



# Operating Manual



## Diaphragm Vacuum Pump

Carefully study the operating instructions and observe at all times the relevant instructions to avoid dangerous situation.

**KEEP THIS DOCUMENT FOR FUTURE REFERENCE**

# CONTENT

---

What this series offers .....	1
Application Examples .....	1
Features .....	1
Technique Data .....	2
Operational Instructions .....	2
Use of product .....	3
Installation .....	3
Mounting .....	3
Product Failure .....	4
Maintenance & Service .....	4
Inspecting .....	4
Service & Installation .....	4
Pump Disassembly .....	4
Pump Reassembly .....	5
Troubleshooting Guide .....	5

## 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 satisfies 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. It can be in service under the condition of no working medium (no oil) and will not produce any pollution. Moreover, there is filtering material in the air exchange bin of the body to guarantee the air clean.
2. New technologies and materials are used in production. It is easy to move and can work smoothly, which can guarantee the ideal vacuum and high rate of air flaoing.
3. It adopts the operation containing no friction, producing no calories and having no friction exhausts. The diaphragm is made of Nitrile Rubber, which resists the corrosion and has long operating life.
4. The self-cooling air draft system is designed in the body. This system can keep the machine continuously running for 24 hours.
5. The pressure can be regulated by a valve to meet various vacuum needs within certain range.
6. The axletrees are classical, which are imported abroad. They have the features of steady running, low noise and high operating efficiency.

## Technique Data

SH-CDP30



Pumping speed:(L/Min)	30	Pump Head	1
Ultimate Pressure Vacuum Positive pressure	$\geq 0.08\text{Mpa}$ 200mbar $\geq 30\text{Psi}$	Voltage Rating	230Vac, 50Hz
Dimensions (L x B x H)(mm)	210x160x235	Temp of the body ( $^{\circ}\text{C}$ )	<55
Motor Power(w)	160	Weight (Kg)	8
Inlet (mm)	$\varphi 6$	Diaphragm	NBR
Outlet (mm)	$\varphi 6$	Valves	
Working Temp( $^{\circ}\text{C}$ )	7-40	Noise Level(DB)	<50
Function	Vacuum & Pressure		

## OPERATIONAL INSTRUCTIONS

Read these instructions carefully before you attempt to use this product. Only qualified engineer/electricians suitably trained should undertake the installation and commissioning of this product.

Read this information carefully before proceeding

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



Protective Conductor Terminal



Caution, hot surface

## Use of product

- This product must only be used for the purpose of pumping/evacuating air.
- Do not allow corrosive gases or particulate material to enter pump. Water vapor, oil-based contaminator or other liquids must be filtered out.
- Ambient temperature should not exceed 55°C.
- The performance of the product will be adversely affected at high altitudes.
- Performance is reduced by lower atmospheric pressure found at high altitudes.
- Your reciprocating diaphragm pump is a precision product. Protect it against dirt and excessive moisture.
- Do not try to obtain higher pressure or vacuums than those recommended. Refer to technical data sheet supplied.

## Installation

- Refer to the technical sheet supplied for full technical specification.
- Disconnect electrical power supply before installing and/or servicing. Failure to do so could result in electrical shock, personal injury or death.
- To avoid risk of electrocution do not use this product in an area where it could come in contact with water or other liquids. If exposed to the elements it must be weather protected.
- The wiring of the electric engine should be made in accordance with local electrical regulations.
- 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 is correct for the products—see nameplate.
- Contact the factory immediately if the voltage conditions are different.
- Do not touch the product during and just after operating as all parts of the products get very 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 at the head ports. Fit a recommended filter/muffler to the inlet/exhaust port.

## Mounting

- To reduce noise and vibration use shock mounts, mount the product in the horizontal plane using anti-vibration mounts, so that they will not resonate.
- Do not block flow of cooling air over pump in any way.
- Connect power supply. Turn the machine's power on. Under the steady operation of pump, connect the vacuum pump and decompression machine with rubber pipe. Then the pump can be started.

## Product failure

- Disconnect the electricity supply.
- Do not attempt to dismantle any part of the product before the electricity is disconnected.
- Wait until the product has cooled down.
- Refer to the Trouble Shooting Guide.
- Contact the factory or distributor for further advice.
- For products are protected by thermal overheats within the motor (refer to motor labels) ensure the product will not failed due to overheating or overload. Automatic reset overloads will restart the product when it has cooled down.

## Maintenance & Service

- Switch the electricity supply OFF and isolate the product.
- Vent all pressure/vacuum from the product.
- Filter will become blocked quickly in dirty environments.

## Inspection

Regular inspection can prevent unnecessary damage and repairs. A dirty filter or muffler restricts airflow and can cause overheating and noisy. Regularly check filters located under pump head cover. If necessary, clean pump head using only water-based solvents. Do not use petroleum-based components, acids, caustics, or combustible solvents to clean or lubricate any parts. It will reduce service life of pump.

## Service and Installation

We will not guarantee performance of the rebuilt pump. You can return pump to the factory for repair, or perform the following rebuild procedure for installing.

Each unit contains all or most of the following: 1 piece of vacuum gauge (-0.1Mpa); 1 piece of rubber pipe ( $\Phi 7\text{mm} * \Phi 12\text{mm} * 800\text{mm}$ )

## Pump Disassembly

1. Disconnect pump from electrical power  
Warning: Always disconnect power before servicing. Failure to do so can result in severe personal injury
2. Relief the pressure valve, and vent all air lines to pump to remove pressure  
Warning: Failure to so can result in severe personal injury or cause damage to the pump.
3. Disconnect air lines to pump
4. Label pressure and vacuum gauges and pump ports so you can reassemble them correctly later. Remove gauges
5. Remove screws in head cover and remove cover and cover gasket. Discard old cover gasket.
6. Remove slotted valve screw, valve and stainless valve leaf. Remove and discard three old filter materials, noting their position.
7. Remove socket head cap screws and washers from pump head, and remove head.
8. Turn head over. On underside of head, remove slotted valve screw, valve, and stainless valve. Discard old valves.
9. If necessary, clean pump head using water-base solvents and/or blow off with air.

Caution: Do not use petroleum-base compounds, acids, or caustics solvents to clean or lubricate any parts. It will reduce service life of pump. Use only water-base solvents for cleaning.

10. Visibly check diaphragm and retainer plate for excessive wear or corrosion. If replacing diaphragm, remove countersunk screws from diaphragm retainer plate and discard old diaphragm.

## Pump Reassembly

11. If replacing diaphragm, choose new diaphragm based on primary intended use. Place diaphragm over raised ring the connecting rod. Apply adhesive to countersunk screws and reinstalled retainer plate.
12. On underside of head install a new valve and stainless valve leaf.
13. Position four thin washers on corners of pump body. Refer to labels made earlier to orient pump head correctly. Install pump head with cap screws and washers.
14. Install new leaf valve, valve limiter, and new slotted screw in top of pump head. Make sure that valve and valve limiter are securely raised locating bar so they point directly toward valve seat.
15. Install new filter element in pump head. Small element goes in recess nearest to inlet port.
16. One of four gasket screw holes is farther from edge than other three. Position new gasket on pump head with side up that allow all four-screw holes to be visible at once. Install head cover using slotted screws.
17. Reinstall handle with hex nuts and washers.
18. Reinstall gauges referring to labels make earlier.

## Troubleshooting

Always disconnect power before servicing. If motor fails to start, or it slows down under load, turn it off and unplug it. Make sure that voltage at power outlet agrees with motor nameplate. Examine plug, cord, and switch for deterioration. If the pump gets overheat or is noisy, stop pump immediately for repair.

NOTE: we will not guarantee performance of a field-rebuilt pump.

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					✓