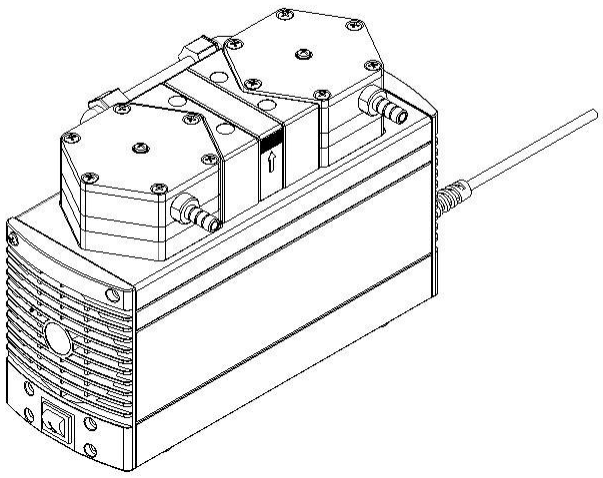
Vacuum Chemical Diaphragm Pump

TF-202

User

Manual



CONTENT

1. Product Overview

This Vacuum Chemical Diaphragm Pump TF-202 is a two-stage vacuum chemical diaphragm pump specially designed for vacuumizing corrosive gases or vapors. All parts in contact with gas are treated with PTFE and reinforced with carbon fiber, which fully ensures the chemical corrosion resistance of the pump. The diaphragm adopts a multi-layer structure to increase its toughness and strength, enhancing reliability and extending service life.

It is suitable for the treatment of corrosive gases in chemical, pharmaceutical, petrochemical and other industries, such as suction filtration, vacuum distillation, rotary evaporation, vacuum concentration, centrifugal concentration, solid phase extraction, etc. With reliable quality and reasonable structural design, it meets the needs of most experiments. An optional vacuum display and control module is available, which greatly reduces energy consumption and maintenance requirements.

2. Main Features

1. Complete chemical corrosion resistance: Adopts composite PTFE coating and pump head design. All parts in contact with gas can be customized with PTFE/ETFE/ECTFE materials to meet users' differentiated needs. Electrical switches, transmission structures, circuits, fastening screws and casings are treated with corrosion resistance, making the pump perfectly suitable for corrosive environments.

2. Continuous and stable operation: Designed as a 100% maintenance-free dry pump without water or oil, eliminating the need for regular maintenance such as cleaning, pipe replacement and water change. The operating temperature range is 5°C to 40°C, covering a wide range of application scenarios.

3. Integrated structure, safe operation, low noise and low vibration: Compact and robust design with an integrated hidden carrying handle; direct motor drive combined

with the low-stroke and low-noise characteristics of the diaphragm ensures the product noise is controlled below 45dB.

4. Overheat protection: Equipped with a temperature protection switch. The pump will automatically stop when the internal temperature is too high and restart after cooling down, ensuring the stability and safety of the system operation.

5. Excellent environmental performance: Compared with rotary vane oil pumps, it does not generate oil mist to pollute the environment or produce contaminated waste pump oil. Compared with water circulation air pumps, it features stable vacuum degree, saves a large amount of water resources, and has no risk of slow exhaust gas overflow.

6. Adaptation of multiple functional modules: Corrosion-resistant vacuum pressure regulating filters and other accessories can be optionally equipped, which can not only prevent solid impurities from entering the pump chamber but also adjust the appropriate vacuum degree.

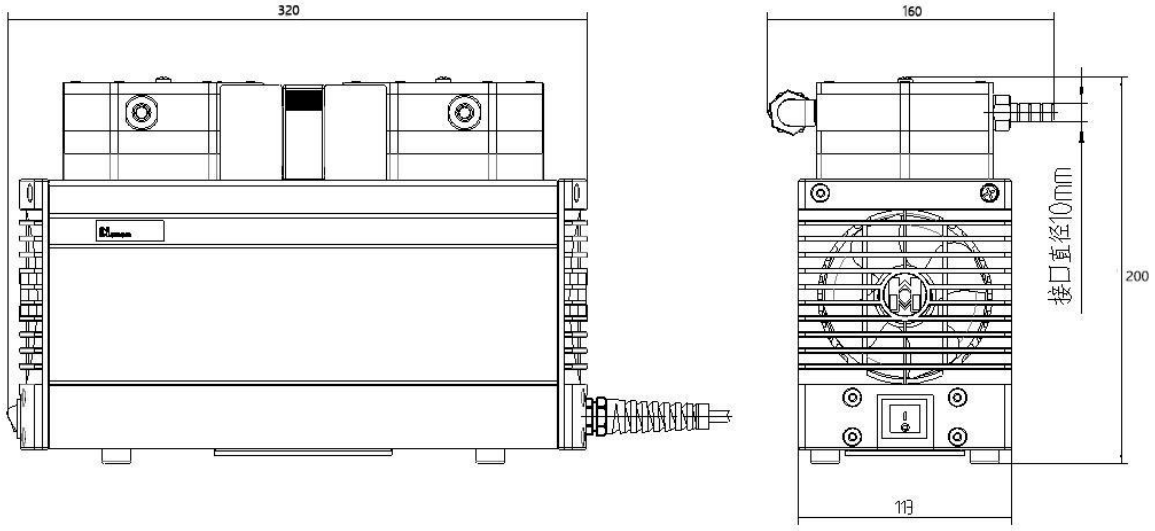
3. Parameter Table

Item	**Specification**
Rated Voltage/Frequency	220 V/50Hz
Rated Power	120W
Pump	Two-stage air pump
Ultimate Vacuum	6～8mbar
Maximum Operating Pressure	1.2 bar
Maximum Flow Rate	20L/min
Applicable Medium	Various corrosive gases such as strong acids, strong alkalis and organic solvents
Interface Specification	10mm
Medium and Ambient Temperature	5℃～40℃
Ambient Relative Humidity	<80%

Item	Specification
Pump Head Material	PTFE
Composite Diaphragm Material	HNBR+PTFE+ETFE/ECTFE (customizable)
Valve Plate Material	FKM, FFPM, FFKM (customizable)
Solid Discharge Valve	Equipped
Vacuum Gauge	Vacuum display and control
Duty Cycle	Continuous operation
Noise	<45db
Rated Rotating Speed	1500 RPM
Overall Dimension (L×W×H)	300×160×200mm
Weight	8.8Kg

Note: For unmentioned matters and special applications, please contact our technical staff.

4. Overall Dimensions



5. Installation Instructions

Unpacking Inspection

1. Unseal the shipping carton with care.

2. Take out the pump and place it on the laboratory bench.

3. Check the instrument and accessories against the packing list. If any error, shortage or abnormality is found, please contact the manufacturer immediately.

Installation Requirements

a. The pump and accessories must be at room temperature before installation.

b. Ensure the pump is installed in a well-ventilated environment to allow the motor fan to draw in sufficient cooling air.

c. Ensure the voltage of the socket is consistent with that indicated on the pump nameplate.

d. Install the pump in a clean, well-ventilated, dry environment with a temperature below 40°C. Protect it from rain, splashing, hoses and dripping water.

e. Connect the inlet and outlet of the pump with high-pressure hoses. Note that the hose connected to the pump outlet must be lower than the pump outlet throughout the entire length.

6. Operation Instructions

1. Turn on the power switch after all pipes are correctly connected to the inlet and outlet.

2. After use, release the vacuum and keep the vacuum pump running for at least two minutes to extend the service life of the pump.

Important Notes

a. The outlet must not be blocked when the pump is used as a vacuum pump.

b. It is forbidden to use the pump to transport liquid or solid particles.

c. Do not use the pump in rooms requiring explosion-proof equipment.

d. Prohibit handling samples that may explode due to collision, friction, heating or sparks (i.e., explosive samples, etc.).

e. It is forbidden to use the pump to generate vacuum and pressure at the same time.

f. The suction port of the pump is prohibited from being connected to overpressure.

g. If the pump does not work when the switch is turned on, turn off the switch immediately, release the vacuum and turn it on again; if the pump still does not work, please contact our technical staff.

7. Maintenance and Repair

Maintenance Precautions

The corrosion-resistant vacuum pump should be stored in a dry and well-ventilated room. The air inlet and outlet of the pump must be sealed with special rubber plugs to prevent foreign objects from entering the inner cavity and damaging the sealing parts, and avoid contact with oil or other flammable materials.

Troubleshooting

Cut off the power supply before troubleshooting all faults.

Fault	Cause	Troubleshooting Method
No operation when powered on	Power supply not connected	Check if the power connection is correct
	No power supply voltage	Open the bottom plate and check the power fuse

Fault	Cause	Troubleshooting Method
	Thermal switch disconnected after pump overheating	Cut off the pump power, let the pump cool naturally, find and solve the cause of pump overheating
Pump runs but no vacuum generated	Connected pipeline blocked	Check the connected pipeline
	Connected valve closed or filter blocked	Check the connected valve and filter
	Condensate in pump head	Release the vacuum and keep the pump running for about 5 minutes (Note: collect condensate at the pump outlet)
	Composite diaphragm and valve plate contaminated	Clean or replace the composite diaphragm and valve plate
System leakage or failure to reach ultimate vacuum	Incorrect or defective pipeline connection	Check the pipeline connection
	Pipeline leakage (embrittlement)	Replace the pipeline
	Condensate in pump head	Release the vacuum and keep the pump running for about 5 minutes (Note: collect condensate at the pump outlet)
	Composite diaphragm and valve plate contaminated	Clean or replace the composite diaphragm and valve plate

8. Safety Precautions

The following symbols are used in this manual; please fully understand their meanings:

Warning

Non-compliance with the given instructions may cause fire or electric shock, leading to injury or death.

Caution

Non-compliance with the given instructions may cause electric shock or other hazards, leading to injury or property damage.

Symbol Descriptions

	Warning / Caution		Prohibition
	Mandatory Instruction		Do not place the device in damp, dusty, greasy areas or near heat-generating equipment, otherwise it may cause malfunctions, fires, or electric shocks.
	Turn off the power supply when the device is idle for a long time or during maintenance, otherwise it may cause fire or electric shock.		Do not disassemble, repair, or modify the product, otherwise it may cause fire or electric shock.
	Cut off the power supply in case of abnormality.		Action that is strictly forbidden

Company Information

Zhongke Tk(Shandong) Intelligent Technology Co., Ltd.

Add: Building 402, Xizhou Community, No.16 Xizhou South Road, Dongfeng Sub-district, Licheng District, Jinan City, Shandong Province

Tel: 0531-88908220

Website: www.tekenwater.com