ALKIN COMPRESSORS

HIGH PRESSURE GAS COMPRESSORS

OPERATOR MANUAL

HIGH PRESSURE GAS COMPRESSOR MODELS

- W32 MARINER -

- W32 CANOPY -

-W3 CANOPY -

International Organization for Standardization
ISO
9001:2015


VeriCert Verification Certification

CERTIFICATE

ALKIN KOMPRESÖR SAN. VE TİCARET LİMİTED Ş…

Scope

Design, Manufacturing, Sales, Service and Maintenance of Low, Medium, High Pressure Air & Gas Compressors, Vacuum Pumps, Breathing Air Compressors, Compressors Spare Parts, Filters, Dryers, Purifiers, Air Receivers

Address(es)

Cüneytbey Mahallesi Tabaş Yolu Küme … No:3 Menderes/İzmir

ISO 9001:2015 QUALITY MANAGEMENT SYSTEMS

Certificate Number: VCR.TR.01.015054/R:01
Initial Certification Date: 27.06.2018
Renewal Date: -
Issue Date: 24.06.2019
Expiry Date: 26.06.2020


TÜRK STANDARDLARI ENSTİTÜSÜ
TÜRK STANDARDLARINA UYGUNLUK BELGESİ
TURKISH STANDARDS INSTITUTION
CERTIFICATE OF CONFORMITY TO TURKISH STANDARDS


IEP ENERGY PETROLEUM INSTITUTE
IEP ATEX

EU-Unit Verification Certificate

(2) Equipment or Protective Systems Intended for use in Potentially Explosive Atmospheres

Directive 2014/34/EU


TÜRK LOYDU

TYPE APPROVAL CERTIFICATE

This Certificate consists of 2 pages.

This is to certify that the

MEDIUM & HIGH PRESSURE BREATHING AIR COMPRESSOR

With type designations

W31 – 700 – 702

Manufactured by

ALKIN KOMPRESÖR SAN. ve TİC. LTD. ŞTİ.

Is found to comply with

Türk Loydu Rules for Classification of Ships and ISO 1217 – TS 7765 Displacement compressors - Acceptance tests

Application: High pressure breathing air compressor (W31) Medium pressure air compressor (700&702) Max. working pressure: 300 Bar and 40 Bar Operation media: Air

Design: ALKIN KOMPRESÖR SAN. ve TİC. LTD. ŞTİ.

Sizes: See left page

Address of Manufacturer: Cüneytbey Mh. Tabaş Yolu Küme Evleri No.3 Menderes/İZMİR

Place and date: İSTANBUL / 06.05.2019

Subject to the conditions referred to in the following pages, this certificate is valid until 10.05.2024.

Emrah SÖĞÜTCÜ
New Building Division Manager


T.C.
TÜRK PATENT ENSTİTÜSÜ

MARKA TESCİL BELGESİ

Marka No : 2012 61585 - Ticaret - Hizmet

ALKIN COMPRESSORS

Marka Sahibi : ALKIN KOMPRESOR SANAYİ VE TİCARET LİMİTED ŞİRKETİ
TÜRKİYE CUMHURİYETİ
İbrahim Turan Cad. No:127 Menderes İZMİR

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İlişiktedir.

TÜRK PATENT ENSTİTÜSÜ


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TSE-HYB
HİZMET YETERLİLİK BELGESİ

ALKIN COMPRESSORS

High Pressure Gas Compressors

Operator Manual

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- January, 2021 -

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FOREWORD

ALKIN gas compressor will provide you with the solid and reliable performance that you should expect from a heavy-duty industrial gas compressor.

Please read this manual carefully before you operate your compressor. This will enable you to start-up your compressor in the proper manner, as well as maintain it using the simple instructions in the maintenance section of this manual. This way your air compressor will always be in top operating condition, giving you years long trouble-free service.

Your compressor is backed up with worldwide sales and service organization, ready to accommodate your everyday needs for parts & service.

Service and parts supply anywhere in the world can be done by an ALKIN Compressors. For any questions, please feel free to call our Menderes plant, in İzmir-Turkey.

Here are the contact details:

ALKIN KOMPRESÖR SAN. ve Tic. Ltd. Şti
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www.alkin.com.tr

In all correspondences, please provide serial number and a copy of invoice.

Additionally, replacement parts not manufactured or approved by ALKIN can damage your compressor creating risks of accidents and injuries.

ALKIN has the right to change information without any prior notice. Users are expected to safely operate and maintain the compressor, observe the rules and instructions, as well as the local safety codes to minimize the risk of accidents and injuries.

SECTION 1

GENERAL INFORMATIONS

1. General

1.1. General Safety Information

All ALKIN gas compressors are designed and manufactured with equipment and components that allow safe operation of the compressors. However, it is the user's responsibility to safely operate and maintain the compressor, observe the rules and instructions, as well as the local safety codes to minimize the risk of accidents and injuries. The following safety precautions are offered only as a guideline and it is recommended to follow them along with the local safety codes and regulations.

This compressor should only be operated by those who have been trained to do so, and who have read and understood the contents of this manual. Failure to do so will increase the risks of accidents and bodily injuries. Please read also the manual of the equipment (electric, etc.) delivered together with the compressor and perform the instructions.

Never start this compressor unless it is safe to do so. Do not operate it with known unsafe condition. Tag the compressor and render it inoperative by disconnecting the power supply, so that others who may not know of the unsafe condition will not attempt to operate it until the unsafe condition is corrected.

Install, use and operate this air compressor only in full compliance with all pertinent requirements and all relevant federal, state and local codes and regulations.

Do not modify this compressor and do not use beyond the specified limits (pressure, etc.) and speeds except with prior written approval of ALKIN.

1.2. Safety Tags

Symbol	Explanation
	READ INSTRUCTION MANUAL
	USE HEADPHONES
	HOT SURFACE – DO NOT TOUCH
	EARTHING
	ELECTRIC HAZARD
	CAUTION: CAN START AUTOMATICALLY
	CAUTION: MOVING PARTS

Read Instruction Manual

This compressor should only be used by persons who are trained in the use of compressors, knowledgeable and who have read this manual and understood the contents. Otherwise, it will increase the risk of accidents and the possibility of injury. Also read the instruction manual of the equipment supplied with the compressor (such as an electric motor) and follow the instructions.

Use Headphones

The protective headphones are used to protect against continuous noise that exceeds the permissible sound level and thus can cause permanent hearing damage.

Hot Surfaces, Sharp Edges and Corners

Avoid physical contact with hot oil, hot surfaces, sharp edges and corners. Keep all parts of the body away from all points of air discharge and away from hot cylinder heads, discharge pipes and intercooler

surface. Wear personal protective equipment, including gloves and protective hat when working on or around the compressor.

Keep a first aid kit handy. Call for medical assistance promptly in case of injury. Do not ignore small cuts and burns as they may lead to infections.

Electrical Shock

Keep the compressor, hoses, tools, and personnel at least 3 meters (10 ft.) away from power lines, panel and underground cables.

Keep all parts of the body and any handheld tools or other conductive objects away from exposed live parts of the electrical system. Maintain dry footing, stand on insulating surfaces, and do not contact any other portion of the compressor when making adjustments or repairs to exposed parts of the electrical system.

Earthing

This machine has an earth connection to the electrical leakage. Be sure to connect the ground wire and check your grounding line. No grounding or sufficient grounding; In case of failure of the machine and electric leakage, it gives the electric current to the outer body and if it is contacted with the machine, it may cause electric current and result in serious injuries and death.

Moving Parts

Keep hands, arms and other parts of the body and clothing away from the belts, pulleys, and other moving parts. Do not attempt to operate the compressor with the canopy cover removed at flywheel side.

Wear snug fitting clothing and confine long hair when working around the compressor, especially when exposed to hot and/or moving parts. Make sure all persons are clear of the compressor prior to attempting to operate it.

Make adjustments only when the compressor is shut off. When necessary, make adjustments, then start the compressor to check if the adjustment is correct or not. If incorrect, shut the compressor, blow down the air, re-adjust, then re-start to check the adjustment. Keep hands, feet, floors, controls, and walking surfaces clean and free from oil, water, anti-freeze or other liquids to minimize the possibility of slips, falls and shock hazard.

Pressure Release

Run the compressor to see if the safety valves are operating properly or not. See and ensure, safety valves are discharging the pressure on their adjusted pressure values. Do not open the oil filling plug or any other connection, tube, hose, fitting, valve etc. when the compressor is running or when

it is standing by (in only automatic start/stop compressors waiting for the pressure switch signal to re-start). Switch off the main electrical switch, shut off the discharge valve and discharge all pressurized sections before attempting to dismantle such components.

Keep all persons away from the discharge opening of hoses, tools and accessories during discharge. Do not use air pressure above 7 Bars (101 Psi) for blow cleaning purposes, without use of proper protective equipment. Do not let the hoses move free or don't play games with the filling hoses as they may cause accidents and injuries. Drain daily the condensate from the purifier, as it may accelerate the internal rusting and corrosion of the purifier.

Fire and Explosion

Clean up oil spills immediately when it occurs. Shut off the air compressor and allow it to cool. Keep sparks, flame, and other sources of ignition away and do not allow smoking in the vicinity when checking and draining or adding oil. Do not permit liquids such as airline anti-icer system anti-freeze compound, or oil film or any other combustible substance to accumulate on any external or internal surfaces of the compressor. Wipe down with aqueous industrial cleaner or steam to clean as required. Do not use flammable solvents for cleaning purposes.

Disconnect the power supply prior to attempting any repair or cleaning. Tag the power supply to avoid unexpected start by someone else.

Keep electrical wiring, including terminals in good condition. Replace any wiring that has cracked, cut, abraded, or otherwise degraded insulation or terminals that are worn, discolored and corroded. Keep all terminals clean and tight.

Keep grounded conductive objects such as tools, away from exposed live electrical parts such as terminals, to avoid arcing which might serve as a source of ignition.

Keep a suitable BC or ABC fire extinguisher(s) nearby while servicing and operating the compressor. Keep oil rags, trash, leaves litter and other combustibles away from the compressor.

Do not spray volatile materials into the compressor intake, as serious damage to the compressor and personal injury or death may result.

Toxic and Irritating Substances

Do not use air from this compressor for breathing unless it is equipped with proper purification equipment.

Make sure that Purifier Cartridge is installed inside the Purifier Housing.

Operate the compressor only in well ventilated areas. Lubricants used in this compressor are typical synthetic oil. Accidental ingestion and skin contact should be avoided. Wash with soap and water after skin contact. If swallowed, call for medical treatment promptly.

Lifting and Carrying

If you must lift the compressor, lift in full compliance with codes and regulations. Make sure entire lifting, rigging, and supporting structure has been inspected, is in good condition and has a rated capacity of at least the net weight of the compressor. If you are unsure of the weight, check before lifting. The distance between forklift's forks should be sufficient for lifting if the compressor will be carried and lifted with the forklift. Moreover, the forklift must have a rated capacity of at least the net weight of the compressor. The forks of the F/L should be positioned under the compressor just like shown in the figure below. The height of the compressor from the ground must be max. 10 cm during carriage.

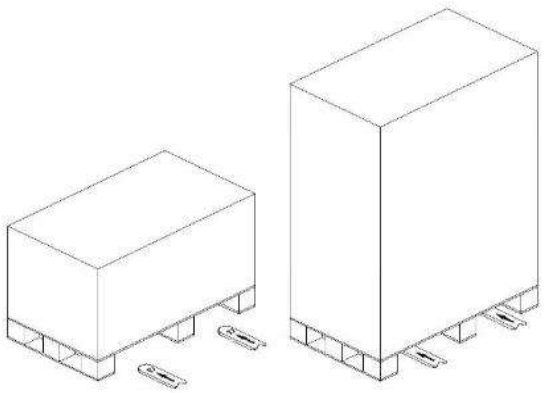


Figure 1 – Lifting and transporting by forklift

Do not distract the forklift operator during carriage.

Verify the lifting hook has a safety clamp and ensure a robust fastening with tough ropes or chain. Avoid the compressor swinging while suspended, by using guide ropes. Keep all persons clear from under and away from the compressor when it is suspended. Lift the compressor not higher than necessary. Keep lift operator in constant attendance whenever the compressor is suspended.

Set the compressor down on level surfaces, capable of carrying its full weight.

NOTE:

DO NOT RUN THE COMPRESSOR ON WOODEN PALLET WHERE THE UNIT IS MOUNTED FOR TRANSPORTATION PURPOSES.

Warranty and Liability

Alkın Compressors cannot be held responsible if your compressor is operated without observing the rules stated in the operator manual.

Your compressor will be out of warranty if:

* Non-compliance with the rules specified in the operator manual,

* Use of parts not produced / approved by Alkın Compressors,

* Installation and operation of the compressor on surface conditions that are not on a flat and stable,

* Installation and operation of the compressor in conditions that are not in compliance with national and local occupational safety rules,

* Interference of compressor operating parameters by third parties without approval of Alkin Compressors,

* Failure to comply with compressor control and component replacement times,

* Interventions that do not comply with Alkin Compressors maintenance / repair instructions,

* Removal of compressor label,

* Force Majeure

SECTION 2

ABOUT COMPRESSOR

2. General

W32 and W3 series gas compressors are three stage, reciprocating type, air-cooled and forced lubricated (W32) / splash lubricated (W3 canopy) compressors. Working pressure of these compressors varies from 150 bar (2175 psi) to 350 bar (5000 psi) for W32 series, from 70 bar (1015 psi) to 250 bar (3625 psi) for W3 canopy series depending on the cooling system and valve heads installed.

Important

Do not attempt to modify a compressor to operate at a higher pressure without written approval of ALKIN. Failure to do so may result in a serious damage to the equipment, injury or death.

This compressor is built with oversize intercoolers and an aftercooler to allow superior performance, longer life, lower operating and discharge temperatures. W32 and W3 canopy series compressor blocks are designed as three stages and three cylinders. The cylinders are assembled in a “W” form where 1st stage is in the center, 2nd stage on right and 3rd stage on left side looking from the purifier side (for W32 series). In the W3 series, when viewed from the crankcase, 1st stage is on the left, 2nd stage is on the middle and 3rd stage is on the right (Figure 2).

Crankshaft is equipped with 2 roller bearings. Both crankshaft and piston ends of the connecting rods have bearings. This allows a much longer service life. All valves have free access for time saving and ease of maintenance.

W32 and W3 series compressors are built with the necessary intercoolers and aftercooler to allow superior performance, longer service life and lower servicing costs. W32 series compressors are equipped with 2 intercoolers between the 1st & 2nd, 2nd & 3rd stage cylinders and an aftercooler after the 3rd stage cylinder. There are oil & water separators installed after the 2nd and 3rd stages. Water condensate and oil collected in these water separators should be manually drained every 10 minutes by opening the manual drain valves at the bottom unless the compressor has an automatic drain system. Purifier should be drained daily after the filling process is completed for both Manual and Automatic Drain Controlled models.

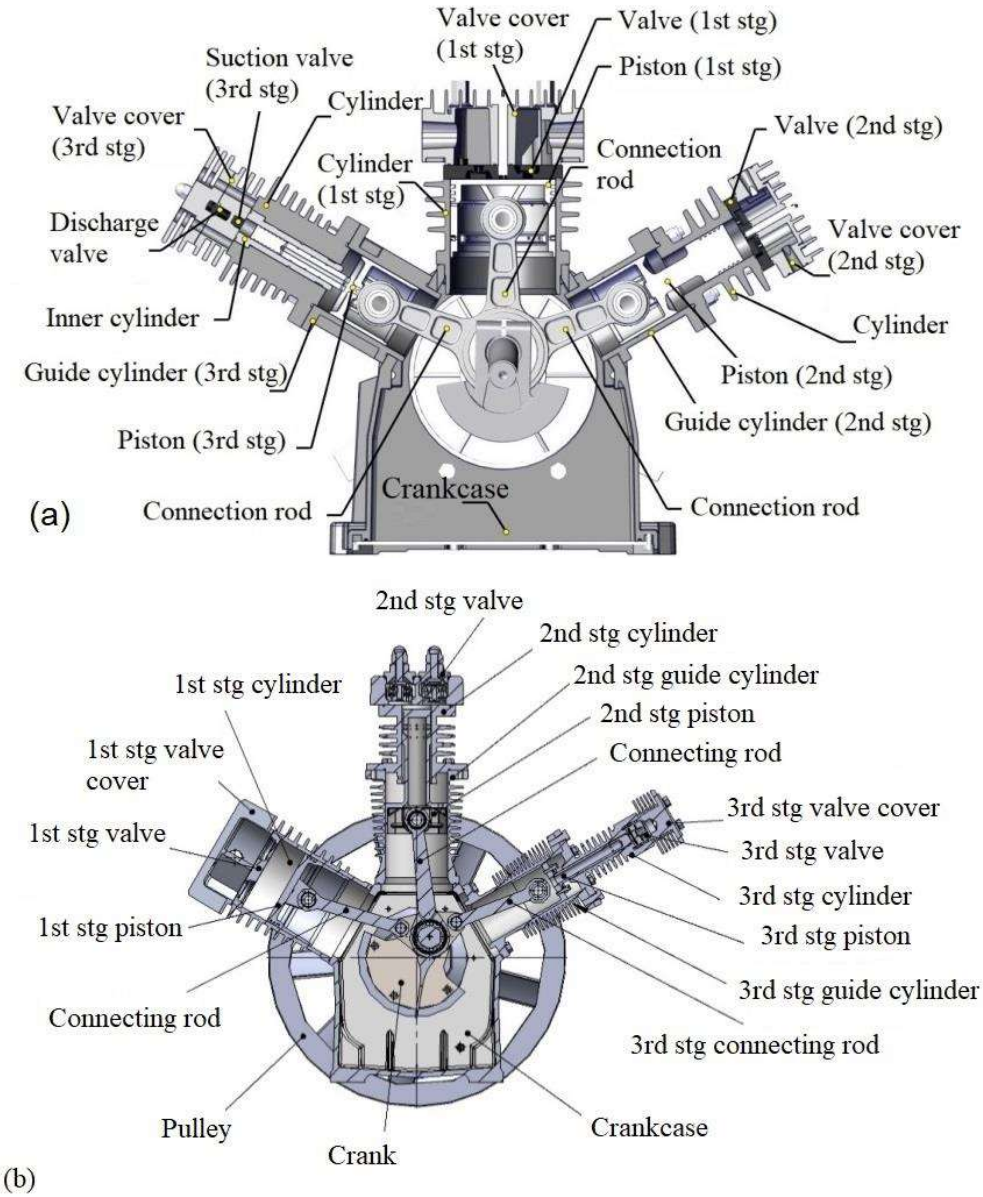


Figure 2 – a) W32 series compressor stages, b)W3 series compressors stages

Cooling in W3 compressors performs with radiator between the 1st and 2nd cylinders, with serpentine intercooler between the 2nd and 3rd cylinders and with aftercooler at the outlet of the3rd stage. There is a water separator at the outlet of the 2nd stage intercooler and at the outlet of the aftercooler. The water separator is connected to automatic drain valves which open and discharge the condensed water accumulated in certain periods. The frequency and opening time of these valves are determined by the time relay in the electrical panel. This timer can be set for both functions.

To protect the system against an unexpected pressure rise due to a malfunctioning valve or component, safety valves are installed after each stage and the final stage. These safety valves must be inspected periodically to insure proper operation and pressure setting verification. W32 and W3 series compressors have valves on all stages. They are designed to have an unobstructed passage of air with no pressure loss; they are easy to maintain and replace. Particular attention must be paid to maintenance of the valves as these valves are one of the most critical parts for proper operation of the compressor. Do not use oils other than the recommended oils in this manual for keeping the valves clean and free of carbon collection. Inappropriate oils may cause carbonization which will occur on the valve discs and springs, resulting in improper sealing of valves. This will increase the operating temperatures which will cause the oil to deteriorate in a shorter time and effect the operation of the valves negatively.
Max. operating pressure is 350 bar for W32 series and 250 bar for W3 series and it is strictly forbidden to exceed the pressure value which is limited according to customer request. Otherwise, **ALKIN COMPRESSORS** is not responsible for any problems that may occur.

NOTE:

Working temperature range of the compressor is 0/+50 ºC

2.1. Compressor Unit

W32 series (mariner) compressor unit involves the main groups below;

1. Compressor unit
2. Electric motor
3. Subbase
4. Water separator
5. Purifier
6. Priority valve
7. Check valve
8. Safety valve
9. Intake filter
10. Regulator
11. Oil retainer
12. Solenoid valve
13. Shock mounts
14. Drain valve
15. Oil pressure switch
16. Oil pressure manometer
17. Control board
18. Auto drain valve
19. Solenoid valve
20. Pressure switch

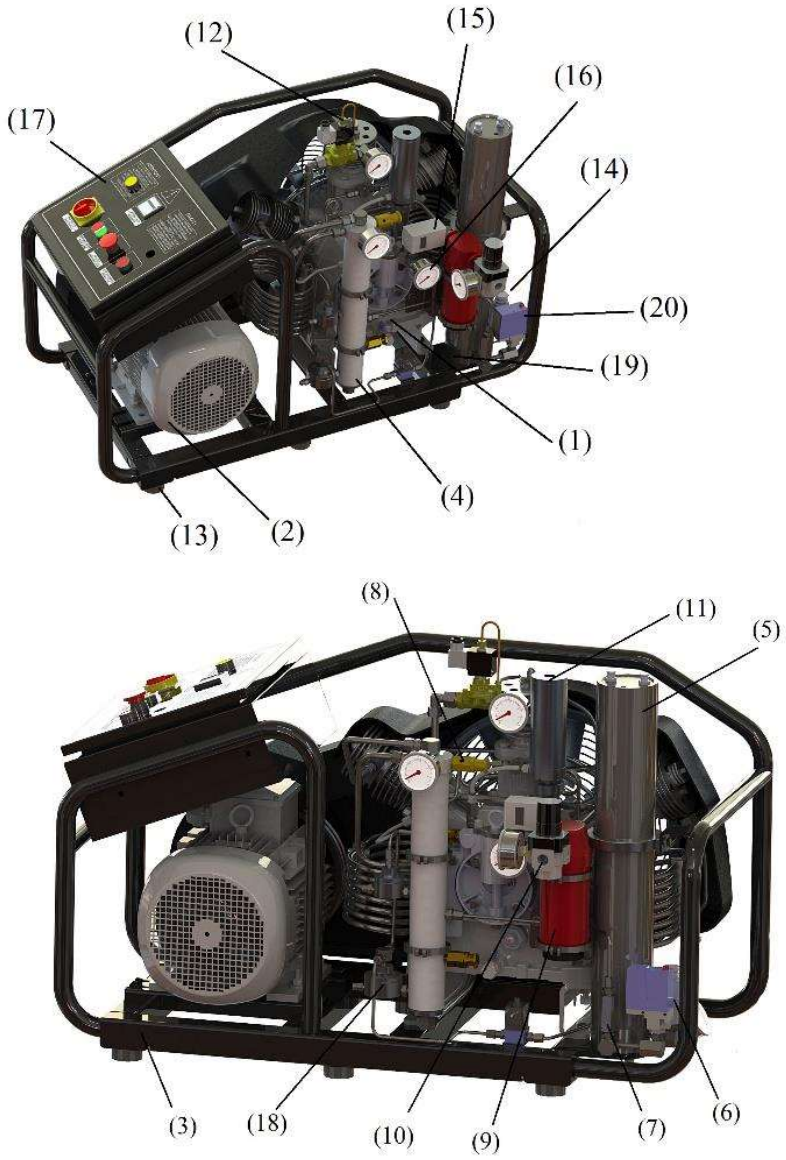


Figure 3 – W32 series compressor general layout (mariner)

W32 series (canopy) compressor unit involves the main groups below;

1. Compressor unit
2. Electric motor
3. Subbase
4. Water separator
5. Purifier
6. Priority valve
7. Check valve
8. Safety valve
9. Intake filter
10. Regulator
11. Oil retainer
12. Solenoid valve
13. Shock mounts
14. Drain valve
15. Oil pressure switch
16. Fan
17. Control board
18. Auto drain valve
19. Solenoid valve
20. Muffler
21. Prefilter

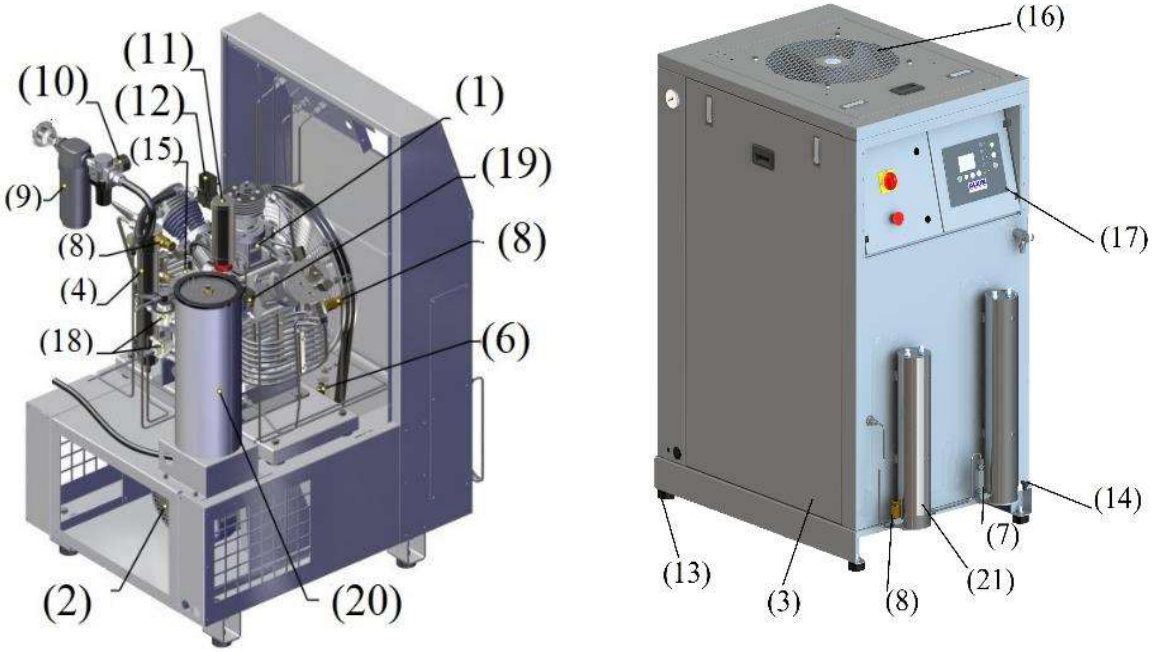


Figure 4 – W32 series compressor general layout (canopy)

W3 series (canopy) compressor unit involves the main groups below;

1. Compressor unit
2. Electric motor
3. Subbase
4. Shock mounts
5. Nitrogen tank
6. Solenoid valve
7. Pressure switch
8. Actuator
9. Pneumatic piston
10. Regulator
11. Filter
12. Oil retainer
13. Safety valve
14. Manometer
15. İntercooler
16. Aftercooler
17. Prefilter
18. Purifier
19. Check valve
20. Priority valve
21. Manual drain valve
22. Pressure switch
23. Muffler
24. Pneumatic drain valve

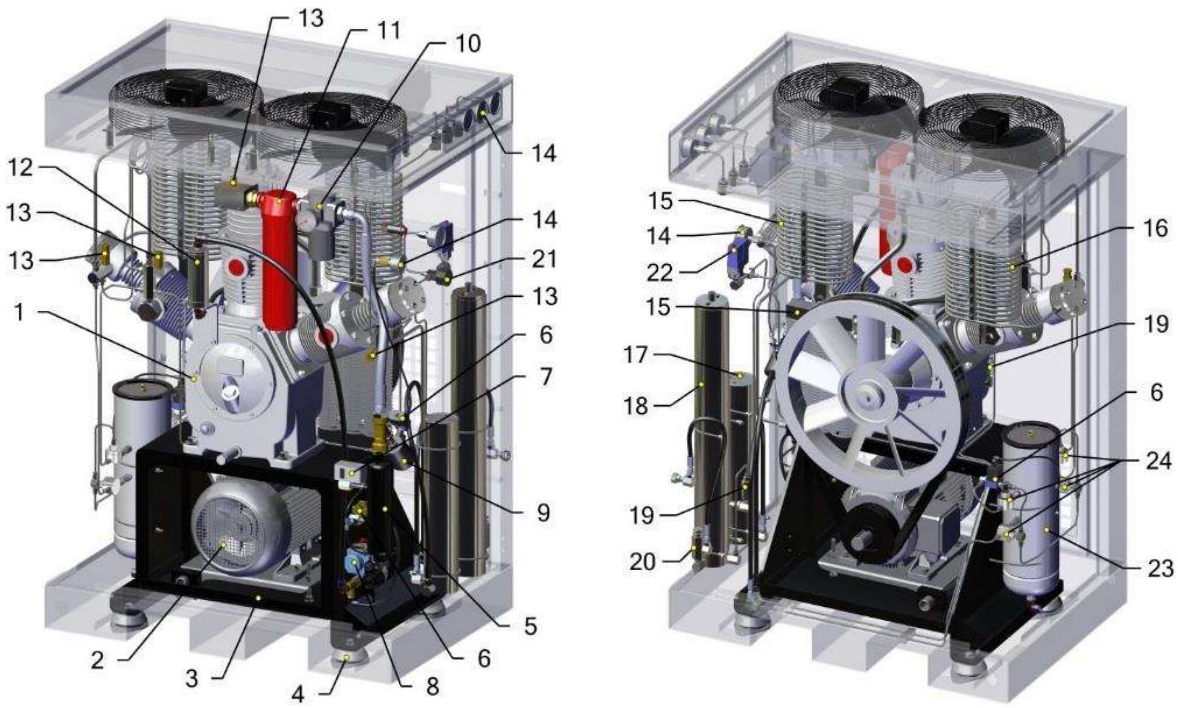


Figure 5 – W3 series compressor general layout (canopy)

2.2. Technical Data

The model design for W32 series gas compressors are based on the below data;

Compressor	W32 Series – Gas
Medium	Nitrogen Gas
Intake pressure	5 bar
Filter system	P41 Purifier
Operating pressure	200 bar
Max. operating pressure	350 bar
Free Air Delivery (FAD)	18 m3/h
Motor power	5,5 kW (7,5 Hp)
Speed	1500 rpm
Diameter of motor pulley	Ø 235
Belt dimension	13x2000
Diameter of compressor pulley	Ø 450
Piston stroke	40 mm
Number of stage	3
Number of cylinder	3
Cylinder bore (1st stage)	38 mm
Cylinder bore (2nd stage)	25 mm
Cylinder bore (3rd stage)	14 mm
Oil capacity	3 liters
Operating temp.	0/+50 ºC
Weight	170 kg (mariner) , 300 kg (canopy)
Dimensions, WxLxH	65x119x70 cm (mariner) 70x103x130 cm (canopy)

The model design for W3 series canopy gas compressors are based on the below data;

Compressor	W3 Series – Gas
Medium	Nitrogen Gas
Intake pressure	5 bar
Filter system	P61 Purifier
Operating pressure	200-250 bar
Free Air Delivery (FAD)	65 m3/h
Motor power	15 kW (20 Hp)
Speed	940 rpm
Diameter of motor pulley	Ø 130
Belt dimension	22x2400
Diameter of compressor pulley	Ø 610
Piston stroke	101,6 mm
Number of stage	3
Number of cylinder	3
Cylinder bore (1st stage)	160 mm
Cylinder bore (2nd stage)	69,85 mm
Cylinder bore (3rd stage)	25,4 mm
Oil capacity	4 liters
Operating temp.	0/+50 ºC
Weight	700 kg
Dimensions, WxLxH	77x111x160 cm

2.3. Process and Instrumentation Diagram (P&ID)

The following process and instrumentation diagrams are prepared with the drawing of the physical components rather than pneumatic symbols in order to facilitate the understanding of the system by users who are not specifically trained to understand pneumatic symbols.

By looking at the P&I diagram, you can see the general layout of the system and operational turns.

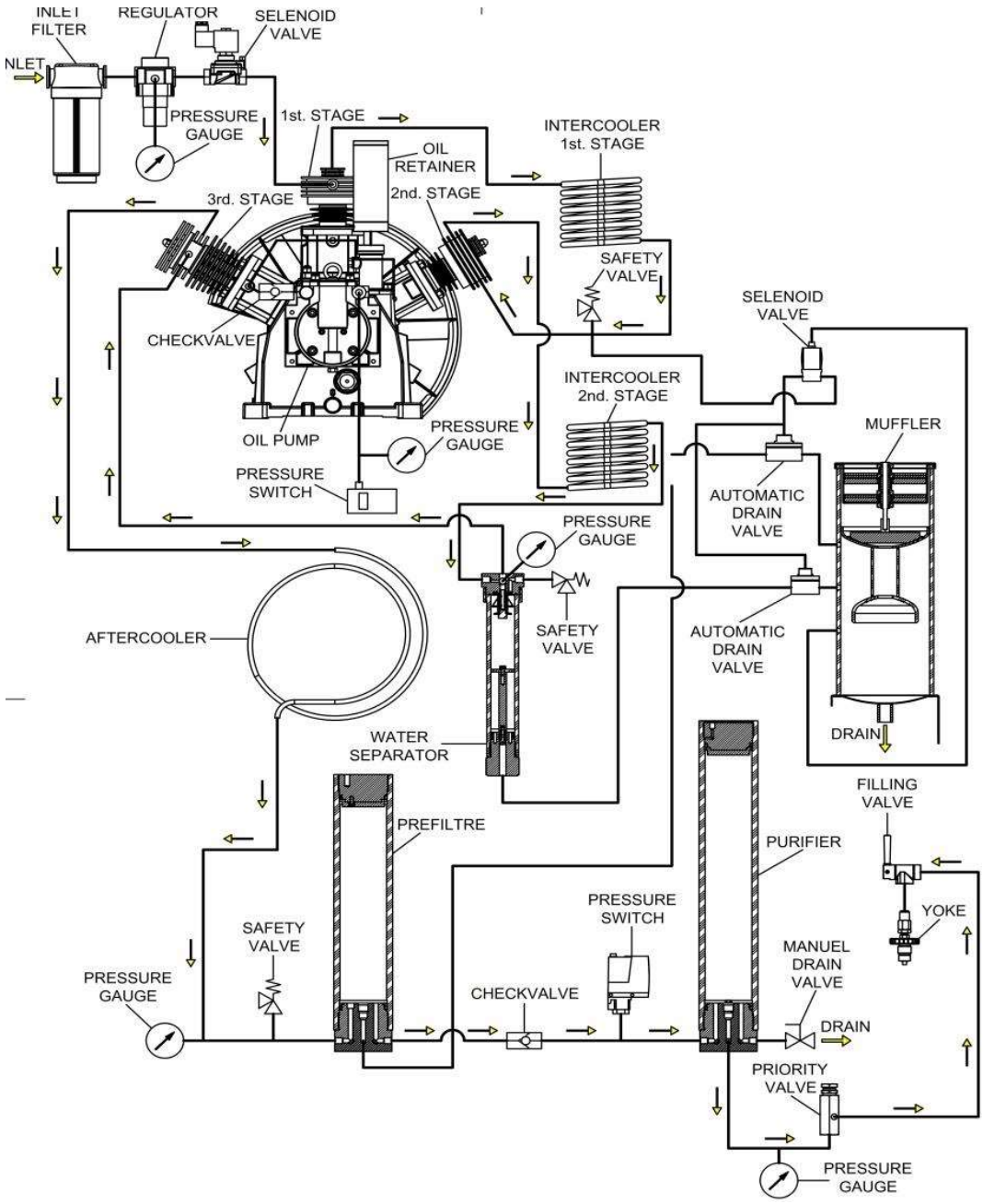


Figure 6 – W32 series compressor P&ID (standard)

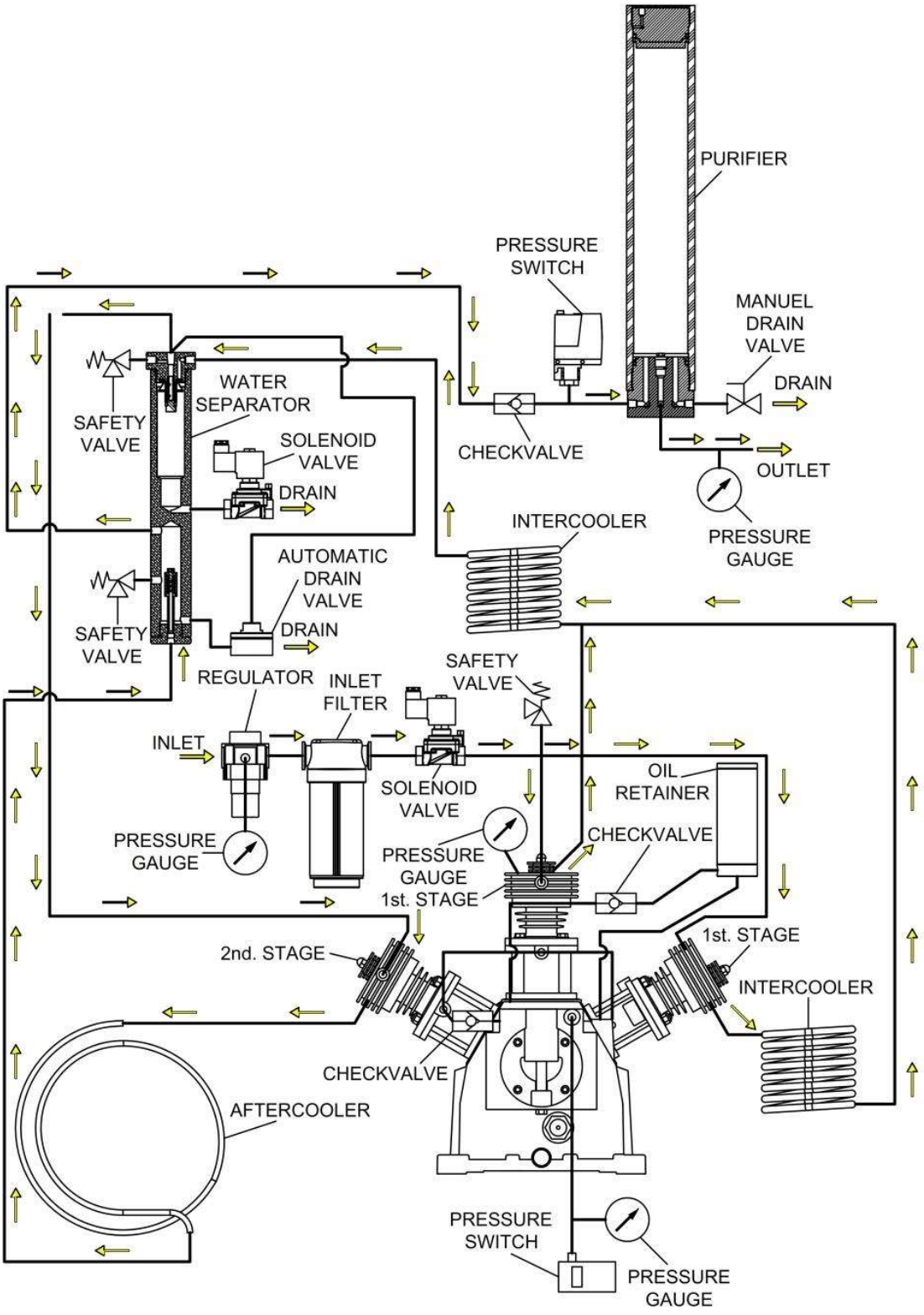


Figure 7 – W32 series compressor P&ID (40 bar)

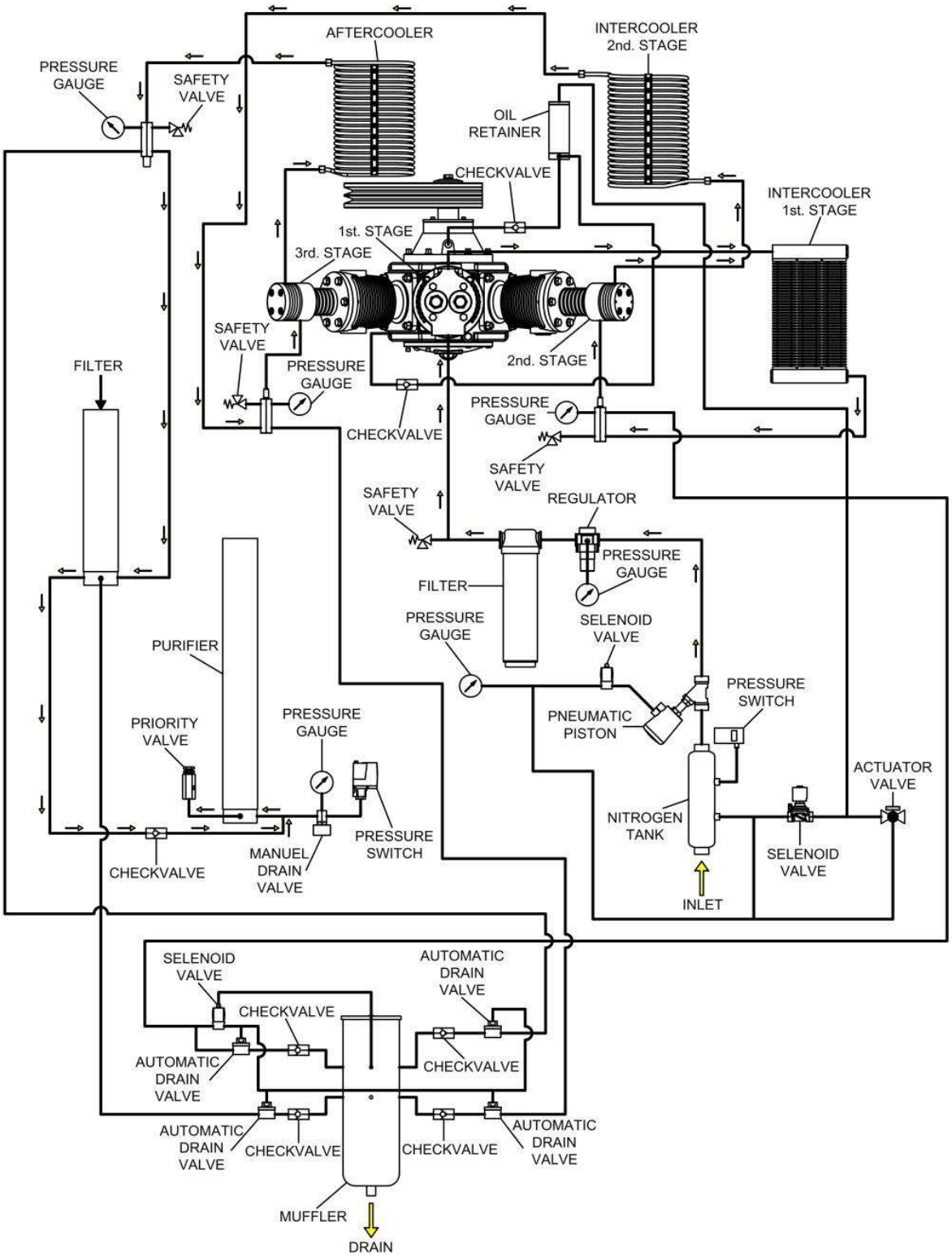


Figure 8 – W3 series canopy gas compressor P&ID

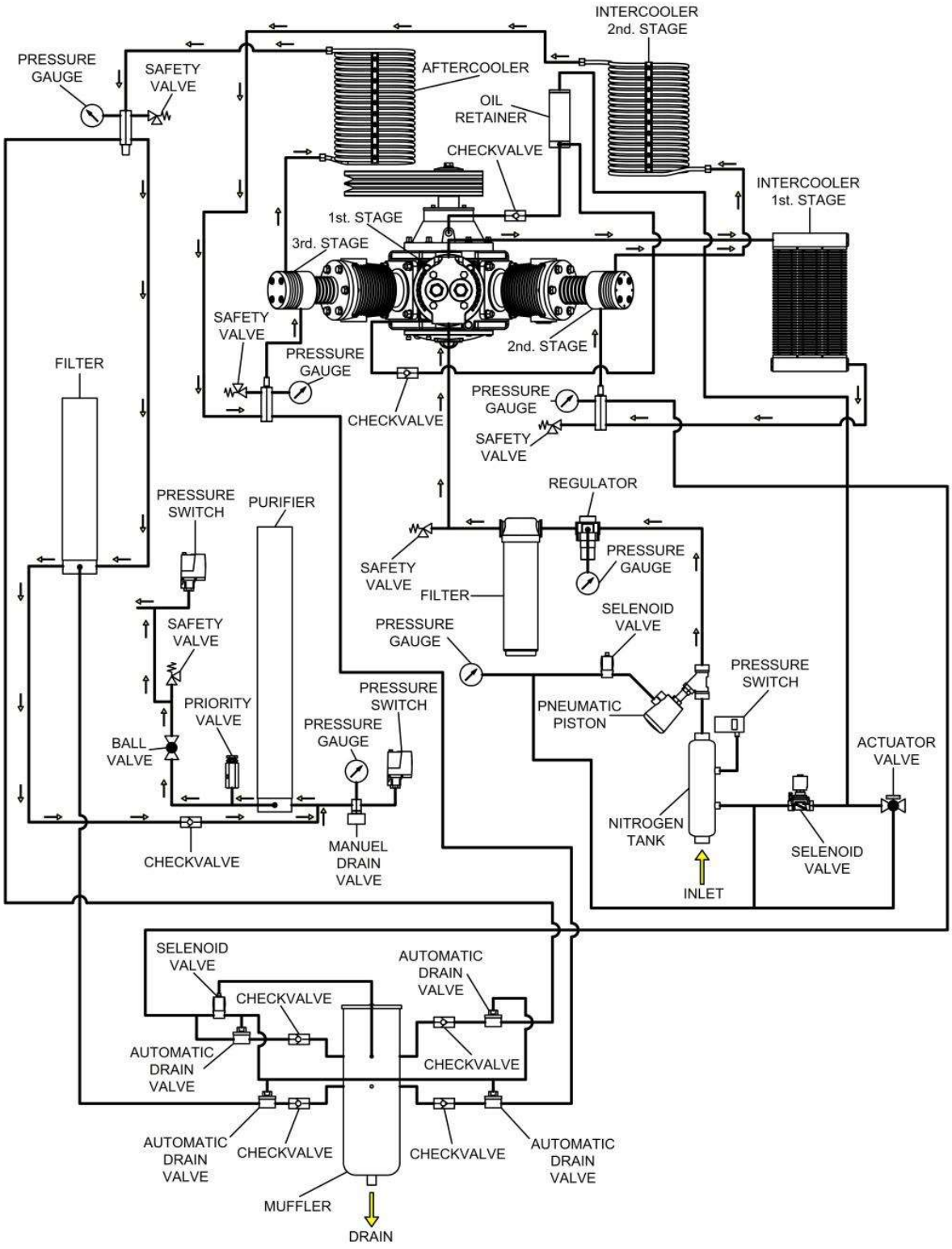
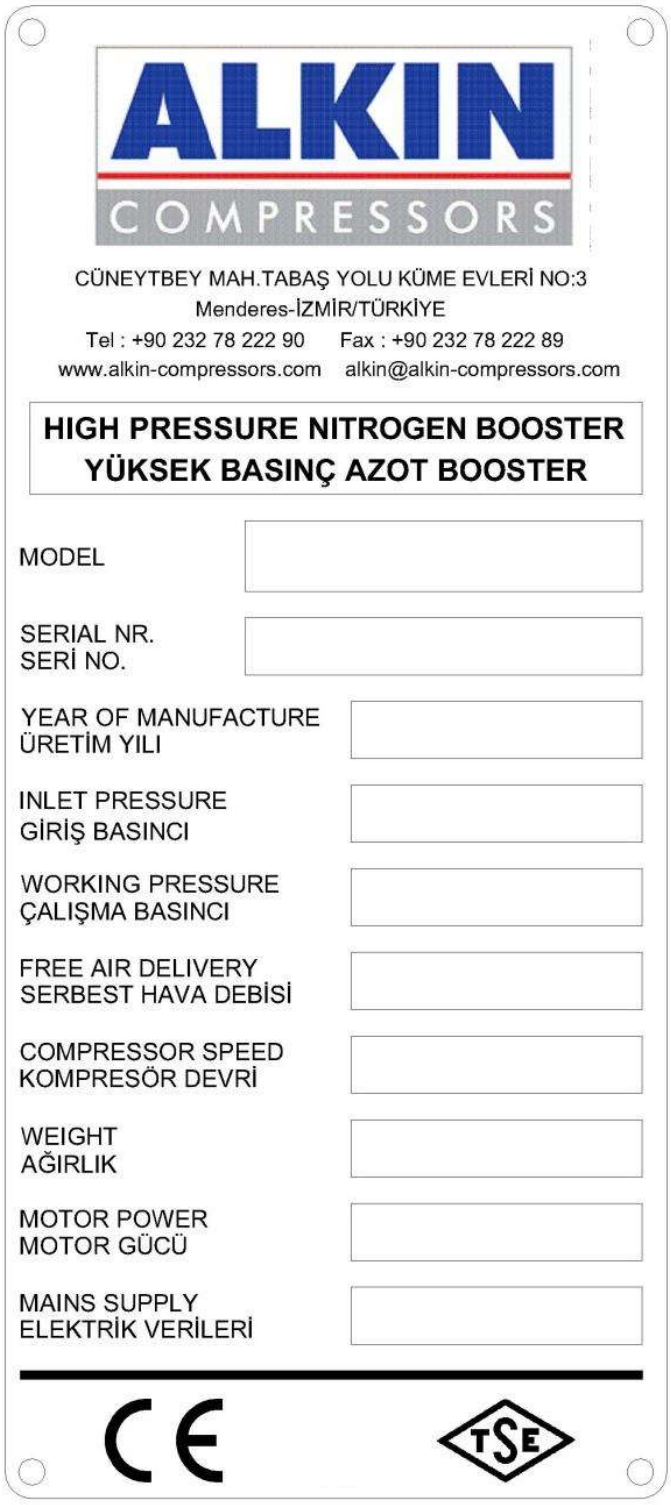


Figure 9 – W3 series canopy gas compressor P&ID (dual pressure)

2.4. Identification of the Compressor

Each compressor has an identification label attached to its frame.



2.5. Principles of Operation

Gas Compressors are effective in increasing the current conditioned and pressurized air / gas in your line, or the air / gas at low pressure from your existing air / gas compressor to the required outlet pressure.

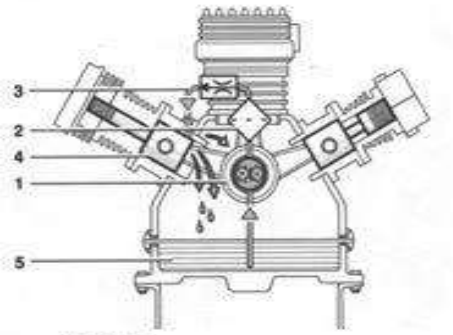
Gas is drawn through the inlet filter at 5 bar into the 1st stage cylinder on the up-stroke of the piston. The up-stroke motion of the piston will cause compression and the gas will be forced out of the cylinder through 1st stage discharge valve. Gas will then pass through the intercooler tubes between the 1st and 2nd stages of W32 series compressors, pass through the radiator of W3 series canopy compressors and goes into the 2nd stage compression chamber. Here, the gas is compressed to the 2nd stage compression level and forced through the 2nd stage valves + 2nd stage intercooler + 2nd stage water separator + 3rd stage inlet valve into the 3rd stage cylinder. Here, the gas is compressed to the final pressure level and forced out to the aftercooler then passing through a check valve enters the purifier chamber, where it is purified and prepared to be used for intended use. For W32 Canopy models, it enters first to the prefilter and then goes to purifier through a check valve.

A priority valve (or minimum pressure valve) is installed downstream the purifier; this valve prevents the air to exit the purifier until the pressure builds to approximately 120±10 bar (2175 psi), a pressure level where the purification process is more efficient than at lower or higher pressures. Gas is then ready to be directed to a filling hose and with proper connections to the cylinders to be filled. Intercoolers, aftercoolers and radiators are designed to dissipate the heat generated from the previous compression cycle, reducing the gas temperatures, allowing the water vapors to condensate and settle in the bottom sections of the moisture separators.

Draining the condensate inside the purifier manually after each filling process is extremely important for getting good quality of nitrogen gas and the life of the consumables inside the purifier cartridge.

W32 series gas compressors with Automatic Start/Stop models have a pressure switch which promises the compressor stops and restarts between the lower and upper pressure limits. In the W32 and W3 series canopy gas compressors, the noise level is clearly reduced thanks to the cabin. It is an ideal solution for working conditions with noise problems. Compressor oil level could be seen from the oil level sight glasses placed on both sides of the crankcase. As W32 Series are forced lubricated compressors oil pressure could be checked also from the Oil Pressure Gauge. Oil pressure should be from 4 to 10 Bar.

2.6. Lubrication System



1.Oil Pump
2.Oil Filter
3.Oil Regulating Valve
4.Guide Piston
5.Oil

Lubrication is performed by an oil pump in the W32 series gas compressors. Oil pump takes the oil in the crankcase, lubricates the 2nd and 3rd stage after enabling the oil pass through oil filter and regulating valve. Pressure rise arises inside the regulating valve. It reads on the oil pressure gauge on all W32 Series. Oil Pressure Switch lets the electric motor and compressor stop when the oil pressure goes under 4 Bar against any possible damages may arise due to lack of lubrication.

NOTE:

The oil pump will only operate if the compressor rotates in the correct direction. Otherwise, the oil pressure does not occur and causes damage in the entire compressor unit.

Lubrication in W3 series gas compressors is provided by splash lubrication system. It is provided by the movement of the rod at the end of the connecting rod in the oil. The connecting rod allows the oil to be lubricated by splashing the oil from the crankcase upwards. The oil of the compressor must be replaced with a new one without passing the periods in the maintenance table. This is very important for the life of the compressor. Refer to the oil change instructions for oil change.

2.7. Major Components

2.7.1. Compressor unit

Crankcase:

This is the frame that holds everything on it. It contains the oil that lubricates the system. The cylinders are mounted on it. The crankshaft is inserted into the bearing housings which is an integral part of the crankcase. There is no maintenance or repair works that need to be done on this part; it needs to be cleaned inside when the oil is changed. If there is a visible damage, it should be replaced.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Crankshaft:

It is overhung type; that means the bearings are on one side, and the crank pin (where connecting rods are mounted) are on the other side. This unique feature allows usage of single piece connecting rods which are far more accurate and safer than split con rods. Large bearings in conjunction with low speeds, allow very long crankshaft life. Replace this part when life of bearings is over.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Connecting Rods:

There are three connecting rods which are exactly same for the 1st, 2nd and the 3rd stages on W32 model. They have bearings mounted on both crankshaft and pistons ends. This allows for much longer service. However, have the connecting rods tested with proper testing equipment within general overhaul periods and replace it if exceeding the tolerance limits mentioned in the parts book.

In the W3 model compressor, two sides and one connecting rod are used. They transmit the movement from the crank to the pistons. High quality copper-bronze alloy bushings are used in the connecting rods. When these bushings become worn over time, the connecting rods must be replaced or, if necessary, only the bushings replaced.

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Cylinders:

They are casted separately and are made of high-grade casting materials, machined & honed to fined tolerances for long service life. The compression cylinders on the 3rd stg. are mounted on guide cylinder to guide the crosshead piston ass'y. However, have the cylinders tested with proper testing equipment in general overhaul periods and replace them if exceeding the tolerance limits mentioned in parts list or having a visible fault.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Valve Complete:

The complete valve consists of valves and up & down covers inside and is located on top of the cylinders. These complete valves should be maintained periodically and replaced if required. The valves must be replaced in every general overhaul

period. Replacement of the valves can be made by ALKIN Service Personnel or a trained costumer.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Breather:

All piston type machines have some compression leak through the rings into the crankcase. There is a breather system to prevent the pressure built up in the crankcase. In the air compressor the crankcase is connected to the inlet with a cupper pipe from where the breathing is made possible.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Pistons:

1st, 2nd and 3rd stg. pistons are connected to the crankshaft via connecting rods. Pistons move up & down and compress the air inside the cylinders with the motion supplied by crankshaft. Have the pistons tested with proper testing equipment in general overhaul periods and replace them if exceeding the tolerance limits mentioned in parts list or having a visible fault.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Safety Valves:

Safety valves are found at the end of each stage of compressor unit. All the safety valves are subject to pressure tests and working pressure is set accordingly. Therefore, the safety valves prevent the danger in case of rising pressure in the compressor. Safety Valves are set and sealed by the manufacturer. Do not attempt to break the seal and change the settings of the safety valves. Otherwise, you may cause serious injuries or accidents may result in death. Check the safety valves in every general overhaul against leakages, by using foam water, and replace if necessary. Return the old safety valves back to the manufacturer.

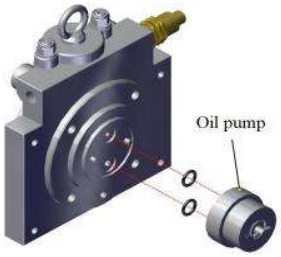
CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Oil Pressure Switch

This switch is installed on the crankcase. When the oil pressure drops fewer than 4 bar, the switch stops the electric motor and protects the compressor against the damages may arise due to lack of lubrication. This equipment is standard on all W32 Mariner Electric and W32 Canopy models.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Oil Pump



Compressor Lubrication is enabled by a low-speed oil pump connected and driven by the crankshaft. The oil pump takes the oil from crankcase and lubricates the 2nd and 3rd stages by pumping the oil to pass through the regulating valve and oil pump filter. Regulating valve promises the oil goes to the stages at required pressure. Oil pressure can be observed from the oil pressure gauge Oil pressure should be 4 to 10 Bar. On W32 series gas compressors' oil pressure switch promises the electric motor stop automatically when the oil pressure drops.

Intake Filter:

Inlet Filter is used to filter the particles in the first stage. Replace the inlet filter element in the periods shown in Maintenance Table.

2.7.2. System

Subbase:

This is the part carrying the motor and compressor and has been supported with 4 shock mounts.

Filling System:

The system consists of filling hoses resistant to high pressure on the compressor after the final filter; purifier, filling valve, yoke, pressure gauge, and DIN Adapter on the hoses which is required to connect and fill the SCBA cylinders. The number of filling hoses can be increased upon request.

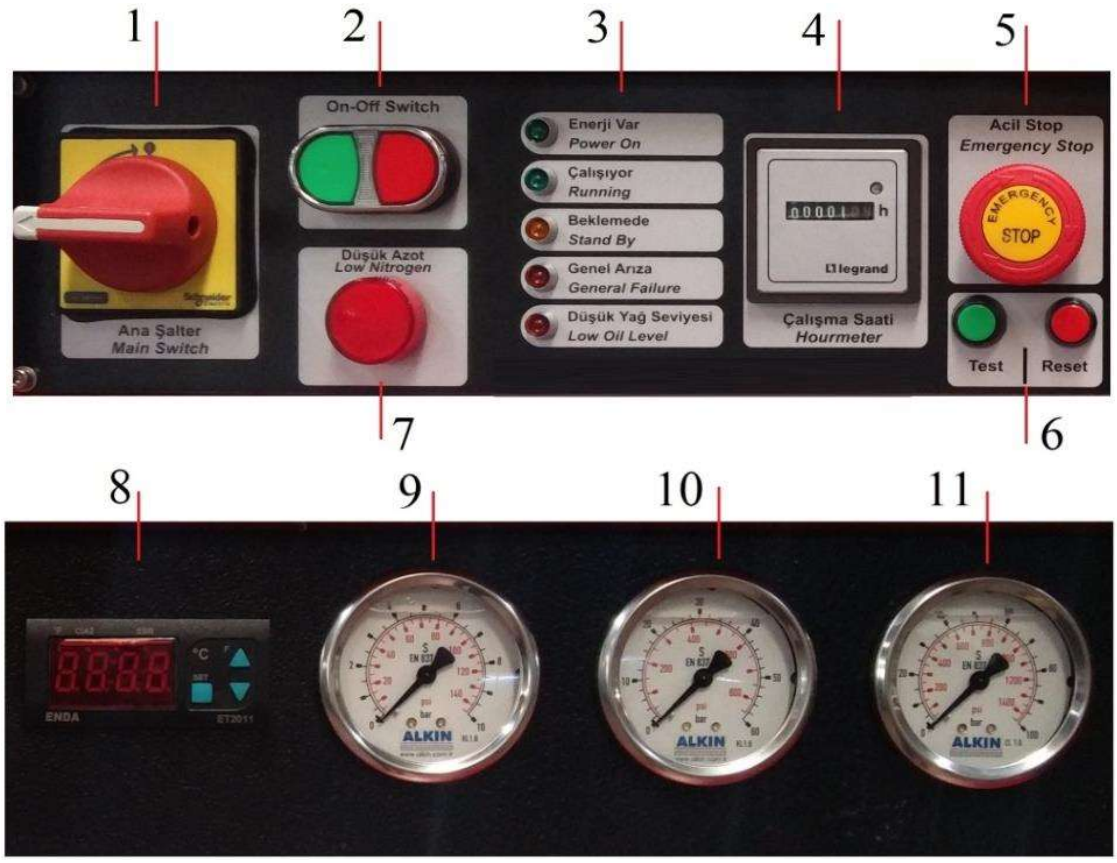
Electric Motor

W32 and W3 series gas compressors can be driven by electric motor. They are belt driven. The control board on the electric motors of the W32 series gas compressors has an hour meter showing the operating hours of the compressor.

Control Board (for mariner compressor)

The control board is located on the left side, in the upper part of the electric motor when viewed from the crankcase side. All electrical equipment that starts the motor and controls the system is located here.

Control Board (for canopy compressor)



On the control panel there are components that can operate the compressor and manometers indicating the stage pressures. The functions of the elements on the control panel are described below.

No	Description	Function
1	Main switch	It is the main element that powers / cuts the
2	On/off switch	Turns the compressor on or off
3	Power on	If the LED is on, the compressor is receiving
3	Running	If the LED is on, the compressor remains active until the set upper pressure is reached and automatically stops when the upper pressure is reached
3	Stand by	If the LED is on, the compressor has reached the set upper pressure and is in standby mode

3	General failure	If the LED is on, the following errors may have occurred; -Flywheel side panel is not placed properly -Phase protection relay triggered - Fan motor overload activated -Motor overload -High discharge air temperature -High rotor winding temperature
3	Low oil level	If the LED is on, it indicates that the oil in the compressor crank is low
4	Hour meter	Indicates the compressor operating hours
5	Emergency stop button	Immediately stops the compressor
6	Reset Button (Red)	Turns off the alarm signal leds
6	Test button (Green)	Tests signal leds
7	Low nitrogen	If the LED is on, it means the suction pressure of the nitrogen is low.
8	Digital thermostat	Turns off the compressor when the compressor outlet air temperature reaches the set value
9	1st stage pressure gauge	Indicates the compressor first stage pressure
10	2nd stage pressure gauge	Indicates the compressor second stage pressure
11	3rd stage pressure gauge	Indicates the compressor second stage pressure

Pressure Switch: (*for auto drain models*)

It is located at the front view / right section of the compressor. This switch both indicates the purifier pressure, and the set pressures on its dial, while serving as a double circuit pressure switch. It controls the start-stop operation of the compressor. The pressure-sensing end of the pressure switch is connected to a port on the purifier; when the pressure inside the purifier reaches the set pressure, it cuts off the control circuit, and stops the electric motor. (See the following section for further details)

Auto Drain Valves: (*for auto drain models*)

The automatic drain incorporates a small piston with high pressure in the bottom, and low pressure on top; the surface where low-pressure acts on is larger than the surface where the high pressure effectively

acts on the piston. Therefore, the force on the top is larger and causes the piston to sit and seal the high-pressure vent port. The drain valves are controlled by a solenoid mounted on the pilot valve fitting. It receives compressed air from the 2nd stage air inlet and sends it over the 2 drain valves forcing them to close. When the solenoid is de-energized, it removes the control air over the top of the drain valve pistons, allowing the high pressure acting from the bottom of the pistons, to open and perform drain operation.

Intercoolers and Aftercooler:

These are the cooling tubes that cool down the air getting warmed after compression in stages, which are located in interstages and at the discharge of the final stage of the compressor.

INTERCOOLERS AND AFTERCOOLER ARE NOT NECESSARILY REPLACED UNLESS A WEARING, CRACKING OR BREAKING OCCURS.

Water Separators:

They remove the water condensate from the compressed gas occurred in stages under pressure. There are two water separators on W32 Series; 2nd and 3rd Stgs.

NOTE:

Replace water separator filters periodically as mentioned in the maintenance table.

Consult the nearest ALKIN dealer or ALKIN for replacement or maintenance.

Purifier:

This is the filtration system that purifies the compressed nitrogen gas. Gas compressed in the compressor stages finally enters the purifier. A refillable cartridge which contains the consumables performing the filtration is placed in the purifier housing. Refillable cartridges are more cost effective and environment friendly compared to replaceable cartridges. Consumables inside the cartridge remove the oil, odor and water condensate from the compressed gas. Purifier Cartridge should be replaced frequently to prevent a loss in gas quality. Compressor can work safely between -0°C and 50°C. Lower temperatures may cause blockage, and higher temperatures may diminish purifier's efficiency. There will also be other factors that affect purifier's life. Condensate water in purifier should be drained with the manual drain valve after each cylinder is filled and compressor is shut off.

Priority Valve:

It does not let the air go unless the inlet pressure of the purifier reaches a certain value (120±10 bar). At this pressure, the filtration is much more efficient than any pressure.

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Check Valve:

It does not let the compressed air inside the purifier goes back to the stages and protects the compressor to run under back pressure.

2.8. PLC (Programmable Logic Controller)

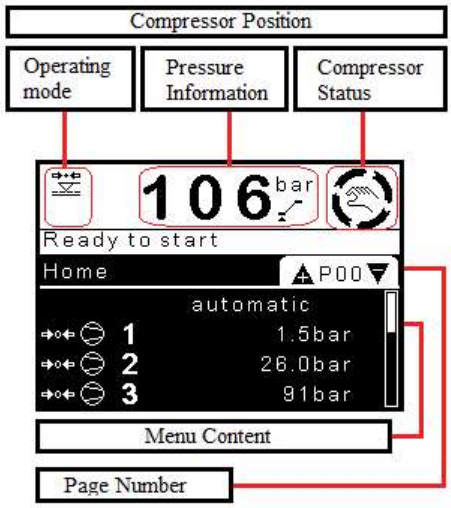
W32 series canopy compressors can be equipped with programmable logical controllers (PLC) to ensure uninterrupted production.

NOTE: Enter the **" 3535 "** as a password in the User menu (P9.04) to set the high pressure operation and purifier maintenance time**.**

2.8.1. User Interface

Icon: Image	Icon: Function
	Start
	Stop
	Reset
	Enter
	Up
	Down
	Escape
	Advanced Power Monitoring
	Metacentre™ Compatible
	SD Card Option
	Airbus485™ Compatible
	MODBUS Compatible
	Advanced Control Algorithms
	Internal System Control
	Ethernet Card option

2.8.2. Graphic Display



After a period of non-use, the graphic display light level will reduce until a key is pressed.
P00 is the default view page after power up and where the display will return after a period of no keypad use. Where applicable, the menu item highlighted will toggle between the default menu display and additional menu information.

For example: P00.02

1: Control mode

2: Load / off load

2.8.3. Menu Navigation

Menu tabs are arranged sequentially and in a continuous loop.

The graphical interface inverts to identify the 'on screen' navigation location and the navigation location is indicated on the vertical scroll bar.

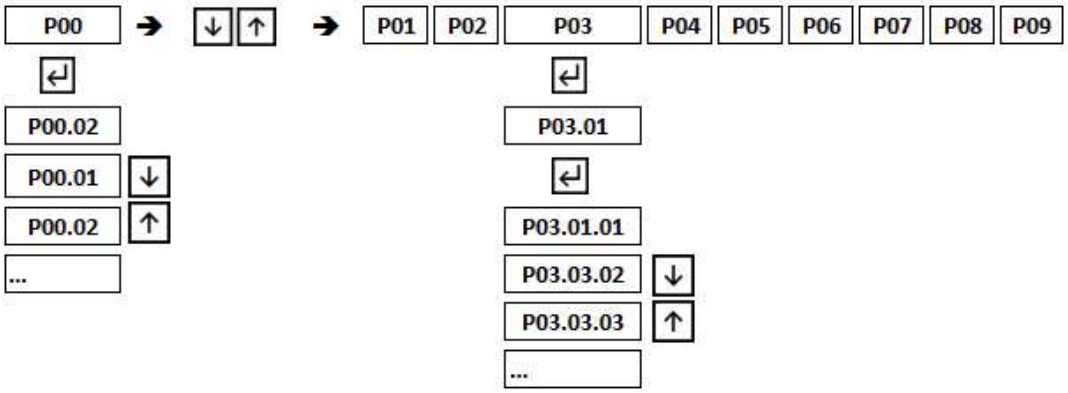
Additionally the menu tab extends to identify the navigation location. For example:

Item	Description
P02	Menu: Utilization
P02.10	VSD average RPM
P02.10.01	AVG RPM 1 – 25%

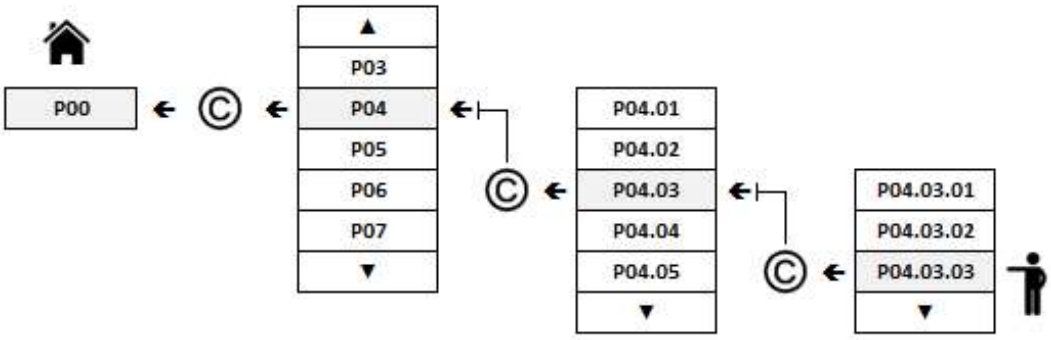
Note: menu content items are only visible when the Airmaster™ is appropriately configured.

Menu items are indexed sequentially and without omission. If a menu item is not present it's most likely due to configuration.

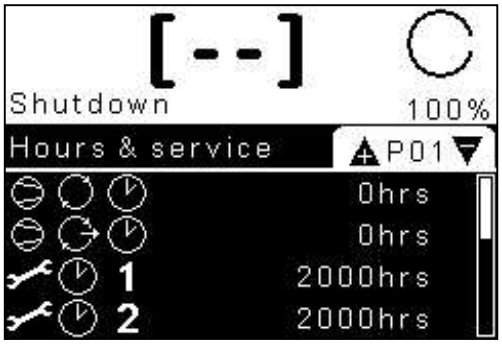
Progress in Menu



Back to previous Menu

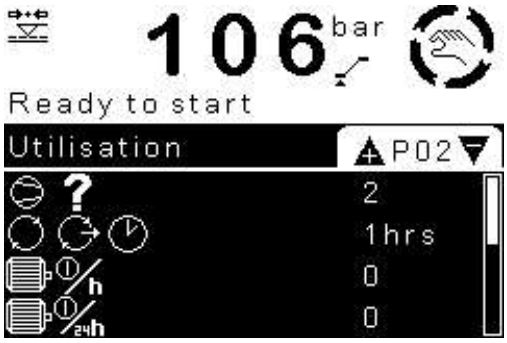


PAGE NO (P00) is on the top right of the screen. P00 is the main screen.

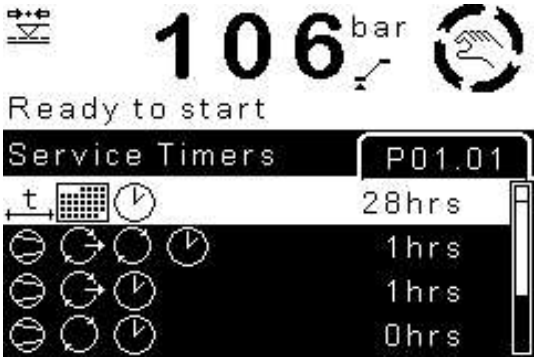


Use the ENTER key and ESCAPE key to navigate between menu page navigation and menu content navigation.

With the menu page item highlighted, use UP and DOWN keys to access the page number. (P01, P02 .. P09) . Menu content items are vertically listed and in a continuous loop.



When the “ENTER” button is pressed, the page remains fixed; and the second page of that page appears (P01.01).



Menu P00: Main Page

P00.01: Active Alarm / Error
P00.02: Operation mode
P00.06: 1st stage pressure
P00.07: 2nd stage pressure
P00.08: 3rd stage pressure
P00.13: Hour
P00.14: Date
P00.15: Daylight difference
P00.19: 4th stage pressure

P00.20: Purifier pressure
P00.21: Oil pressure
P00.22: Inlet temperature
P00.23: Outlet temperature
P00.24: Inlet pressure
[*]The parameters between *P00.01 and P00.XX.24* can vary according to the machine.

Menu P01: Service and Machine Hours

P01.01: Output time of compressor from production
P01.02: Load / Idle time (total)
P01.03: Working time on load
P01.04: Idle time
P01.05: Stop time
P01.06: Time to change the Purifier filter
P01.07: Time left for oil change
P01.08: Time remaining for valve and segment change

Menu P02: Machine Usage Information

P02.01: Machine operation mode
P02.02: Load / Idle time
P02.03: Number of START in the last 1 hour of the engine
P02.04: Number of START engines in the last 24 hours
P02.05: Number of idle load switching of main motor
P02.06: % of the Main Engine's last 1 hour 'load'
P02.07: Percentage of Main Engine in last 24 hours' load
P02.08: Time in 'load' in the last 1 hour period [DD]
P02.09: Time in 'load' in the last 24-hour period [HH: DD]

Menu P03: Alarm and Error Logs

P03.01 – P03.50 The last 50 alarm and fault records of the machine.
[Chronologically listed]
[*] *.01 is the last alarm or error record of the compressor, .50 is the last the last alarm or error.*
Each record is detailed in itself. If the related alarm or error record is entered; related alarm and error,
P03.XX.01: Alarm or fault record number
P03.XX.02: Error code and description
P03.XX.03: When the alarm or fault occurred: Time
P03.XX.04: When the alarm or fault occurred: Date
P03.XX.05: When alarm or malfunction occurs: Machine Status
P03.XX.09: When the alarm or fault occurs: Main motor current
P03.XX.10: When alarm or fault occurs: Fan motor current
P03.XX.11: When alarm or fault occurs: Load / idle time
P03.XX.12: When the alarm or fault occurs: 1st stage pressure

P03.XX.13: When the alarm or fault occurs: Step 2 pressure
P03.XX.14: When the alarm or fault occurs: Step 3
P03.XX.15: When the alarm or malfunction occurs: Step 4 and purifier pressure
[*] Parameters P03.XX.11 to P03.XX.15 may vary by machine.

Menu P04: Event records

P04.01 - P04.200 The last 50 processes in the machine.

[Chronologically listed.] Each record is detailed in itself. In case of entry to the relevant event record; related event,

P04.XX.01: Event log number
P04.XX.02: What is the event log?
P04.XX.03: Event log: Time
P04.XX.04: Event record: Date

Menu P05: OEM Informations

P05.01: OEM: Name
P05.02: OEM: Name (continue)
P05.03: OEM: Address
P05.04: OEM: Address (continue)
P05.05: OEM: City
P00.06: OEM: District
P05.07: OEM: Post code
P05.08: OEM: Country
P05.09: OEM: Phone
P05.10: OEM: Fax
P05.11: OEM: E-mail
P05.12: OEM: Web

Menu P06: Controller Information

P06.01: AirMaster Q2: Part code
P06.02: AirMaster Q2: Serial number
P06.03: AirMaster Q2: Software ID
P06.04: AirMaster Q2: Software version
P06.05: AirMaster Q2: Software hour
P06.06: AirMaster Q2: Software date
P06.07: AirMaster Q2: Config file
P06.08: AirMaster Q2: Producer

Menu P07: Machine Information

P07.01: Machine producer
P07.02: Machine model
P07.03: Model serial number
P07.04: Model nominal pressure information
P07.05: Model nominal outlet

P07.06: Model production year
P07.07: Compressor serial number
P07.08: Compressor production year
P07.09: Motor serial number
P07.10: Motor production year
P07.11: X serial number
P07.12: X production year
P07.12: Machine test date

Menu P08: Alarm/Error code description:
P08.01 – P08-252 Alarm / Error codes and descriptions

Menu P08: Alarm/Error code explanations;
P08.01 – P08-252 Alarm/Error codes and explanations

INLET PRESSURE WORKING AND CODE LIST

R:2130 & R:2131 "FIRST OPERATION" OBSTRUCTIVE CONDITIONS

R:2130 LOWER VALUE:
Displayed if it falls below the value P15.15
How to remove the code? It must reach the total value between P15.15 + P15.16 parameters

R:2131 UPPER VALUE:
Displayed if it rises above the value P15.17.
How to remove the code? It must reach the difference value between P15.17 – P15.18 parameters.

L:2130 & L:2131 "LOAD" OBSTRUCTIVE CONDITIONS

L:2130 LOWER VALUE:
Displayed if it falls below the value P15.15
How to remove the code? It must reach the total value between P15.15 + P15.16 parameters

L:2131 UPPER VALUE:
Displayed if it rises above the value P15.17.
How to remove the code? It must reach the total value between P15.17 – P15.18 parameters

A:2131 ALARM
Displayed when the inlet pressure reach the value P16.16 parameter

E:2131 EMERCENCY STOP
Displayed when the inlet pressure reach the value P17.81 parameter

2.9. Description of Controls

W32 and W3 series gas compressors can be operated by 2 different controls.

2.9.1. Manual start/stop

W32 and W3 series compressors can be manually controlled by pressing the start/stop switches on the electric motor.

2.9.2. Auto start/stop

W32 and W3 series compressors can be controlled by a pressure switch to automatically stop and restart at the upper and lower pressure limits. Pressure switches cuts off the electric motor control when the compressor reaches the adjusted upper pressure. When the pressure drops to the adjusted lower pressure, the pressure switches cuts in to restart the compressor.

2.9.3. Auto drain (for auto drain models)

W32 Series compressors can be automatically drained by automatic drain valves. These drain valves are controlled by 3 way Solenoid Valve which is normally closed. This solenoid valve supplies or cuts the control air on the drain valves, thus letting them to open or close. The solenoid valve itself is controlled by a timer installed in the electrical panel. The dual time adjustment on this timer allows to adjust the time period (t1~10 min) which the solenoid will remain energized (=the drain valve will remain closed), and the duration (t2 ~ 5 seconds) during which the solenoid will be de-energized (=the drain valve will open and perform the drain function).

IMPORTANT:

Do not change the factory settings of the drain times and durations. Consult the factory if you need to change the settings.

2.10. Installation

2.10.1. Inspection

The compressor should be inspected and checked for the following when received:

a. Check if any damage exists during shipping, handling, etc.

b. Check the compressor nameplate to verify the equipment confirms the working conditions.

c. Check the electrical motor nameplate to verify the compliance with the available power and electrical supply.

d. Check the compressor if it is filled with oil or not.

e. Check the purifier if the cartridge is installed or not.

f. Check if the intake filter is installed.

2.10.2. Location

Location where the compressor is installed determines to a considerable extent the overall performance and service life of the unit. **Compressor should be located in an area that is dry and sheltered, well ventilated, not exposed to high ambient temperatures, air borne contaminants such as dust, fumes, lint, vapor, steam, gases, engine exhaust and another contaminant.** The floor must be flat and capable of taking the load of the system weight. Install the compressor at least 60 cm distances to surrounding walls, to insure adequate cooling and access for service.

For compressors using a petrol or diesel engine, a piping / positioning is required where the compressor air intake can only be supplied with fresh air.

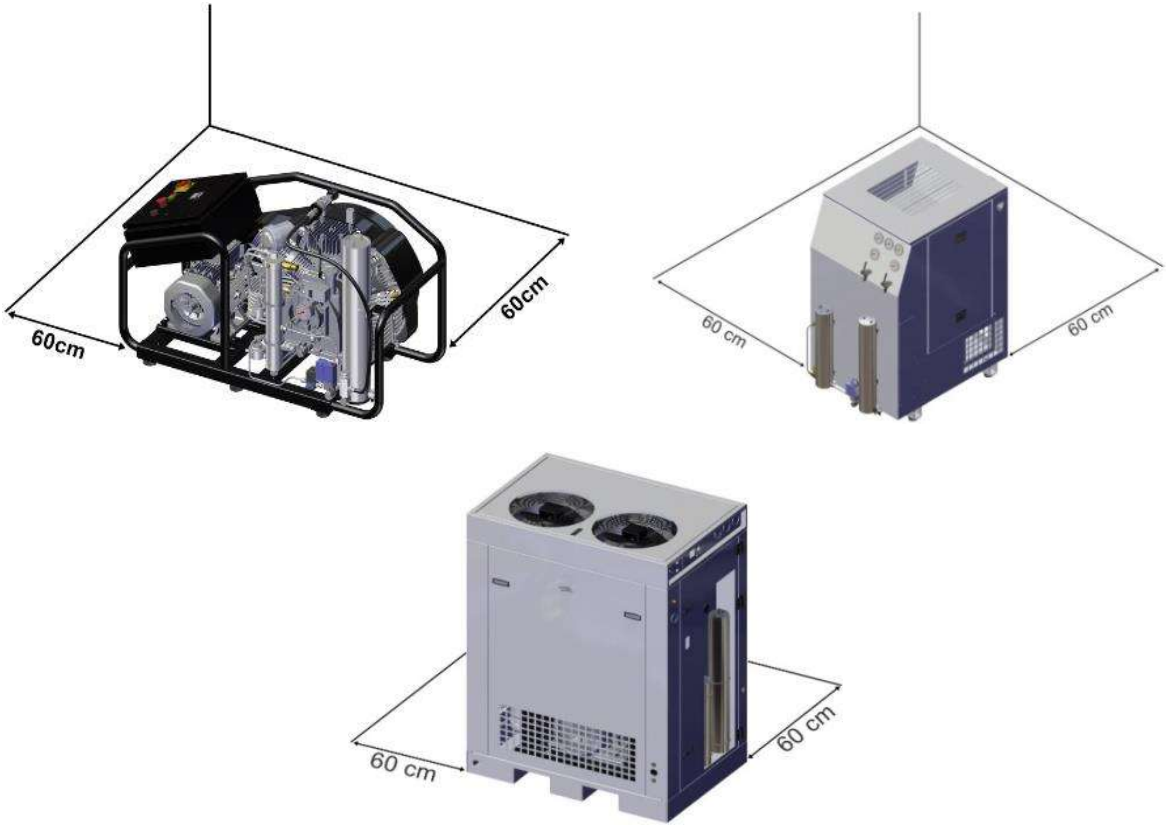


Figure 10 – W32 and W3 series gas compressors layout

2.10.3. Piping

Inlet Piping: If it is necessary to carry the inlet air filter to a clean location, due to excessive dirt, heat, dampness, or toxic fumes in the near vicinity of the compressor, use suitable diameter NON-TOXIC transparent steel wire hose; the distance from the compressor should not exceed 3 meters (10 ft). If the intake filter will be somewhere outdoors, protect it with a proper hood against possible environmental effects like rain, fume, etc.

Discharge Piping: If piping is required between the compressor and the filling panel or fill station, depending on the length between the compressor and the filling panel properly selected stainless-steel pipes must be used. The piping should be installed in full compliance with all Federal, State, and local codes, standards, and regulations. If required, consult the manufacturer for further information.

Drain Line Piping: There will be a hose line required from the bottom fitting through a drum, to discharge the water collected inside the silencer. Ensure the hose is connected well, against flying out and cause danger.

2.10.4. Electrical controls

IMPORTANT:

Although all electrical instructions addressed to the reader directly, the actual inspection, wiring, installation, maintenance, repair, etc. must be carried out by licensed and certified electricians only.

Make electrical connections to the compressor in accordance with the wiring diagrams and in full compliance with all applicable federal, state and local standards, codes and regulations, including those dealing with the earthing requirements. A few electrical checks should be made to insure that the first start-up will be trouble free. Make the following checks before attempting any start up:

- **a.** Check line voltage. Verify that the compressor motor corresponds with these specifications.
- **b.** Check the electrical motor nameplate to verify the compliance with the available power and electrical supply.
- **c.** Check tightness of all electrical connections including those in the electrical panel of the compressor.
- **d.** At start up, check the direction of rotation to insure that flywheel rotates to the direction of the arrow on it. Although a few minutes of operation in the wrong direction of rotation will not seriously damage the compressor, it will cause serious damages on the compressor if it runs in this position for a long time as the cooling air flow will be reversed, the compressor cylinders cannot be cooled down and the oil pump will not pump oil, the compressors will run without lubrication.

Check starter and max. load for conformity with the motor power and current data.

2.10.5. Wiring

It is important to select the right size and capacity wire and fuses. Install a switch with magnetic protection and a capacity of bigger than the motor full load current on the wall.

2.11. Storage

If the compressor will not be working for a long time for any reason and stored idle during this time, it is suggested to do the following steps before putting it out of reach in order to keep it in good condition:

- Store the compressor in a dry, clean, and sheltered indoor area.
- Start the compressor and run it for app. 15 minutes to lubricate the internal parts. If not possible, the compressor pulley should be turned by hand. Failure to do this may result in corrosion on the internal parts of the compressor.
- Check if there is any leak on the fittings, hoses, tubes, filters, and valves.
- When the compressor is warm, shut it down.
- Open the drain valves and release the pressure inside the compressor.
- Close the filling valves and drain valves after the unit is completely depressurized.
- Turn off the power of the compressor by turning off the main power switch.
- Place a dust cap at the intake port against the dust and fumes may enter.
- For long-term storage, please view the electric / gas engine owner's manual.

NOTE: If the compressor will not be used for a long time, the purifier cartridge should be completely emptied, cleaned, and dried by holding air.

If the compressor will be started-up after a long time of storage, it is suggested to do the following steps before start to filling bottles.

- Clean the compressor with a clean cloth.
- Install a new intake filter.
- Replace the Purifier cartridge filled with the new cartridge refill kit.
- Open the intakes which have been closed while stored against dust, fume, etc. may enter the compressor.
- Check the oil level; make sure there are no leaks or sweating around the connections, gaskets, etc.
- Run the compressor for a while till it gets warm while the filling valves, drain valves are open and the purifier cartridge is empty. Do not fill any cylinders at this time. Make sure that there is no leakage.
- Stop the compressor.
- Put the compressor in a normal service.

NOTE:

If the compressor has been stored with the old oil inside, first run the compressor for a while and stop it after the oil is warmed up, discharge the old oil and refill with new oil.

2.12. Operation

2.12.1. Initial start-up procedure

Follow up the following procedures when making the initial start-up of the compressor.

a. Make sure that you have read this manual carefully and understand it. If you have any questions, contact ALKIN.

b. Make sure that all the preparations described in the installation section of this manual have been made.

c. Check the oil level in the crankcase.

d. Check the pressure switch and make sure that the pressure adjustments are set at the proper start-stop Pressures.

e. Rotate the compressor flywheel several times by hand to see that it is free and working properly.

f. Keep all objects such as tools, rugs, etc. away from the compressor.

g. Check the Purifier if the cartridge is installed.

h. Check the direction of rotation. Rotation must be in the direction of the arrow marked on the crankcase and flywheel.

i. Press the start button to start the compressor. Check and verify that there is no abnormal vibration, or any abnormal sounds.

j. Let the compressor run without producing pressure while the purifier drain valve is open for 10 minutes to observe if any abnormalities in the operation of the compressor exist. This way lubrication of all parts will be complete.

k. Check the possible leaks in piping. If there is any leak stop the compressor and let it cool down.

l. At the end of 10 minutes running the compressor free, close the purifier drain valve allowing the pressure to rise. Check the last stage safety valve if operating proper or not. The safety valve must open and leak at the pressure stated on it. If the safety valve does not open, stop the compressor without waiting for the pressure to rise up.

m. To fill cylinders, please read Cylinder Filling Instructions.

2.12.2. Oil Recommendation

The oil level should be checked before each start up. **Top up to the overfill point when required 3 liters of oil for W32 series compressors, 4 liters of oil for W3 canopy compressors should be loaded during each replacement.**

RECOMMENDED OILS

Oil	Type	Quantity
Mobil Rarus 427	Mineral	3 liters (W32) 4 liters (W3)
Anderol 755 (equivalent)	Synthetic	
Anderol 750 (equivalent)	Synthetic	

Mobil Rarus 427 Compressor Oil

The use of the Mobil Rarus 427 oil can result in cleaner compressors and lower deposits compared to conventional mineral oils, resulting in longer running periods between maintenance intervals. Their excellent oxidation and thermal stability safely allow extended life capability while controlling sludge and deposit formation. They possess outstanding anti-wear and corrosion protection, which enhances equipment life and performance.

SPECIFICATIONS	TEST METHOD	MOBIL RARUS 427
Viscosity, cSt		
@ 40 ºC	ASTM D 445	104.6
@ 100 ºC	ASTM D 445	11.6
Flash point, ºC	ASTM D 92	264
Density, 15°C (60°F)	ASTM D 1298	0.879
Viscosity index	ASTM D 2270	100

- Do not use another type of oil without prior written approval of the compressor manufacturer.
- Do not mix different brand and type of oils.
- If you will change the oil you use with another approved brand of oil, refill with the new oil after you make sure that you drain the old oil completely in the crankcase.
- Refill the oil every year unless you reach the replacement time of the oil stated in the Maintenance Table.

2.12.3. Extremely cold ambient temperatures

Operating conditions different than stated conditions must be reported to the compressor manufacturer to make the necessary changes to adopt the compressor to the current conditions. For instance, if the compressor needs to work in an extremely cold ambient temperature below freezing temperatures a crankcase heater can be attached to the crankcase of the compressor to prevent the negative effect of the cold ambient temperatures.

2.12.4. Motor lubrication

Electric motors on ALKIN W32 and W3 series compressors are supplied with greased and sealed bearings. They do not any need further maintenance.

2.13. Adjustment

Pressure switch adjustment (for auto drain models)

When adjusting pressure switch, verify compressor is operating and make adjustments according to the final outlet pressure.

- Adjustment is done by rotating the Red Adjustment Screw.
- You can adjust PH1 pressure switch to the required upper pressure (working pressure) by turning the screw on the pressure switch clockwise or anti-clockwise. Turn the screw clockwise to increase the upper pressure, anti-clockwise to lower.
- Standard Pressure Switches used on ALKIN have standard differential of 10% of working pressure. For example, a pressure switch set at 200 bar will work between 180 and 200 bar.

Not: Even though there is a monitor scale in the front of Pressure Switch, setting a value from there is very difficult.

Sequential drain timers (for auto drain models)

These are the drain timers on which the draining times and duration adjustments are made for automatic drain function. On this timer you will find two dials to make the time adjustments. Upwards dial controls the duration of the automatic drain which the drain valve remains open (drains the condensate) It is adjustable between 0 to 10 seconds. The dial does not have figures showing the times on it; it needs to be proportionally adjusted. The full scale shows 10 seconds while half of the scale indicates 5 seconds. The downwards dial is used to adjust the time period of the automatic drain during which the drain valve will remain closed. Draining time periods and duration are adjusted as 5 seconds for every 10 minutes. Factory settings should not be changed for trouble free operation.

Safety Valves

CAUTION!

• Do not adjust the safety valves and do not alter their original settings. Only authorized service technicians are certified to make such adjustment.

• Do not remove the leaking safety valves and do not replace it with a plug. This may be extremely dangerous. If the safety valve is leaking, replace with a new one.

SECTION 3

MAINTENANCE

3. General

As you proceed through this section, it will be easy to see how simple to maintain the compressor. By following these recommendations, you will get long and trouble-free operation from your air compressor. The following are general guidelines for periodical maintenance; specific details will be mentioned in the following chapters. Use the **Maintenance Table** for maintenance and keeping records.

CAUTION!

Before attempting any maintenance or service work, isolate the compressor by switching off the power and blowing down the pressure inside all equipment like the filters, purifiers, piping, etc. If a bank system exists, isolate by closing the appropriate valves.

CAUTION!

The priority is working hours for the compressor control and part replacement. However, if the specified working hours do not expire depending on the operating conditions of the compressor, the specified periods (3 months, 6 months etc.) must be taken into consideration.

3.1. Maintenance Table

3.1.1. Check Table

Check Time	Part	Instruction no.
Daily	Check oil level	01
	Check for leakage	02
	Check pressure and gauges	-
	Condensate should be drained from purifier by opening manual drain valve located below purifier after each filling and day. Also, auto drain valves should be checked to see if they are draining for 5 seconds at every 10 minutes. CONSULT ALKIN IF UNSURE.	03
	Open the manual drains beneath water separators at every 10 minutes to drain condensate water.	-
Weekly	Check intake filter	04
	Check V-belt	05
	Check the tightness of the fasteners	06
	Clean intercoolers and aftercooler and flywheel	07
	Check current	08
	Check the tightness of the cable connections	-
1000 hours / 1 year	Check safety valves, replace if necessary.	09 09-01
	Inspect the stage valves, clean if there are any dirt or carbon deposits in the valves.	-
	Check the oil check valve, replace with a new one, if necessary	10 10-01
	Check the check valve, replace with a new one, if necessary	11 11-01
	Check priority valve, replace with a new one, if necessary	12
	Check belts, replace with a new one, if necessary	13
	Check oil seal, replace with a new one, if necessary	14
5 years	Purifier should be tested by authorized third parties in accordance with the Pressure Equipment Directive (PED).	-

3.1.2. Replacement Table

Replacement time	No	Explanation	Qty.	Inst. no.
500 hours / 1 year	1	Oil change	3 liters (W32) 4 liters (W3)	17
	2	Oil filter element and cover	1 pcs.	18
	3	Purifier cartridge	1 pcs.	15
2000 hours / 2 years	1	Gas filter element	1 pcs.	04
	2	Prefilter element	1 pcs.	16
	3	Muffler element	1 pcs.	Contact with ALKIN
	4	Stage valves	1 set	
	5	Gasket	1 set	
	6	O-ring	1 set	
	7	Piston ring	1 set	
	8	Pneumatic valves with auto drain maintenance kit. (For auto drain models.)	1 set	
	9	Oil check valve	1 pcs.	10-01
	10	Check valve-400 bar	1 pcs.	11-01
4000 hours/4 years	1	Piston	1 set	Contact with ALKIN
	2	Cylinder	1 set	
	NOTE: Cylinders and pistons will be checked every 4000 hours / 4 years and replaced with new one if necessary.			
	3	Safety valve	1 set	09-01 13
	4	V-belt	2 pcs.	

CAUTION!

Important: please be advised that compressors which are not maintained according to ALKIN maintenance tables above would be out of warranty.

3.2. Torque Values

The following table indicates the torque values to which a torque wrench should be set for tightening the various size attaching bolts & nuts. Use these values to set a torque wrench to tighten these fasteners at intervals indicated in the MAINTENANCE TABLE.

RECOMMENDED TORQUE VALUE TABLE

Bolt	Thread	Quality class	Max torque
Bolt - allen head	M6	8,8	10.5 Nm
Bolt - allen head	M8	8,8	25.3 Nm
Bolt - allen head	M10	8,8	50.8 Nm
Bolt - allen head	M12	8,8	86.9 Nm
Bolt - allen head	M14	8,8	139 Nm
Bolt - allen head	M16	8,8	213 Nm
Pipe connections (nuts)			Hand tightness +1/2 round

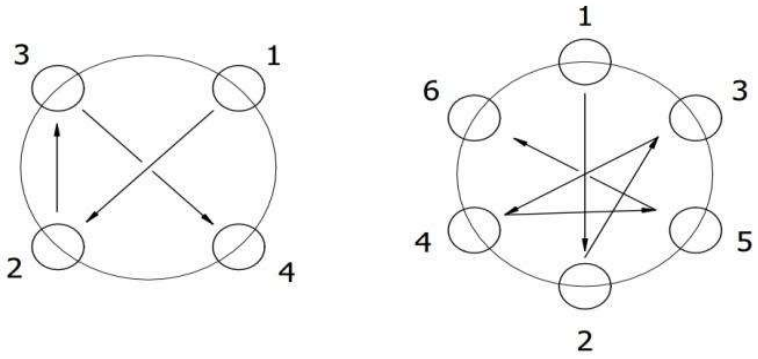


Figure 11 – Tightening order

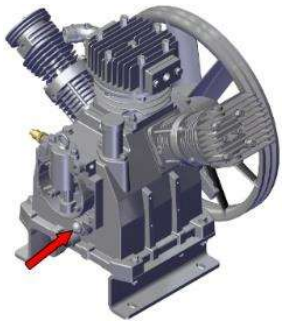
3.3. Maintenance Instructions

Before attempting any maintenance or service work, isolate the compressor by switching off the power and blowing down the pressure inside all equipment like the filters, purifiers, piping, etc. If a bank system exists, isolate by closing the appropriate valves.

3.3.1. Oil level check

Instruction no	01
Instruction name	Oil Level Check
List of tools required	None
No of persons required	1 person

- Oil level can be visually checked through oil level glass in the front of crankcase. Oil level should be below the red line.
- Refill oil if needed.



3.3.2. Leak check

Instruction no	02
Instruction name	Leak Check
List of tools required	Bowl, sponge, foam water
No of persons required	1 person

- Listen to compressor while working and check for unusual sounds.
- If there is an unusual sound, try to detect the source.
- Detect and tighten the screw, nuts, fittings, etc.
- Put foam water with sponge on where the leak is tightened connectors. Check if leaking is no more.
- Wipe the foam water off the compressor.

3.3.3. Auto drain valve check

Instruction no	03
Instruction name	Auto Drain Valves Check
List of tools required	None
No of persons required	1 person

- While working, compressor should drain for 5 seconds at every 10 minutes.

3.3.4. Intake filter check and filter element replacement

Instruction no	04
Instruction name	Intake Filter Check
List of tools required	Clean cloth
No of persons required	1 person

- Check intake filter element at every 2000 running hours and clean with pressurized air from inside towards outside. Depending on ambient temperature and humidity, replace filter element at most every three months.
- Suction filter cover is turned counterclockwise. The cover is removed from the place by taking precautions against the possibility of spring under the cover.
- The inside of the suction filter body is cleaned with air. The suction filter element is rotated at an angle of 45 degrees and reinstalled. When doing this, check whether the O-ring in the filter is in place.

3.3.5. V-Belt alignment check

Instruction no	05
Instruction name	V-belt Tension Check
List of tools required	None
No of persons required	1 person

- Check the V-belt tension. The proper tension should allow 13 mm (½”) deflection with a 1 kg (2 pounds) weight applied on the center of each belt.

3.3.6. Components check

Instruction no	06
Instruction name	Components Check
List of tools required	Appropriate tools
No of persons required	1 person

- Stop the compressor. Make sure the compressor is cooled down.
- Appropriate tool is selected depending on the component, dual tighten the component according to their torque values.
- Check with foam water for leaks. Mind electrical components. Wipe the foam water off the compressor.

3.3.7. Serpentines, Intercoolers and aftercooler, flywheel cleaning

Instruction no	07
Instruction name	Serpentines, Intercoolers and Aftercooler, Flywheel
List of tools required	Cloth
No of persons required	1 person

- Clean dust on serpentines, intercoolers and aftercooler, flywheel with 6-7 bar pressurized air. Wipe if necessary.

3.3.8. Current check

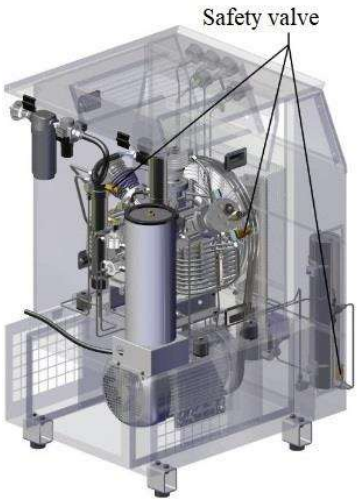
Instruction no	08
Instruction name	Current Check
List of tools required	Ampere meter
No of persons required	1 person

- Check with an ampere meter at max. load for conformity with the motor power and current data

3.3.9. Safety valve check

Instruction no	09
Instruction name	Safety Valve Check
List of tools required	foam water
No of persons required	1 person

- Start the compressors. While it is working, put foam water on valves and check for leaks. Replace valves if necessary.



3.3.9.1. Safety valve replacement

Instruction no	09-01
Instruction name	Safety Valve Replacement
List of tools required	appropriate tools, foam water
No of persons required	1 person

- Remove the problematic safety valve with the appropriate tool. Start the compressor and verify teflon tape parts are removed from valve hole. Then stop the compressor.
- Wrap Teflon tape on the new safety valve and put it on its place and tighten with appropriate tool.
- Start the compressors. While it is working, put foam water on valves and check for leaks.

3.3.10. Oil check valve check

Instruction no	10
Instruction name	Oil check valve check
List of tools required	-
No of persons required	1 person

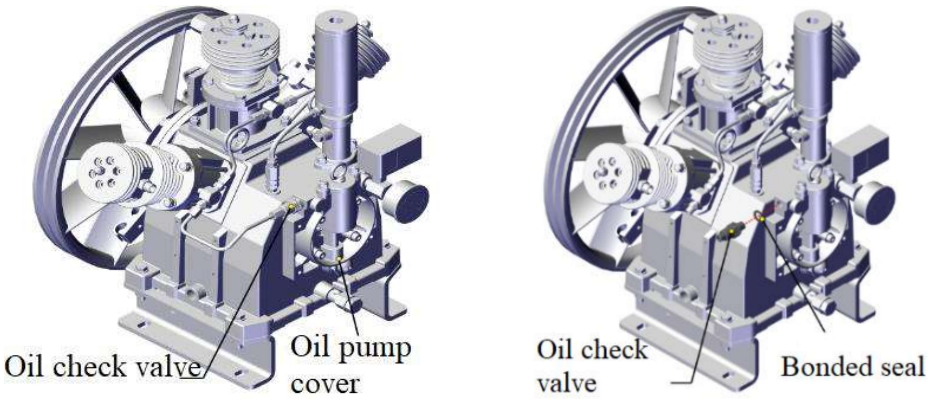
- The compressor is started and the pressure gauge is checked to see if the oil pressure rises within 2 minutes. If the oil pressure rises, there is no problem. If the pressure does not rise within 2 minutes, the compressor will stop automatically.

3.3.10.1.Change oil check valve

Instruction no	10-01
Instruction name	Change oil check valve
List of tools required	-
No of persons required	1 person

- Compressor is stopped and pressures are discharged.
- Wait 2-3 minutes after the compressor is stopped.
- When the compressor is viewed from the front, the outlet pipe of the oil check valve on the left side of the oil pump cover is removed with the appropriate wrench.
- Unscrew oil check valve with wrench.
- Remove the bonded seal at the bottom of the removed oil check valve on the cover. Then the new one is installed.
- The new oil check valve is installed with the appropriate wrench.

- The previously removed outlet pipe is re-tightened with a suitable spanner.
- The compressor is started, and the pressure gauge is checked to see if the oil pressure rises within 2 minutes. If the oil pressure rises, there is no problem. If the pressure does not rise within 2 minutes, the compressor will stop automatically.



3.3.11. Check valve check

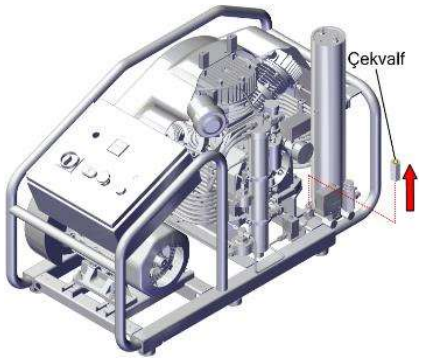
Instruction no	11
Instruction name	Check Valve Check
List of tools required	appropriate tools, foam water
No of persons required	1 person

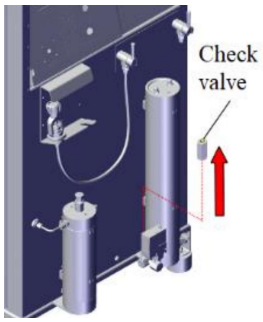
- Start the compressor. When purifier is pressurized, remove check valve inlet pipe. Check for leaks with foam water. Reconnect the pipe if no leaks. If leaking, replace check valve.

3.3.11.1. Check valve replacement

Instruction no	11-01
Instruction name	Check Valve Replace
List of tools required	appropriate tools, foam
No of persons required	1 person

- If check valve is leaking, remove it with appropriate tool.
- Clean its place and install the new check valve.
- Start the compressor. Check for leaks with foam water.





3.3.12. Priority valve check

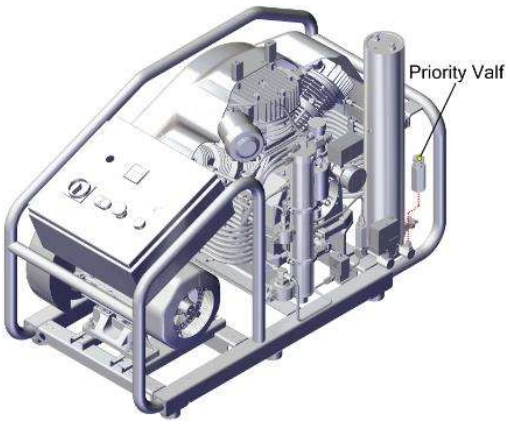
Instruction no	12
Instruction name	Priority Valve Check
List of tools required	None
No of persons required	1 person

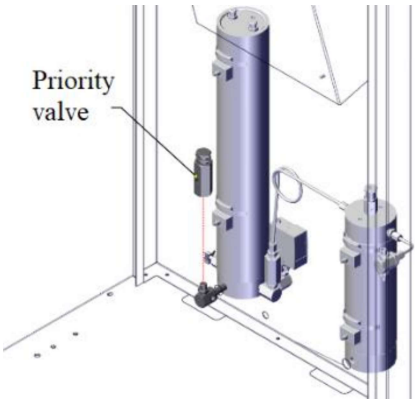
- Open all drain valves and start the compressor. Close all drain valves.
- When gauge on compressor's outlet hose is at 150 bar, check if filling valves are being pressurized. If no pressure at filling valves, priority valve is malfunctioning. Replace it.

3.3.12.1. Priority valve replacement

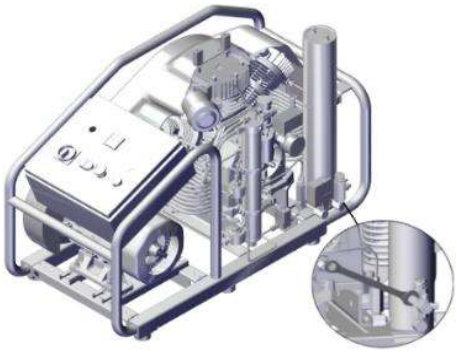
Instruction no	12-01
Instruction name	Priority Valve Replacement
List of tools required	None
No of persons required	1 person

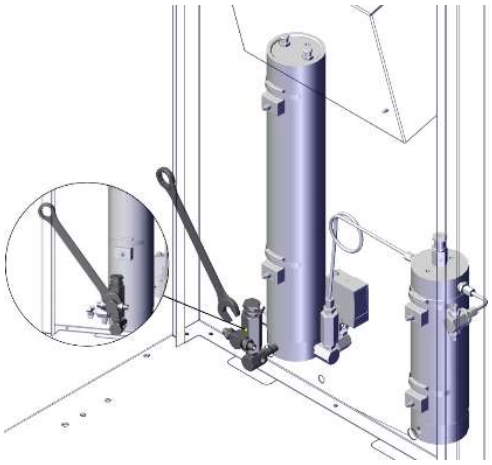
- Stop the compressor and verify complete depressurization.
- Priority valve is located at the outlet of purifier.



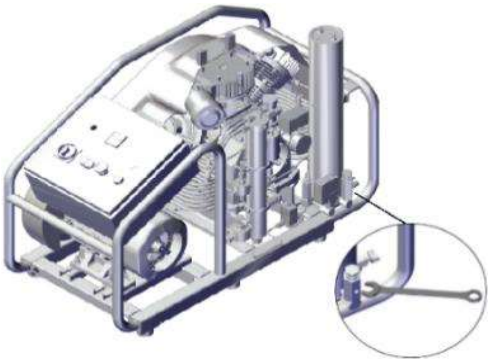


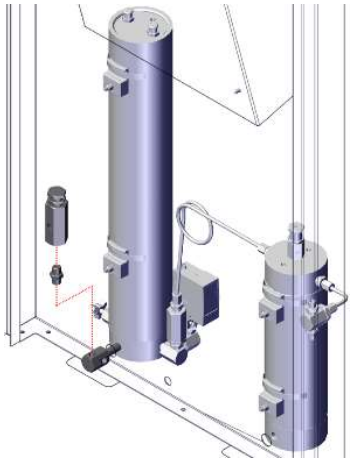
- Remove all hoses and pipes connected to priority valve.
- Remove priority valve with appropriate tool. Clean its place.





- Wrap teflon tape on the new priority valve and put it on its place and tighten with appropriate tool. Reconnect all hoses and pipes connected to priority valve.





- Start the compressor. New priority valve should allow air flow at 150 bar.

3.3.13. V-Belt replacement

Instruction no	13
Instruction name	V-belt Replacement
List of tools required	appropriate tools
No of persons required	1 person

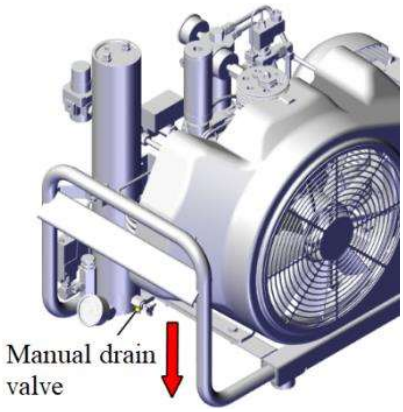
- Stop the compressor and verify complete depressurization.
- Remove flywheel grid with appropriate tools.
- Remove belts from flywheel and install new ones. Rotate flywheel by hand to check tension.
- Reconnect flywheel grid with appropriate tools. Start the compressor and check the proper rotation.

3.3.14. Oil seal replacement

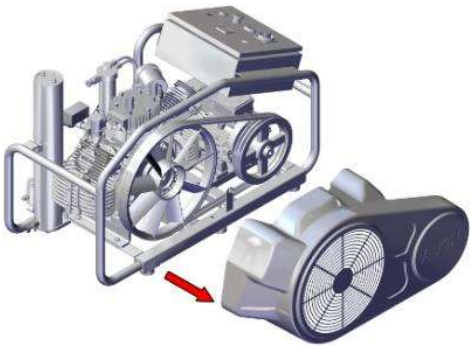
Instruction no	14
Instruction name	Oil Seal Replacement
List of tools required	appropriate tools
No of persons required	1 person

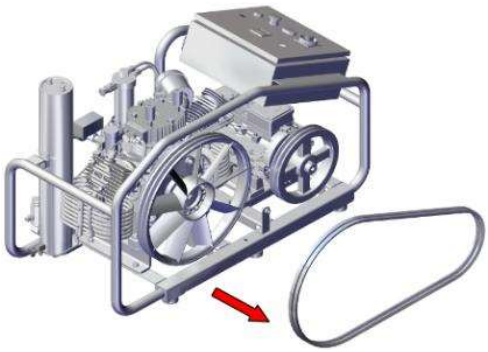
For W32 series gas compressors;

- Remove the bolts on the compressor housing using the appropriate wrench and remove the housing.

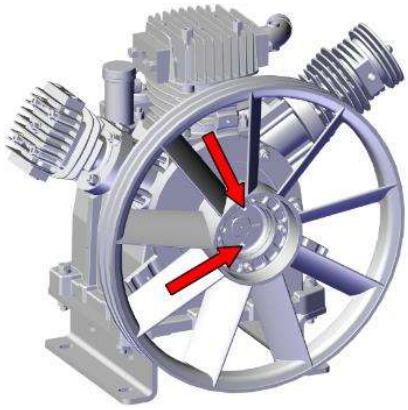


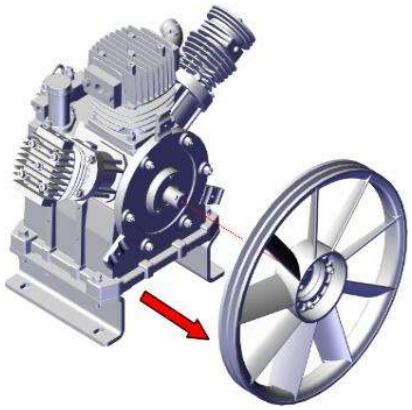
- Remove the engine belts by loosening the engine cradle.



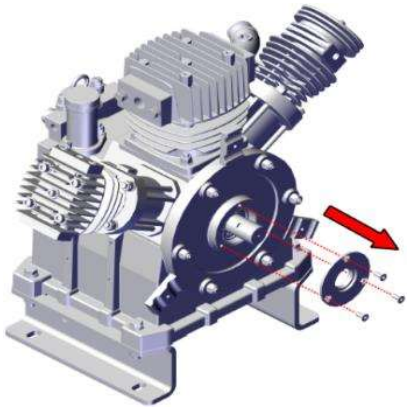


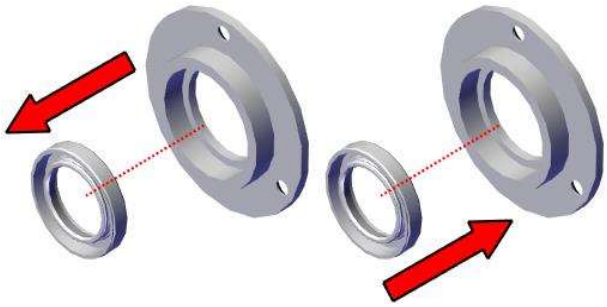
- Loosen setscrews on compressor pulley hub. Unscrew one of the Setskur bolts and insert into the third hole on the pulley and tighten. As a result, the pulley is loosened and when the bolt is tightened, pull the pulley and remove it.



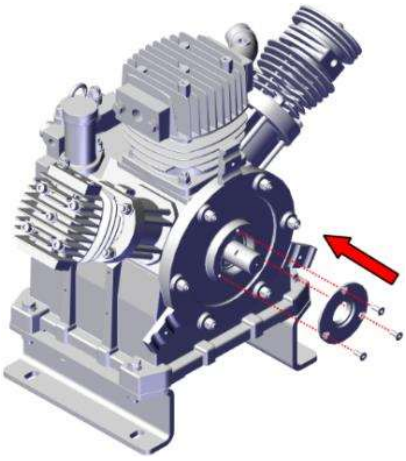


- Remove the bolts on the seal cover by applying force counterclockwise and remove it from the crankcase with a thin screwdriver.

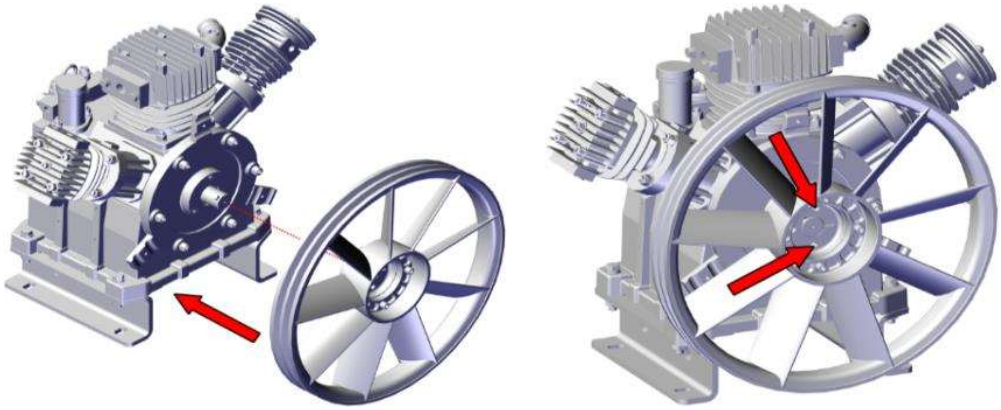




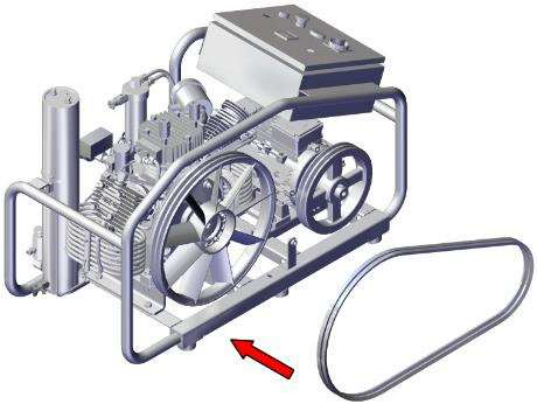
- Remove the old seal from the seal cover and install a new one. Then lubricate the compressor with its own oil.
- Insert the seal cover onto the shaft and engage.
- Tighten the screws by applying force in a clockwise direction.



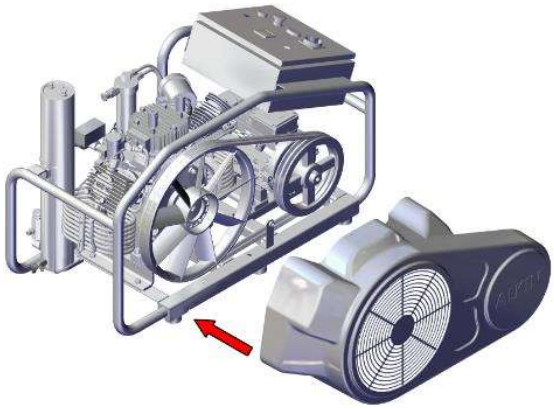
- Fit the pulley on the shaft and remove the clearance by reciprocating the setscrews used to remove the pulley. Align the pulley with the motor pulley and tighten the setscrews mutually.



- Reinstall the pulley belts and tension the engine.

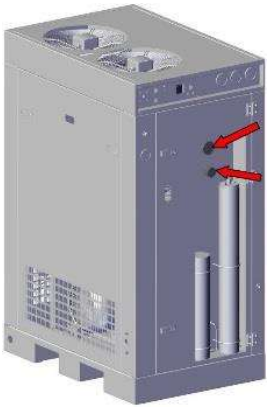


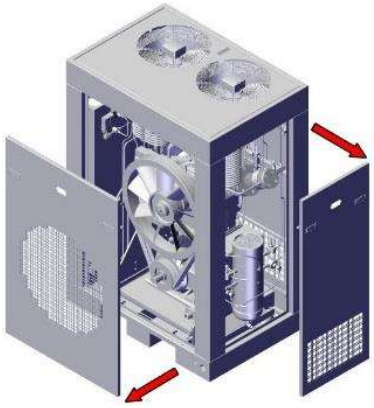
- Engage the pulley housing and tighten the bolts using the appropriate wrench.



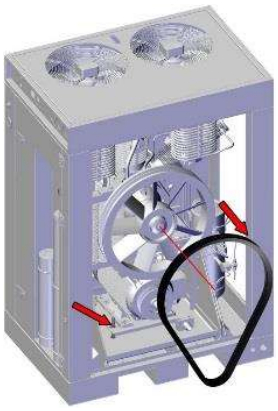
For W3 series gas compressors;

- The air in the compressor is discharged. The compressor covers are removed.





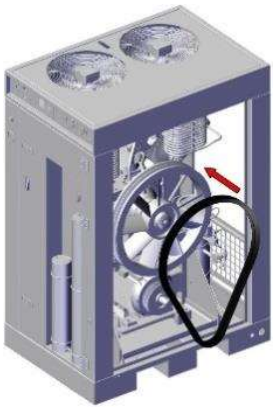
- The motor belts are removed by loosening the engine cradle.



- Loosen the bolt on the compressor pulley. The loosened bolt is not completely removed against the danger of the pulley falling. The pulley is removed from the crankshaft. The disengaged pulley is completely dislodged by a person and the wedge on the crank is kept in place.
- The felt is removed from its place with a large screwdriver and hammer, even if it is damaged. The outer and inner diameter of the new seal is lightly lubricated with grease and is flattened into place with a round material or apparatus.

- The pulley key is attached to the pulley. Then, the pulley is inserted into the wedge channel with the help of two people. The pulley washer and bolt are manually installed in place and tightened with the appropriate wrench.

- The pulley belts are replaced and the tension nuts on the engine cradle are tightened until the belts are tensioned. Tension control is performed.

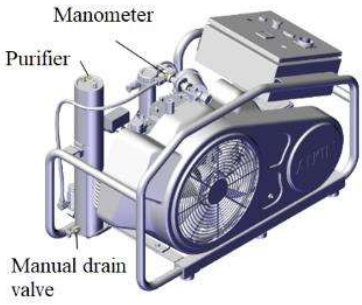


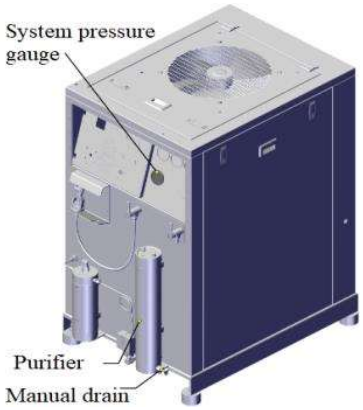
- Rotate the pulley by hand several times to check for noise and problems. The compressor covers are closed.

3.3.15. Purifier cartridge refill kit replacement

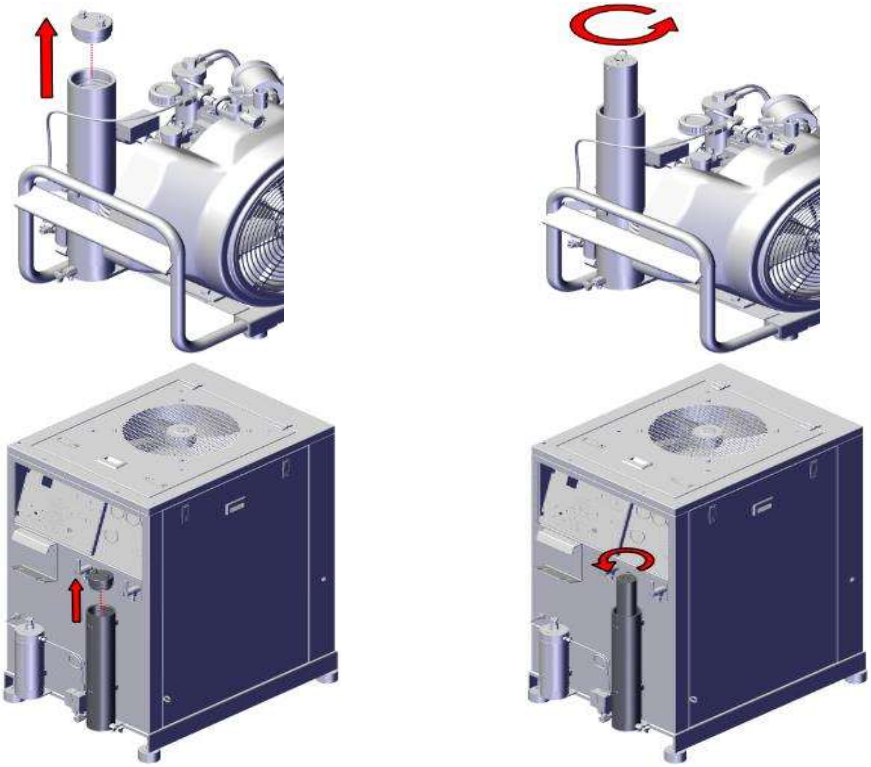
Instruction no	15
Instruction name	Purifier Cartridge Replace
List of tools required	Appropriate tools
No of persons required	1 person

- The compressor is switched off. The pressure in the purifier is discharged from the manual relief valve under the purifier. Operation is started after the pressure inside the purifier is zero.
- The key on the Purifier top cover or the bolts on the cover are unscrewed by turning it counterclockwise with the help of an apparatus.

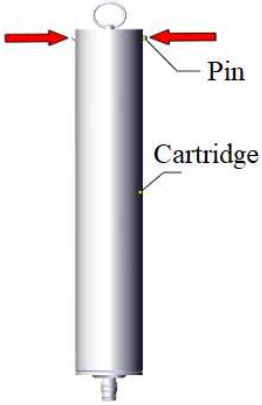




- The top cover is removed and wiped with a clean lint-free cloth. The purifier cartridge in the purifier body is then removed by turning it counterclockwise with the aid of the wire on the cartridge.

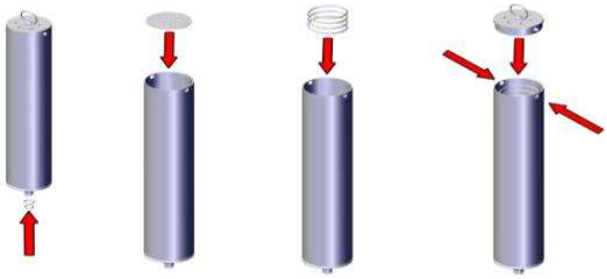


- The inside of the Purifier body is cleaned with a lint-free cloth.
- The top cover of the removed purifier cartridge is pushed inward on the pins on either side of the cartridge body to release the cover. Care must be taken against the danger of the spring under the cover being ejected.



- The removed cartridge top cover is cleaned and stored in one place.
- The spring and plety under the cover are removed and cleaned and stored in a place.

- Turn the cartridge upside down so that the material inside the cartridge is emptied. The falling plety is then cleaned and stored for later use.
- The O-rings on the pin on the underside of the cartridge are removed. These O-rings will not be reused and will be replaced with a new one.
- The inside of the cartridge is cleaned with hot water and dried. (Never use gasoline and similar chemical products.)
- Parts and chemicals are placed in the installed cartridge, respectively.
- Put the plety previously removed on the bottom of the cartridge. Place the seal on the plate. 150 g of molecular sieve is added to the seal. It is settled thoroughly. Then put seal on it. 190 g of activated carbon is placed on the seal. The seal is placed on the activated carbon. 240 g of molecular sieve is placed on the seal. Then put the seal. 190 g of activated carbon is added to the seal. Finally, one more seal is put.
- After the filling process is completed, a plety is placed over the seal on the top of the cartridge. Place the spring on the plate and close the cartridge top cover.



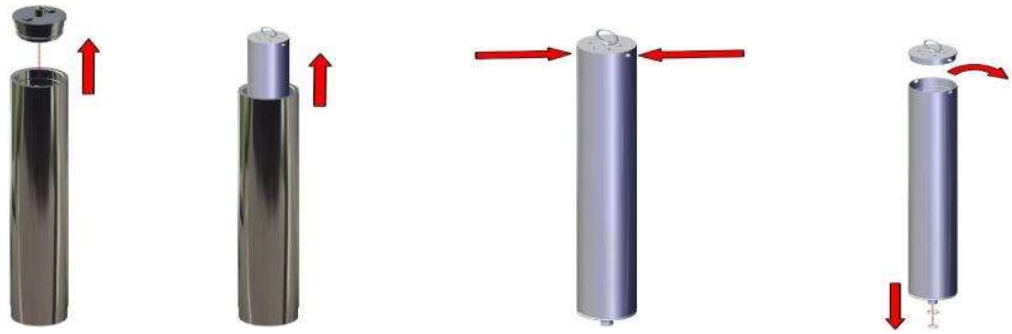
- New O-rings are attached to the end of the purifier cartridge which is completed and lubricated with compressor oil.
- Hold the wire from the top of the cartridge and insert it into the purifier body by turning it left and right.
- The Purifier top cover is installed so that the pins snap into place. It is attached to the bolts in the 2 holes on the cover or the purifier wrench is tightened with the help of a wrench to ensure that the cover is completely closed. The bolts are then removed.

For W3 series canopy gas compressors;

- The air in the purifier is completely discharged by loosening the relief valve handle on the top of the purifier.
- The Purifier Switch supplied with the compressor is installed on the purifier top cover. The key is fixed to the top cover by means of 2 pcs M10 bolts. The ratchet handle is attached to the protrusion in the middle of the Purifier wrench,

and the purifier top cover is removed by turning it counter clockwise.

- The purifier cartridge inside the Purifier body is turned to the right and left by means of the pull ring on it to loosen the O-rings underneath and then pulled upwards.
- The inside of the Purifier body is cleaned with a clean, lint-free cloth.
- Remove the chemicals, perforated sheets and felts by pressing the pins on the cartridge top cover. Clean and dry the inside of the cartridge.



- Replace all materials by following the instructions provided with the Cartridge Refill Kit. Place the new O-rings on the lower end of the purifier cartridge (lightly lubricated with molykote oil to facilitate fitting of the O-rings into the housing).

  • The Purifier Cartridge is carefully placed in the Purifier Body. He won't be thrown. Check that the cartridge is fully seated.

  • The top cover is attached to the Purifier Body. With the help of the Purifier wrench, the cover is tightened by turning it clockwise until it rests on the purifier.

3.3.16. Filter element replacement

Instruction no	16
Instruction name	Filter element change
List of tools required	
No of persons required	1 person
Parts list to be used in replacement	

- When the compressor is not running and there is no pressure inside, the filter top cover is fitted with the Purifier Switch supplied with the compressor. The

key is fixed to the top cover by means of 2 pcs M10 bolts. The filter top cover is removed by turning the ratchet handle counterclockwise by attaching the ratchet handle to the protrusion in the middle of the Purifier wrench.

- After the cover is removed, the filter element is removed by turning it slightly to the right and left by holding the wire with the hand.
- After removing the filter element, clean the inside of the filter housing with a clean lint-free cloth.
- Remove the adapter under the filter element with the appropriate wrench.

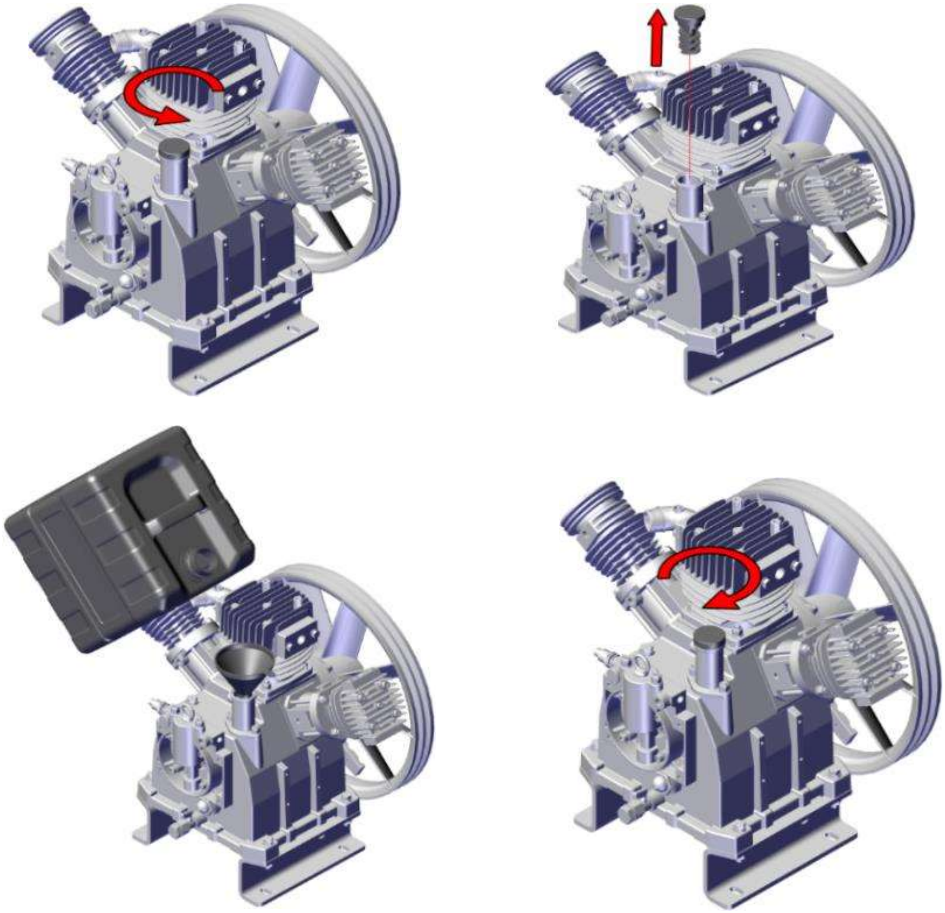
- The adapter that is removed under the new filter element coming out of the kit is reinstalled.
- The two O-rings coming out of the kit are then inserted into the O-ring channels (firstly big one).
- The filter element is lubricated with molykote oil and placed by turning it to the left and right to make it easy to fit.
- The top cover is attached to the Filter Body. With the help of the Purifier Wrench, the cover is tightened by turning it clockwise until it is the same as the upper level of the filter.

3.3.17. Oil change

Instruction no	17
Instruction name	Oil Change
List of tools required	cloth
No of persons required	1 person
Parts list to be used in replacement	Mobil Rarus 427

- If the compressor is cold, start the compressor for 15-20 minutes and wait for the oil inside the compressor to warm up. When the oil is cold, no change is performed.
- When viewed from the front of the compressor, the oil drain valve cover is opened on the side of the sump and the oil is drained into a container. The oil in the sump is expected to drain well.

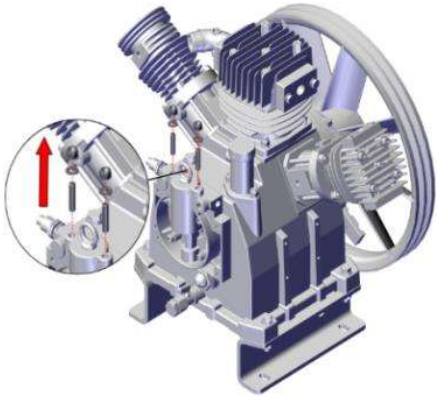
- The oil drain valve is closed.
- Remove the oil filler cap on the crankcase counterclockwise. Then add Mobil Rarus 427 by checking the oil level. The oil filler plug is closed by tightening it clockwise.

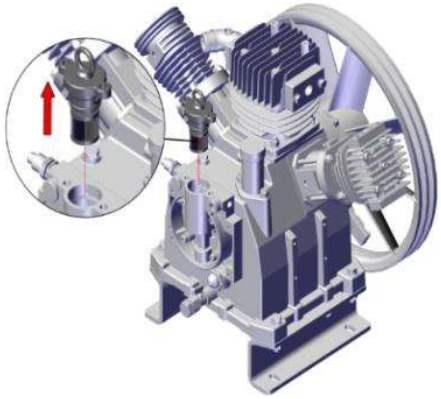


3.3.18. Oil filter replacement

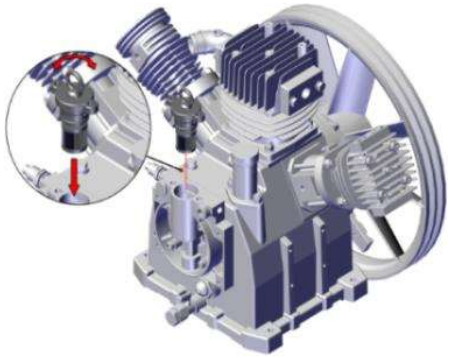
Instruction no	18
Instruction name	Oil Filter Replacement
List of tools required	cloth
No of persons required	1 person

- Unscrew the 2 bolts and two washers on the oil filter cover located next to the oil plug.
- Remove the oil filter cap by turning it to the right and to the left.





- The old oil filter element removed from the oil filter cover is removed by hand.
- Once the new filter element is installed on the cover after lubricating with compressor oil.
- After checking the O-ring on the oil filter cover, it is installed by making the right and left hand instead of the cover.

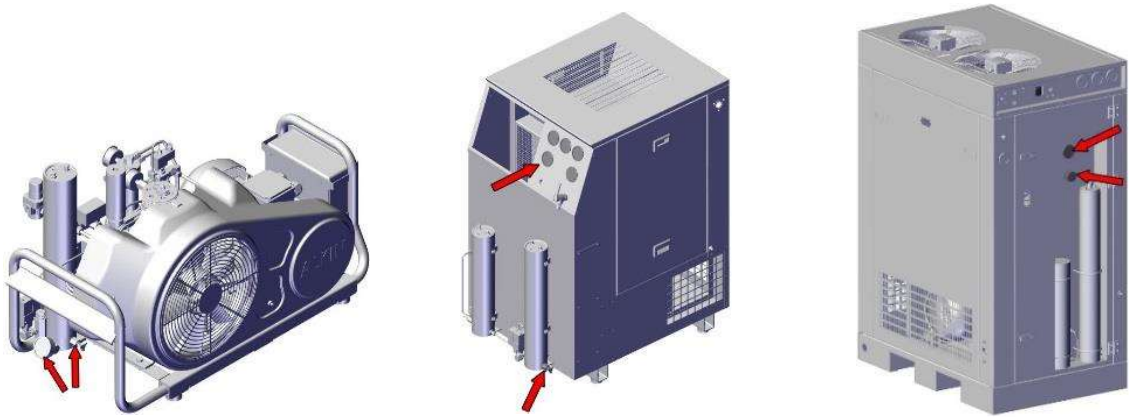


- Then, 2 pieces of M8 hex head nuts and washers are tightened and the cover is fully seated. This completes the process.
- The compressor is started. The oil pressure should rise after 5-10 seconds. If the oil pressure does not rise within the given limits within 1 minute, there is a problem. If the pressure rises, there is no problem. If the pressure does not rise, read the instructions in the fault section. Check the oil pressure on the oil pressure gauge.

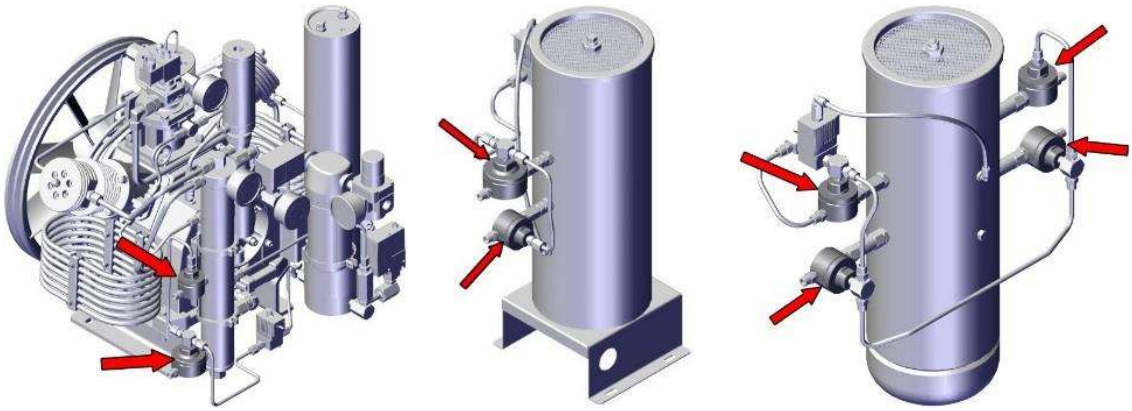
3.3.19. Auto drain valve adjustment with repair kit

Instruction no	19
Instruction name	Auto Drain Valve Adjustment with Repair Kit
List of tools required	
No of persons required	1 person

- Stop the compressor.
- Verify complete depressurization of pressure equipment.



- Remove the piping of auto drain valve with appropriate tools.



- Remove the auto drain valve head with no.27 tool with counterclockwise rotation.
- Remove from the auto drain valve old pistons and spring and clean auto drain valve ass'y with pressurized air.
- Take the new piston and spring from the manufacturer's repair kit. Verify that o-ring on the auto drain valve head is installed (and oiled). Then, install the new piston Teflon side downwards onto the assy. Then, install the spring onto the spring housing on the piston.

- Tighten the valve head with no.27 tool. After tightening, slightly loosen it with rotating no.27 tool counter clockwise. This is done so that the piston is well placed.
- Reconnect the piping of auto drain valve with appropriate tools
- Start the compressor and verify that the drain valve is operating within drain intervals.

SECTION 4

TROUBLESHOOTING

4.1 COMPRESSOR DOES NOT WORK	
• No power	Turn power key ON.
• Motor starter overload tripped	Start and check if trips again. If it does, check if compressor in not staying under load.
• Pressure switch not making contact	Check all the terminals and wires. If pressure switch is defective, replace it.

4.2 EXCESSIVE NOISE DURING OPERATION	
• Loose sheave, flywheel, belt, belt-guard, intercooler, bolts or accessories	Detect and tighten.
• Faulty vibration mounts	Check if the mounts are in good condition; if damaged, replace.
• Lack of oil in the crankcase	a. Check for possible damage to bearings. b. Refill oil and check if the noise persists
• Piston hitting the valve plate	Remove the compressor cylinder head; replace the gasket with the brand-new gasket and reassemble.
• Deflected crankshaft or crankshaft bearing failure	Replace the crankshaft.
• Excessive dirt or carbon on piston(s)	Remove the compressor air heads; clean pistons and valve(s) or replace if worn; reassemble.

4.3 COMPRESSOR KNOCKS	
• Crankshaft bearing failure	Replace bearings or crankshaft assembly.
• Connecting rod journal bearings worn	Replace the connecting rods; if worn, replace the crankshaft bushing center as well.
• Wrist pins and journals are worn	Replace complete pin and rod assembly.

4.4 MILKY OIL IN THE CRANCKASE	
• High moisture and dirt content in the ambient air	a. Pipe air intake from less humid source. b. Change oil more frequently.

4.5 EXCESSIVE OIL CONSUMPTION	
• Restricted air intake	Replace intake filter element.
• Oil leaks.	Tighten bolts and fittings; replace gaskets
• Worn piston rings	Replace piston rings.
• Low oil viscosity	Drain oil; refill with oil of proper viscosity
• Piston rings misassembled	If piston rings are upside down, install in proper position.
• Compressor tilted too much	Level compressor.
• Scored or worn cylinder(s).	Replace cylinders.

4.6 OIL IN DISCHARGE AIR	
• Restricted air intake	Replace intake filter element, check for other restrictions at the inlet.
• Worn piston rings	Replace piston rings
• Excessive oil in the crankcase	Drain to the overflow level
• Low oil viscosity	Drain oil; refill with oil of proper viscosity
• Piston rings misassembled	If piston rings are upside down, install in proper position.
• Consumed purifier cartridge filling kit	Refill the Purifier cartridge with refilling kit.

4.7 COMPRESSOR VIBRATION	
• Mounting bolts are loose	Tighten the mounting bolts.
• Compressor not properly mounted	Level the compressor so that all feet touch the floor.
• Motor belt and the sheave misaligned	Align.

4.8 AIR FROM INTAKE	
• Broken 1st stg. inlet valve	Replace its spring and disc

4.9 INSUFFICIENT AIR AT THE POINT OF USE	
• Leaks or restrictions	Check for leaks and restrictions in the piping and hoses.
• Restricted air intake	Replace the intake filter element
• Slipping belts	Tighten the belts.
• Excessive air consumption	a. Limit the air consumption to the capacity of the compressor. b. Increase your air capacity with an additional compressor unit.
• Worn cylinders	Replace piston rings.

4.10 PRESSURE VESSELS DO NOT HOLD THE PRESSURE WHEN THE COMPRESSOR IS UNLOADED	
• Check valve leaks	Relieve the pressure vessels and replace the check valve.
• Excessive leaks in the plant piping	Check the pipings, repair the leaks.

CAUTION!

Do not service tank, valves, piping, etc. while compressed air exists in the system. Drain the air inside before attempting any repairs.

4.11 EXCESSIVE BELT WEAR	
• Sheaves misaligned	Realign the motor sheave and the
• Belts too tight	Adjust tension
• Belts too loose	Adjust tension
• Sheave or crankshaft wobble	Check for worn or bent crankshaft, keyway or sheave bore

4.12 EXCESSIVE DISCHARGE AIR TEMPERATURE	
• Dirty valves / carbon on valves	Remove valves; clean or replace.
• Dirty intercoolers and/or cooling surfaces	Clean cooling surfaces of the cylinders, intercoolers and aftercooler.
• Poor ventilation and air circulation	Relocate the compressor, improve ventilation.

• Blown head gasket	Replace the head gasket.
• Restricted air intake	Replace the intake filter element.
• Worn valves	Repair or replace valves.
• Compressor rotating in the wrong direction	Correct the direction of rotation
• Low oil level	Check and refill.

4.13 AIR LEAKING FROM THE INTERSTAGE SAFETY VALVE	
• Safety valve faulty	Replace the safety valve.
• Inlet valve of the next stage leaks	Remove the valves; clean or replace.
• Inlet valve of the next stage is broken	Remove the valves; replace.

4.14 PRESSURE SLOWLY RISING	
• Restricted air intake	Replace the intake filter element.
• Blown cylinder gasket	Install a new gasket.
• Worn or broken valves	Replace valves.
• Air leaks in the system	Check for leaks; fix the problem
• Loose belts	Adjust tension
• Low Compressor Speed	Check RPM

4.15 RECEIVER PRESSURE RISING TO FAST	
• Water in the system	Drain the system more often.
• High compressor speed	Check RPM

4.16 COMPRESSOR DOES NOT DISCHARGE WHEN STOPPED	
• Automatic drain valves blocked	Check, disassemble and clean the drain valves; install new o-ring and seat if necessary.
• Solenoid valve faulty	Check and replace solenoid valve.

4.17 AUTO DRAIN VALVES DO NOT DRAIN	
• Automatic drain valves blocked	Check, disassemble and clean the drain valves; install new o-ring and seat if necessary.
• Solenoid valve faulty	Check and replace solenoid valve.

4.18 AUTOMATIC DRAIN VALVE(S) REMAIN(S) OPEN ALL THE TIME	
• Low 2nd stg. control air pressure	Check the interstage pressures.
• Solenoid Valve faulty	Replace solenoid valve.
• Blocked drain valve(s)	Clean the drain valve(s).

4.19 COMPRESSOR DOEN NOT ACCESS NOMINAL OPERATING SPEED	
• Low voltage	Check the line voltage.
• Motor and control panel connectors loosen	Check it, tighten if needed.
• Poor power regulation (unbalanced phases)	Notify the power company.

4.20 UNUSUAL PISTON, RING OR CYLINDER WEAR	
• Improper oil	Replace with the proper oil.
• Low oil level	Check the oil level and fix the problem, refill oil.
• Extremely dirty ambient conditions	Pipe the intake filter to a cleaner location if possible; alternatively use a heavy duty two stage filter.

4.21 ODOR IN COMPRESSED AIR	
• Purifier cartridge saturated	Replace the cartridge.
• Improper oil	Replace with the proper oil.
• Wrong direction of rotation	Check the arrow; the compressor flywheel must blow air onto the cylinders; if the direction of rotation is wrong, reverse the phases and make sure it is running in the right direction.
• Carbonization on valves	Clean; make sure that the ambient temperatures are within permissible limits.

NOTES:

DECLERATION OF CONFORMITY

2014/35/EU - 2006/42/EC

MANUFACTURER: ALKIN KOMPRESÖR SAN.VE TİC.LTD. ŞTİ.

ADDRESS: Cüneytbey mah. Tabaş yolu Küme evleri No:3 35470 Menderes/İZMİR

Alkın Compressors declare that under our sole responsibility of supply/manufacture of this compressor to which this declaration relates is in conformity with the below standarts and the essential health and safety requirements identified in the above directives.

Model No : GAS COMPRESSORS

This statement is in compliance with the following standards and the above basic health and safety requirements.

Standart No

EN 12100
EN 60204-1
EN 1012-1

ALKIN ALKIN KOMPRESÖR SAN.VE TİC.LTD.ŞTİ.
Cüneytbey Mh. Tabaş Yolu Küme Evleri No:3
Menderes / İZMİR Tel: 0 232 [illegible]
Menderes V.D.: 0540038[illegible]
Mersis No: [illegible]

Date: **01/01/2020**

Özcan GÜRSOY
Factory Manager

CE

ISO 9001
VCR.TR.01.015054

WARRANTY CERTIFICATE

ALKIN Air/Gas Compressors and accessories are warranted for **two year** from the date of delivery within the framework of the following terms and conditions:

1. This warranty certificate covers the compressor unit and other parts manufactured by ALKIN. Parts & components manufactured by others are covered under the warranty terms of their manufacturer.
2. The date of delivery is the date of actual delivery to the user by our company or authorized dealers, not later than six months.
3. This warranty covers ex-factory free of charge replacement and / or repair of parts found to be defective, subject to investigation of cause and nature of failure. The costs associated with the transport and return of the compressor to our factory belongs to the user.
4. This warranty is valid provided the compressor is properly installed, wired, operated and maintained as instructed in the accompanying instruction manual. This warranty is void in case of repairs and / or interference by third parties other than authorized ALKIN servicemen, or authorized ALKIN distributors, and in case of removal of the compressor nameplates.
5. In case of trouble, the serial number of the compressor, and the nature of the problem must be reported by phone and in writing to ALKIN.
6. Wherever applicable, the terms and conditions of sale of ALKIN prevail and precedes all other terms and conditions.

Date :

Model :

Serial Number :

ALKIN KOMPRESÖR
SAN. ve TİC. LTD. ŞTİ.

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