Portable High Pressure Helium Compresor
- Model: AD-TN-0.1/E or AD-TN-0.1/GS
- Manual & Instruction

- Dimension: 68X38X42cm (Electrical Version)
- or 80X38X40cm (Gasoline Version)
- Max Air Pressure: 2100 – 2400 psi/(15 Mpa – 16.5 Mpa)
- Net Weight: 55 kg or 50 kg
- Capactiy: 100 L/min
- Flow Rate: 6 m3/ hour
- Motor or Engine: 2.2 Kw or 4 kw
- RPM: 2260 r/min
- Max Working Altitude: 2000m

Technic Support:
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Warning: 

1. The Portable High Pressure Helium Compressor is strict adherence to the quality standards, ignoring operation and maintenance procedures, can cause serious injury or death. We strongly recommend that you read this manual carefully before using the compressor, and strictly enforced. Machine damage due to violation of operating instructions caused, will not be included in the product warranty.

2. The Portable High Pressure Helium Compressor is manufactured according to the highest technical standards and safety standards. However, the operator and third parties can still cause harm or result in damage to machinery and other equipment during operation. So the machine can only be manufactured with this manual compression of the gas, as its other use is strictly prohibited.

3 . All work on the compressor must be at a complete standstill state, no pressure and cut off the power of the state to do the next procedures.

4 . Do not braze or weld pressure piping or/and tubing, do not attempt to bolt or modify the structure or configuration of any component or subcomponent of this compressor while under pressure.

This manual contains the operating instructions and Maintenance schedules for high pressure helium compressors. The operator must read and understand all the information in the manual.

Very imporant Experience :

Eevery 1- 2 hours need to stop running to let machine cooling down 0.5 hour（cause small compressor）

ATTENTION. 

This machine only be used after a careful reading of this instruction manual by skilled and trained operator. The machine may only used to compress helium gas. Other use is strictly prohibited. The manufacturer and the supplier void all responsibility for damage or injury resulting from failure to follow these instructions.

Before using the machine please put your attention to this general information:

1. Personnel engaged to operate the machine must have read the instruction manual before beginning work, especially the safety notices chapter.
2. Personnel may not wear long hair loose, loose clothing or jewellery, including rings.
3. Keep all safety and danger notices on the unit complete and in readable condition.
4. No modifications may be made to the unit which could impair safety without first obtaining permission from the suppliers.

5. Piping must be thoroughly checked (pressure and visual inspection) by the operator at appropriate time intervals, even if no safety related faults have been noticed.
6. Intervals stipulated or given in the instruction manual for recurring checks/inspections must be adhered to.
7. It is absolutely essential that the workplace is appropriately equipped for Maintenance measures.
8. Work on/with the unit may only be carried out by reliable personnel. Observe the legal minimum age permissible.
9.Operator must be trained and have experience on compressor

Remember that your machine is not a ‘toy’, but a highly Efficient internal-combustion machine whose power is Capable of harming you, or others, if it is misused of abused.As ower,you,alone,are responsible for the safe operation Of your machine, so act with discretion and care at all time.If at some future date,your machine is acquired by another Person,we would respectfully request that these instructions are also passed on to its new owner.

Warranty

We products provide one year warranty, the warranty period from the date of delivery of the products. During the warranty period, We provide product repair or/ and replacement parts. We does not cover any other losses due to the replacement costs of parts problems arising.

You must be in accordance with the contents of the manual, the compressor regular and irregular maintenance. Failure to follow up the guidance of the maintenance manual for machine maintenance, or in the absence of contact We of unauthorized disassembly of the compressor, the consequences may cause not assume responsibility for warranty. At the same time, failure and damage caused by an unauthorized operator, We assumes no warranty responsibility .We usesits compressor spare parts, which have been qualified design and processing. Compressor warranty from the date of delivery and least one year. Customer should note: machine problems found within two months, must be reported to the presence of a flaws and faults to We; otherwise We will not provide warranty service.

Warranty covers only comply with the manual instructions, and regular maintenance of the compressor. The warranty does not cover damage or failure due to incorrect use of the compressor, placed outdoors because of exposure to atmospheric agents (e.g. moderate rain) or damage during transport caused. Material wears and requires periodic replacement and maintenance parts are not covered by the warranty, customers need to buy these materials. We machine without authorization to be modified, the terms of this service automatically lapse. Because of the design, manufacturing flaws or defects on the material caused by the compressor maintenance and replacement costs covered by us. Transportation costs, consumable materials fee covered by the customer.

If the warranty work must be carried out at the customer site, We personnel travel expenses and accommodation costs shall be met by the customer, regarding of whether the service is determined to be covered by warranty. Declaration by the customer's machine failure does not necessarily covered by the warranty. Under warranty, repair or/and replacement provided by We, does not automatically extend the warranty period. In the case of the warranty coverage does not mean We will be compensated. For other direct or indirect losses arising due to compressor failure, We is not responsible, unless there is gross negligence of the relevant evidence.

Genernal

1. Basic information of the (AD-TN-0.1)

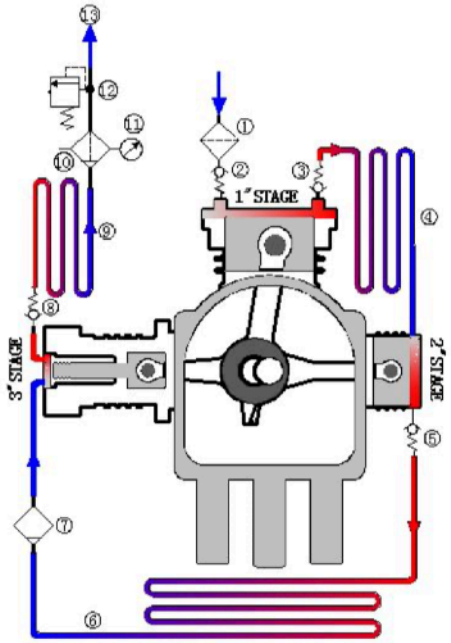
The **AD-TN-0.1 Model** are manufactured for the primary purpose of Press helium gas to cylinder in High Pressure(15Mpa to 16.5MMpa).It provide high quality helium gas balloon and blimp recycle usage.

1.1 Technical Data

Technical Data AD-TN-0.1		
Number of stages	3 stage	
Working pressure:	15 -16.5	Mpa
Capacity	100	l/min
Power	2.2	Kw
Electrical Version:	Three-phase or Single Phase	
Gasoline Version:	Gasoline 4HP	
Noise	80.7	dB(A)
Dimension	68cmX38cmX42cm	Electrical Version
	80cmX38cmX40cm	Gasoline Version
Gross Weight	66 kg	Electrical Version
	62 kgs	Gasoline Version

1.2 Structure

- Structure: Block, Compressor
- Frame
- Oil/mosture Separator（Manual）
- Dimension: 1st stage 62mm, 2nd stage 30mm, 3rd stage 12mm Stroke 24mm
- Driven: Electrical motor or Petrol Engines）
- Lubricant:
- Compressore Oil: 0.4 liter

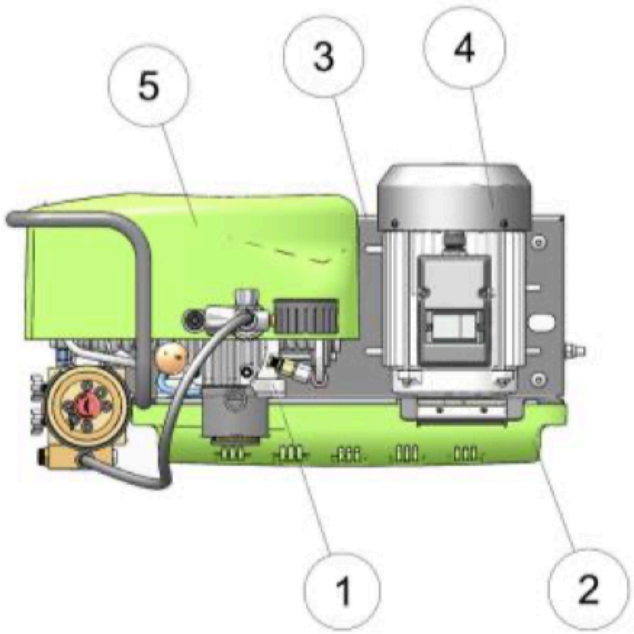


Air enters through 1. the air filter, through 2. the first stage cylinder intake valve into the first stage cylinder.

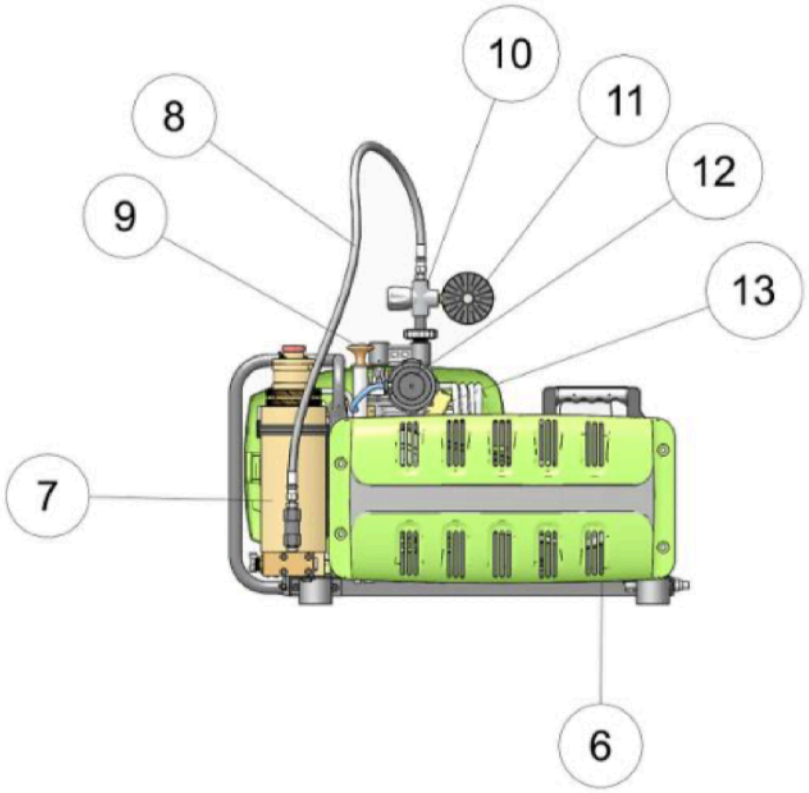
After compression, it exits through the 3. first cylinder vent valve into the 4. first stage cooling pipe. The cooled air enters the second stage cylinder for additional compression. It exits through the 5.second stage cylinder vent valve into the 6. second stage cooling pipe.

After 7. the oil-water separator, the air continues through the 8. third stage air inlet valve intothethird cylinder for final compression. The air then flows past the cylinder vent valve into the 9third stage cooling pipe and then enters 10the activated carbon molecular sieve, filtered clean air is discharged through the pipe. 11pressure gauge 12 safety valve 13 connecting pipe.

1.3 Compressor Structure



1.Block	
2.Belt cover	
3.Base	
4.Motor	
5.Fan cover	



6.Belt	
7.Final stage filter	
8.filling hose	
9.Dipstick	
10.Fillingvalve	
11.Pressure gauge	
12.Inlet filter	
13.fan	

Note: gasoline engine-driven compressor, just below set out the different parts and motor-driven compressor, the remaining parts are the same.

1.4 Safety notices for operation

1. This machine is manufactured based on the most advanced technology and existing security technology specified by the manufacturer, but still may cause injury to the life of operator or a third person, may result in direct economic losses of machinery and other equipment.

2. Only operate the machine when perfect technical and safety condition .If found any problems or/and anomalies, should be corrected immediately.

3. The machine is designed exclusively for producing compressed air and technical gases for breathing purposes. Any other application or use is prohibited. The manufacturer is not responsible for damages and economic loss caused by other uses or applications. The operator will have to be authorized to use the machine, and follow instructions, appropriate testing and maintenance.

Management department

1. The operation manual should be placed near the compressor position.

2. In addition to this, please comply with environmental protection and prevent the risk of general regulations. These include contact with dangerous goods and personal protective equipment worn.

3. Additional instructions must develop monitoring and management, such as: the organization of work, production, and employment and other personnel.

4. The staff of the operation of this machine, before starting work, must carefully read this manual, particularly the chapter on operational safety. It's too late if the work has begun. (Particularly for temporary staff, such as maintenance personnel) must be on temporary staff supervision.

5. The operator should not have untied hair, jewelry or loose clothing that may be caught by the machine.

6. Wear personal protective equipment (including hard hat, safety goggles, ear protection, jumpsuit, etc) while operating this machine.

7.Pay attention to the safety instructions and symbols indicated on the machine and within this manual.

8. All safety and hazard markers must clearly and completely marked on the machine.

9. Without supplier's agree, the machine cannot make any changes, including: installation of safety valve and changes, as well as welding gas cylinders and piping.

10. Compressor parts quality must comply with the manufacturer's technical requirements of all the original parts quality assurance.

11. Do not change operating procedures of the compressor built-in computer program.

12. All piping must be detailed and comprehensive examined on a regular basis by the operator, including visual inspection and pressure testing. Even found no safety issues also need to check regularly.

13. The schedule periodic inspection regulations, and regular inspection specified in the operating manual, must be observed.

14. The workplace should be properly equipped, well lit and adequately ventilated based on the operational, maintenance and repair requirements of the compressor.

15. Know the location and operation of the nearest firefighting equipment and escape procedures

Basic qualifications and responsibilities

1. Must be operated by a trusted operator.

2.Only hire trained, responsible personnel responsible for the operation, maintenance and repair of the machine.

3. Develop work responsibilities for machine operator. In addition, the operator shall introduce to a third party regarding the risk of the machine.

4. Just being trained, or the new operator, must work under the guidance of an experienced operator.

5. Install or operate electrical equipment must be carried out by a qualified electrician, electrician or under the guidance of conduct in accordance with electrical regulations

6. The high-pressure pipes must be installed in accordance with the relevant regulations carried out by a qualified person.

Safety measurements for operation

1. If there are safety problems, cannot do any operation.

2. Must comply with all safety requirements and safe operation under all protection and safety facilities in good working condition.

3. Check the machine at least once a day its external circumstances, if unusual circumstances found, should be reported immediately to the relevant departments and personnel, switch off the machine, if necessary, put it is in a safe state.

4. If unusual circumstances found, for safety, immediately shut down, and immediately corrected anomalies.

5. According to the operational procedures doing associated switching program.

6. In accordance with rules prescribed time, regular adjustment, testing, maintenance (including replacement parts and equipment); all work must be performed by qualified personnel.

7. When making unregularly work or/and maintenance work, the operator must notify and inform compressor management.

8. When operating work-related, such as changes in production lines, changes and adjustment of safety devices, such as: inspection, repair and maintenance, please note that switching program rules and safety guidelines indication.

9. Make sure the maintenance works.place tidy when doing

10. If the machine is turned off completely for repair and maintenance work, in order to avoid start accidentally of the compressor, turn off the main switch and remove the key, or put a label on the main switch.

11.When using a crane to lift the compressor and/or accessories, please do so within the crane's indicated capacity and be aware of safety issues.

12.Only allow operation.qualified personnel for crane

13. When servicing the height of the compressor section, please pay attention to the safety and use high-altitude table; do not climb on the machine.

14. Before doing repair or/and maintenance work, clearing oil, fuel, and protection from the machine, especially on the wire, screws interfaces, do not use strong liquid cleaners with a lint-free cloth to clean enough.

15. Before using the cleaner to clean the machine, or the use of detergents for the operation and safety, all the openings are closed, so there will be no water infiltration, especially electric motors, electronic control box.

16. When cleaning the compressor room, make sure the fire alarm and sprinkler system temperature sensor does not touch the hot cleaning fluid, to prevent accidental starting the fire sprinkler system.

17. After the cleaning is completed, check the pressure pipe leaks, the connector is loose, damaged, such events should be immediately corrected.

18. It should be tight on all maintenance loose screws.

19. If for maintenance needs and the security device removed, must replace immediately when the work is completed.

20. It is important for safety and environmental disposal of old parts and consumables.

Particularly dangerous aspects:

1. Use the corresponding operating current fuse, the power supply if unforeseen circumstances arise, it should immediately stop.

2. When using a motor-driven compressor for operation, must according to electrical regulations that carried out by a qualified technician under the guidance and supervision of a qualified technician.

3. When need to check, repair and maintenance of parts, the main power supply must be interrupted. Split out parts must check first whether have he charge, if any, should be grounded immediately , short circuit, or/and insulated from live parts.

4. The electrical part of the machine must be regularly checked, in case of an adverse, must be corrected immediately.

5. When servicing live parts, use insulated tools and arrange an employee responsible for controlling the overall system power switch.

6. Can only be carried out on a special note of component welding, burning and grinding work, otherwise fire or explosion may occur.

7. Before start welding, pre-combustion and milling work, clean up the dust around the machine, and flammable materials, ensure good ventilation.

8. If you work in a small room, please refer to the safety guidelines in this chapter.

9. The people only have some knowledge and experience of the pneumatic equipment, can operate pneumatic equipment.

10.Check regularly for all pressure lines, hoses, screws connectors, leaks or/and obvious damages. Replace damaged parts immediately. pressure leaks could cause injury or fire.

11. Before carry out maintenance work for the system and pipeline, pressure must be relief.

12. The pressure line must be installed by a qualified person. Connectors must not be confused. Connectors, pipe length and quality, must comply with the appropriate technical requirements.

13.In accordance with legal installation of soundproofing device.

requirements,

14. The operators need to wear earplugs.

15. With regard to lube, grease and other chemical substances, please refer to the relevant safety regulations.

16. Only arrange enough horsepower's .crane and qualified personnel to handle cargo handling, carrying fixed compressor only.

17. Even if the machine will move a short distance, all the external power supply must be disconnected before operating the machines, according to the provisions of the power supply connected

Notes on the pressure vessel dangerous

1. Never under stressful situations, attempting to open or loosen pressure vessel or piping cover, be sure to relieve pressure. Never exceed the working pressure of the pressure vessel.

2. Absolutely not part of the pressure heated to above the operating pressure. vessel

3. Replace the pressure vessel, package must be replaced. Affected by the pressure of the individual components, it cannot be considered separately purchased parts. Because all the pressure vessel components, as a whole are tested, the certificate is issued for the entire container.

4. After the cleaning is completed, all seal and cover are being removed.

Special attention should be, depending on the work of the pressure vessel, we will be categorized as: static and dynamic load container.

Static load container

Static load pressure vessels are always at a stable working pressure with small pressure fluctuations This kind of pressure vessel is able to be used until the time of regular pressure testing. Any safety related issues must be disclosed.

Dynamic load container

Dynamic load pressure vessels work under continuous pressure fluctuations ranging from atmospheric pressure to the maximum working pressure. The certification and operation manual for these pressure vessels indicate that these pressure vessels are able to withstand changes in pressure. The working hours of these pressure vessels are also available

These pressure vessels are subjected to dynamic load, the change from one working pressure to another is referred to as a change in load. A cycle consists of two changes in load. From these vessels' technical data one can find cycle times based on working pressure fluctuations. An internal inspection must be carried out when usable cycle times reaches the half mark to ensure safe operation. The pressure vessel must be scrapped and replaced once the maximum usage cycle time is reached.

Regularly inspect internal and external surfaces of the pressure vessel for any signs of rust or corrosion. Pay special attention to the second hand equipment, especially when we have no clear clue of its previous record.

2. Install and Use

2.1 Unpacking

- AD-TN-0.1 is fully assembled and manufactured. The intake pipe is in bulk.
- Please handle it carefully.
- There are the following items in the box:
- High Pressure Compressor
- 1 intake pipe
- 1 high pressure exhaust pipe
- Operational Maintenance Hand

2.2 Install

All installation operations are carried out on the basis of the operator's full understanding of the unit

2.2.1 Enplace

- This machine is not resistant to salt water. Spray the compressor with a rust preventative agent when operating in a high salinity environment.
- Keep machine away from flammable materials, in case the cylinder is opened, or when the operation of the machine, please do not smoke.
- Do not use compressors powered by gas or diesel internal combustion engines indoors.

Outdoor installation location

1. The compressor is placed in the designated area and check the level.

2. Take the fresh air for the gasoline engine-driven compressor operation is very important; the machine will be placed downwind, so that the exhaust gas can be blown away.

3. If the wind changes, change the placement of the machine immediately.

4. When the machine is running, do not start any car nearby.

5. Cannot operate the machine in the vicinity of fire(flammable gas!).

Indoor installation location

1. Make sure the area is ventilated well for placing compressor, no dust, no explosion, corrosion or fire hazard.

2. Similarly, the exhaust air and air ingested by the compressor must not be contaminated by exhaust or toxic fumes (eg. smoke, volatile gases, etc.)

3.If possible, install the compressor in a place with direct exposure to fresh air.

4. Make sure there is adequate exhaust outlet.

5. When machine is installed in a small room, and lack of natural ventilation, artificial ventilation must be installed.

6.Air conditioning or forced air ventilation is required for cooling if the ambient temperature exceeds 45°C (110°F) while the machine is in operation.

7. Make sure the compressor set position at least 1 meter away from the wall, from the ceiling at least

1.5 m, this will ensure a normal operation of the compressor, cooling equipment properly.

8. Make sure that the compressor set area lighting in good condition, and the various components of the labels are clearly visible.

Ectrical installation

Installation of electrical equipment to comply with the following article:

1. Meet the local power company's regulations.

2. Only electrician can make arrangements for electrical devices and connections.

3. Check if it is correspond to the voltage and frequency of the grid with the voltage and frequency of the motor.

4. For not connected via a plug device, but the device is to be equipped with permanently, installed a main switch on each pole with minimum contact gap of 3mm.

5. Check immediately after starting the rotational direction coincides with the direction of the arrow on the device.

6. If you are replacing the power cable, only use the same type of cable!

Add the oil and check the oil level

Add the lubricant

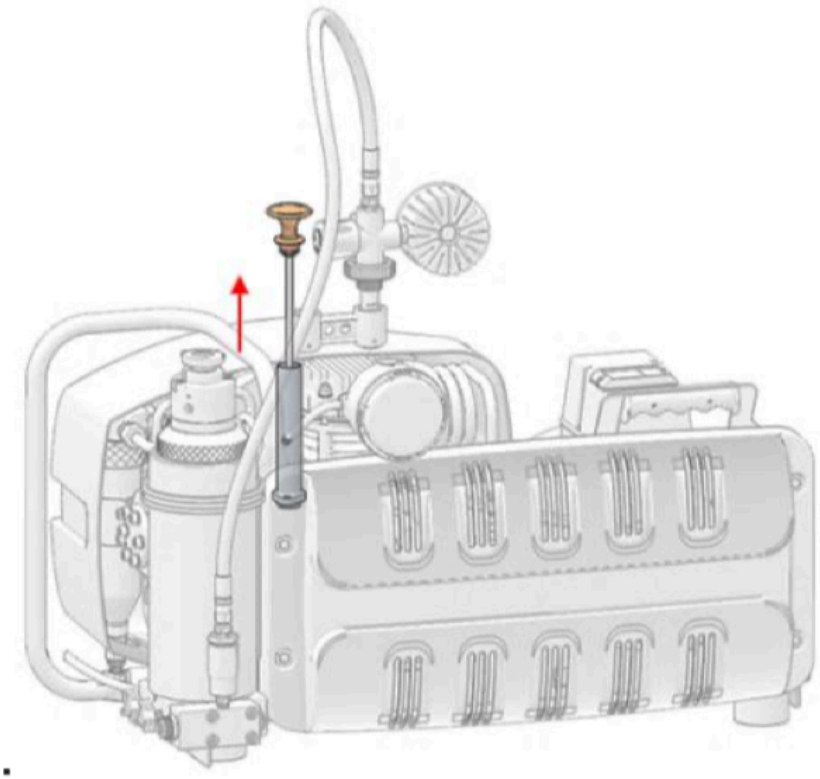
All piston, cylinder, master pieces, connecting rod bearings are using a splash lubrication.

When compressor is delivered, the machine is not filled with oil. Bottled lubricant placed in the box

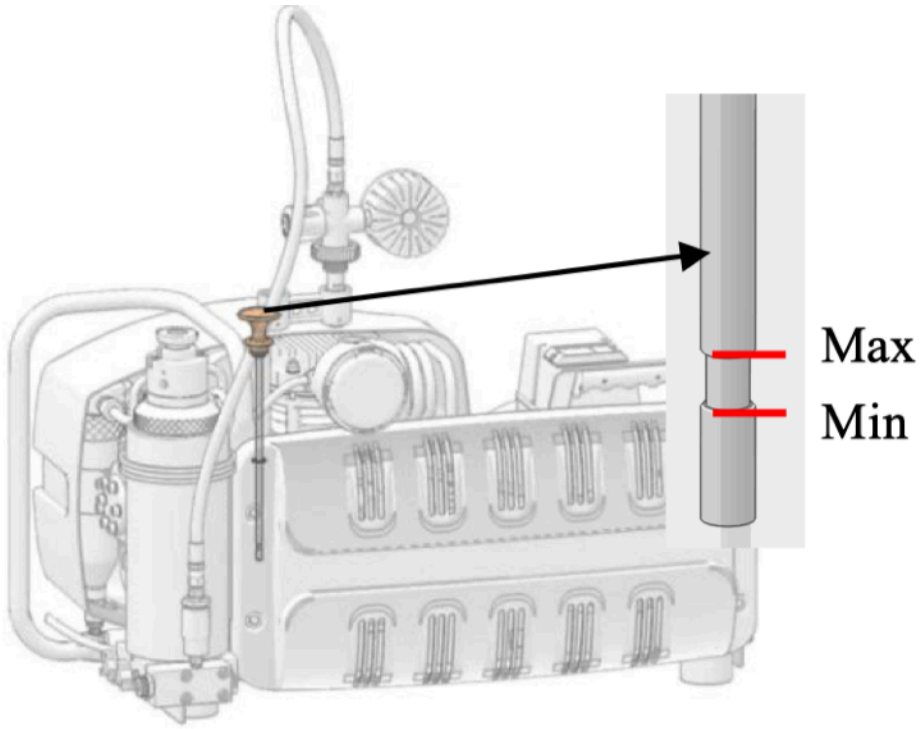
Filling capacity （L）	0.4
Recommended oil	IDE NO.1

1) Carefully open the filler cap.

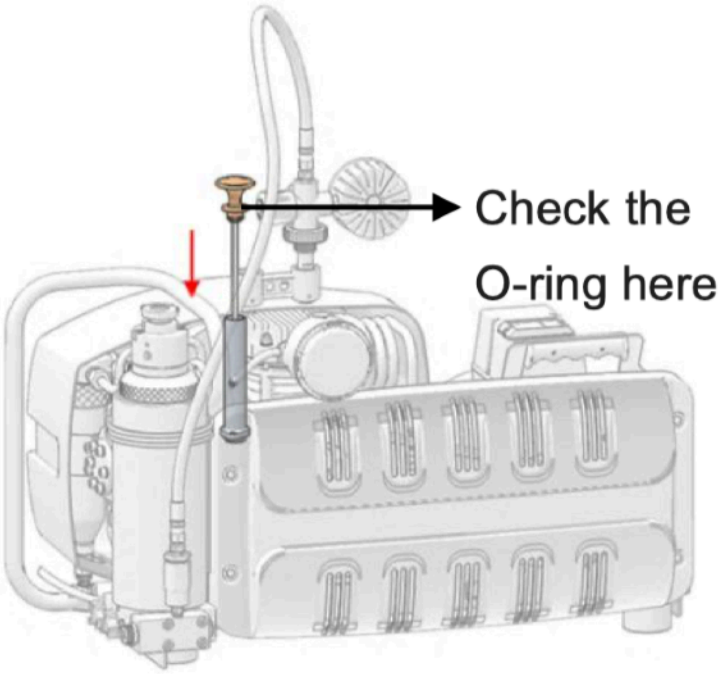
2) Remove the dipstick, with a funnel to the compressor oiling (using the recommended
special lubricants IDE NO.1 Premium Quality Synthetic Compressor Oil), do not over filled



3) Check the oil level in the compressor cylinder through the dipstick, the best oil level in the middle of the highest and lowest oil level indicator.



4) Inspect the O-ring on the dipstick and fit it back into the filler barrel.



Checking oil level:

Use the dipstick to check the oil level in the compressor block.

When the oil level is below the minimum mark, you need to refuel to the compressor block

Before the compressor operating every day, you must check the oil level.

Adding Gasoline

Please refer gasoline engine specification & manual, add fuel to the gasoline engine.

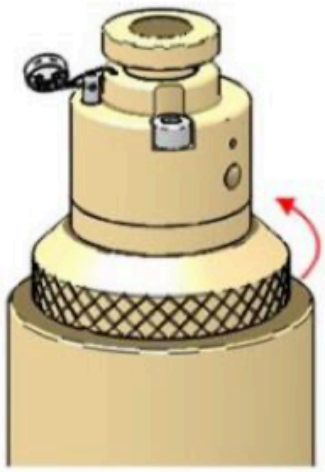
Installing the filter cartridge

Final filter housing needs to load a filter cartridge containing activated carbon molecular sieve to air quality.

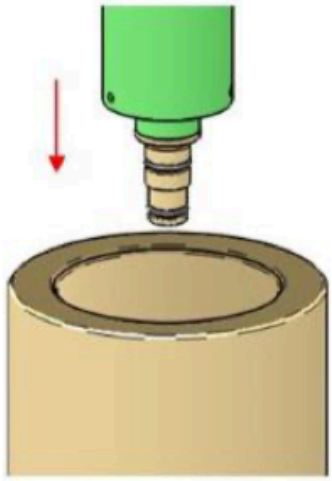
Compressor delivery, there is no filter cartridge in filter housing; the filter cartridge should be loaded correctly before use compressor.

Install the filter cartridge steps

1) Remove the top cover of the filter cartridge by rotating it. (No depressing operation).



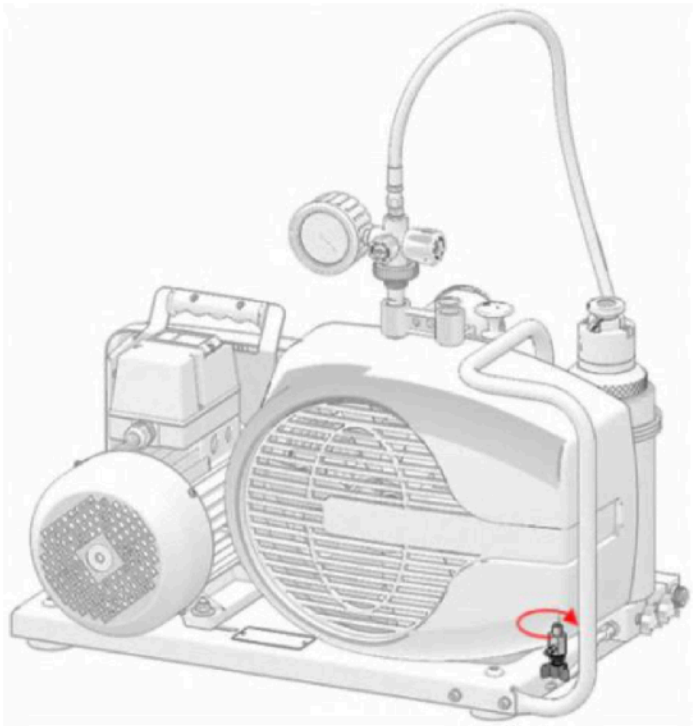
2) Remove the new filter cartridge and insert it into the filter cartridge, ensuring that the cartridge has been pushed to the desired position. (Filter must be gently pushed into).



3) After the filter cartridge cover is cleaned, grease the threads and seal ring, replace the filter cartridge, and tighten.

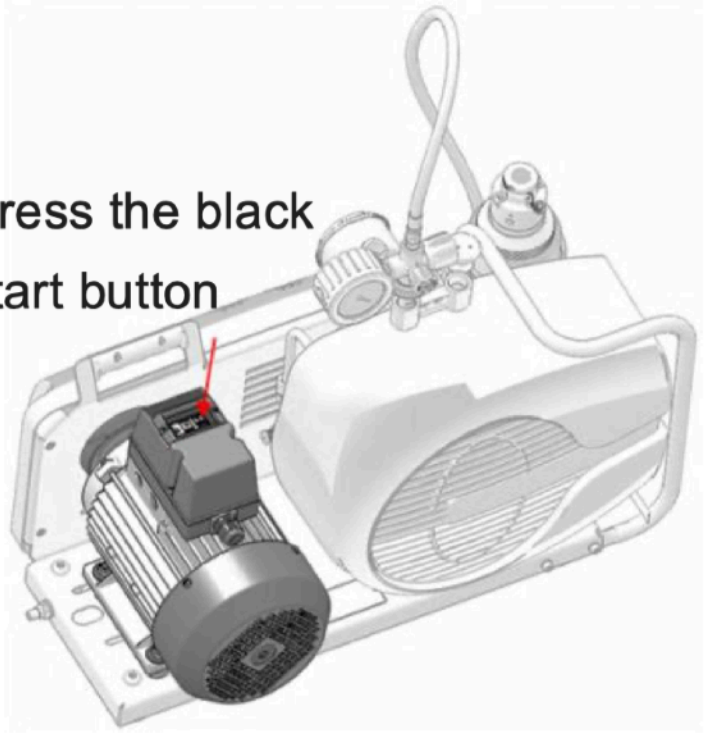
Start and stop compressor - Testing

1)Before opening the compressor, open the drain valve.

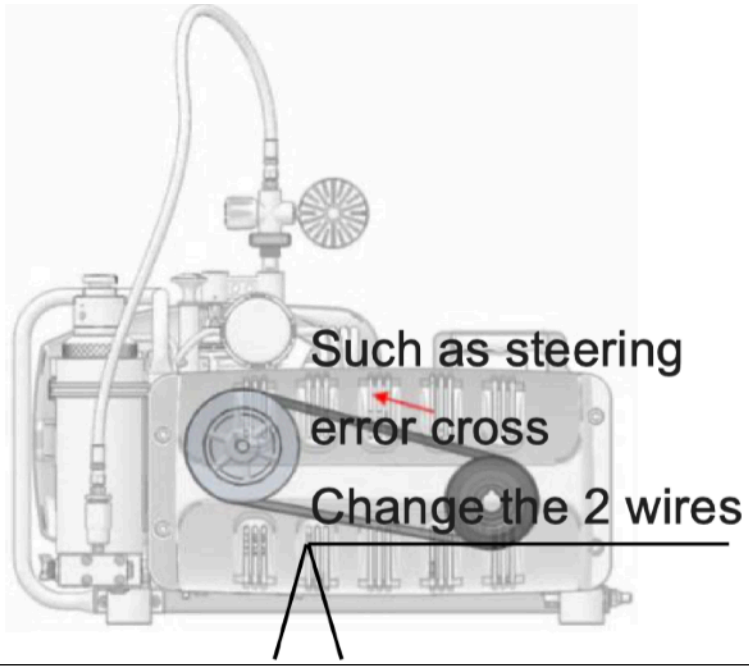


2) Press the switch on the motor to start the compressor.

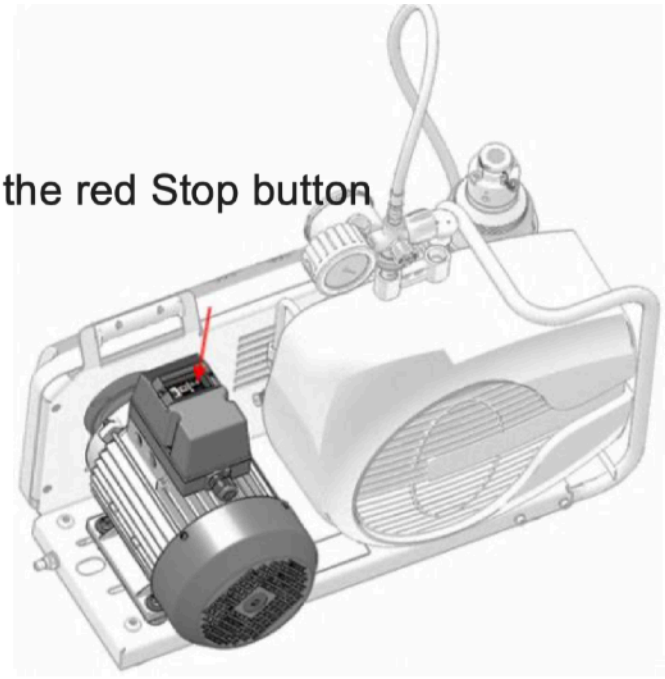
Note: Gasoline engine-driven compressor, with reference to the gasoline engine manual to start the gasoline engine。



3) Immediately after turning on the compressor, check the direction of rotation of the motor. Depending on the type of connection, the three-phase motor may be steered differently. If the direction of rotation of the motor is different from the direction of the arrow marked on the housing, disconnect the power supply and swap any two-phase position in the three-phase supply



4) Use the switch on the motor to turn off the compressor. Note: Gasoline engine-driven compressor, with gasoline engine instructions to close the gasoline engine.

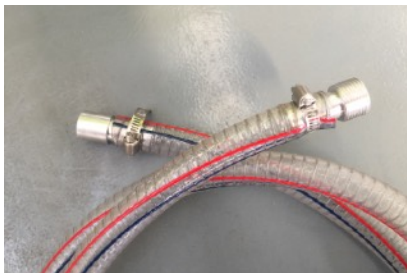


5) Close the drain

valve.

2.2.2 Connecting pipe

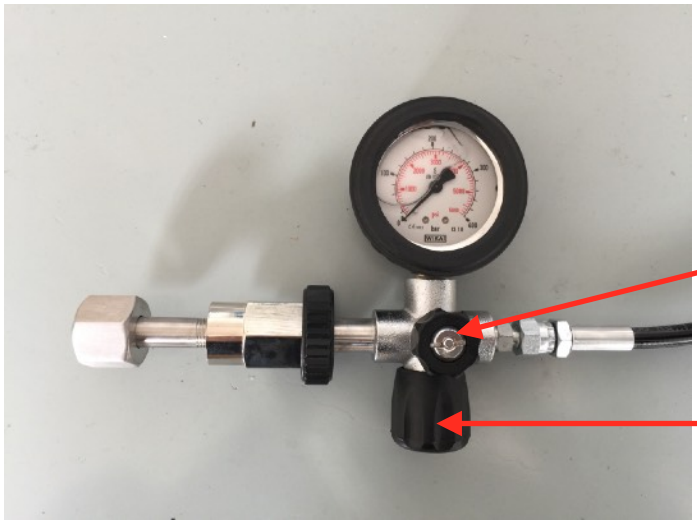
A Connect intake pipe with machine and balloon or blimp


B Connect pipe with helium cylinder


C Before starting the machine

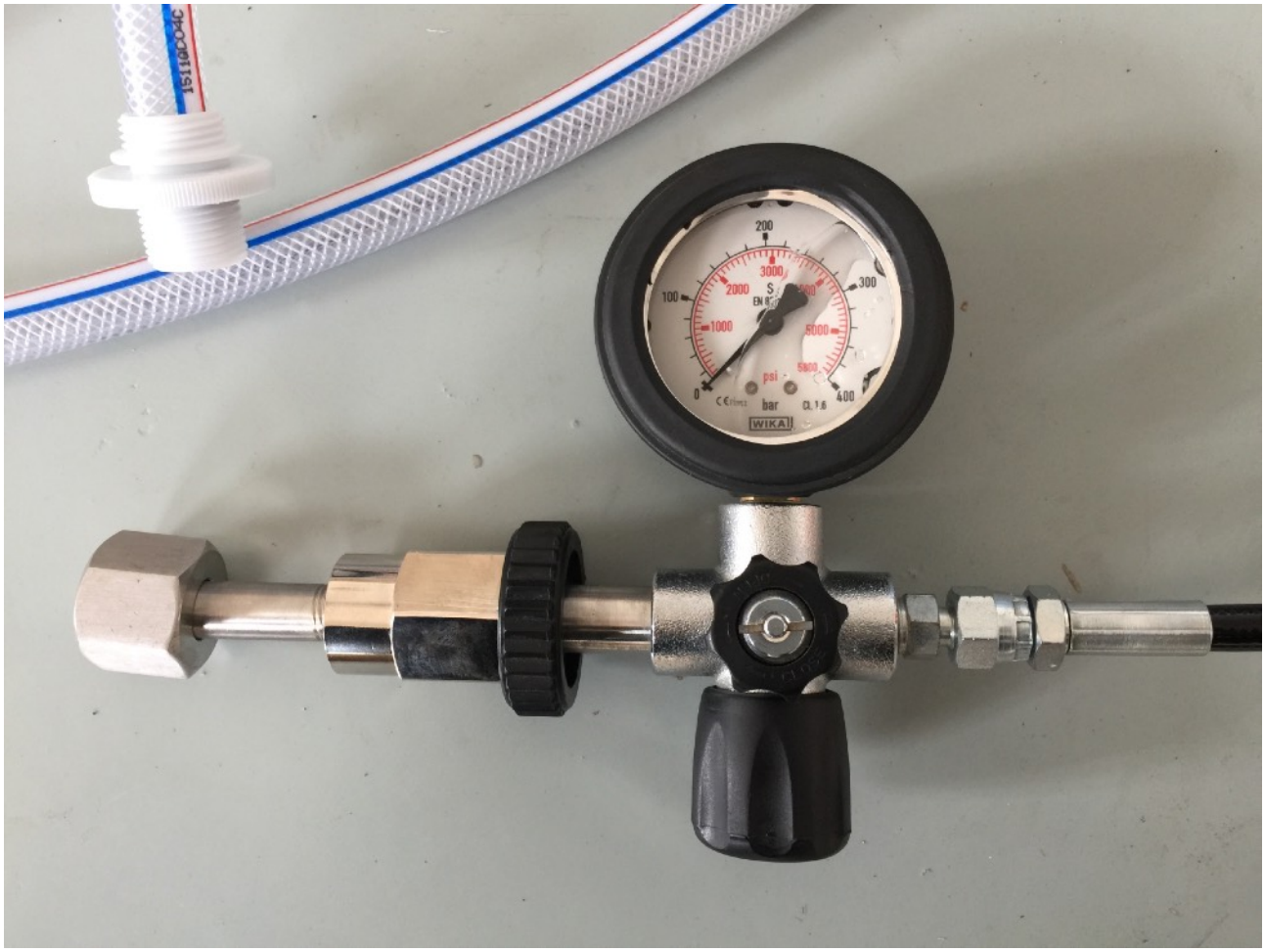
C.1 Before starting the machine, attention should be paid to 1. Closing state of cylinder valve 2. Closing state of oil-water separator valve 3. Closing state of exhaust valv



Exhaust Valve B Opens the exhaust pipe and the machine with air in it before opening it.

Exhaust Valve A Closed

Pay attention to pressure gauges and cylinders after starting the machine

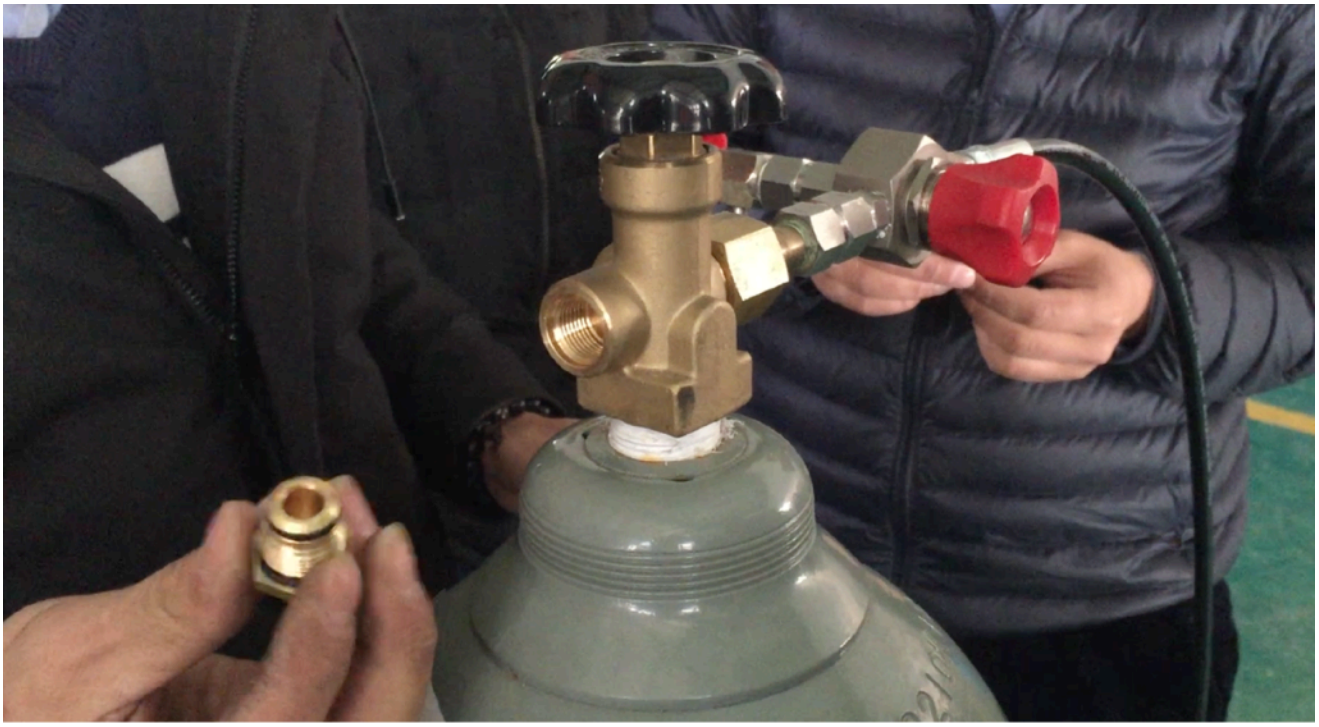


The exhaust valve B is open at this time because it needs to be excluded after about 10s of air in the machine and pipe.

Close exhaust valve B and open exhaust valve A to allow helium to enter cylinders

Notes

1. Oil-water separator should be turned on every **10-15 minutes to discharge**.
2. The machine needs a moderate rest when it runs for 25 minutes each time, because this minimal power machine needs to wait for the compressor cylinder to be cooled before it can be used again.
3. When the machine suddenly stops or rests, it needs to close the helium cylinder valve, close the exhaust valve A and slowly open the exhaust valve B.
The function is to let the high-pressure gas in the machine exhaust to facilitate the start-up again when there is air pressure inside the cylinder block.
4. Note that instrument gas is about 11-12 MPa and cylinders can be replaced because it takes a long time to change from 12 to 14, which is more efficient.
5. Some gas companies sell cylinders with installations behind cylinder valves to prevent customers from recovering helium correctly.
Check cylinders when there is no gas



Check safety valve before the first filling

Before the first filling, check final stage's safety valve and the filling connector is compatible with the operating pressure.

Operation: Close all valves, power, start the compressor. Start the compressor, pressure gauge valve will remain open after the pressure is beginning to show a change in pressure (starting at about 1 minute). Pressure will continue to rise until

the safety valve vent gas. If there is no safety valve vent gas while compressor exceeds the working pressure, manually turn off the compressor (compressor stop button is pressed), and contact with technical personnel.

Gas Quality

egistration number	Normal pressure (Bar)	Water mg/m3	oil mg/m3	CO ppm(v) {ml/m3}	CO2 ppm(v) {ml/m3}
EN 12021	40-200(Compressed air container)	<50	<0.5	<15	<500
	〉200(Compressed air container)	<35	<0.5	<15	<500
	<300(air compressor)	<25	<0.5	<15	<500