



## User Manual

Oil Lubricated Rotary Vane Vacuum Pump – WOVP Series



# COMPANY

# HISTORY

**Wonchang Vacuum Co., Ltd.** is a vacuum pump company in Korea, and has been growing steadily through continuous technology development and quality control since 1982. Based on plenty of vacuum experience, we provide solutions for various areas such as food packaging, rubber and plastic molding, automation equipment, CNC machines, and hospital and Industrial central vacuum systems.

The main products are **oil rotary vane pump, dry carbon vane pump, dry claw type pump, vacuum booster, and vacuum systems.**

In 1998, Wonchang vacuum started exporting vacuum pumps through supply lines all over the world, in 2006 achieved 1 million dollars in exports, in 2011 and 3 million dollars, and will be providing continuously various solutions to the overseas customers as well as domestic customers.

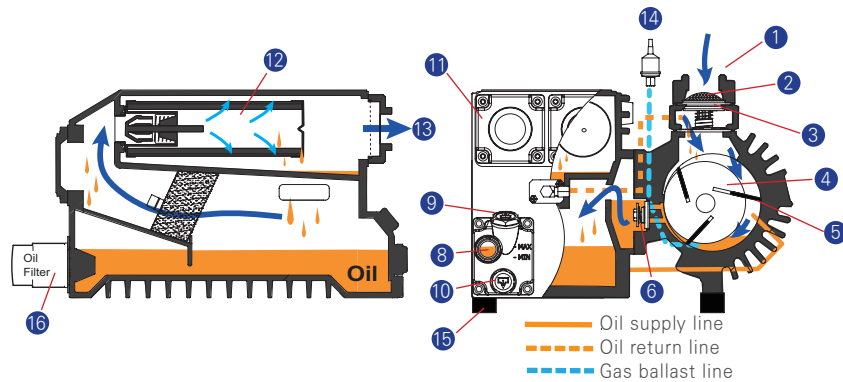
Wonchang vacuum will try its best for customer satisfaction in various needs with high-quality products and services.

|                       |         |  |
|-----------------------|---------|--|
| <b>2010 ~ Present</b> | 2019.12 | Developed Vacuum Booster                             |
|                       | 2019.06 | Relocated factory to Hakun 3, Industrial complex     |
|                       | 2011.11 | Achieved 3million Export tower award                 |
|                       | 2010.03 | Acquired ISO14001:2015 certificate                   |
|                       | 2010.01 | Acquired ISO9001:2014 certificate                    |
| <b>2001~2010</b>      | 2009.10 | Built & extended new factory at Kimpo(Tongjin)       |
|                       | 2007.12 | Developed Claw type pump and started to sell in 2008 |
|                       | 2006.11 | Achieved 1million export tower award                 |
| <b>1991~2000</b>      | 1999.10 | Built & extended new factory at Kimpo(Daegot)        |
|                       | 1998.03 | Set distributors in USA region (Start exporting)     |
|                       | 2006.11 | Achieved 1million export tower award                 |
| <b>1980~1990</b>      | 1989.03 | Developed oil rotary vane vacuum pump (1-stage)      |
|                       | 1987.05 | Developed oil rotary vane vacuum pump (2-stage)      |
|                       | 1982.11 | Developed dry rotary vane vacuum pump                |
|                       | 1982.04 | Established Wonchang company                         |



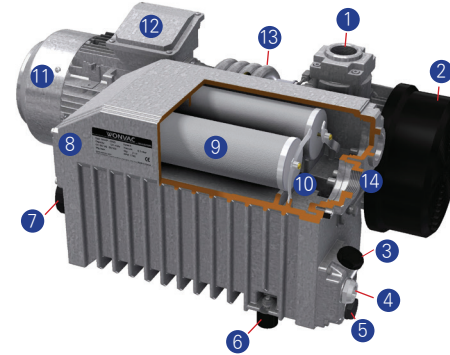
## How it works

- As shown in the below figure, the oil rotary vane pump rotates by motor drive. The rotor is positioned eccentrically in the cylinder and has the slots for vane sliding. The centrifugal forces when rotates push the vanes towards wall of the cylinder through the slots of the rotor. The external air is sucked in, thereby creating a vacuum at the top of the pump.
- The oil from the oil sump will be sucked inside of the cylinder by differential pressure and will help to form a vacuum with lubrication and sealing(inner) effects.
- The oil that is sucked in and inhaled air comes out of the oil sump through the exhaust valve and the exhaust filter, only clean air will be exhausted to the discharge.
- The oil filtered through the exhaust filter will be collected and re-circulated to the pump through the oil return valve(N-type) or float valve(F, H type).

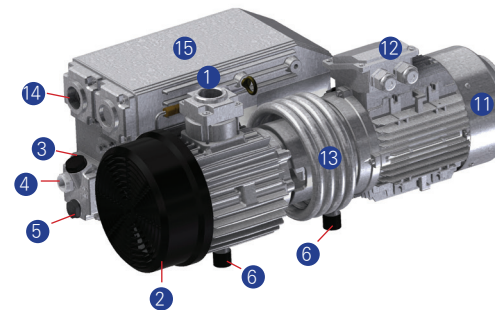


- ① Inlet ② Inlet screen ③ Non-return valve ④ Rotor ⑤ Vane
- ⑥ Exhaust valve ⑦ Float valve/oil return valve ⑧ Filter Pressure gauge ⑨ Oil plug
- ⑩ Drain plug ⑪ Exhaust cover ⑫ Exhaust filter
- ⑬ Discharge ⑭ Gas ballast filter ⑮ Absorber rubber foot ⑯ Oil filter

## Structure & part name



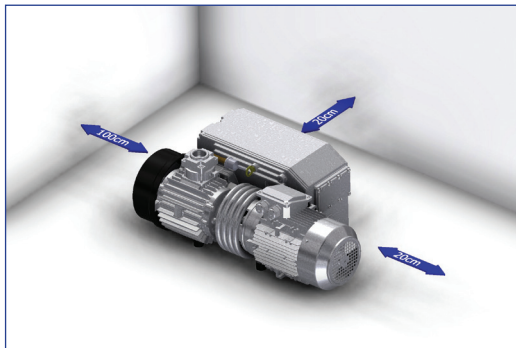
Shown with WOVP-200



- ① Inlet ② Fan cover ③ Oil plug ④ Oil gauge ⑤ Drain plug
- ⑥ Absorber, rubber foot ⑦ Oil filter ⑧ Pump plate ⑨ Exhaust filter
- ⑩ Filter spring ⑪ Motor fan cover ⑫ Motor terminal box ⑬ Oil cooler
- ⑭ Discharge ⑮ Oil sump

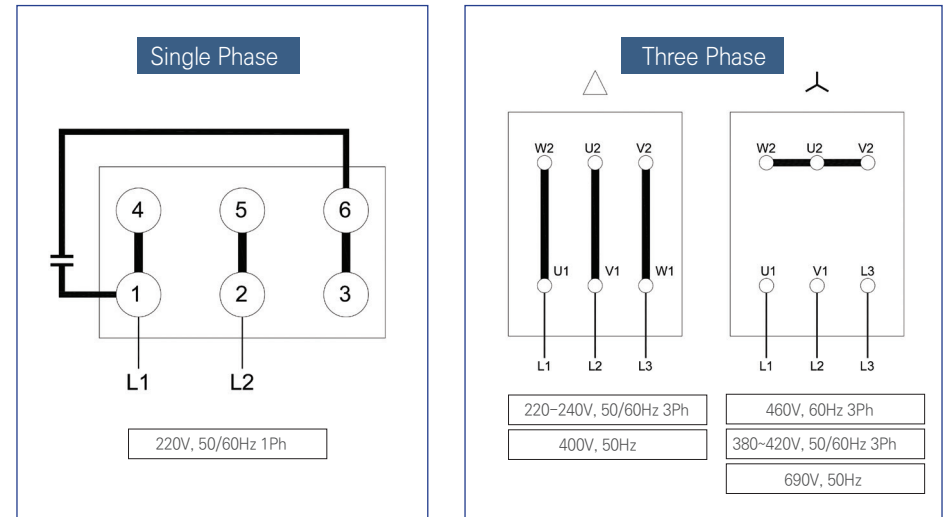
## Transport & installation

1. Before carrying the pump, please drain the oil and carry horizontally (prevent oil leakage from the pump).
2. Please, install the pump horizontally in a clean and well-ventilated area at the distance from the wall for prevention of pump overheat, and maintenance space for replacement of the filters.



3. When shipped out from the factory, the rubber plugs are attached on the suction inlet and exhaust to prevent inhalation of foreign substances. Please remove those rubber plugs before installation and use them to store the pump if needed.
4. There are rubber absorbers at the bottom of the pump with screws to fix the pump on the base.
5. The pipe size at the inlet of the pump should be the same or one size larger one. (It will lose pump performance if it's smaller than the pump inlet size)
6. When piping to the exhaust, the pipe size should be the same or one size larger, and avoid curved piping.
7. The oil is not included inside of the pump at the time of shipping. Please fill the oil up to 3/4 of the oil gauge before running the pump.

## Motor connection diagram



## Oil lubricating

1. The oil will not provide when shipped out from the factory for safety reasons.
2. Before installing or operating, please check the oil sight glass if oil is contained inside and fill the oil up to 3/4.

## Pump Maintenance

### ● Regular inspection check list

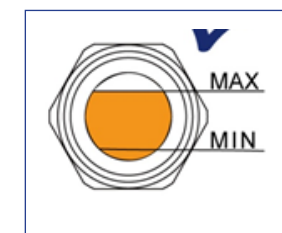
|                      |                                      | Every day | Weekly | Monthly | Halfyear / 2,000 hours | 3 years | 5 years |
|----------------------|--------------------------------------|-----------|--------|---------|------------------------|---------|---------|
| OIL                  | Volume(Level)                        | ◎         |        |         |                        |         |         |
|                      | Color/Contaminants/Viscosity         | ◎         |        |         |                        |         |         |
|                      | Leakage                              | ◎         |        |         |                        |         |         |
| NOISE                | Condition (Noise)                    | ◎         |        |         |                        |         |         |
| COLOR                | Paint color change                   | ◎         |        |         |                        |         |         |
| VACUUM               | Condition (Low efficiency)           | ◎         |        |         |                        |         |         |
| FILTER               | Suction                              |           |        | ◎       | ●                      |         |         |
|                      | Exhaust                              |           |        | ◎       | ●                      |         |         |
|                      | Oil                                  |           |        | ◎       | ●                      |         |         |
|                      | Gas ballast                          |           |        | ◎       | ●                      |         |         |
| COOLING FAN          | Contaminant/ Damage check            |           | ◎      | ◆       |                        |         |         |
| OIL COOLER           | Contamination check                  |           | ◎      | ◆       |                        |         |         |
| INSPECTION & REPLACE | O-ring, Seal, Gasket Consumable part |           |        |         |                        | ●       | ●       |

◎ : Inspection    ◆ : Cleaning    ● : Pump inspection & replacement parts

1. Change the oil if the oil color and viscosity are changed.
2. Please replace the exhaust filter when oil mist occurs in the exhaust port.
3. The air filter has to be cleaned and replaced regularly.
4. Please contact WONVAC service team when pump noise occurs and oil color changed.
5. Please contact WONVAC service team for regular inspection needed.

## Oil change

1. Loosen the oil plug and remove the oil by using an oil drain pan.
2. Close the oil drain plug, fill the oil 1/2 by using a funnel. Fill the oil up to 3/4 after running the pump.



3. Please replace the oil filter when changing the oil.  
\* Please follow the environmental regulation for drained oil and old exhaust filter.

### ● Oil type & Amount

| (WOVP)                 | 0020, 0030, 0040 | 0060, 0080 | 0120, 0130 / 0200 | 0320, 0430, 0505 | 0350, 0500, 0600 | 0800, 1000, 1200, 1500 |
|------------------------|------------------|------------|-------------------|------------------|------------------|------------------------|
| Amount (Liter)         | 0.5              | 1.4        | 2.5/2.7           | 8                | 8                | 19                     |
| Oil viscosity (ISO VG) | 32               | 68/100     |                   |                  |                  |                        |

- Oil for food use : WONVAC 68F/100F (NSF H-1, Registration No. 161709 Approved)
- Oil for industrial use: WONVAC 68 or 100
- Supply container: 0.5L, 1L, 2L, 4L, 20L, 200L (Drum)



## Replace oil filter

1. Turn the oil filter counterclockwise to remove it.
2. Coat some amount of oil at the new oil filter gasket and tighten it clockwise.  
(Please tighten it with the proper force to prevent leakage.)

## Change exhaust filter

1. Open the exhaust cover bolt by using a hexagonal wrench.  
(5mm wrench: WOVP020~200, 6mm wrench: WOVP320~1500)
- 2-1. Applied model : **WOVP- 0020, 0030, 0040, 0060, 0080, 0120, 0130, 0200, 0350, 0500, 0600, 0800, 1000, 1200 & 1500**

Loosening the pan-shaped filter spring by using a driver.



WOVP-020-0200



WOVP-350-600



WOVP-800 ~1500

- 2-2. Applied model: **WOVP- 0320, 0430 & 0505**

Turn to loosen the star knob, which holds on a filter, counter-clockwise.



WOVP-320



WOVP-430 & 505

3. Please check o-ring is mounted on the filter when removing the old filter.
4. 4-1. Applied model : **WOVP - 0020, 0030, 0040, 0060, 0080, 0120, 0130, 0200, 0350, 0500, 0600, 0800, 1000, 1200 & 1500**
  - 1) Check that the new exhaust filter is fitted with an O-ring.
  - 2) Attach the exhaust filter to the oil sump.
  - 3) Remove the filter spring and insert it into the hole in the center of the exhaust filter and use a screwdriver to secure the bolt.  
(At this time, turn the bolt to the right to force the filter spring to firmly adhere the filter to the oil sump.)

- 4-2. Applied model : **WOVP- 0320, 0430 & 0505**

- 1) Make sure the new exhaust filter is mounted with a rubber gasket.
- 2) Insert the guide rod and attach the exhaust filter to the oil sump.
- 3) Turn the Star knob by hand to the right to lock it firmly.

5. The exhaust filter arrow must be directed to upward or seam line directs to downward.



WOVP- 0020, 0030, 0040, 0060, 0080, 0120, 0130, 0200, 0350, 0500, 0600, 0800, 1000, 1200 & 1500



WOVP- 0320, 0430 & 0505



6. After assembled the exhaust filter, run the pump to check the filter is mounted in the right way. If oil mist comes out, the o-ring was not mounted and installed in the wrong way. Please mounted the exhaust filter again.

# Consumable parts / System failure & solution

## Consumable parts

| Model (WOVP)           | Item           | Description | Qty           |
|------------------------|----------------|-------------|---------------|
| 0020, 0030, 0040       | Exhaust filter | ø70x130     | 1             |
|                        | Air filter     | FC110       | 1             |
| 0060, 0080             | Exhaust filter | ø70x205     | 1             |
|                        | Air filter     | FG130       | 1             |
|                        | Oil filter     | 06100       | 1             |
| 0120, 0130, 0200       | Exhaust filter | ø70x250     | 2             |
|                        | Air filter     | FG170       | 1             |
|                        | Oil filter     | 06100       | 1             |
| 0320, 0430, 0505       | Exhaust filter | ø107x290(구) | 1 (0320)      |
|                        |                | ø100X300(신) | 2 (0430/0505) |
|                        | Air filter     | FC230       | 1             |
|                        | Oil filter     | 50100       | 1             |
| 0350, 0500, 0600, 0605 | Exhaust filter | ø70x375     | 4             |
|                        | Air filter     | FC230       | 1             |
|                        | Oil filter     | 50100       | 1             |
| 0800, 1000, 1200, 1500 | Exhaust filter | ø70x500     | 8             |
|                        | Air filter     | FC270       | 1             |
|                        | Oil filter     | 120100      | 1             |

## System failure & solution

| Failure                       | Check point | Reasons  | Solutions  |
|-------------------------------|-------------|--|--|
| Vacuum Failure                | Cylinder    | Poor oil supply  | Check connection of oil piping                                 |
|                               |             | Large amount of moisture inflow (Milky color)              | Removal of the cause of moisture flow or replacing             |
|                               | Oil sump    | Large amounts of moisture condensed                        | Oil change   |
|                               | Motor       | Bad voltage  | Check voltage  |
| Oil leakage                   | Cylinder    | Damaged on shaft seal & worn out                           | Repair or send it to the service center                        |
|                               | Oil sump    | Poor connection of oil piping                              | Check piping fitting parts or repair                           |
| Noise                         | Cylinder    | Foreign body inhalation                                    | Repair or send it to the service center                        |
|                               |             | Poor oil supply  | Check the amount of oil and oil pipe line                      |
|                               |             | Fan & coupling noise                                       | Check the fan cover and coupling                               |
|                               | Motor       | Pump vibration   | Check fixed bolt connection                                    |
|                               |             | Transformed fan and cover                                  | Restored the shape or replace new one                          |
|                               |             | Bearing damage   | Replace a bearing  |
| Exhaust mist                  | Oil sump    | Bad quality & Life ended of exhaust filter                 | Replace the exhaust filter                                     |
|                               |             | Inhalation of large amounts of moisture                    | Change the oil or operate the pump only                        |
|                               |             | Poor oil viscosity   | Use recommended oil  |
|                               |             | Defect on oil return valve                                 | Replace oil return valve                                       |
|                               |             | Poor quality or unmounted of O-ring                        | Check exhaust filter o-ring & replace                          |
| Overheat                      | Oil sump    | Inadequate oil   | Check amount of oil & replenish or change the oil              |
|                               |             | Oil filter clogged   | Replace oil filter   |
|                               |             | Exhaust filter clogged                                     | Replace exhaust filter   |
|                               | Cylinder    | Poor oil supply  | Check oil piping connection                                    |
|                               | Motor       | Wrong voltage  | Check input voltage or connection                              |
| Pump stopped during operation | Cylinder    | Damaged on vane or other parts                             | Repair or send to service center                               |
|                               |             | Poor vane operation from incoming matters or oil denatured | Disassemble and clean the cylinder<br>Take preventive measures |
|                               | Motor       | Coupling damage  | Replace coupling (check if cylinder is rotating)               |
|                               |             | Power disconnection  | Check the power unit or repair                                 |
|                               |             | Defect on motor coil                                       | Repair motor or replace new one                                |

Technical & parts service request

82-31-988-6166







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