VACUUM PISTON PUMP

Operating manual



Model: VP550, VP750, VP1100, VP1500, VP750-30L, VP1100-50L, VP1500-50L

TRANSLATION OF THE ORIGINAL USER MANUAL

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Edition: I 2026

BEFORE USING, PLEASE READ THIS OPERATING MANUAL. Keep the manual for possible future use, as it may always be necessary to remember the information contained in the manual, and it must be provided with the device in the event of reselling the machine or changing the user.

WARNING! In order to avoid the risk of injuries and accidents, as well as to increase work efficiency and prevent premature failure of the device, read all warnings, safety instructions and paragraphs marked with the symbol: ⚠

Do not dispose of that product as unsorted municipal waste.
Used equipment should be sent to an electro-waste collection point.

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All photos used in this manual are illustrative photos. The appearance and quantity of the elements supplied to the customer, as well as their mutual location may vary depending on the ordered vacuum piston pump.

This operating manual is based on current knowledge and experience. The manufacturer reserves the right to change the content of this manual without informing the consumer.

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1. Range of applications.

Vacuum pumps are used in the degassing process of pouring products such as: silicone, resin, gypsum and the process of impregnation of wood and other porous materials. These pumps can be widely used in the medical equipment, automotive industry, automation, printing machines, packaging machines, chemical industry. The series of piston vacuum pumps is characterized by oil-free technology, which allows them to work in clean rooms where oil mist generation is unacceptable. These pumps provided by VacuumChambers.eu are characterized by a great depth of vacuum compared to competing piston pumps. VacuumCahmbers.eu declares that, the ultimate vacuum is below 20mbar (2kPa) of absolute pressure or 50mbar (5kPa) for pumps with a built-in expansion tank. Additional advantages of the pumps described in this manual are stable operation, low noise level, high reliability and long life.

Vacuum pump is operated in the following conditions: ambient temperature between +5°C and +40°C, air humidity up to 80% at 20°C.

The vacuum pump is stored under the following conditions: ambient temperature from -15°C to + 50°C, air humidity up to 95% without condensation.

2. Properties of the vacuum piston pump.

VacuumChambers.eu offers vacuum piston pumps and vacuum piston pumps with an expansion tank and a digital vacuum controller.

Table No. 1: Technical data of piston pumps:

Pump model:	VP550	VP750	VP1100	VP1500	VP750-30L	VP1100-50L	VP1500-50L
Pump final vacuum (abs.):	2kPa 20mbar	2kPa 20mbar	2kPa 20mbar	2kPa 20mbar	5kPa 50mbar	5kPa 50mbar	5kPa 50mbar
Pump capacity:	80l/min 2.8CFM	120l/min 4.2CFM	220l/min 7.8CFM	320l/min 2.5CFM	120l/min 4.2CFM	220l/min 7.8CFM	320l/min 11.3CFM
Pump power:	550W	750W	1100W	1500 W	750W	1100W	1500W
Expansion tank capacity:	x	x	x	x	30L	50L	50L
Expansion tank vacuum time:	x	x	x	x	1 min 30s	2 min 30s	1min 45s
Noise level under full vacuum:	51	65	60	64	63	65	70
Noise level during free air circulation:	60	67	70	76	65	70	72
Weight:	10.4 kg	12.3 kg	18.4 kg	18.6 kg	24 kg	41.8 kg	42 kg
Pump dimensions (mm):	330x170x220	380x200x245	360x260x305	350x250x300	570x310x580	740x360x750	760x360x790

A. Vacuum piston pump.

Vacuum piston pump (Photo 1) consists of:

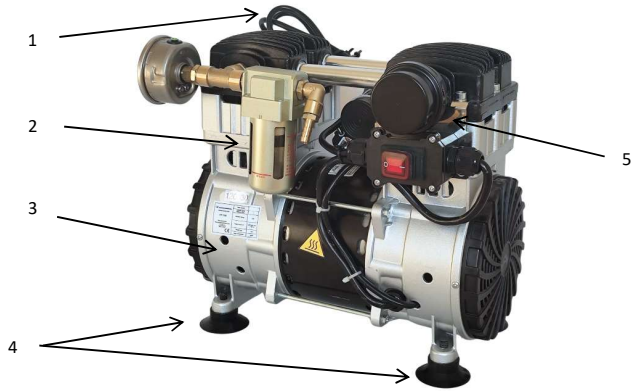

Photo No. 1: Vacuum piston pump.

1. Power cord.
2. Intake air filter.
3. Electric motor.
4. Mounting feet.
5. Exhaust with silencer.

The piston vacuum pump is equipped with an intake air filter (2) and an exhaust with silencer (5). The intake air filter has a barb fitting or a quick coupler for connecting an air hose. In selected models of vacuum piston pumps, a vacuum gauge is mounted on the air filter. The pump exhaust with silencer is equipped with a replaceable filter. The pump also includes an electric motor (3), a power cord (1) and mounting feet (4).

B. Vacuum piston pump with an expansion tank and a digital vacuum controller.

Vacuum piston pumps with an expansion tank and a digital vacuum controller (Photo No. 2) allow for the automation of technological processes for which a vacuum pump is used. Such pumps include:



Photo No. 2: Piston vacuum pump with expansion tank and digital vacuum controller.

1. Piston vacuum pump.
2. Expansion tank.
3. Wheels.
4. Handle.
5. Digital vacuum controller.
6. Intake air valve.
7. Drain valve.
8. Stand.

The vacuum piston pump (1) is firmly attached to the expansion tank (2). The pump suction connection is connected to the tank. Wheels (3), handle (4) and stand (8) enable convenient transport and stable placing of the set. The tank is equipped with a drain valve (7) that allows to remove any possible moisture from the inside of the tank. A digital vacuum controller (5) is attached to the top of the tank, next to it is an intake air valve (6). The intake air valve enables connection of a pneumatic hose to the tank.

The expansion tank maintains the pressure created by the pump after it has been turned off. The regulator measures and displays the pressure inside the tank and controls it by cyclically switching the vacuum pump on and off. It also allows to enter parameters that control the pump.



Photo 3: Digital vacuum controller.

The digital vacuum controller (Photo 3) is operated by using the display (1), buttons (2) and control lamps (3). The display shows the relative pressure value in bar - as described on the regulator. The display shows the current vacuum value in the tank. The regulator is also used to enter the limits of the pressure value to be maintained in the tank. The "SET" button allows the programmed pressure values to be displayed and modified. The "+" and "-" buttons are used to enter new parameter values. The green "RUNING" indicator light is on, during the correct work of the regulator. The "RUN", "STOP" and "PROTECT" indicator lights come on, while new settings are being made. When programming the controller, it is possible to set the parameters:

- RUN value - this is the pressure value in the tank, above which the pump will run.
- STOP value - this is the pressure value in the tank, after reaching which the pump will stop working. The lowest relative pressure that can be achieved by the pump is: - 0.98 bar. This corresponds to 20mbar absolute pressure. If the device is set to a lower value (e.g. -0.99bar), the vacuum pump will run continuously.
- PROTECT value - this function protects the device from excessive pump operation. If a leak is detected (the chamber cannot reach the required vacuum level) this function will turn off the pump and display an error.

By switching the vacuum pump on and off, the regulator keeps the pressure in the expansion tank constantly between the RUN and STOP values. When the pressure in the tank rises above the RUN value, the pump starts. When the STOP value is exceeded, the vacuum pump is stopped.

The operating and programming instructions for the controller can be found in the next chapter of this manual.

3. User manual.

WARNING! Points 3-8 only apply to a vacuum piston pump with an expansion tank and a digital vacuum controller.

WARNING! Before turning on the vacuum piston pump without an expansion tank, ensure that the pump exhaust is directed toward free space and not toward the power switch.



1) Connect the vacuum piston pump to the vacuum set with which it is to be used.
2) Start the pump by connecting the pump's power cord to the mains supply.
3) When the pump is connected to the mains supply, the pressure regulator is started. After a while, the display will show the pressure value inside the expansion tank.
   a. If the pressure is less than or equal to the RUN value, the pump will not start.
   b. If the pressure is higher than the RUN value, pump will run, reducing the pressure to the STOP value. When the STOP value is exceeded, the pump will be turned off.
4) If the vacuum set is leaking or not connected to the system (no indication of change in the vacuum value on the regulator with the pump running), then after 3 minutes the "FAULT" indicator light will light up on the regulator. Check the connection of the components or close the inlet valve (set the valve handle perpendicular to the valve). This will allow you to obtain or maintain the set vacuum value inside the expansion tank.
5) Remember to open the intake air valve (position the valve handle parallel to the valve) in order to degassing the components connected to the tank valve.
6) Pressure is maintained in the expansion tank and controlled by a vacuum controller. When the pressure rises above the RUN value, the pump starts and runs until the pressure is reduced below the STOP value. If the pressure is equal to or lower than RUN value, the pump will not start.
7) The value of the "PROTECT" parameter must be set below the values of the "START" and "STOP" parameters. Otherwise, the pump will enter an emergency mode.
8) Use vacuum controller to set or check the RUN and STOP values.
   a. Select the parameter to be set / displayed using the "SET" button.
   b. The selection of the parameter will be confirmed by the lighting of the red control lamp above the relevant inscription ("RUN", "STOP" or "PROTECT").
   c. The display will show the programmed value of the selected parameter.
   d. To change the parameter value, use the "+" and "-" buttons.
   e. In order to set / display another parameter, perform steps a-d again.
   f. The controller automatically remembers the set / displayed value.
9) To disconnect the vacuum set from the expansion tank, first close the intake air valve (position the valve handle perpendicular to the valve). This allows to maintain the pressure in the expansion tank. To start degassing a new vacuum set, remember to open the intake air valve after connecting it (position the valve handle parallel to the valve).
10) To turn off the pump, disconnect it from the mains supply.

4. Notes about use.

- The vacuum pump should stand on its feet on a horizontal and stable surface, in a dry, clean, low-dust and well-ventilated place. The distance of the side surfaces of the pump from other objects should not be less than 5cm. The distance between the front and back of the pump from other objects should not be less than 10cm. If the pump will be installed inside any device or furniture, provide air inlet to the device from the pump fan side.
- Do not allow the vacuum pump to overheat. Exceeding the temperature of 75°C on the motor housing significantly shortens the life of the pump, and in some cases can lead to its complete damage.
- Vacuum piston pumps are not intended for continuous operation. The recommended mode of use is S3 50% intermittent operation. The maximum time of continuous operation of the pump is 8 hours.
- If the pump will not be used for an extended period of time, cover the suction and exhaust gas connections and then put the pump away in a dry and safe place.
- The pump works without oil. Do not fill the pump with oil or lubricate it, as this may damage it.

- To protect the inside of the expansion tank from corrosion, open the bottom drain valve every day to get rid of moisture and water that may have entered it.
- The accumulation of fine solid contaminants in the polycarbonate housing of the intake air filter is a natural result of filtration.
- The rate of pressure drop during venting gradually decreases. However, if it is not possible to achieve a negative pressure at the level declared by the distributor, it may indicate the vacuum set untightness.

5. WARNING! Safety Instructions.

- **Read the operating instructions before use.**
- **There are warning decals on the vacuum pump and the expansion tank, read them before starting work and follow them.**
- **Before each use of the vacuum pump, it is necessary to check its technical condition, in particular the supply cable of the vacuum pump.**
- **Perform servicing and maintenance of the vacuum piston pump periodically.**
- **Carry out all maintenance work when the pump is not hot and is not running.**
- **The general rules for the use of equipment working under voltage must be observed.**
- **Before starting work, make sure that the parameters of the power source correspond to the pump requirements specified on the pump.**
- **Make sure that the pump complies with the technological requirements, processes and purposes for which it is to be used. Make sure that the pump is not exposed to chemicals that could damage it. The customer is solely responsible for selecting the appropriate pump for the working conditions.**
- **Do not pump flammable, explosive and toxic gases. Do not pump gases that are extremely moist or contain deposits or dust. If the pumped gases have a harmful effect on health or have a bad effect on the environment, an extension pipe can be installed at the pump outlet and the gases handled in accordance with environmental standards.**
- **The temperature of pumped gases should not be higher than + 70 °C.**
- **Use the pump in a safe, well-ventilated place, on a flat, stable surface.**
- **Avoid excessive pollution of the working environment by dust, powders, small solids or water, as heavy contamination can damage the pump.**
- **Do not expose the device to rain or excessive moisture.**
- **Some parts of the vacuum pump get very hot during operation. To prevent burns, never touch the body and pump motor.**
- **Never place in close proximity to the vacuum pump objects flammable, explosive, and susceptible to high temperature.**
- **Do not repair the vacuum pump by yourself.**
- **Never put fingers or other objects inside the pump impeller cover. Keep your hair, clothing, gloves and other objects that could get into the impeller, away from moving parts.**
- **Do not subject any parts of the human body to under pressure.**
- **The device should be operated by trained technicians, mentally and physically able to operate the vacuum pump.**
- **Keep children and animals away from operating area of the device.**
- **Be foreseeable, watch what you are doing, and be reasonable when using the device. Do not use the device when you are tired or under the influence of drugs, alcohol or medication.**
- **Do not use the device or any of its parts for purposes other than those for which it was intended. Do not make any modifications or changes to pump or its individual components. Any modifications and changes are made by the customer under his sole responsibility and will void the warranty.**

6. Maintenance.

Keep the vacuum pump clean. Disconnect the pump from the power supply before cleaning. Cleaning should be done at least once a month or more frequently if necessary. Pay particular attention to the cleanliness of the intake filter and the muffler filter, as contamination may adversely affect the flow rate and shorten the life of the pump.

Do not clean the vacuum pump with flammable liquids, solvents or with a stream of water. The pump housing and components should be cleaned with a dry, soft cloth. If any dirt gets inside the housing, it can be removed with compressed air. The expansion tank can be cleaned with a damp cloth and a mild detergent. Digital vacuum controller should be cleaned with dry, soft cloth.

A. Cleaning the check valve.

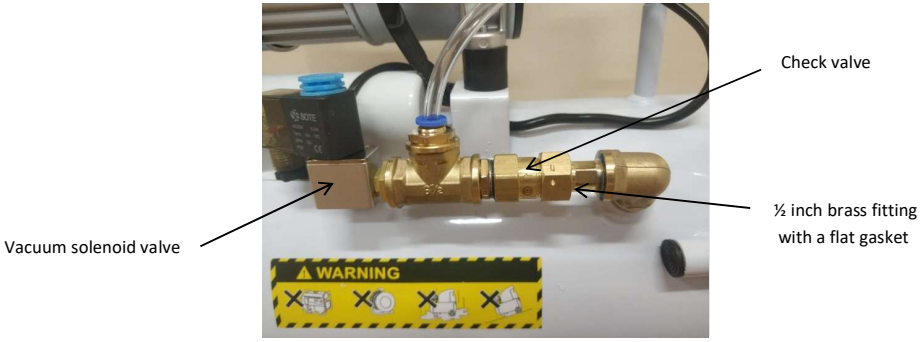

Photo 4: Check valve

The tank is equipped with a vacuum solenoid valve, brass pneumatic connectors and a brass check valve. In the event of a leak or loss of negative pressure in the tank (caused by the solenoid valve spontaneously drawing air into the tank), unscrew the brass union in order to clean the non-return valve. Use a size 24 open-end wrench to disassemble it. Use compressed air to clean the non-return valve. Do not use organic solvents such as trichlorethylene or alcohol-based solvents for cleaning. After cleaning, assemble the elements by carefully tightening the screw connections (maximum tightening torque - 58 Nm).

B. Cleaning the air intake filter.

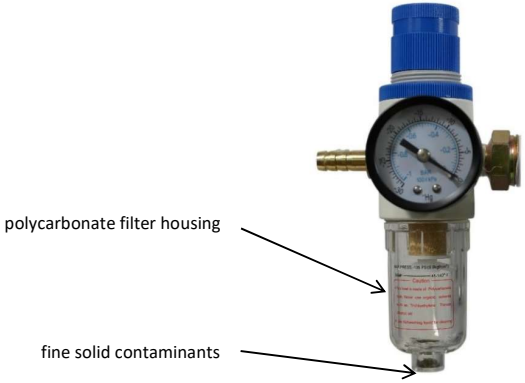

Photo 5: Air intake filter.

Fine solid contaminants can accumulate inside the filter housing during operation (Photo 5). This is the result of effective filtration. In order to remove them, unscrew the transparent part of the housing and pour out the dirt from it. If necessary, wash

the polycarbonate housing with water and a mild detergent (dish washing liquid). Do not use organic solvents such as trichloroethylene or alcohol-based solvents for cleaning. After drying the polycarbonate housing it can be reinstalled on the filter.

C. Cleaning and replacing the muffler filter.

In order to replace the muffler filter (Photo 6), unscrew the cover of the muffler housing. Then remove the used or dirty filter and install a new one in its place. After replacement, remember to screw the cover of the muffler housing back on.



Photo 6: Air muffler filter mounted in muffler.

It is possible to reuse the filter after it has been thoroughly cleaned. The filter can be cleaned with a brush or a stream of compressed air. However, if the dirt is difficult to remove or the filter is old, it is recommended to replace it with a new one.

7. Warranty.

VacuumChambers.eu guarantees that the vacuum pump will be operational and free of defects for a period of 12 months from the date of purchase. In the event of a breakdown during this period, VacuumChambers.eu will repair or replace any damaged pump element on the terms described in the warranty card included in with the pump.

This limited warranty does not cover damage to the pump caused by improper use, maintenance or use not in accordance with this manual. Any use of the device which is not in accordance with the intended purpose given above is forbidden and will void the warranty and the manufacturer's liability for any resulting damage. Any modifications of the device made by the user release the manufacturer from liability for damage and damage caused to the user and the environment. Proper use of the device also applies to maintenance, storage, transport and repair.

VacuumChambers.eu is not liable for damages, nor does it cover them under the warranty, for any kind of losses resulting from the breakdown of this product. In the case of a claim, VacuumChambers.eu's sole responsibility is to accept a return or exchange of the product itself.

8. EC declaration of conformity.

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DEKLARACJA ZGODNOŚCI WE

EC DECLARATION OF CONFORMITY/ EG-KONFORMITÄTSERKLÄRUNG

W rozumieniu dyrektywy 2006/42/WE, załącznik II, 1. A/
As defined in the directive, 2006/42/EC annex II, 1.A/ Im Sinne der Richtlinie 2006/42/EG Anhang II, 1.A

DEKLARACJA ORYGINALNA/ TRANSLATION OF THE ORIGINAL DECLARATION/ ÜBERSETZUNG DER ORIGINALKONFORMITÄTSERKLÄRUNG

Producent:/ Manufacturer: /Hersteller:

VacuumChambers.eu
drControl Dawid Roszczenko
Jodłowa 3A/34 16-001 Ignatki-Osiedle
Polska / Poland / Polen

Osoba upoważniona do przygotowania dokumentacji technicznej (nazwisko i adres):/ Person authorised to compile the technical file (name and address):/ Person, die bevollmächtigt ist, die technischen Unterlagen zusammenzustellen (Name und Anschrift):

Dawid Roszczenko, Jodłowa 3A/34 16-001 Ignatki-Osiedle.

Opis i dane identyfikacyjne maszyny:/ Description and identification of the machinery:/ Beschreibung und Identifizierung der Maschine:

Ogólne określenie:/ Generic denomination:/ Allgemeiner Bezeichnung: pompa próżniowa/ vacuum pump/ Vakuumpumpe.
Funkcja:/ Function:/ Funktion: wytwarzanie względnej próżni/ generating a relative vacuum/ Erzeugen des relativen Vakuums.
Nazwa handlowa:/ Commercial name:/ Handelsbezeichnung: pompa próżniowa/ vacuum pump/ Vakuumpumpe.

Model:/ Model:/ Modell:	VP550	VP750	VP1100	VP1500	VP750-30L	VP1100-50L	VP1500-50L
Typ:/ Type:/ Typ:	VP550	VP750	VP1100	VP1500	VP750-30L	VP1100-50L	VP1500-50L
Numer seryjny:/ Serial numer:/ Seriennummer:*	150000	160000	120000	140000	170000	130000	180000

*Numer seryjny określają dwie pierwsze cyfry./ The serial number is determined by the first two digits./ Seriennummer wird durch die ersten zwei Ziffern bestimmt.

Maszyna spełnia wszystkie odpowiednie postanowienia:/ The machinery fulfils all the relevant provisions of:/ Die Maschine entspricht allen einschlägigen Bestimmungen:

DYREKTYWA 2006/42/WE PARLAMENTU EUROPEJSKIEGO I RADY z dnia 17 maja 2006 r.
w sprawie maszyn, zmieniająca dyrektywę 95/16/WE,

DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006
on machinery, and amending Directive 95/16/EC,

RICHTLINIE 2006/42/EG DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 17. Mai 2006
über Maschinen und zur Änderung der Richtlinie 95/16/EG,

oraz:/ and:/ und:

DYREKTYWA PARLAMENTU EUROPEJSKIEGO I RADY 2014/30/UE z dnia 26 lutego 2014 r.
w sprawie harmonizacji ustawodawstw państw członkowskich odnoszących się do kompatybilności elektromagnetycznej.

DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014
on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.

RICHTLINIE 2014/30/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 26. Februar 2014
zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit.

Maszyna spełnia wymagania następujących norm:/ The machinery fulfils the requirements of the harmonised standards:/ Die Maschine entspricht der harmonisierten Normen:

EN ISO 12100:2010, EN 1012-1:2010, EN 60204-1:2018,
EN IEC 61000-6-1:2019, EN 61000-6-3:2007 + A1:2011+AC:2012,EN IEC 61000-3-2:2019, EN 61000-3-3:2013 + A1:2019.

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Białystok, 01.04.2024	**Dawid Roszczenko**	
(miejsce i data wydania) (place and date of issue) (Ort und Datum der Ausstellung)	(osoba upoważniona do sporządzenia deklaracji) (the person empowered to draw up the declaration) (die zur Ausstellung dieser Erklärung bevollmächtigte Person)	podpis signature Unterschrift