

# PRESSURE CHAMBER

## User manual



TRANSLATION OF THE ORIGINAL USER MANUAL

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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 pressure chamber.

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.

**ENVIRONMENTAL INFORMATION:**



Do not dispose of that product as unsorted municipal waste.



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przyjazna  
naturze®

Nature friendly company.

**SYMBOLS USED IN THE MANUAL:**



Danger - A hazard that can cause injury or damage.



Necessity to read the instruction manual of the device.



Necessity to use eye protection.



Necessity to use appropriate protective gloves.




Necessity to use protective clothing.



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 wear of the device, read all warnings, safety instructions and paragraphs marked with the symbol: .

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## 1. WARNING! Safety instructions.



- During work, use personal protective equipment, including eye protection, protective gloves, clothing and footwear.
- Never stand next to the pressure chamber, especially when there is high pressure inside, without appropriate protective equipment, including: eye protection and protective clothing. In the case of unexpected leakage of the chamber or its element, a sudden outflow of compressed air may occur, which could cause injury, in particular eye damage.



- Explosion hazard. Failure to follow this user manual can result in property damage or serious injury.
- Perform servicing and maintenance of the pressure chamber periodically.
- Before each use of the pressure chamber, it is necessary to check its technical condition, in particular condition of the tank, the three-arm knobs and that the silicone gasket is installed correctly.
- Be sure to use product in safe, well-ventilated area, on flat, stable surface.
- Use this product away from heat and fire. Do not use the chamber or leave the chamber with high pressure inside near an open flame, due to the risk of uncontrolled blowing of fire when opening the chamber valve or its unexpected leakage.
- Avoid using contaminated pneumatic hoses, compressors or a dirty pressure chamber, as dirt particles may be blown out of the chamber with the compressed air when opening the chamber or in an emergency situation.
- The user must ensure that the chemicals that are used in the intended process or when cleaning the chamber will not damage the pressure chamber or any of its components.
- The chamber cannot be used in contact with fluids classified as group 1 in Article 13 (1) DIRECTIVE 2014/68/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 15 May 2014. These are materials such as: explosives; flammable gases; oxidizing gases; flammable substances; self-reactive substances and mixtures; pyrophoric substances; substances and mixtures which in contact with water emit flammable gases; oxidizing substances; organic peroxides; acute toxicity; target organ toxicity; substances and mixtures contained in pressure equipment with a maximum allowable temperature TS which exceeds the flashpoint of the fluid; substances and mixtures contained in pressure equipment with a maximum allowable temperature which exceeds flash point of the fluid. The exact classification, categories of compounds and related legal provisions are described in DIRECTIVE 2014/68 / EU.
- The customer is solely responsible for the appropriate selection of the pressure chamber for the intended purposes and technology.
- The maximum working pressure shown on the pressure chamber nameplate must not be exceeded. For the PC2123S chamber, the maximum working pressure is +5.0 bar relative pressure. For the PC2623S chamber, the maximum working pressure is +4.0 bar relative pressure.
- The safety valve is used to protect the tank against excessive pressure. Do not make any adjustments or replace the safety valve.
- If the safety valve releases pressure from the chamber during operation, despite the fact that it works properly, the pressure value on the regulator is too high. Reduce the pressure on the regulator or close the air inlet valve on the chamber when desired pressure is reached.
- Do not put any additional weight or other objects on the lid of the tank.
- The lid must be correctly positioned on the tank. When closing the pressure chamber, always follow point "5. Proper closing and opening of the pressure chamber. " of this manual. Improper closure may result in chamber leakage, sudden unsealing of the chamber during operation or overuse use of the silicone gasket.
- The lid have to be properly tightened with the three-arm knobs. Too weak pressing of the lid down to the tank can lead to blowing of the gasket from the edge of the tank, and thus to sudden unsealing of the chamber.
- In the case of lid cracking or other damage immediately exclude it from use.
- In the case of cracking, abrasion, loss of elasticity or other mechanical damage of the gasket, immediately exclude it from use.
- In the case of deformation or any other mechanical damage of the tank immediately exclude if from use.
- In the case of any mechanical damage to the three-arm knobs, nuts, washers, screws and eye screws, immediately exclude pressure chamber from use.
- In the case of damage of the elements mounted on the tank or on the lid, immediately exclude pressure chamber from use.



- In the case of discontinuity of the powder coated surfaces on the chamber, immediately exclude pressure chamber from use.
- The manometer used in standard pressure chambers is not suitable for use in vacuum chambers. Using it in a tank where the pressure drops below atmospheric pressure may damage it. Before creating a vacuum in the chamber, replace the manometer with a vacuum gauge or manovacuumeter.
- An incomplete chamber must not be used. This applies in particular to the safety valve, eye screws, flat washers with large external diameter, three-arm knobs and elements connecting the eye screws with the tank.
- Individual elements of the pressure chamber, in particular the fastening elements of the chamber, should not be assembled or disassembled when pressure is generated in the chamber.
- No structural changes may be made to the pressure chamber by welding, drilling or other mechanical processing. This can weaken the chamber structure.
- Do not expose the device to rain or excessive moisture.
- Do not move or transport chamber with positive pressure inside.
- Do not move the chamber by grasping them by the pneumatic elements on the lid. In particular, the pressure reducer, as this may damage the chamber components and cause drop the device being carried.
- Do not leave the pressure chamber unattended during operator or under positive pressure, in particular when the chamber tank is being pumped.
- Do not place live organisms in pressure chambers.
- Do not subject any parts of the human body to high pressure.
- Keep children, people with disabilities and animals away from the 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.
- The device should be operated by trained technicians, mentally and physically able to operate the pressure chamber and its individual components.
- The pressure chamber is intended for professional use. It is not intended for non-professional use. The buyer is obliged to secure the pressure chamber and all its elements against unauthorized access.
- 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 the pressure chamber or its individual components. Any modifications or changes are made by the customer under his sole responsibility and will void the warranty.

## 2. Range of applications.

The pressure chamber is a sealed tank that allows to collection and storage of compressed air generated by the compressor. The pressure chamber is used in the casting process of details from moulding products such as: silicone, resin (polyurethane, epoxy), gypsum, wax. The pressure chamber creates conditions enabling the production of castings free from defects in the form of air bubbles.

The pressure chamber PC2123S is designed to operate with a pressure up to +5.0 bar relative pressure inside the tank. The safety valve actuation value for this chamber is +5.0 ( $\pm 10\%$ ) bar relative pressure. The pressure chamber PC2623S is designed to operate with a pressure up to +4.0 bar relative pressure inside the tank. The safety valve actuation value for this chamber is +4.5 ( $\pm 10\%$ ) bar relative pressure.

The minimum value of the working pressure for pressure chambers PC2123S and PC2623S is -1.0 bar relative pressure. However, in that case it is necessary to use a manovacuumeter instead of the manometer supplied as standard with the pressure chamber. If the standard manometer is used in a tank whose internal pressure is lower than 0 bar relative pressure, the manometer may be damaged.

The pressure chamber is operated under the following conditions: ambient temperature from +5°C to +40°C, air humidity up to 80% at 20°C.

The chamber is not intended for use in contact with fluids classified as group 1 in Article 13 (1) DIRECTIVE 2014/68/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 May 2014. These are materials such as: explosives; flammable gases; oxidizing gases; flammable substances; self-reactive substances and mixtures; pyrophoric substances; substances and mixtures which in contact with water emit flammable gases; oxidizing substances; organic peroxides; acute toxicity; target organ toxicity; substances and mixtures contained in pressure equipment with a maximum allowable temperature TS which exceeds the flashpoint of the fluid; substances and mixtures contained in pressure equipment with a maximum allowable temperature which exceeds flash point of the fluid. The exact classification, categories of compounds and related legal provisions are described in DIRECTIVE 2014/68 / EU.

## 3. Properties of the pressure chamber

The pressure chamber consists of (Photo 1):



Photo 1: Pressure chamber.

- |  |   |
|--|---|
| 1. Air outlet valve with pneumatic silencer. | 7. Air intake valve.                          |
| 2. Lid.                                      | 8. Pressure reducer with pressure gauge.      |
| 3. Eye screw.                                | 9. Three-arm knob.                            |
| 4. Tank.                                     | 10. Flat washer with large external diameter. |
| 5. Tank foot.                                | 11. Silicone gasket                           |
| 6. Safety valve                              | 12. Nameplate.                                |

The pressure chamber tank (4) is made of powder coated steel and is equipped with feet (5) and a nameplate (12). The tank is provided with a vulcanized silicone gasket (11). The applied gasket is durable, shows low susceptibility to mechanical deformation, and ensures the tightness of the chamber. The tank has been adapted for mounting the eye screws (3), which together with the washers (10) and the three-arm knobs (9), allow the lid to be securely attached to the tank and close the chamber. The lid of the chamber (2) is made of thick powder coated steel sheet. The inlet (7) and outlet (1) valves along with the pressure reducer (8) allow to control the pumping process. The pressure gauge on the reducer shows the current pressure value in the chamber. The inlet valve has a type 26 quick coupler plug which allows easy connection of the compressor to the pressure chamber. The outlet valve is equipped with a fitting muffler, improving the comfort of working with the device. The safety valve (2) on the lid automatically releases air from pressure chamber, when the pressure exceeds limits.

### A. Connecting the compressor to the pressure chamber.

The compressor can be connected to the chamber when the intake valve is closed – when the valve handle is perpendicular to the valve. Additionally, there should be no overpressure at the connected end of the compressor's hose. It is also recommended to connect the pneumatic hoses on the previously mounted and closed lid of the chamber.

The compressor can be connected to the pressure chamber by using a suitable pneumatic hose. The inlet valve has a type 26 quick coupler plug. The pressure hose to be connected to the pressure chamber must be equipped with a type 26 quick coupler. In order to connect the chamber and the compressor, slide the quick coupling of the compressor hose onto the plug of the inlet valve. It should be heard a soft click when the hose is putted on the valve. Make sure the hose is connected firmly on the valve.

To remove the hose from the inlet valve, firmly pull the knurled part of the quick coupler housing towards the hose. Do not remove the hose when there is overpressure on the hose or in the chamber. If there is overpressure in the chamber, the hose can only be removed when the inlet valve is closed (the valve handle is perpendicular to the valve).

## B. Pressure in the chamber regulation.

The pressure reducer in chamber PC2123S is factory-set at +5.0 bar relative pressure. The pressure reducer in chamber PC2623S is factory-set at +4.0 bar relative pressure. If not necessary, it should not be regulated. Before starting pressure reduction, the pressure chamber must be inflated. Pressure regulation is possible only when there is pressure inside the chamber. To do this, unlock the pressure reducer knob by gently pulling it away from the reducer. Turning the knob anticlockwise will reduce the pressure. The pressure reducer has no indicator or scale indicating the pressure reduction. During reduction, the reducer opens the system and decrease the pressure inside the chamber. This changes the pressure gauge indication and allows to indirectly control the pressure reduction. When the pressure gauge indicates the intended pressure, turn the knob clockwise until the gauge indicator no longer retracts. The set value should be locked by gently pressing the reducer knob.

To return to the upper pressure value, it is necessary to connect an pressure source to the chamber. Inflate the chamber, then unlock the knob and turn it slightly clockwise. The inlet valve should be open during regulation (valve handle positioned parallel to the valve) so that the chamber can be pumped. The manometer indication increases simultaneously with the increase in pressure in the chamber. Turn the knob gradually while still controlling the pressure on the gauge. After reaching the intended pressure, lock the knob by gently pressing it to the reducer.

## 4. Before the first use.

The pressure chamber delivered to the customer is not ready for use (Photo 2). In order to avoid damage to the chamber during transport, the chamber lid is mounted upside down and secured with temporary washers and nuts. Three-arm knobs, washers, and feet are not mounted on the chamber before shipment. The customer should prepare delivered pressure chamber for exploitation.

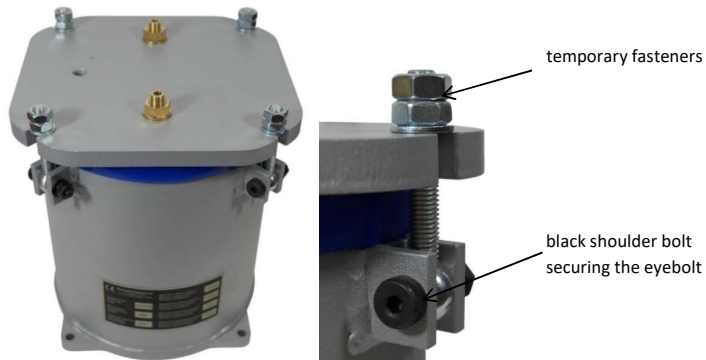


Photo 2: Chamber prepared for transport, temporary fasteners.

Before the first use, unpack the device and place it on a flat, stable surface. Then assemble the chamber elements in accordance with these instructions. The chamber delivered to the customer is complete, the loose parts are placed inside the chamber's tank.

## A. Preparation of the lid.

- 1) Remove all temporary nuts and washers from the pressure chamber eye screws (Photo 2). Do not remove the eye screw black shoulder bolt or anything mounted on it (washer, nut).
- 2) Remove the lid by lifting it vertically upwards. Be careful as there are pneumatic components mounted on the lid. Moving the lid sideways horizontally can damage the pneumatic elements. The chamber lid lifted to the appropriate height should be inverted in such a way that the valves are at the top. The lid can be put aside on a horizontal, flat surface. The chamber lid must not be supported or placed on its side edges, on valves or on reducer - it may cause the damage the parts mounted on the lid.
- 3) Take out all loose parts, which are located inside the tank.
- 4) One of the elements taken out of the chamber should be a pneumatic silencer with a muff. These elements should be screwed onto the thread connected to the pressure reducer on the underside of the lid, as shown in the photo below.

Correctly installed pneumatic silencer disperses the compressed air pumped into the chamber, which prevents splashing of products placed in the tank during pumping the chamber.

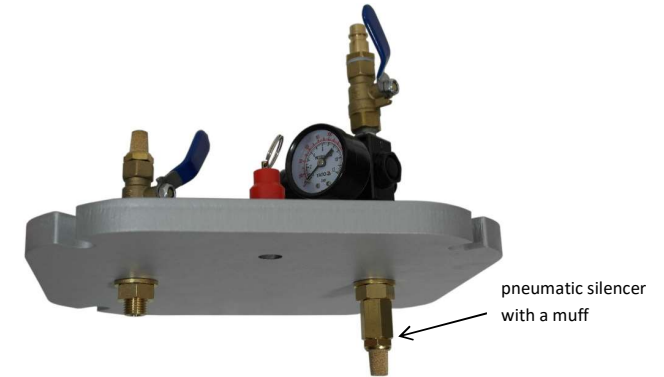


Photo 3: Pneumatic silencer correctly installed on the lid.

## B. Tank feet assembly.

The set delivered to the customer includes four tank feet with elements for their assembly.

- 1) Remove the nut, washers, and nut cap from the foot.
- 2) Insert the threaded pin of the foot into one of the holes in the bottom of the tank. The rubber foot cap should be on the underside of the tank.
- 3) On the threaded pin of the foot should be placed sequentially: a plain washer, a spring washer and a nut.
- 4) Tighten the nut with a spanner. While tightening the foot, hold its rubber part by the hand.
- 5) Mask the nut with the nut cover provided.
- 6) Attach the other feet in the same way.

Photo 4 shows the correct installation of the tank foot. It may be necessary to tilt the tank when installing the feet. Make sure that such a move does not damage the chamber or other items. Do not tilt the chamber if on top of the tank is unsecured lid.



Photo 4: Tank foot correctly installed on the chamber.

## C. Flat washers and three-arm knobs assembly.

The flat washers and the three-armed knobs are delivered loosely with the pressure chamber and must be assembled before the first use by customer.



**The chamber with temporary fasteners must not be used. These elements must be replaced with three-arm knobs and flat washers with large external diameter. It is especially important to install flat washers with large external diameter, the absence of which or incorrect installation may break the three-arm knobs and cause a dangerous leakage of the chamber.**

- 1) Place the flat washer with large external diameter over the eye screw. The smooth side of the washer should be on the opposite side to the free end of the eye screw. This will reduce the risk of scratching the painted surface of the lid.
- 2) Screw the three-arm knob on the thread of the eye screw over a short distance.
- 3) Install the other washers and knobs as described above. There should be exactly one flat washer with large external diameter and one three-arm knob on each eye screw.

#### 5. Proper closing and opening of the pressure chamber.

The fastening of the chamber consist of eye screw, flat washer with large external diameter and three-arm knob. The first installation of the washer and the three-arm knob must be done before the first pressure chamber use. During further use, it is not necessary to remove the chamber's fastening elements. Four fasteners are mounted on each pressure chamber. They allow the chamber to be tightly closed with a lid. Steps to close the pressure chamber:

- 1) Place the chamber lid centrally on the tank so that the notches in the corners of the lid are positioned vertically over the eye screws. The valves mounted on the lid must be on the top side.
- 2) Lift any fastening up (grasp it by the washer) and put the washer with the three-arm knob on the lid of the chamber. The eye screw should be inserted into the notch in the lid of the chamber in a vertical position. The washer should be placed directly on the lid of the chamber and there should be a three-arm knob above it. If setting the fastener in the described position is difficult, loosen the three-arm knob (turn it anticlockwise) or move the lid a bit (if the notch in the corner of the lid is not centred over the eye screw).
- 3) If the washer and the knob are not mounted on the eye screw, first set the eye screw in the correct position (vertically, in the notch on the corner of the lid), then put the flat washer with large external diameter (smooth side facing the lid) on pin and screw the three-arm knob on.
- 4) After setting the fastener in the correct position, pre-tighten the three-arm knob to secure the fastener against falling down. Retain the possibility of horizontal sliding the lid.
- 5) Install the opposite fastener as described above.
- 6) Install the others fasteners as described above.
- 7) When all fasteners are pre-fitted, start tightening them. The three-arm knobs should be tightened by hand, without using tools. Always remember to tighten two opposite fasteners at the same time. After fastening the first pair (two opposite fasteners), go to the second pair, then tighten the first pair again and the second pair again.
- 8) Before starting the pumping process, check each three-arm knob individually. The lid should be pressed as tightly as possible.

The fastener of the chamber has been properly mounted if the eye screw is vertical, and the washer and the three-arm knob are on the upper side of the chamber lid (Photo 5).



Photo 5: Correctly fastened fastener of the pressure chamber.

The fastener is not properly closed when the washer is not between the lid and the three-arm knob (Photo 6 A) or the eye screw is not positioned vertically (Photo 6 B). Incorrect installation of the washer may break the three-arm knob. If the eye screw is incorrectly positioned, the fastener may slip out of the chamber. Both situations may lead to a dangerous leakage of the chamber. Before using the chamber, always check that the fasteners are correctly positioned.

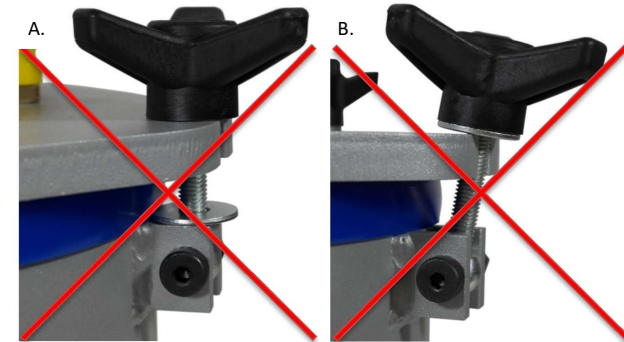


Photo 6: Incorrectly fastened fastener of the pressure chamber (A-incorrect position of the washer, B- non vertical positioning of the eye screw).

To open a pressure chamber, first make sure that there is no pressure inside it. Then loosen the three-arm knobs (turn them anticlockwise). The knobs should be loosened until it is possible to freely slide the fasteners off the lid. After opening the chamber, leave the fasteners hanging loosely on the tank. There is no need to remove the washers or the three-arm knobs from the eye screws.

When the fasteners have been removed, the lid can be lifted up. The lid should be gently lifted up. The lid cannot be moved sideways because the pneumatic elements protruding from the bottom of the lid could hit the gasket or the tank. The lid can be put aside on a horizontal, flat surface. Remember not to support or place lid on its side edges, on valves or on reducer

#### 6. Operating manual.

Before operating the pressure chamber, read the sections "2. A. Connecting the compressor to the pressure chamber." and "5. Proper closing and opening of the pressure chamber." of this manual, and always act in accordance with the information contained therein. In order to carry out the intended process:


- 1) Open the pressure chamber.
- 2) Place casting product in the chamber.
- 3) Place the lid on the chamber. Make sure it's placed centrally on the tank and that each eye screw can be secured in a vertical position.
- 4) Use the three-arm knobs to press the lid down to the tank. Make sure that lid is properly secured. Tighten the three-arm knobs diagonally in pairs. (See point 5. "Proper closing and opening of the pressure chamber.")
- 5) Close the intake air valve (valve handle positioned perpendicular to the valve).
- 6) Close the outlet air valve (valve handle positioned perpendicular to the valve).
- 7) Check if the pressure reducer knob is locked (it should be pushed towards the pressure gauge and it should not be possible to turn).
- 8) Connect the pneumatic hose from the compressor to the quick coupler plug on the lid of the pressure chamber.



**Before inflating the chamber, make sure that all three-arm knobs are properly closed – as shown in Photo 5.**

- 9) Slowly open the intake air valve. The pressure chamber will start receiving compressed air from the compressor.
- 10) Attentively control the pressure in the tank by checking the pressure gauge indication.
- 11) After reaching the required pressure, immediately close the air intake valve on the lid of the chamber.
- 12) The compressor pneumatic hose can be disconnected from the pressure chamber quick coupler plug. The pressure chamber allows to maintain the pressure inside the tank for many hours with no need to re-inflate it.

- 13) Casting products must be kept in a pressure chamber for time at least equal to the cure time of the moulding material.
- 14) Before opening pressure chamber gradually open the air outlet valve. The pressure in tank will equalize with the ambient pressure.
- 15) Check the pressure in the chamber - the pressure gauge should show a value of 0 bar relative pressure. It is not allowed to open the chamber when there is higher pressure inside!



- Always open the air outlet valve gradually.
- Before unscrewing the three-arm knobs and opening the tank, make sure that the pressure inside the tank does not exceed 0 bar relative pressure - the pressure gauge shows 0 bar and the drain valve is open (valve handle is parallel to the valve) and is not blowing air.

- 16) Loosen the three-arm knobs sufficiently to allow free release of the eye screws from the notches in the lid. (See point 5. "Proper closing and opening of the pressure chamber.")
- 17) Remove the lid fasteners. Remove the chamber lid.
- 18) Remove materials from tank.

The maximum allowable pressure in the chamber PC2123S is +5.0 bar relative pressure. The maximum allowable pressure in the chamber PC2623S is +4.0 bar relative pressure. If a lower value is required for a specific process, before inserting the material in the chamber, inflate the chamber (follow steps 3-11 of the instruction above) and set the appropriate reduction value (in accordance with paragraph "3 B. Pressure in the chamber regulation."), And then open the chamber, following steps 14-17 of this manual. After these steps are completed, it is possible to start the casting process at the new pressure value.

#### 7. Notes about use.

- Casting materials placed in the chamber should be in an additional container or a mould large enough to prevent them from spilling into the chamber tank.
- Do not remove the chamber lid until the pressure in the chamber has equalized.
- The pressure chamber must not come into contact with aggressive chemicals, as this may lead to rapid degradation of powder coated surfaces and accelerated corrosion of individual elements.
- The chamber must not be used with temporary fasteners located on the chamber during delivery. It is necessary to replace them with flat washer with large external diameter and three-arm knobs.
- The three-arm knobs should always be tightened in pairs diagonally. This will ensure the best result of the fastening lid on the tank.
- Always check the device for any signs of mechanical damage. In particular, check the condition of the three-arm knobs and the correct installation of the silicone gasket.

#### 8. Trouble shooting guide.

Possible and the most common failures and problems are described below, as well as recommended procedure in case of their occurrence.

Problem	Possible cause	Recommended procedure.
<b>Air is blowing out the gasket.</b>	The chamber was not properly closed - incorrect order of assembly of the three-arm knobs.	Correct the fastening of the chamber following the instructions in point 6."Operating manual." of this manual. Particular attention should be paid to tightening two opposite three-arm knobs simultaneously.
	Three-arm knobs insufficiently tightened.	If the chamber has been closed in accordance with point 6."Operating manual." in this manual, tighten the three-arm knobs more firmly, remembering to tighten the two opposite three-arm knobs at the same time.
<b>Air is unexpectedly blown out of the chamber or chamber component.</b>	Air outlet valve is not tightly closed.	Close the air outlet valve - place the valve handle perpendicular to the valve.
	There is an unexpected leak in the chamber.	Stop pumping the pressure chamber immediately. The pressure chamber must not be used if compressed air is blown out of it in an uncontrolled manner. Locate the leak. Contact supplier for additional information.
<b>The safety valve opens before the maximum working pressure is reached.</b>	The safety valve opening pressure is lower than the maximum working pressure.	If the value of the pressure for which the safety valve opens is higher than 90% of the maximum working pressure, the valve works properly - the tolerance of the safety valve opening

		limit is 10% of the safety valve opening pressure. If the valve opens at lower values, contact supplier for more information.
<b>The safety valve does not open despite exceeding the maximum working pressure.</b>	The safety valve opening pressure is higher than the maximum working pressure.	If the value of the pressure for which the safety valve opens is higher than 110% of the maximum working pressure, the valve works properly - the tolerance of the safety valve opening limit is 10% of the safety valve opening pressure.
	The safety valve was not checked regularly.	Check the operation of the safety valve in accordance with point 9. "Maintenance." of this manual. Remember to check the safety valve regularly.
<b>Failure to achieve the maximum working pressure, declared by the manufacturer.</b>	Not enough efficient compressor has been used.	More efficient compressor should be used.
	Air outlet valve open.	Close the air outlet valve - place the valve handle perpendicular to the valve.
<b>The pressure chamber is difficult to open.</b>	Leakage on one or more parts of the pressure chamber.	Stop using of the pressure chamber. Locate the leak. Contact supplier for additional information. If the gasket is blowing out, go to "Air is blowing out the gasket." row in this table.
	There is compressed air inside the chamber. High pressure has caused the three-arm knobs to be tightened.	Do not open the chamber! It is necessary to: close the air supply from the compressor, disconnect the compressor, open the air outlet valve, wait until the pressure inside the chamber equalizes with the atmospheric pressure. After making sure that the steps listed above have been properly followed, and air is not blowing from the air outlet valve, try to open the pressure chamber again.
<b>Mechanical damage or weakness of the pressure chamber.</b>	Incorrect operation of the pressure chamber or its individual elements.	Do not use damaged elements. Contact the supplier to replace damaged elements with new ones, if possible. Inform your supplier of how the pressure chamber or its elements were damaged for additional information and guidance, that may reduce the risk of similar damage in the future.
<b>Chemical damage or deterioration of the pressure chamber and / or when inflated, the tank heats up significantly.</b>	Substances for which the tank is not designed were placed in the tank.	Exclude the chamber from use. Deflate the chamber if it is possible and safe. Strictly follow the chemical safety data sheets or other instructions for handling the substances used. If the chamber has been in contact with substances for which it is not intended, it cannot be further used. Even after briefly placing in the pressure chamber substances incompatible with its intended purpose, the chamber could weaken invisibly to the naked eye. Continued use of such a pressure chamber may endanger the operator and the environment.

If the above information did not allow to fix the problem, or the problem that occurred is not described above, please contact the supplier for additional information or to return the product for warranty repair or post-warranty service.

#### 9. Maintenance.

Pressure chamber must be kept clean and the pneumatic components must be taken care of so that the extraneous objects don't get into them and as a result block and damage the chamber or compressor.

Tank, lid and silicon gasket can be cleaned with water and a mild detergent like the liquid dishwashing detergent. The use of strong detergents to clean the chamber may cause it to scratch or peeling of the powder coated layer. Do not clean the pressure chamber with flammable liquids, solvents or by spraying it with a stream of water.

Pay special attention not to scratch the surface of the tank during cleaning. Violation of the continuity of the powder coated surface may result in corrosion. A tank with signs of corrosion must not be used.

##### A. **Safety valve.**

As a result of contact of the safety valve with substances or mixtures used by the user, the safety valve may become clogged. Also, the valve may be damaged by impurities that have entered it or as a result of other mechanical damage.

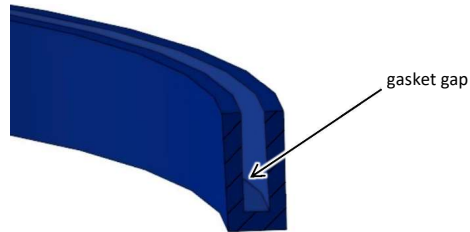
Due to the important role of the safety valve in ensuring safe operation of the chamber, its technical condition and correct operation should be regularly checked. To do this, gently pull the cotter pin on the valve when the pressure in the tank reaches a value equal to the maximum working pressure of a chamber. This should open the valve and discharge the air. Then release the

locking pin and the valve should close again. If the valve does not work as described, it is defective and must be replaced. To replace the safety valve, contact the supplier. If the safety valve does not have a locking pin, pull the end of the valve spindle with pliers during the test. The end of the safety valve spindle is a small silver element protruding at the top of the valve.

#### **B. Tank gasket replacement.**

The silicone gasket on the tank is a consumable item and its wearing out is a natural process. Excessive use of the gasket or its damage may cause leakage of the chamber. If there are visible signs of wear, damage, dirt or leakage of the chamber, it must be replaced. The gasket may lose its elasticity or harden as a result of contact with the materials used by the customer. In that case it should also be replaced.

For replacement, the old gasket must be removed. Take it with hand and pull it off the tank wall. The gasket should be completely removed, and no contamination should be left in the place of its installation.



*Picture 1: Gasket - sectional view.*

The new gasket should be placed on the tank in place of the old one. Installation should begin with the positioning of a short section of the gasket on the edge of the tank. It is necessary to open the gasket gap locally (Picture 1), so that it can be easily placed on the wall. When the first section of the gasket is on the edge, hold it with hand and slide the rest of the gasket on. Application should continue along the gasket. Finally, press the gasket with hand down to the tank along its entire length. Do not apply too much pressure or hit the gasket with hard objects. Hitting the gasket can damage it, which can cause leakage in the vacuum set.

#### **10. Warranty**

VacuumChambers.eu guarantees that the pressure chamber 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 pressure chamber element on the terms described in the warranty card included in the chamber.

This limited warranty does not cover damage to the system 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 any 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.