Operating Manual

Diaphragm Vacuum Pump

Carefully read the operating instructions and observe at all times the relevant instructions to avoid improper use and potential risks.

KEEP THIS DOCUMENT FOR FUTURE REFERENCE

CONTENT

What this Series Offers

This series diaphragm vacuum pump has the features of continuous oil free pumping, low noise level, higher efficiency, long lifetime. It is mainly used in medicinal products analysis, tenuously chemical engineering, biochemical pharmacy, food examination, investigating and solving criminal case, etc. It is the ideal product used with the high-accuracy chromatogram apparatus, and as backing pumps for (wide range) turbo molecular pumps. This rang of vacuum pumps were developed especially for laboratory operations. It meets the highest expectations in terms of precision, reliability and ease of use.

Application Examples

- Vacuum filtration
- Vacuum distillation
- Vacuum drying
- On rotary evaporators
- To extract and transfer gases
- Gel drying

Features

1. This highly efficient pump works without any medium like oil, and thus cause no pollution. Inlet Filters are installed to prevent contamination and ensure clean air.
2. Advanced technology & materials are adopted for ideal vacuum degree and airflow rate.
3. The machine will power off automatically when the pump temperature reaches 130°C. Such overheat protection can prevent motor from damage because of long-time operation.
4. Made of nitrile rubber, the diaphragm is durable and anti-corrosive. The friction-free operation will not cause any heat or abrasion to the diaphragm.
5. The automated cooling and exhaust system can work continuously around the clock.
6. Adjustable pressure valve allows for easy control over vacuum degree.
7. High-quality axletrees facilitate steady running and low noise.
8. The pump and the components in contact with air are coated with PTFE, making the device resistant to chemical corrosion and extreme temperature between -190~260 .
9. It features compact size and light weight and is easy to maintain.
10. The smooth instrument surface is free from accumulation of most impurities and particles.

Technical Data
RVP01

Pumping speed (L/Min)	30	Pump Head	2
Ultimate Pressure Vacuum Positive pressure	≥0.095 Mpa 50mhar	Voltage Rating	220V/110V, 50Hz/60Hz
Dimensions (L x B x H)(mm)	300x120x235	Temp of the body (°C)	<55
Motor Power(w)	160	Weight (Kg)	9
Inlet (mm) Outlet (mm)	φ6 Silencer	Diaphragm Valves	NBR
Working Temp(°C)	7-40	Noise Level(DB)	<50
Function	Vacuum		

OPERATIONAL INSTRUCTIONS

Read these instructions carefully before using this product. Only qualified engineer/electricians suitably trained should undertake the installation and commissioning of his product.

The following is an explanation of the two different types of hazards:

 Protective Conductor Temrinal

 Caution, hot surface

Usage & Environmental Guidelines

- Intended Use: This product is designed only for pumping/evacuating air.
  Do not use with liquids, corrosive gases, or particulate matter.
- Contaminant Protection:
  Filter out water vapor, oil-based contaminants, and other liquids before they enter the pump.
  Protect the pump from dirt and excessive moisture to maintain performance.
- Operating Conditions:
  Max ambient temperature: 55°C (131°F).
  High-altitude effects: Performance decreases due to lower atmospheric pressure. Refer to the technical sheet for altitude-specific ratings.
- Do not exceed recommended pressure/vacuum limits. Operating beyond specifications may damage the pump. Always consult the supplied technical data sheet.

Installation

- Refer to the supplied technical sheet for full specification.
- Disconnect electrical power supply before installing or servicing. Failure to do so could result in electrical shock, personal injury or death.
- Avoid exposure to liquids. To prevent electrocution, do not use this product in wet environments. If installed outdoors, ensure proper weather protection.
- Follow local electrical regulations when wiring the electric motor.
- Ensure that the product ventilation grilles are kept free from obstruction.
- Do not place any objects (fingers, metal, tools, etc.) through the grille holes.
- Check that the mains supply voltage matches the product's nameplate.
- Contact the factory immediately if the voltage conditions differ.
- Avoid touching the product during or immediately after operation, as surfaces become extremely hot.
- Do not lubricate any part of this oil-less pump. The sealed bearings are permanently lubricated.
- Do not install with pipes that are smaller than the size of the head ports. Install the recommended filter/mufiler to the inlet/exhaust port.

Mounting

- To reduce noise and vibration, use shock mounts and install the pump horizontally on anti-vibration mounts to minimize resonance.
- Do not obstruct airflow around the pump. Ensure proper ventilation to prevent overheating.
- To startup: connect the power supply and turn on the machine. Allow the pump to reach steady operation. Connect the vacuum pump to the decompression machine using a rubber hose. Start the pump only after all connections are secure.

Product Failure

• Always disconnect the electricity supply before servicing or maintenance.
• Do not attempt to dismantle any part of the product while it is powered.
• Allow the product to cool down completely before handling.
• Refer to the Troubleshooting Guide for common issues.
• Contact your local dealer for further assistance if needed.
• For Products with Thermal Overload Protection (Check Motor Labels)
Ensure the product does not fail due to overheating or overloading.
If equipped with automatic reset overload protection, the product will restart once it has cooled down.

Maintenance, Service & Installation

• Safety Precautions
Power Off & Isolate: Always disconnect the electricity supply before servicing.
Release Pressure/Vacuum: Fully vent all pressure or vacuum before maintenance.
• Filter & Muffler Maintenance
Regular Inspection: Prevents damage and costly repairs. Check weekly in dirty environments.
Cleaning Procedure: Clean filters (located under pump head cover) using water-based solvents only. Never use: Petroleum-based products, acids, caustics, or combustible solvents.
Risk Warning: Improper cleaning accelerates wear and reduces pump lifespan.
• Rebuild & Installation
Factory Service Note: Performance guarantees do not apply to rebuilt pumps.
Options: Return to factory for repair or follow the rebuild procedure below.
Standard Kit Includes: Vacuum gauge (-0.1MPa) *1
Rubber pipe (φ7mm × φ12mm × 800mm) *1

Pump Disassembly

1. Power Isolation
Disconnect the pump from all electrical power sources.
Warning: Failure to disconnect power may result in severe injury or electrocution.
2. Pressure Release
Open the pressure relief valve and vent all air lines to fully depressurize the pump.
Warning: Skipping this step risks injury or pump damage from sudden pressure release.
3. Air Line Disconnection
Detach all air supply lines from the pump.
4. Gauge & Port Preparation
Label all pressure/vacuum gauges and pump ports for correct reassembly.
Remove gauges carefully.
5. Head Cover Removal
Unscrew and remove the head cover.
Discard the old cover gasket (replacement required during reassembly).
6. Valve & Filter Removal
Remove the slotted valve screw, valve, and stainless valve leaf.
Extract and discard all three filter materials (note their original positions).

7. Pump Head Detachment
   Remove socket head cap screws and washers securing the pump head.
   Lift off the pump head assembly.
8. Underside Valve Removal
   Flip the head over.
   Remove the underside slotted valve screw, valve, and stainless valve.
   Discard old valves (replace with new components).
9. Cleaning Instructions
   Clean the pump head with water-based solvents only or blow dry with compressed air.
   Caution: Never use petroleum-based compounds, acids, or caustic solvents.
   Harsh chemicals will permanently reduce pump lifespan.
10. Diaphragm Inspection
    Check the diaphragm and retainer plate for wear/corrosion.
    If replacing: Remove countersunk screws from the retainer plate. Discard the old diaphragm (install new diaphragm during reassembly).

Pump Reassembly

1. Diaphragm Installation: Select new diaphragm based on primary use. Position diaphragm over connecting rod's raised ring.
   Apply adhesive to countersunk screws and install retainer plate.
2. Underside Valve Installation: Install new valve and stainless valve leaf on head underside.
3. Pump Head Installation: Place four thin washers on pump body corners. Align head using previous labels for correct orientation. Secure with cap screws and washers.
4. Top Valve Assembly: Install new leaf valve, valve limiter, and slotted screw.
   Ensure components point directly toward valve seat.
5. Filter Installation: Insert new filter element (smallest near inlet port).
6. Head Cover Installation: Position new gasket with all screw holes visible.
   Install cover using slotted screws (note offset hole).
7. Handle Reinstallation: Reattach handle with hex nuts and washers.
8. Gauge Reinstallation: Reinstall gauges according to previous labels.

Troubleshooting Guide

Always disconnect power before servicing. If the motor fails to start or slows down under load, turn it off and unplug it immediately. Verify that the voltage at the power outlet matches the motor nameplate rating. Inspect the plug, power cord, and switch for any signs of damage or deterioration. If the pump overheats or becomes noisy, stop operation immediately and perform repairs.

Note: Performance of field-rebuilt pumps is not guaranteed.

Possible Reason	Low Pressure	Low Vacuum	Excessive Noise	Over Heating	Will Not Start
Dirty Filter	√	√			
Damaged Valves	√	√			
Damaged Diaphragm	√	√			
Low Voltage	√	√		√	√
Wrong Voltage			√	√	√
Back Pressure On Head					√
Relief Valve Set Too Low	√	√	√		
Hose Leak	√	√			
Check Valve Leak					√

Warranty

We guarantee that our scientific instruments adhere to the most rigorous engineering and quality standards. This instrument is warranted to be free from defects in materials and workmanship under normal use and service, for a period of 12 months from the date of dispatch. The warranty is extended only to the original purchaser. For claims under the warranty, please contact your local supplier. After the warranty period expires, the manufacturer retains the right to invoice the cost price for the repair or maintenance of a faulty device, along with any associated service fees.

Scope of Warranty

The following conditions are not covered under the warranty.

• Faults or damage caused by negligence, improper installation, improper operation, or failure to use and maintain the machine in accordance with the instructions in this operating manual.

• Issues caused by unauthorized disassembly or modification.