

INSTRUCTION MANUAL

SINGLE MACHINE ROTARY VANE VACUUM PUMP

PROVIDE HIGH-QUALITY PRODUCTS AND SERVICES FOR GLOBAL AUTOMATION EQUIPMENT ENTERPRISES



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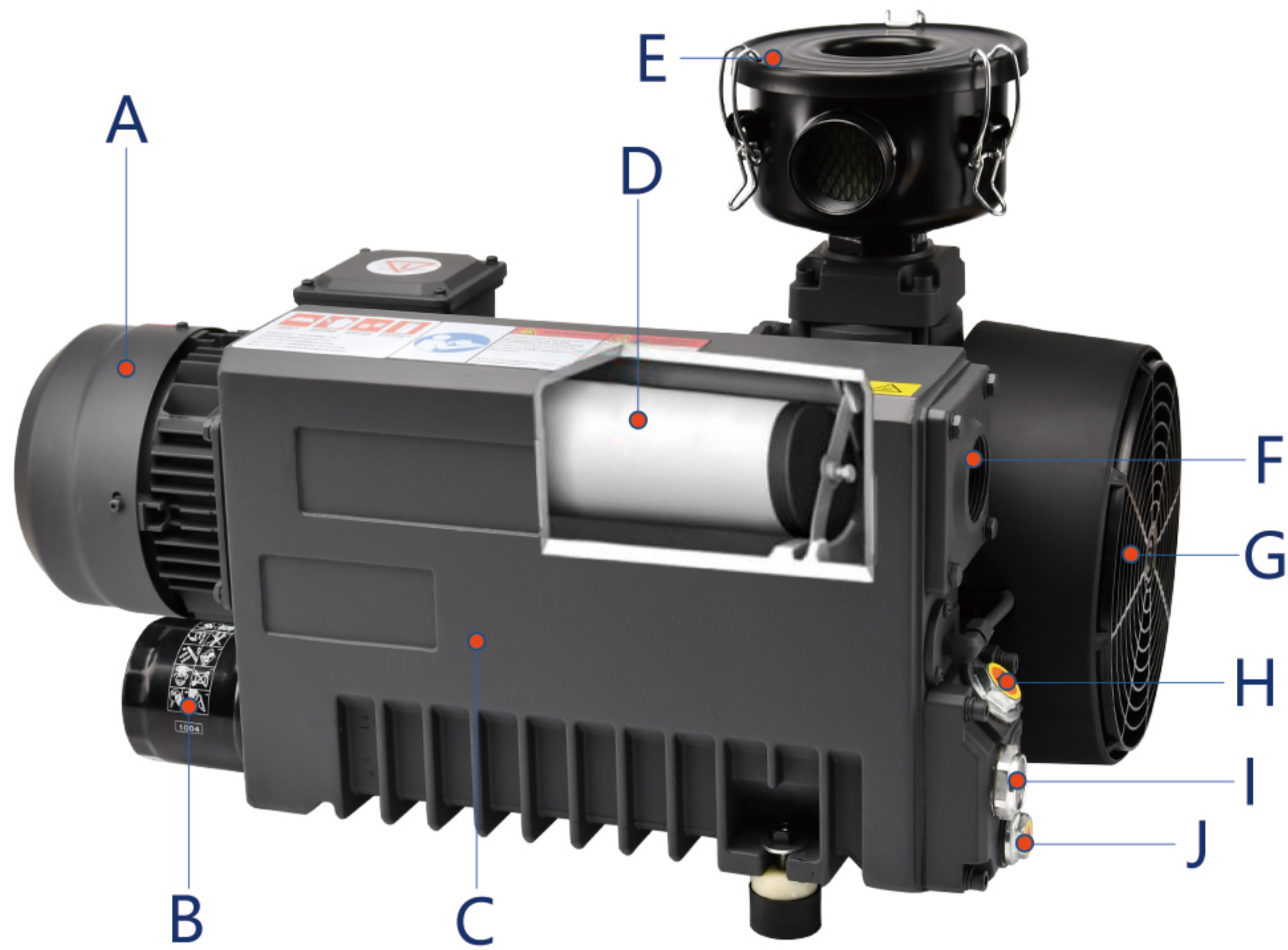
First of all, I would like to sincerely thank you for purchasing Youcheng Zhixin products. You are welcome to use our VN series rotary vane vacuum pump products (hereinafter referred to as vacuum pumps), we will wholeheartedly provide you with high-quality services Business. Please carefully check whether the products you receive are consistent with the products ordered, whether there is any damage during transportation, accessories, and instruction manuals and so on. This "Instruction Manual" introduces you to the operation method of the product and the precautions for use. Please read this instruction carefully, and use this product only after fully understanding the safety matters, product performance, and operation methods. In addition, after reading, please use this book. The manual is placed next to the machine for easy access at any time.

SAFETY PRECAUTIONS

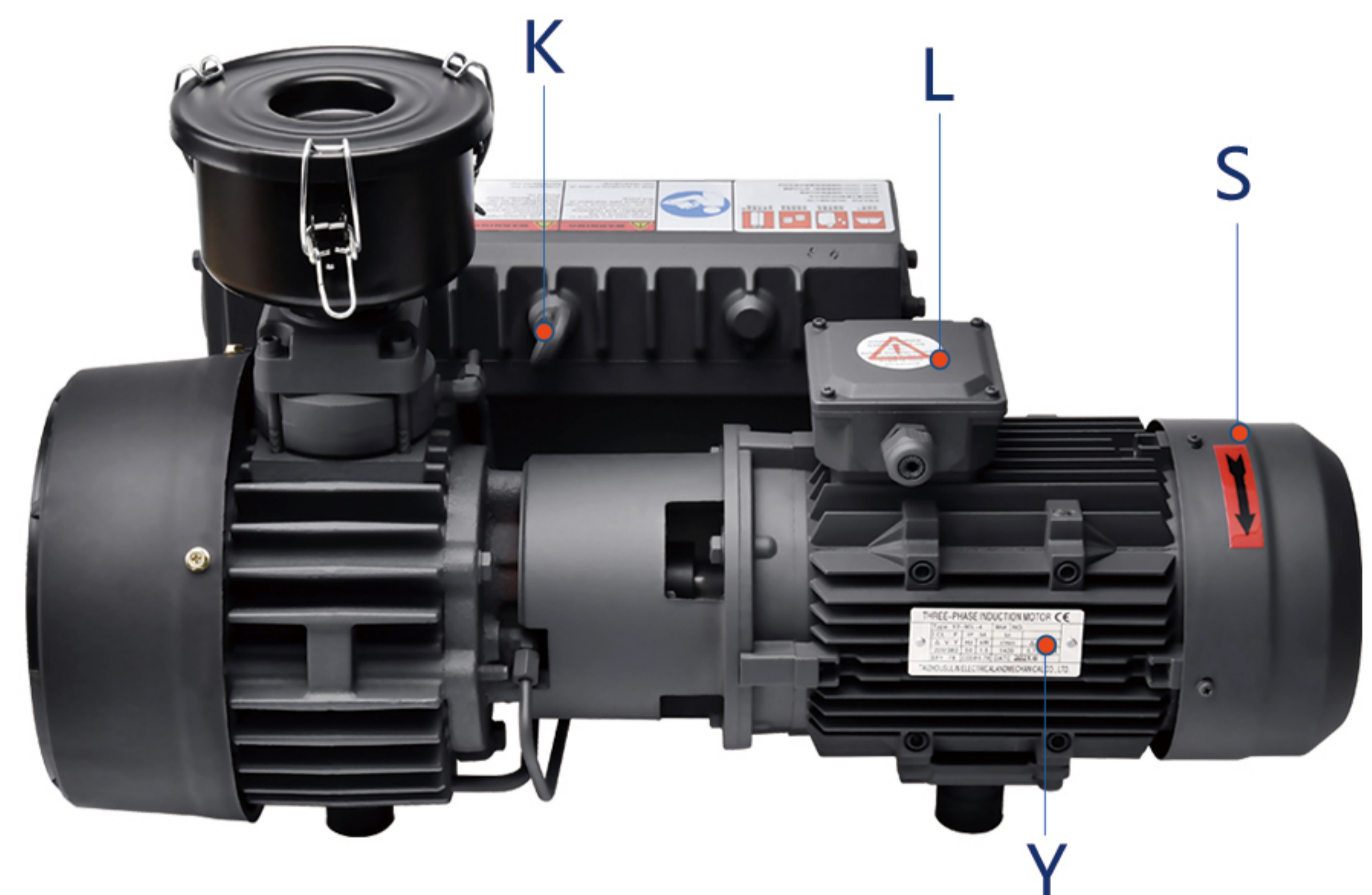
SAFETY PRECAUTIONS

- Before the vacuum pump is running, it is necessary to make sure that the joints and accessories of the machine are locked, and there is enough vacuum pump oil in the vacuum pump.
- This vacuum pump is not suitable for pumping corrosive gases, flammable and explosive gases, mixed gases and liquids.
- When the vacuum pump is running, do not loosen or disassemble any joints, accessories and devices. The machine is filled with high-temperature liquids and gases. Can cause serious personal injury accidents.
- When overhauling, maintaining and maintaining the vacuum pump, it is necessary to ensure that the vacuum pump is in a power-off state and the air in the vacuum pump has been vented.
- Only safe solutions can be used for cleaning vacuum pumps and auxiliary equipment.
- This vacuum pump installation manual describes the handling, installation, use, maintenance, troubleshooting and repair of the vacuum pump in detail. vacuum pump For use in the industrial field, the installation must be carried out by professionals.
- This vacuum pump is manufactured in accordance with specialized technical and safety standards, and if it is not installed and used properly, it will cause dangerous situations and cause injury.
- Be careful with oil mist! Caution!
- Exhaust filters not provided by our company have similar appearances, but they do not have the characteristics and functions they should have. Only use the company to mention. In order to ensure safety, the gas discharged by the vacuum pump contains a trace amount of residual oil, which is harmful to health and discharged from long-term inhalation. The room must be well ventilated.

1. PRODUCT DESCRIPTION



(2.1Diagram Front)



(2.1Diagram reversed)

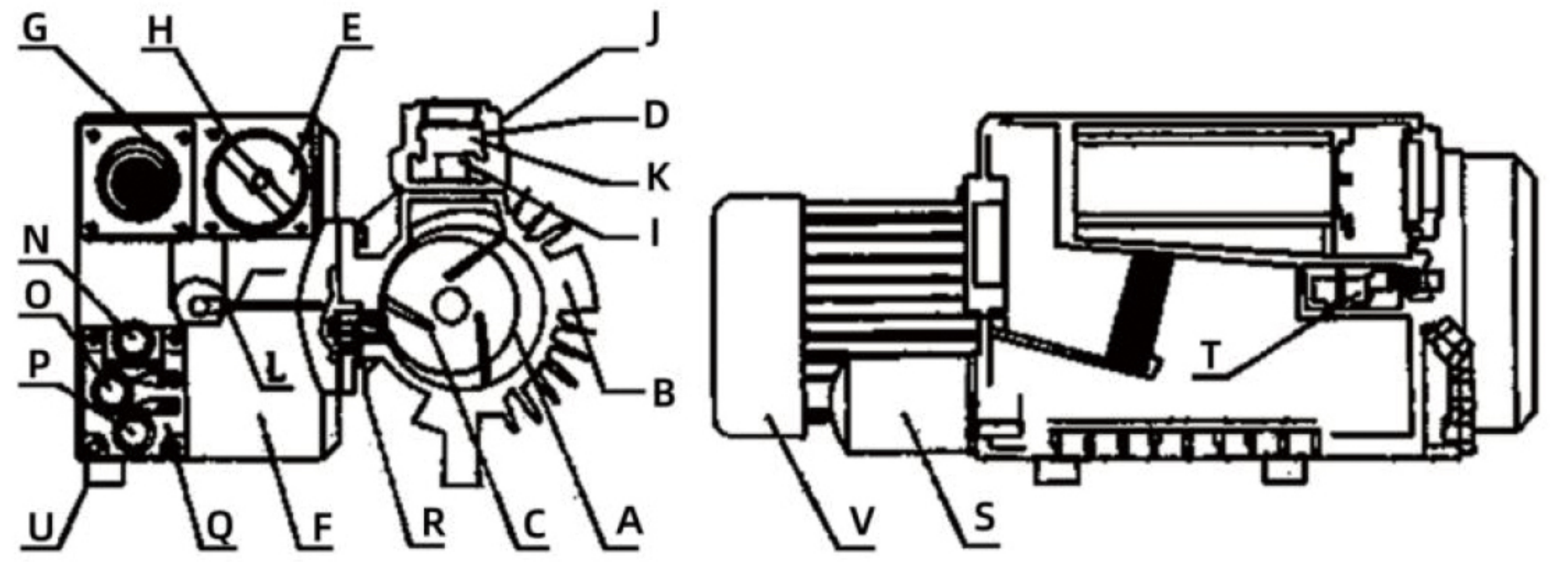
A	Motor	H	Oil filler
B	Oil mist filter	I	Oil level mirror
C	fuel tank	J	Drain
D	Exhaust filter	K	Eyebolts
E	Air filter	L	Motor junction box
F	Exhaust outlets	S	Turn to the arrow
G	Cooling fan	Y	nameplate

1.1 APPLY

- Rotary vane vacuum pump is suitable for industrial vacuum applications. For example: vacuum packaging of various types of food in the food manufacturing industry; on the textile industry Vacuum compression packaging of various soft items; vacuum drying, distillation, and concentration in the chemical industry; vacuum fixtures on machining; vacuum loading and unloading in transport operations; vacuum suction in hospital operating rooms; Blister molding in the plastics industry.
- Mainly used for pumping air and other dry gases. However, it cannot smoke toxic, corrosive, flammable and explosive gases, nor can it be pumped Inhale gases containing tiny particles or dust, and cannot transport other small objects.
- This vacuum pump can work for a long time in an environment temperature of 0~30°C, humidity <80%, and good ventilation.

1.2 HOW IT WORKS

A Rotor B Pump Body C Rotary Vane D Suction Filter E Exhaust filter F Oil separator G Exhaust valve body H Top Plate I Suction Valve J Suction Nozzle K Suction Valve Body L Ferrule fitting M Return pipe N Filler plug O oil window P Oil



drain Q Injection drain cover R Exhaust S oil filter T Float Valve U Shock Resistant Foot Pad V Motor

- This vacuum pump works according to the principle of rotary vane.
- The rotor (A) rotates around the axis of the vacuum pump, and the drive motor (V) drives the vacuum pump shaft through the coupling.
- The rotor rotates in the circular pump body (B), and the center line of the pump body deviates from the axis of the rotor, so the rotor forms a linear contact with the pump body. The rotary vane (C) slides along the chute of the rotor, separating the pump body and the rotor into multiple working chambers, and when the working cavity is connected to the old mouth, it is sucked in As the gas rotates, the inhaled gas is compressed and discharged into the oil separator (F).
- The constant pressure difference allows the vacuum lubricating oil to enter the pressure chamber.
- The lubricating oil and the pumped gas enter the oil separator together and are driven by gravity and under the action of the oil and gas filter and exhaust filter (E). The oil and gas are separated, the lubricating oil falls back to the bottom of the oil separator (F), enters the oil circulation, and the gas without oil is discharged to the atmosphere through the exhaust port.
- In order to avoid inhaling solid particles, the vacuum pump is equipped with a suction filter (D); In order to avoid turning off the power after the rotary vane rotates in the opposite direction, true The empty pump is fitted with a suction valve (G).

Note: The suction valve cannot be used as a check or shut-off valve for a vacuum system, and a suction valve does not prevent oil from being sucked into the vacuum system. If true The empty pump is equipped with a gas ballast valve (optional), through which a small amount of air enters the vacuum pump chamber and is compressed together with the process gas to prevent the condensation of condensable gas components in the process gas in the vacuum pump chamber. The gas ballast valve is equipped with a throttle valve and can be partially or completely closed. In order to improve the working characteristics of the vacuum pump, an exhaust valve (R) is installed at the exhaust port of the vacuum pump body.

1.3 OIL CIRCULATION

- The vacuum pump needs oil to seal the gap, lubricate the rotary vane and take away the heat generated by gas compression. The oil supply hole of the vacuum pump is located in the vacuum pump of the inspiratory side (low-pressure area). The oil collector of the vacuum pump is located in the lower part of the oil separator

on the exhaust side (high-pressure area) of the vacuum pump. in exhaust Under the action of the pressure difference between the side and the suction side, the vacuum pump oil enters the suction side of the vacuum pump from the oil separator through the oil pipe. Inject the oil into the vacuum chamber The gas that is inhaled is discharged into the oil separator in the form of oil mist, which accumulates at the bottom of the oil separator after being separated. Exhaust filter (E) The separated oil accumulates at the bottom of the oil separator. If the vacuum pump is equipped with a float valve or return pipe, then through the float valve or return pipe, The oil that has accumulated in the upper part of the oil separator can be returned to the vacuum pump chamber.

1.4 COOLING

- Heat dissipation through the surface of the vacuum pump and oil separator.
- Through process gases.
- Heat dissipation is dissipated through the fan wheel that drives the motor.
- Airflow through a fan on the shaft of the vacuum pump.

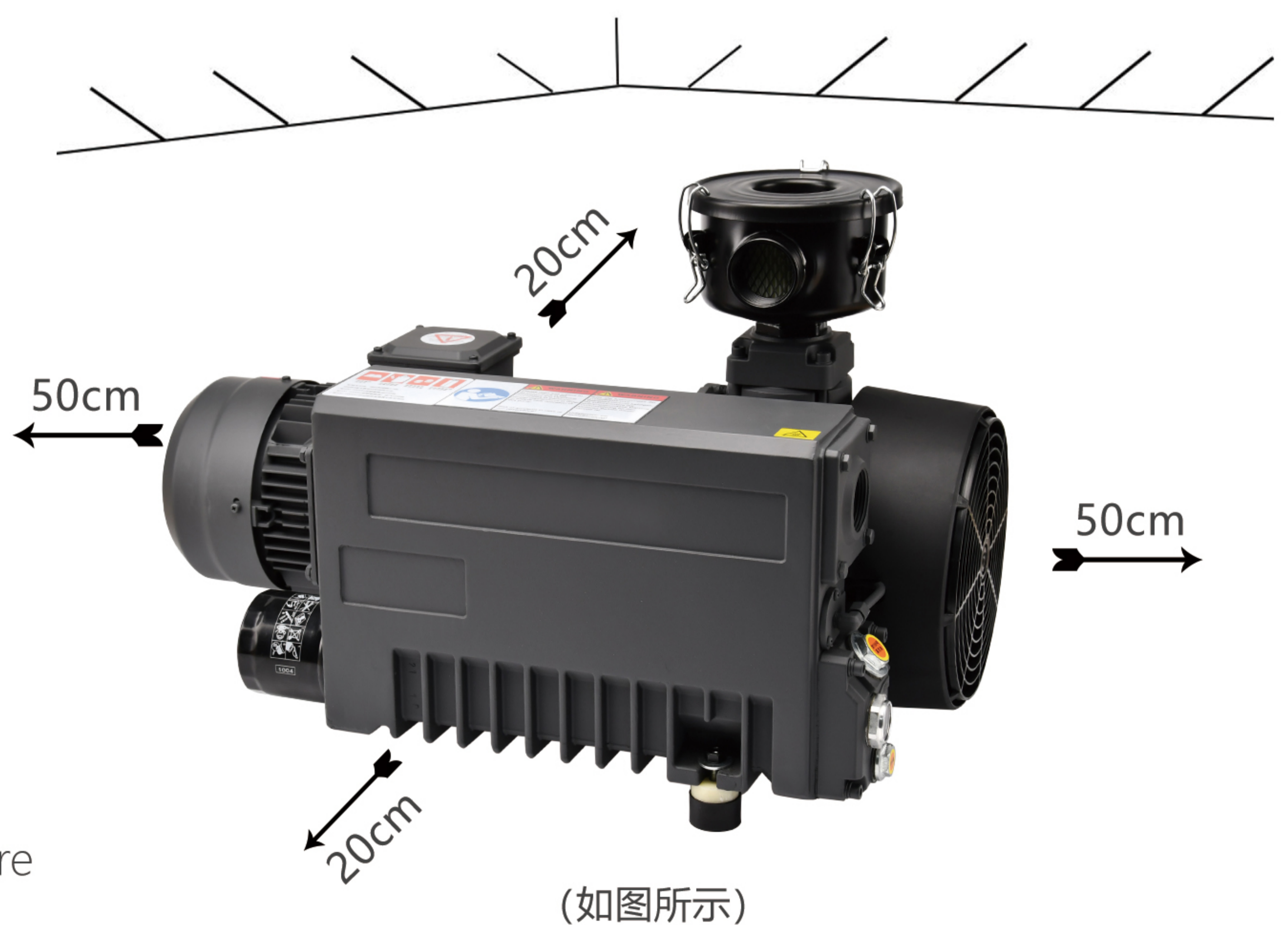
2. INSTALLATION INSTRUCTIONS

INSTALLATION INSTRUCTIONS

2.1 VACUUM PUMP INSTALLATION

- Please make sure that the vacuum pump is not used in flammable and explosive working environments.
- Please ensure that the environmental conditions meet the conditions:
 - (1) Ambient temperature: $-10\sim 55^{\circ}\text{C}$;
 - (2) Ambient pressure: atmospheric pressure
- Please make sure that the vacuum pump

is placed horizontally. • Ensure that the environmental conditions meet the protection level of the motor and electrical equipment, and the installation is carried out by professional personnel. • Please ensure that the vacuum pump must be installed in a well-ventilated position, and the distance between the vacuum pump and adjacent objects is at least 20cm to ensure that it is true The empty pump is sufficiently cooled.



- Make sure that the cooling air inlet and outlet are not covered or blocked, and that the cooling airflow is not adversely affected in any way.
- Please make sure that the oil level mirror of the vacuum pump is easy to see.
- Make sure there is enough space for maintenance work, easy to refuel, drain oil, and replace exhaust filters, etc.

2.2 AIR INLET CONNECTION



unprotected air extracts; Beware of serious injuries! Never put your hands or fingers into the intake!

(1) Please ensure the tightness of the inlet pipe of the vacuum pump, the connected pipe does not generate pressure at the connection of the vacuum pump, and install a bellows if necessary. (2) Make sure that the vacuum pump is equipped with a suitable filter in the direction of the air flow. (3) Please make sure that the rated diameter of the intake pipe is not less than the intake diameter. (4) Please make sure that there are no foreign particles (such as welding slag, etc.) in the inlet pipe. (5) If the vacuum pump extracts gas containing condensation (such as steam, etc.), it is necessary to install a shut-off valve on the suction pipe, and the liquid discharge branch pipe and Drain valves to remove condensate from the pipes.

2.3 EXHAUST PORT CONNECTION



The exhaust gas still contains residual oil, be careful of harmful to health! If the exhaust gas gets into a room where someone is staying, make sure to ventilate it adequately!

(1) Please make sure that the exhaust pipe is suitable for the discharge of vacuum pump gas. The exhaust gas flows smoothly, and do not close or throttle the exhaust pipe or use the exhaust pipe as a pressurized air source. (2) If the extracted gas is discharged directly from the vacuum pump into the atmosphere: the exhaust pipe should be inclined down to leave the vacuum pump, or use a gas-liquid separator, or use a drain branch pipe with a drain valve to ensure that no liquid will flow back to the vacuum pump.

Note: Exhaust pipes made of insulating materials can generate static electricity, which can cause oil mist explosions, and the exhaust pipes must be made of conductive materials, or take measures to prevent static electricity.

2.4 COME ON



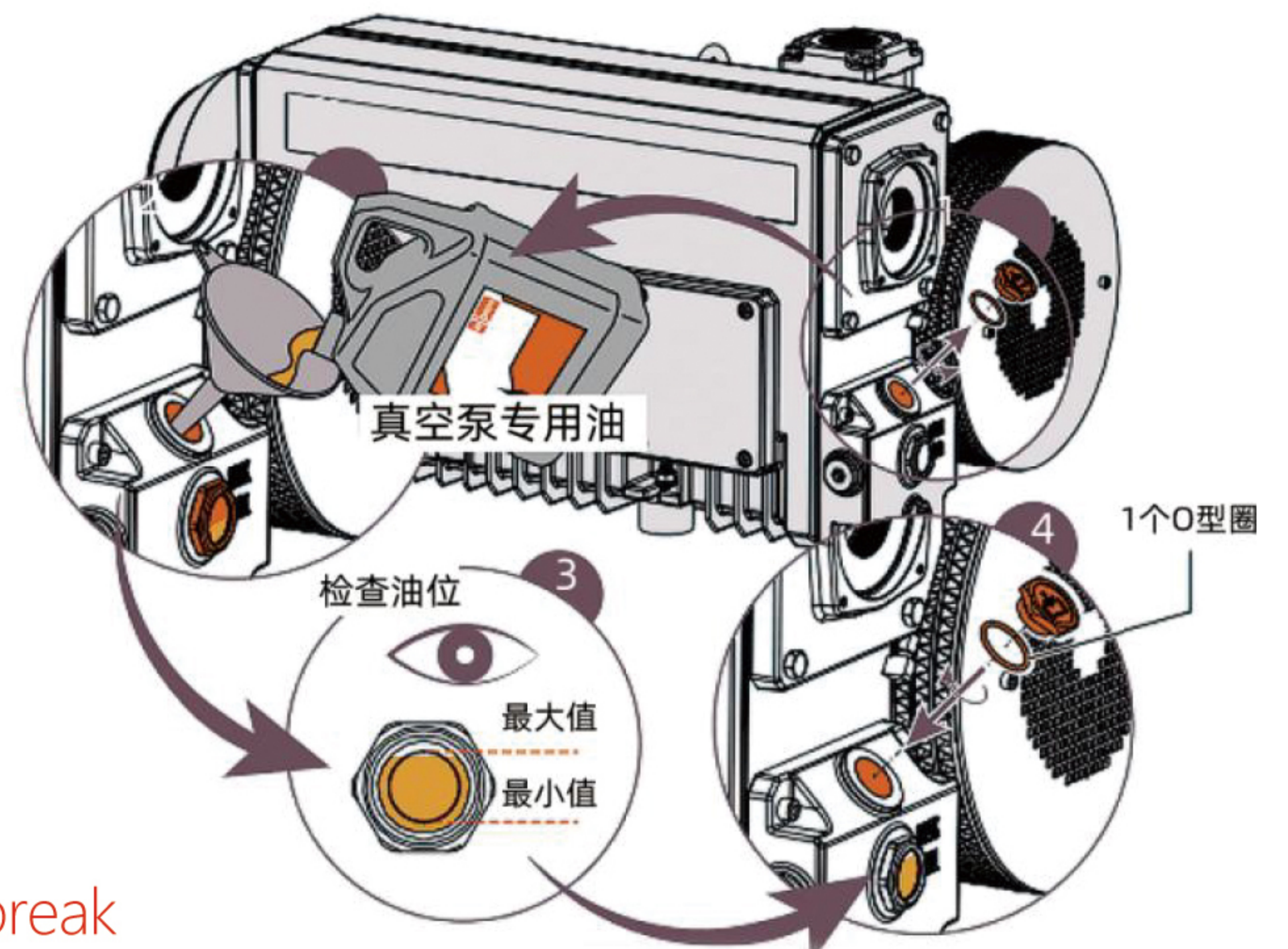
improper use of motor oil; Premature damage is dangerous! Efficiency suffers! Use only oil models that have been previously certified and recommended by our company!

(1) Before starting the vacuum pump, it must be confirmed that it is filled with oil.

(2) The vacuum pump runs without oil, which will damage the vacuum pump in a short time.

(3) Please make sure that the oil filler plug seal must be intact and be replaced if necessary.

(4) Please make sure that the oil level is between the marks of "MIN" and "MAX" in the oil window.



- Attention! Filling the air inlet will cause the rotary vanes to break and damage the vacuum pump, which can only be injected from the filler hole.
- Attention! When the vacuum pump is working, the oil separator is filled with high temperature and high pressure oil mist, if the oil filling hole is open, there is a risk of being scalded by the hot oil mist.
- Attention! The lubrication plug must be tightened when the vacuum pump is running, and the lubrication plug can only be unscrewed when the vacuum pump is stopped.

2.5 ELECTRICAL CONNECTIONS



Warn!

live wires; electric shock hazards; Electrical installation work must be done by professional staff

(1) Ensure that the voltage and frequency of the power supply must be consistent with the nameplate value of the motor

(2) Electrical installations must comply with applicable national and international standards.

(3) The power line is equipped with a lockable disconnect switch to ensure that the equipment is in a safe state of complete power failure during maintenance.

(4) Please make sure that the drive of the vacuum pump is not subject to mains, electricity or electromagnetic interference. If you have any questions, please do not hesitate to contact us.

(5) The protective grounding wire must be properly connected.

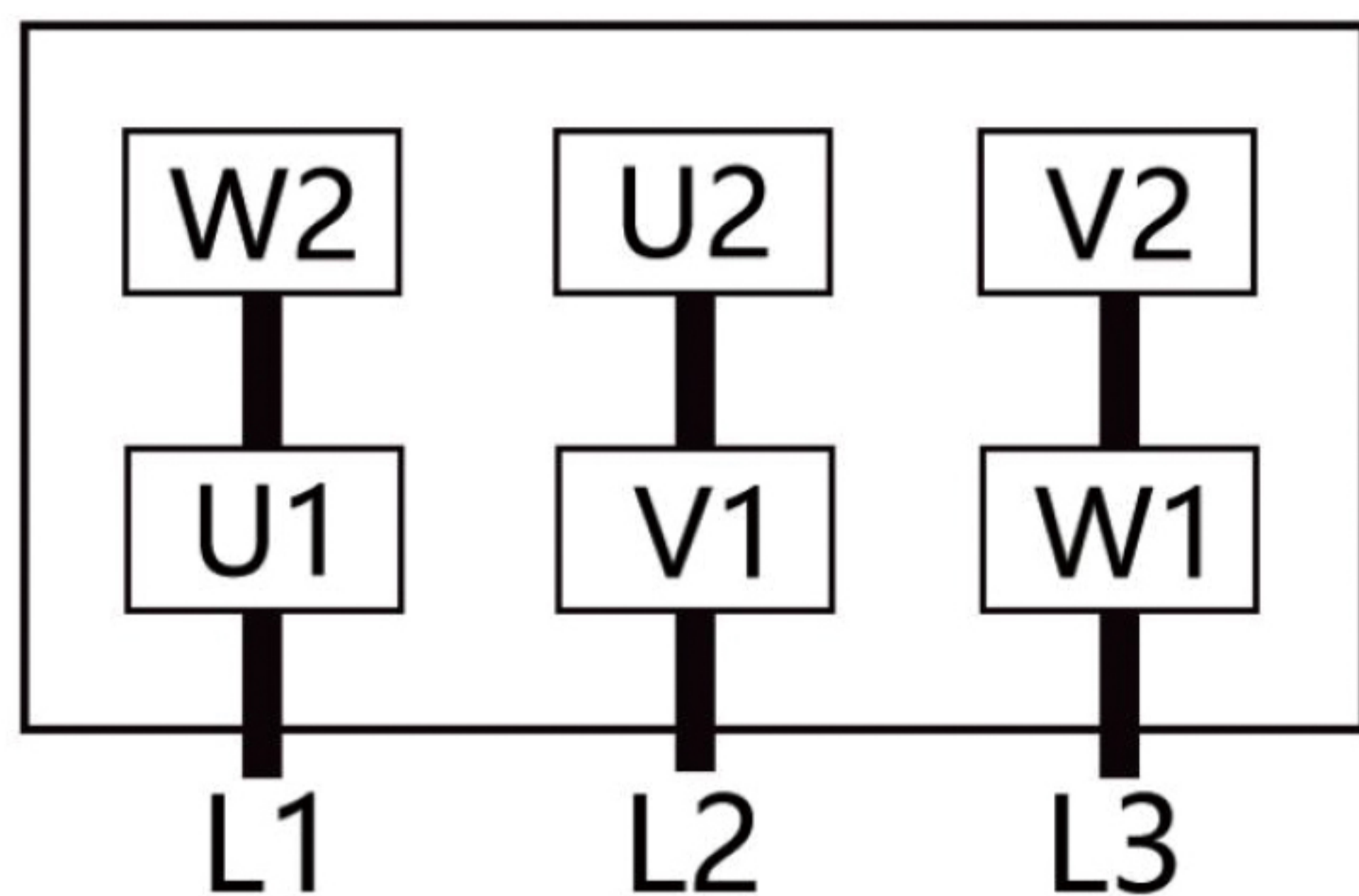
2.3 WIRING METHOD



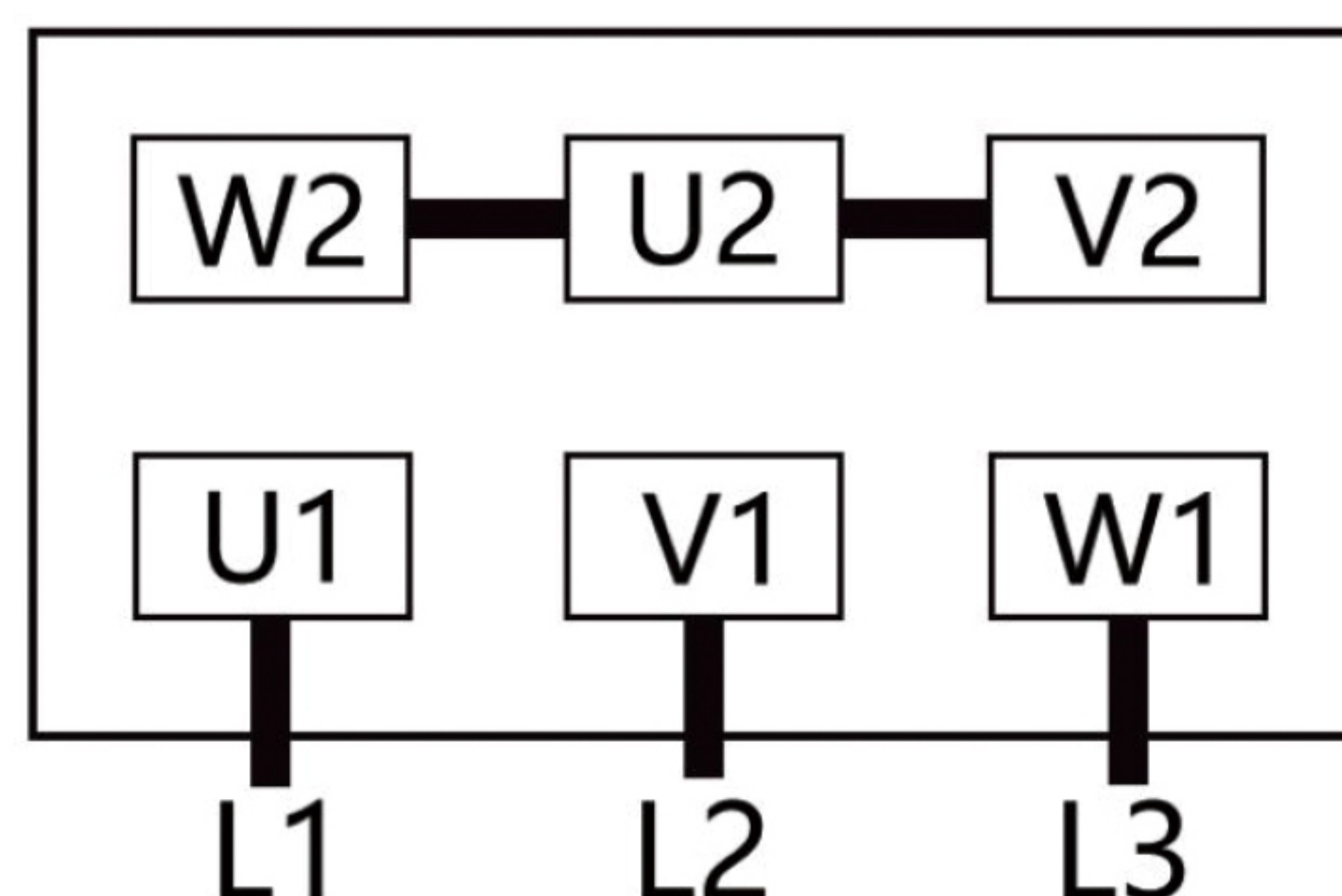
Note!

Incorrect connection; Be careful of damaging the motor! If the schematic diagram of the motor connection with impaired efficiency is a standard type, check the wire connection in the junction box according to the motor connection instructions or diagram

Delta connection (low voltage)



Star connection (high voltage)



(1) The motor rotation direction is incorrect, and the vacuum pump will be damaged in a short time! Before starting the vacuum pump, make sure that the vacuum pump is connected correctly.

(2) If you need to change the direction of rotation, switch any two phases in the three-phase power supply.

3. TECHNICAL PARAMETERS

TECHNICAL PARAMETER

3.1 VACUUM PUMP PARAMETERS

Model parameters	VN-0020	VN-0025	VN-0040	VN-0063	VN-0063大	VN-0100	VN-0140	VN-0202	VN-0302
Pumping rate (m ³ /h)	20	25	40	63	70	100	140	202	302
Vacuum (KPA)	-100	-100	-100	-100	-100	-100	-100	-100	-100
Motor power(KW)	0.9/0.75	0.75	1.5	1.5	2.2	3	3.5	4.5	7.5
Voltage(V)	220/380	220/380	380	380	380	380	380	380	380
Motor speed (Rpm)	2800	2800	1400	1400	1400	1400	1400	1400	1400
Oil Quantity (L)	0.5	0.5	1.5	1.5	2.5	2.5	5	6	8
Piping interfaces	G1/2	G3/4	G1-1/4	G1-1/4	G1-1/4	G1-1/4	G1-1/2	G2	G2
Dimensions(cm)	45*25*29	31*25*22	64*28*26.5	64*27*40	64*40*40	71*41*40	75*45*30	88*48.5*50	101*56*48.5

Note: The above water vapor removal is the maximum amount of water vapor removal when the vacuum pump is equipped with a gas ballast valve and is opened

3.2 VACUUM PUMP OIL SELECTION

Vacuum pump oil	VM068	VM100	VS100
Base oils	mineral oil	mineral oil	mineral oil
Density (g/cm ³)	0.884	0.888	0.96
Ambient temperature °C	0~12	12~30	>30
100'C kinematic viscosity nWs	8.5	11.5	9.5
Flash point. C	235	260	255

4. HANDLING, STORAGE, DISMANTLING, DISMANTLING AND DISPOSAL

4.1 CARRY

- Make sure that the oil has been discharged from the vacuum pump before handling, or the vacuum pump is always kept level when transporting.
- Beware that the vacuum pump is filled with oil, the vacuum pump filled with oil at an inclination will cause a large amount of oil to enter the pump chamber, if the vacuum pump is started, if there is too much oil in the pump chamber, the vanes and the vacuum pump will be damaged immediately.

4.2 STORAGE

- Drain the vacuum pump oil
- Close all ports with tape or reuse the plug.
- Make sure to exhaust the air.
- If you plan to keep it for more than 3 months: (1) Pack the vacuum pump with anti-corrosion film. (2) Store the vacuum pump in a dry, dust-free room Inside, if possible, keep the original packaging and control the temperature between 0~40°C.

4.3 DISCONTINUE USE

- Please make sure that the vacuum pump is turned off and locked in case of any accidental power to start the vacuum pump after it is turned on.
- Make sure the vacuum pump is connected to atmospheric pressure.

4.4 DISMANTLING AND DISPOSAL

(1) Drain the old oil (2) Remove the exhaust filter (3) Remove the oil filter (4) Separate the special waste from the vacuum pump (5) Dispose of it according to the corresponding regulations (6) Vacuum pump for special waste according to metal scrap

5.1 ROUTINE MAINTENANCE

The time interval for vacuum pump maintenance depends on each working environment. Depending on your application, you can shorten or extend the maintenance period especially in heavy dusty working environments. For example, there is a lot of dust in the working environment or process gases, there are other pollutants or there is a process stream. In the case of residual substances in the process, the maintenance time of the vacuum pump must be shortened!

(1) Daily maintenance items: ● Check the oil level and oil color. (Attention!) The vacuum pump oil is bright and clear. If the oil is static and precipitates, it is turbid and cannot disappear. The substance or oil is blackened, the vacuum pump oil must be replaced. (Attention!) The life of the oil depends on the working environment. Extraction of clean, dry gases and operating temperatures below 100°C. Generally, the oil must be changed every 500-2000 hours or so.)

(2) Weekly maintenance items: ● Check the vacuum pump for oil leakage. If there is an oil leak, repair the vacuum pump.

(3) Items to be maintained each month: ● Check the resistance of the exhaust filter. The current change of the motor is measured to confirm whether the exhaust filter needs to be replaced. ● Check the air inlet filter. If necessary, clean (with compressed air) or replace the intake filter element.

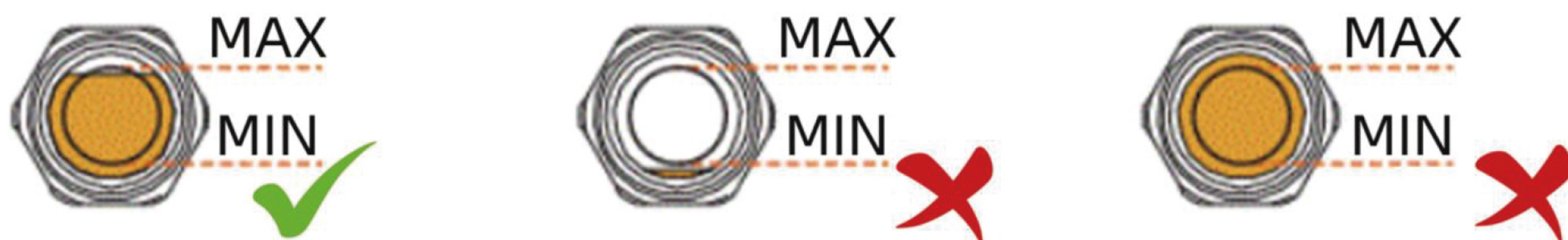
(4) Matters to be maintained every six months: ● Please make sure! There is no dust or dirt in the vacuum pump chamber. Clean the inner chamber of the vacuum pump if necessary. ● Please clean! Fan blades, fan blade covers, disc oil pipes (with compressed air)

(5) Annual maintenance items: ● Please replace the intake filter element ● Please clean the vacuum pump. Note: Blackened and deteriorated oil can block the oil pipe and cooling pipe. (Attention!) Blackened, spoiled oil will make the vacuum pump insufficient lubrication will cause the vacuum pump temperature to be too high. It will damage the vacuum pump.) ● According to the ratio of 50% vacuum oil, 50% paraffin oil or diesel engine fuel, 2L is mixed as cleaning stop. In order to ensure that the vacuum pump is inside the old machine. Once the oil has drained, fill the clean, close the air inlet, and allow the vacuum pump to run for at least 30 minutes to drain the cleaning agent.

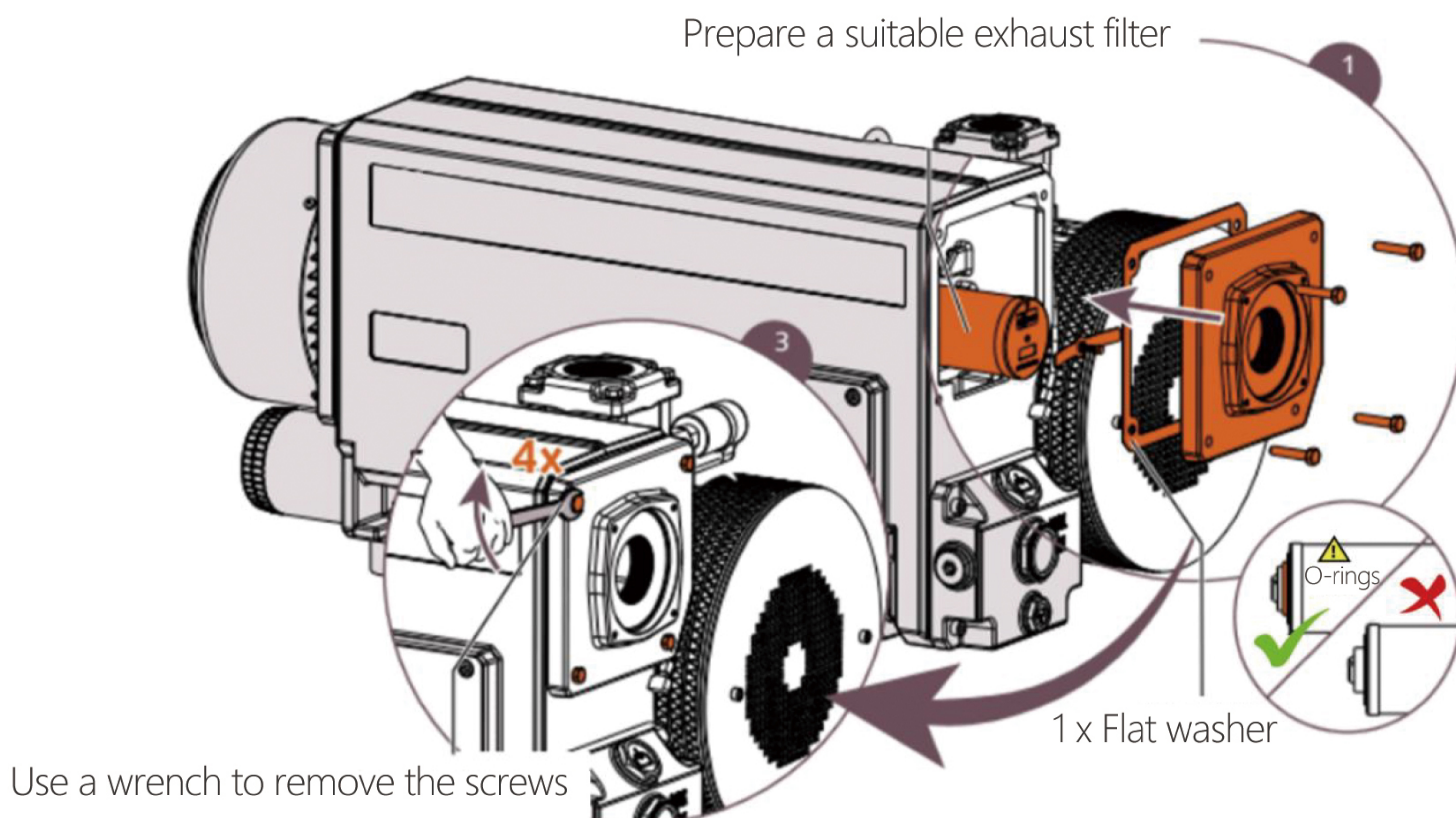
(Note: Using paraffin oil or diesel fuel as a cleaning agent, there will be a peculiar smell after starting the pump, and the peculiar smell will gradually disappear after a period of operation)

5.2 CHECK THE OIL LEVEL

- Shutdown • After the vacuum pump stops running, wait for 1 minute before using the oil level mirror to check the oil level. Top up if necessary.



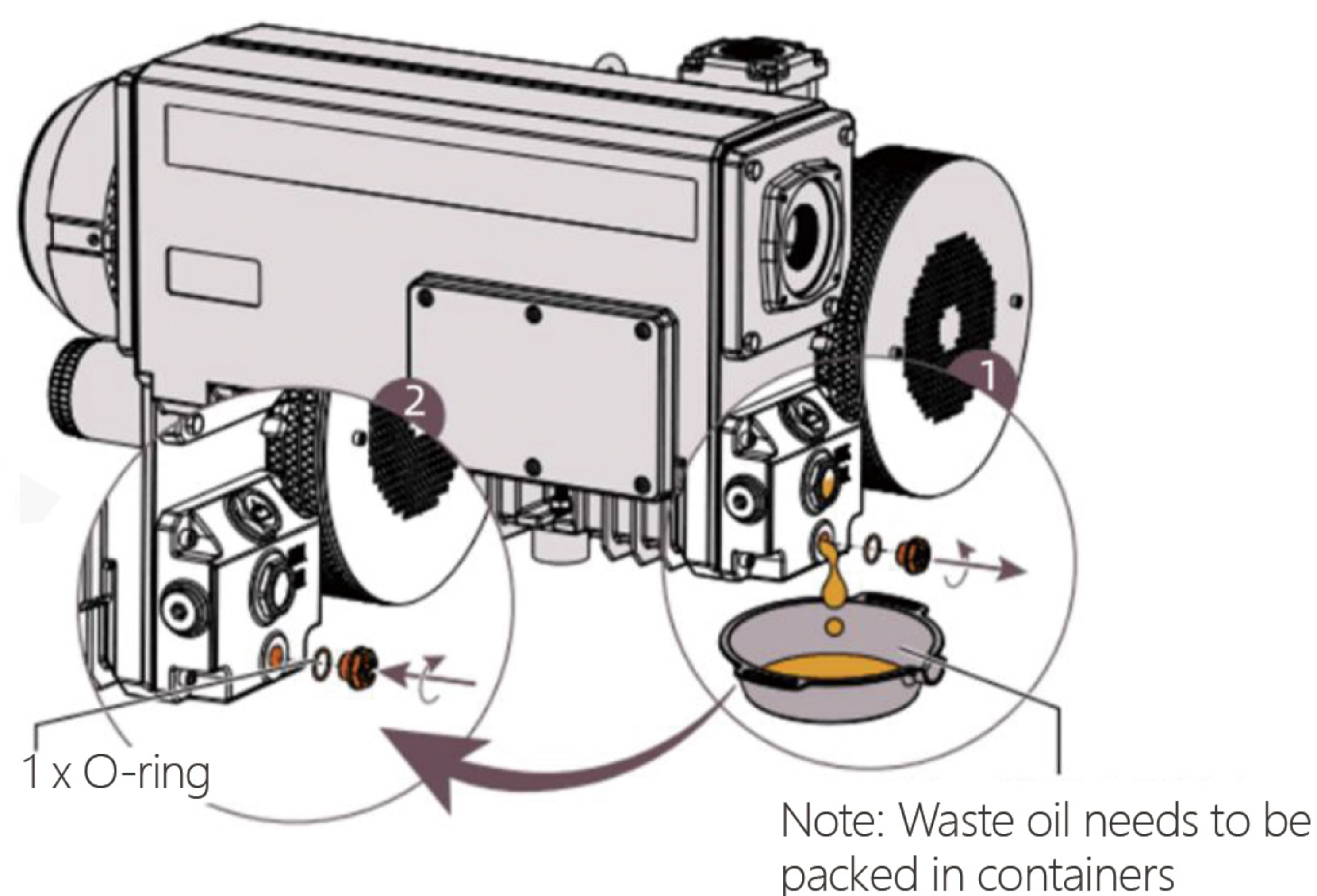
5.3 REPLACEMENT OF EXHAUST FILTERS

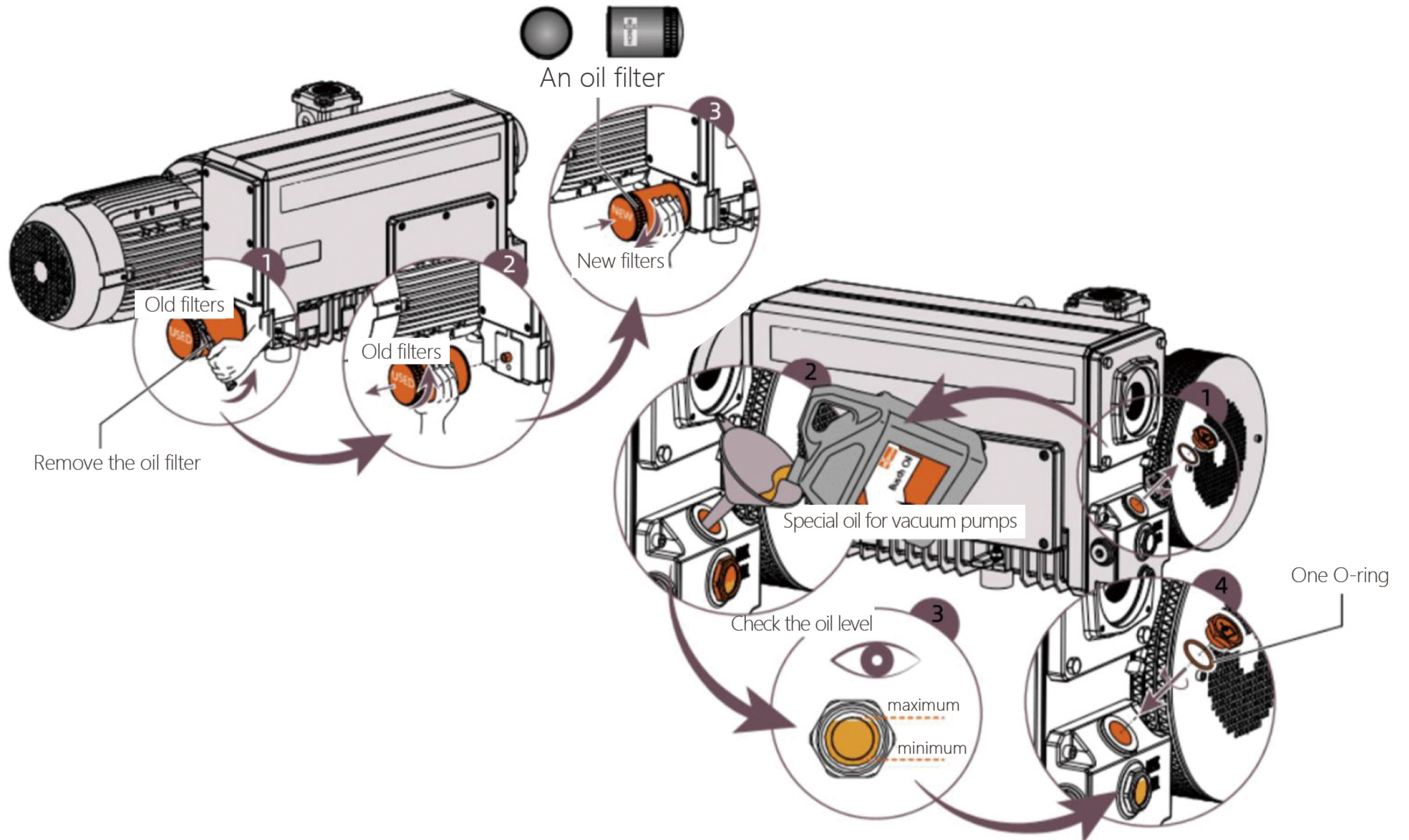


5.4 REPLACEMENT OF OIL AND OIL FILTERS

! Note!

Improper use of motor oil. Premature damage hazards! Efficiency suffers! It is recommended to use the oil number recommended by our company. Special oil for vacuum pump - type/dosage: See "Technical data" and "Vacuum pump oils".





6. TROUBLESHOOTING

TROUBLESHOOTING

FAULT	CAUSE	MEASURE
The vacuum pump cannot be started	The operating voltage of the motor is incorrect	Check the power supply
	The motor is damaged	Replace the motor
	The coupling is damaged	Replace the coupling
The vacuum pump cannot reach the normal pressure of the suction port	The oil level is too low	Come on
	The air inlet filter is clogged	Clean the air inlet filter
	The inlet filter element is clogged	Replace the air intake too
	Damaged internal parts	Filter cartridge repair vacuum pump (contact us)
The oil is blackened	The oil has been used for too long	cleaning the vacuum pump; Replace the exhaust filter; Replace the oil filter; Fill with new pump oil
After the vacuum pump is turned on, there is an abnormality Excessive noise or load	The motor runs out of phase	Corrective steering
	The vacuum pump has not been running for a long time	Tighten or replace the cables
	Ambient temperature, oil temperature is too high	The air inlet of the vacuum pump is closed, which heats the pump
	The quality of the oil is not good	Use synthetic oils and, if necessary, oils with a slightly lower viscosity (Note: Using oil with too low viscosity can cause scratches inside the pump)
	The exhaust filter is clogged and the oil is blackened	Clean the vacuum pump, replace the oil filter, replace the exhaust filter
	Do not change the oil for a long time	Change the oil, replace the oil filter
	Foreign substances enter the pump and damage the rotary vanes and bearings	Repair of vacuum pump (to be operated by a professional)
The vacuum pump is not functioning properly	The drive motor voltage is too low	Normal voltage is provided
	The fuse blows	Find out the cause of the blown fuse
	The pump head or motor is stuck	Inspect and repair pump heads and motors
	The motor overload protector is too small	Please refer to the overload protector setting value and the motor nameplate data,
	The motor burned out	Replace the overload protector if necessary
	The cables are mismatched, resulting in a voltage drop	Replace the motor
The vacuum pump is blocked	Foreign substances enter the vacuum pump	Check the suction filter and replace it if it is damaged.
	Residual condensate causes corrosion of the vacuum pump	Repair of vacuum pumps. (operated by professionals) to check the process Use the vacuum pump correctly according to the instructions
	The motor is steering incorrectly, causing damage to the rotary vane	Repair of vacuum pumps. (Operated by professionals)
	Oil may be sucked into the pump chamber, causing damage to the rotary vanes	Repair of vacuum pumps. (Operated by professionals)
Smoke or exhaust when the vacuum pump is discharged When the gas is released, there is a spray of oil	Incorrect installation of the exhaust filter	Reinstall the exhaust filter
	The exhaust filter needs to be replaced	Replace the exhaust filter
The drop in oil levels is not normal	The O-ring is damaged	Replace the O-ring
	There are cracks in the exhaust filter	Replace the exhaust filter
	Foreign substances clog the exhaust filter	Replace the exhaust filter
	The return line is clogged. Oil accumulates on top of the oil separator, When a certain amount is reached, it is ejected with gas from the air intake	Check if the return pipe is blocked, Clean and unclog the return pipe
	The float valve does not work flexibly	Repair the float valve and replace the float valve if necessary
The temperature of the vacuum pump is too high, the temperature of the oil tank >100°C	The ambient temperature is too high	Comply with the ambient temperature requirements for the use of vacuum pumps
	The temperature is too high	Comply with the requirements for the inlet air temperature of the vacuum pump
	The exhaust filter is partially blocked	Replace the exhaust filter
	Lack of air circulation	It can only be installed and used after confirming that the environment is fully ventilated. Clean the fan blades, fan blade cover annular disc tubing
	The oil filter is clogged	Replace the oil filter
	There is too little oil in the tank	Come on
	The oil spoils after overheating	cleaning the vacuum pump; Replace the exhaust filter; Replace the oil filter; Fill with new vacuum pump oil
	The frequency and voltage of the power supply are abnormal	Provide a normal power supply
	The inner diameter of the intake and exhaust pipe is too small and the length is too long	Replace pipes that meet the requirements
	The filter or strainer is clogged with the intake air and the exhaust pipe is clogged	Clean up clogged substances
The oil becomes thin and cloudy, and the oil foams	The vacuum pump sucks up water, and it is seriously mixed with moisture incompatible oils	cleaning the vacuum pump; Replace the exhaust filter; Change the mode of operation and replace the oil filter; Fill with new vacuum pump oil

7. AFTER-SALES WARRANTY CARD

1. To purchase this product, please fill in this card carefully and read the following warranty terms carefully to ensure that the product is effectively warranted.

1. The user should carefully keep this card when purchasing the product, and ask the seller to seal and confirm.
2. This warranty card must be provided at the same time as the warranty.
3. The information added to this warranty card is true, otherwise it will be invalid.
4. The warranty period of the product is one year, and if the product fails during the warranty period, it is a poor quality or production problem of the original device, and the parts will be repaired and replaced free of charge.

2. The product cannot be used normally due to damage caused by the following reasons, which is not covered by the warranty.

1. Damage caused by failure to use and install in accordance with the manual.
2. All man-made or accidental product damage.
3. Maintenance, modification or cracked product sealing sticker without the approval of the company.
4. Aging, bruises and scratches on the surface shell of the product.

3. After the expiration of the warranty period, the user can still get the

User Profile			
Product name		Product model	
Product number		Quantity purchased	
Date of purchase		Purchase a unit	
Customer's name		Contact	

Warranty records			
Warranty date	How to handle the troubleshooting	Completion date	Customer's signature

VUYOMUA

PROFESSIONAL SERVICE R&D INNOVATION

PROVIDE HIGH-QUALITY PRODUCTS AND SERVICES FOR GLOBAL AUTOMATION EQUIPMENT ENTERPRISES



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