

Operation and Service Manual

VTE 3 / 6 / 8 / 10

Vacuum Pump

PICOLINO





Vacuum Pump VTE 3, VTE 6, VTE 8, VTE 10

Warning:

Do not use this product in any way different to that described in these operating instructions. Store these operating instructions in a safe place and make them available to the user of the pump.

Symbol explanation

 **Advice!** Danger sign. Attention is brought to advice on the handling and economic use of equipment.

 **Warning against electric energy!** Your life could be in danger. Make sure that all electrical work is carried out by a qualified electrician.

Pump ranges:

These operating instructions cover the following dry running rotary vane vacuum pumps:
VTE 3, VTE 6, VTE 8 und VTE 10.

Description:

All models are complete with a pipe connector on the inlet and exhaust silencer on the outlet. The sucked air is cleaned by an integrated micro-fine filter. The motor fan cools the motor and pump housing.


Accessories: Vacuum regulation valve (ZRV) part number: 31430 (VTE 3/6), 31490 (VTE 8/10) and non-return valve (ZRK) parts number: 61802 (VTE 3), 61803 (VTE 6/8/10).


Intended use:

The VTE is intended for the evacuation of a closed system or for a continuous vacuum up to -850 mbar (25.0 in.Hg). All other modes of operation (e.g. for pressure) are prohibited.


The VTE vacuum pumps are suitable for industrial use with protection features according to EN DIN 294, table 4, for people aged 14 and above.

The ambient and air intake temperature must be between 0°C (32°F) and 50°C (122°F) for VTE 3, 6, 8 and 0°C (32°F) and 40°C (104°F) for VTE 10. These dry running vacuum pumps are suitable for use with air of a relative humidity of 30% to 90%.

 Dangerous gas mixtures (e.g. inflammable or explosive gases or vapours), extremely humid air, water vapour, aggressive gases or traces of oil must not be allowed to enter the pump. All operation in potentially explosive areas is prohibited.

 Additional safety measures are necessary for applications where an unforeseen switch-off or failure of the vacuum pump (e.g. through power breakage, tripping of the motor protection switch due to overheating or vane breakage due to insufficient service) would danger the safety of personnel or the installation. In order to avoid the danger of falling parts whilst operating of the pump in lifting equipment, the user must at all times ensure sufficient holding force (dependent upon the vacuum level of the pump, design of the vacuum holding plate, as well as the use of non-return valves). The non-return valve available from GARDNER DENVER THOMAS does not fulfil the necessary safety requirements to ensure the safety of vacuum lifting equipment.

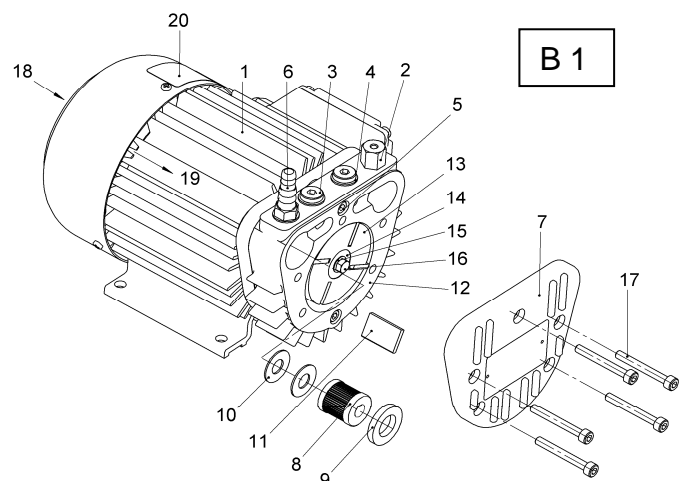
Installation (B 1):


 For installation and operating take note of the mandatory safety and health requirements.

In general, despite low vibration, we recommend fixing the pump using the feet on the motor. For stationary operation the pump should be isolated from the base using suitable vibration mounts.


A loss of performance will be noticeable for installations higher than 1,000m (3,280 ft.) above sea level. Please contact us if further information is needed.

The cooling air entry (18) and exits (19) require a minimum distance of 8cm (3.2 in.) to any obstruction. The discharged cooling air must not be re-circulated. VTE should only be operated when mounted horizontally.



 Connect the vacuum line to the vacuum pipe connector (6). The outlet air can exit the pump through the exhaust silencer (2), or can be piped away through an additional pipe connector.

The vacuum performance will be reduced if the vacuum line is either too restrictive or too long.

 The electrical installation should only be made by a qualified electrician and according to EN60204 and the regulations of the local power supplier. The main switch must be provided as disconnecting device by the operator.

The electrical data can be found on the motor nameplate (20). The connection diagram can be found on the inside of the terminal box (unless a cable and plug is fitted). Check the motor data with available power supply (voltage, frequency, maximum current).

A suitable cable strain relief must be provided (e.g. via a cable clamp).

The pump shall be protected against short-circuit with circuit-breaker. We recommend also that any motor protection switch should be fitted with a time delayed trip. This is due to the brief high ampere draw when starting from cold.


If the connecting cable is damaged or broken, it shall be displaced by the manufacturer or a qualified electrician to prevent electrical hazard.

The appliance must only be assembled or used according to its protection type.

Storage:

The VTE should be stored at a relative air humidity value from 30% to 80% and a temperature from -20°C (-4°F) to +60°C (+140°F). Above 80% relative air humidity suitable additional packing with a drying agent should be used.


Initial operation (B 1):

 The vacuum port (6) should be open or not restricted; otherwise the vanes may break if the pump rotates in the wrong direction.

Check motor direction by briefly starting the pump and comparing the direction of rotation with that on the motor nameplate (20).

Vacuum regulation valve: (Pos 3 – Accessories): The setting of the vacuum regulation valve determines the maximum vacuum as described in the operation instructions.

During operation:

 Pumps which have reached their operating temperature may have a surface temperature up to 100°C (212°F). To avoid burning, do not touch.

Do not manually transport the pump while in operation.


The internal pump parts are self-lubricating. To avoid damage, do not allow lubricants to enter the pump.


Regularly clean the air filter and check the condition of the vanes (see service information).

Noise emission:

The use of ear protection for longer exposures to operating pumps is recommended.

Service and maintenance (B1):

 During service the pump must be isolated from the power source and made certain that re-connection is not possible. To prevent burning injuries due to hot parts, servicing should not be undertaken on pumps which are at operating temperatures. To ensure satisfactory operation, only use original service parts.

 In the case of devices without thermal protection, you must check whether they are suitable for continuous operation in accordance with the manufacturer's catalogue. If you ignore this, it can result in overheating leading to the motor blocking. In this case, you must immediately disconnect the device from the mains supply, since there is a fire risk.

- Air filtration:

The performance of the vacuum pump will reduce if the air filter is not maintained correctly.

The filter cartridge (8) should be cleaner by blowing air through the inlet to the outside of the cartridge, or if necessary replaced. A replacement of the filter is recommended at least once per year (or under extreme conditions more often).

Filter cartridge change: Unscrew housing cover (7). Remove filter cartridge (8) and gaskets (9, 10) from filter chamber. Clean or replace filter cartridge (8) and check the condition of the gaskets (9, 10). Reassembly is in the opposite direction. Insert filter cartridge (8) with the closed end towards the housing cover (7). Pay attention that the gasket 9 is not confused with gasket 10 (which is thicker). Replace housing cover (7) and ensure the surface of both the rotor (13) and housing (6) are clean. Tighten the screws (17) to 5.5Nm (49.0 in-lbs) ± 0.5 Nm (± 4.5 in-lbs).

- Vanes (B 2):

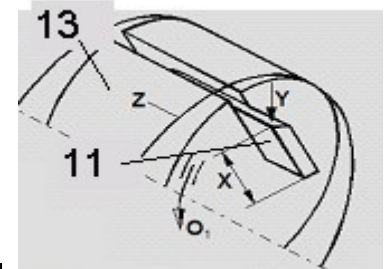
The VTE pump has four graphite vanes (11), which have a low but permanent wear rate. The wear rate will be increased if the inlet air is contaminated. For pumping clean air the vanes should be checked at the latest after 4,000 running hours and thereafter every 1,000 hours. For other conditions, depending upon the application, the service interval should be reduced.

Checking the vanes: Remove the housing (7) cover from the housing. Remove the vane (11) to be checked. All vanes should have a minimum height (X) of 10mm (0.39 in.) for VTE 3 and VTE 6 or 12mm (0.47 in.) for VTE 8 and VTE 10. If the minimum height is reached then all four vanes should be replaced.



The vanes should only be replaced as a complete set.

Replacing the vanes: Clean housing (12) and rotor slots (13) with compressed air. Insert the vanes (11) in the rotor slots ensuring that the angled end of the vane (Y) is on the outside and in the direction of rotation (O1) along the bore of the housing (Z). Replace the housing cover (7) and lightly tighten. Start the pump briefly and check for the free and smooth running of the vanes. Tighten the housing cover screws to 5,5Nm (49.0 in-lbs) $\pm 0,5$ Nm (± 4.5 in-lbs)



B 2

Fault Finding:

Problem (P), Cause and Solution (S):

P Vacuum pump switches off due to activation of the motor protection switch.

- S Voltage or frequency of supply does not correspond to the motor nameplate → ensure correct power supply
- S Pump seized → Check if vanes are broken, otherwise contact local service centre
- S Incorrect lead connection in terminal box → Check connections are according to diagram
- S The back pressure of the motor fan is too high → Ensure sufficient cool ventilation
- S The motor protection switch is not set correctly → Ensure settings are according the data onto motor nameplate
- S Automatic cut-out activates too quickly → Use cut-out with time delay

P In sufficient Vacuum flow:

- S Inlet filter is blocked → Clean or replace the inlet filter
- S Inlet or outlet pipe is too long or too restrictive → Reduce length or increase diameter of pipe
- S Leakage in pump or in system → Check / tighten fittings and pipes
- S Worn or damaged vanes → Check vanes and replace if necessary

P Max. Vacuum not reached:

- S Leakage in pump or in system → Check / tighten fittings and pipes
- S Worn or damaged vanes → Check vanes and replace if necessary

P Thermal switch activates → Vacuum pump is too hot:

- S Temperature of the ambient air or inlet air too high → Reduced temperature of cooling or inlet air
- S Pump is over loaded or set up incorrectly → contact local service centre
- S Cooling air restricted → ensure sufficient cooling air

P Vacuum pump emits unusual noise:

- S Pump housing is worn → Return pump to manufacturer or local service centre
- S Vacuum regulation valve (if fitted) is noisy → Replace valve
- S Vanes are worn or damaged → Check vanes and replace if necessary

On-site repair:

For all on-site repairs an electrician must disconnect the motor and ensure that accidental restart cannot occur. It is recommended to contact the manufacturer, local subsidiary, or representative for advice. The address of the nearest service centre can be obtained from the manufacturer (see manufacturer’s address). Following repair work and before installation refer to the instructions ‘initial operation’ and ‘during operation’.

EC-Conformity:

The pump is in conformity to the European safety standards (RoHS and Machinery Directive).
 Declaration of incorporation available upon request.

Service Kits and Accessories

Service kit part number:

VTE 3	25130104
VTE 6	25160104
VTE 8	23630104
VTE 10	27740104

Service kit consists of

Position (Drawing B1)

4x	Vanes (Blades)	11
1x	Filter cartridge	8
2x	Filter sealing ring	10
1x	Filter seal	9
3x	Gasket (copper)	4
1x	O-ring	In exhaust silencer (2)

Accessories:

VTE 3	31430	Vacuum regulator ZRV 6
	61802	Non-return valve ZRK 6
VTE 6	31430	Vacuum regulator ZRV 6
	61803	Non-return valve ZRK 12
VTE 8	31490	Vacuum regulator ZRV 12
	61803	Non-return valve ZRK 12
VTE 10	31490	Vacuum regulator ZRV 12
	61803	Non-return valve ZRK 12

Installation position:

Vacuum regulator ZRV:
Pos. 3 (Drawing B1), replaces plug
Non return valve ZRK:
Pos. 6 (Drawing B1), between pump and pipe connector