleshooting guide

5.1 Failure to start

- Check if the voltage selector switch is in the right position.

5.2 Oil leakage

- Ensure that that the oil is not a residual accumulation of spillage etc.

If leakage exists, the housing gasket or the shaft seal may need to be replaced.

- Contact the distributor.

If leakage exists in the area of the oil drain plug,

- reseal the plug using a commercial pipe thread sealer.

5.3 Failure to attain a good vacuum

- Ensure the vacuum gauge and all connections are in good condition and leak free.
- Confirm leakage by monitoring the vacuum with the manometer while applying vacuum pump oil at connections or suspected leak points. The vacuum will improve briefly while the oil is sealing the leak.
- Ensure the pump oil is clean.

A badly contaminated pump may require several oil flushes.

- Ensure the oil is at the proper level.

For optimum pump operation, the oil must be even with the oil level line on the sight glass when the pump is running.

- Do not overfill as operating temperatures will cause the oil to expand, which will appear at a higher level than when the pump is not running.
- To check the oil level, start the pump with the stopcock closed.
- Check the oil level in the sight glass. Add oil if necessary.

5.4 Automatic shut down

The pump is equipped with a thermal protection function. If the ambient temperature is too hot, the product may stop functioning.

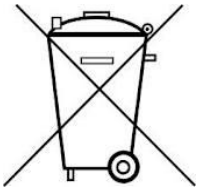
- Do not to switch off the power supply immediately.

If the pump does not re-start automatically after 3 minutes,

- cool the pump by lowering the ambient temperature to prolong the lifespan of the vacuum pump.

6. Disposal

- The packaging should be disposed of at local recycling points.
- Should you need to dispose of the equipment itself, never throw it away in normal domestic waste. If being used in private households it can be disposed of at the local public waste disposal authority.



- Comply with the applicable regulations for the disposal of electrical equipment.