ALKIN COMPRESSORS

HIGH PRESSURE BREATHING AIR COMPRESSORS

W4 SERIES OPERATOR MANUAL

W4 SERIES HIGH PRESSURE BREATHING AIR COMPRESSOR MODELS

- AIR COOLED - DIESEL ENGINE

- WATER COOLED - DIESEL ENGINE

- AIR COOLED- CANOPY -

- WATER COOLED- CANOPY -

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ISO 9001
ISO 45001
BUREAU VERITAS
Certification

ALKIN COMPRESSORS

High Pressure Breathing Air Compressors

Instruction Manual

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CONTENTS

FOREWORD

Dear Customer,

ALKIN air compressors will provide you with the solid and reliable performance that you should expect from an industrial air 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 trouble-free service.

Alkin Compressors has a service and sales team that can respond rapidly to your daily spare parts and service requirements. Service and parts supply anywhere in the world can be done by Alkın Compressors. For any questions, please feel free to call our Torbalı plant, in İzmir-Turkey.

Here are the contact details:

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

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 air compressors are designed and manufactured with equipment and components that allow the 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 also read 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 it 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
	DIRECTION OF ROTATION
	RECOMMENDED COMPRESSOR OIL
	AIR INLET
	AIR OUTLET

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 adjusting 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.

Can Start Automatically

Automatic compressor control, unit may start-up without warning!
Before carrying out maintenance and repair work, switch off at the main switch or disconnect from the mains and ensure unit will not restart.

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 the 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 people are clear of the compressor before attempting to operate it.

Only make changes when the compressor is turned off. Make modifications as needed, then start the compressor to see if the adjustment is accurate. 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 hazards.

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 the use of proper protective equipment. Do not let the hoses move free or do not 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 an 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 the 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 the 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 forklift should be positioned under the compressor just as shown in the figure below. The height of the compressor from the ground must be max. 10 cm during carriage.

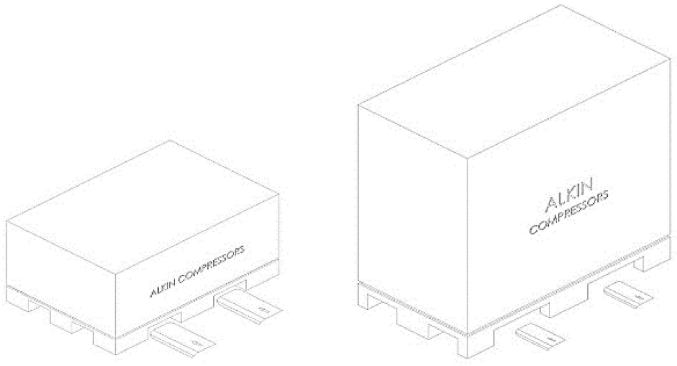


Figure 1 – Lifting and transporting by forklift

Do not distract the forklift operator during the carriage. Verify the lifting hook has a safety clamp and ensures a robust fastening with tough ropes or chain. Avoid the compressor swinging while suspended, by using guide ropes. Keep all people 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 the approval of Alkin Compressors,

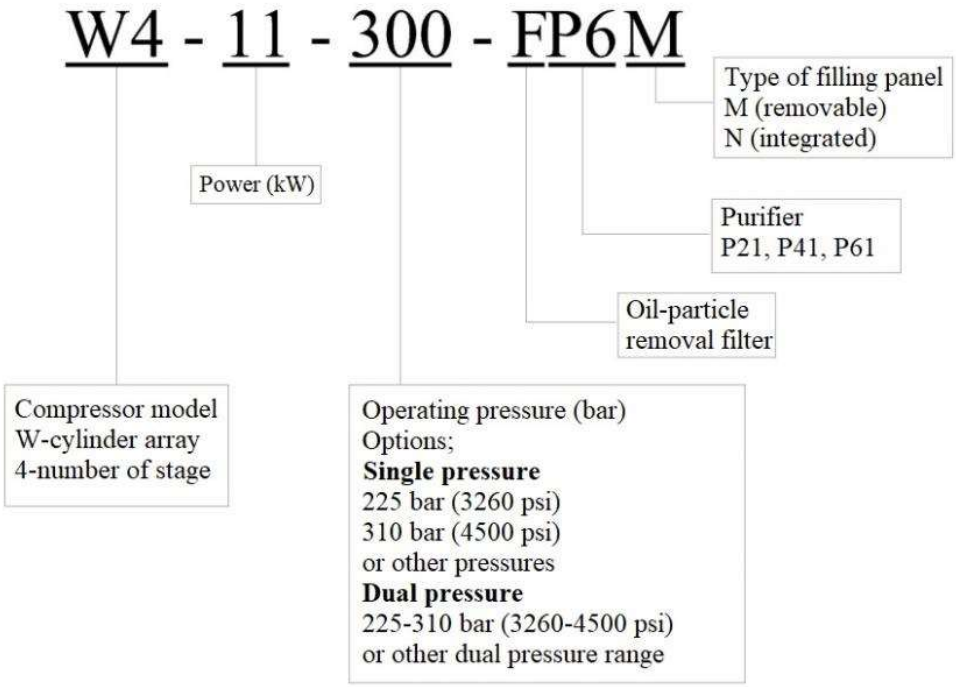
* Failure to comply with compressor control and component replacement times,

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

* Removal of compressor label,

* Force majeure

1.3. Model Identification



SECTION 2

ABOUT COMPRESSOR

2. General

W4 series compressors are four stage, reciprocating type, air/water cooled, and splash lubricated compressors. The working pressure of these compressors can be between 100 bar (1450 psi) and 415 bar (6000 psi) depending on valves and the cooling system. Do not attempt to modify the compressor to operate at higher pressure without the written approval of ALKIN. Failure to do so may result in heavy damage to equipment, injury, or death.

W4 series compressors are equipped with oversize copper intercoolers/radiator between the 1st&2nd and 2nd&3rd stage cylinders and stainless steel intercooler between the 3rd and 4th stage cylinders and stainless steel aftercooler after the 4th stage cylinder. A moisture trap (or condensate separator) is installed Downstream of the 2nd & 3rd stage aftercoolers and downstream the aftercooler. Each of these moisture traps is connected to automatic drain valves that periodically open and drain the condensate in these traps. The opening intervals and duration are set by a time control relay found in the electrical control panel of the compressor (see the controls section). This time relay can be adjusted for both functions. Normal – factory set- values of the drain valve timer are 10 minutes closed, and 5 seconds open operation.

There is a safety valve at each stage to prevent an unwanted increase in pressure resulting from a problem in valves or any other parts. It must be periodically checked that these safety valves are working properly, and they keep their set pressure values.

W4 series compressors are equipped with stainless valves at each stage that are designed to maintain the airflow without any loss of pressure. They are easy to maintain and replace. The maintenance of valves is especially important as they are the main parts in the proper and problem-free working of compressors. Lubricants not approved by ALKIN can prevent valves from working properly due to the accumulation of carbon on springs and washers. Valves not working properly will cause an increase in working temperature and the deterioration of lubricant, thus in return, will further break down the valves.

Lubrication is created by a dipstick found in the bottom of the 4th stage connecting rod. While the crankshaft rotates, the connecting rod reciprocates and the dipstick enters the oil bath in the bottom of the crankcase; while coming out of this oil bath, the dipstick splashes oil to the moving parts of the compressor. Efficient oil wiper rings control the economical lubrication of the system.

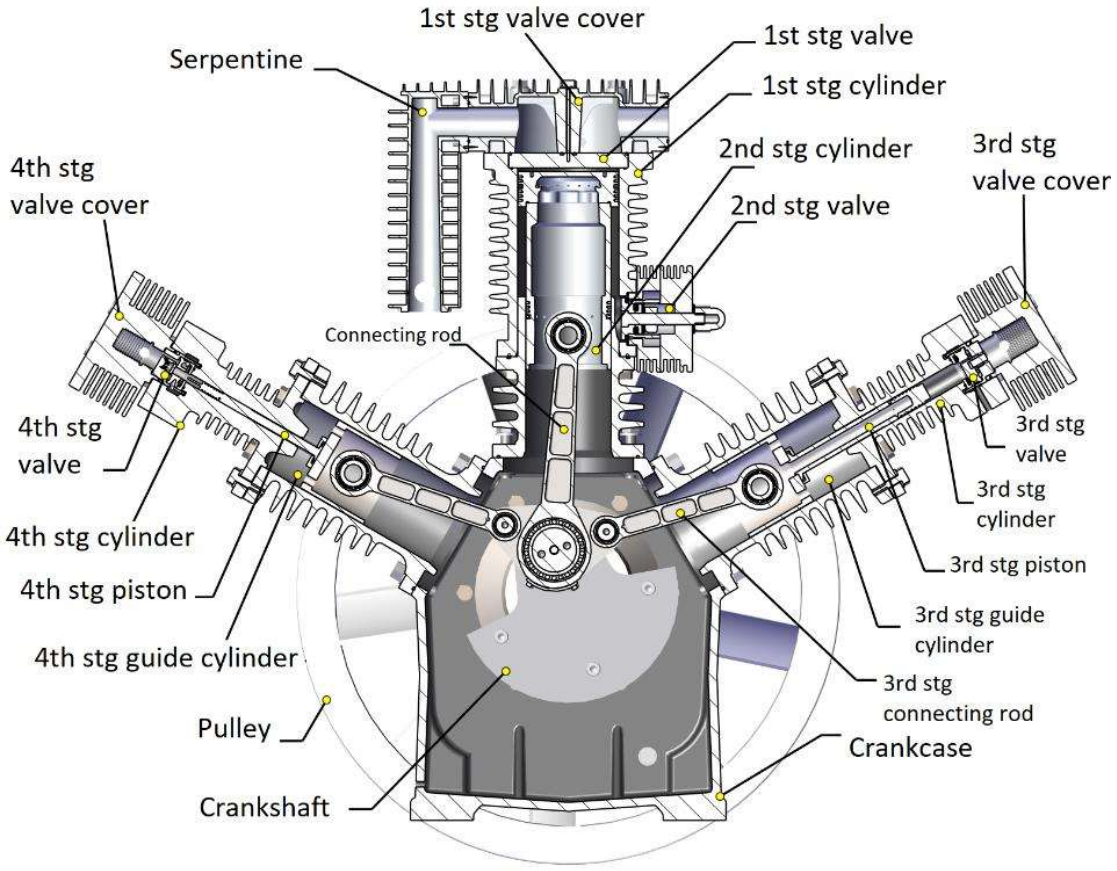


Figure 2 – Compressor unit (air cooled)

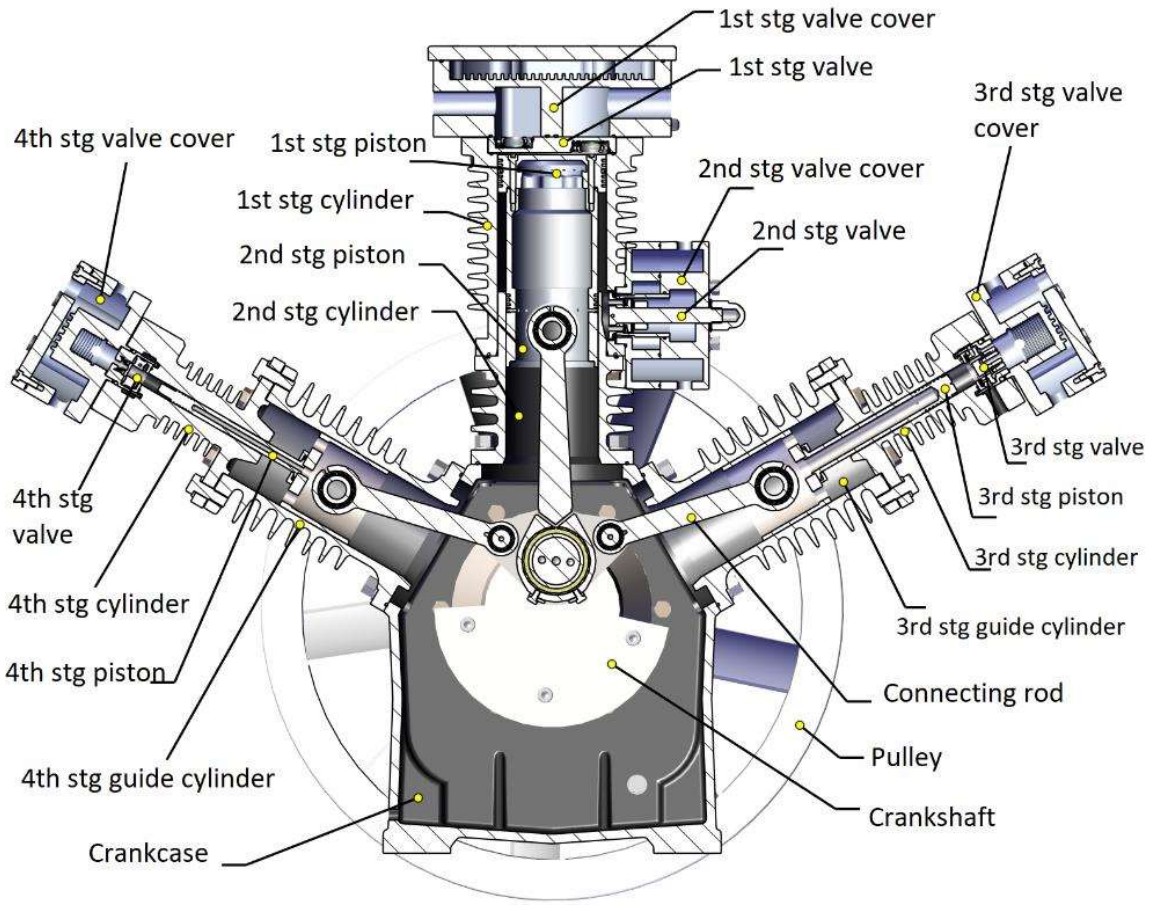


Figure 3 – Compressor unit (water cooled)

Max working pressure is 415 bar and, it is dangerous and strictly prohibited to set a value higher than 415 bar. **ALKIN COMPRESSORS** will not be held liable for any problems resulting from acting otherwise.

NOTE:

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

2.1. Compressor Unit

W4 series (air cooled-canopy) compressor unit involves the main groups below;

1. Compressor unit
2. Electric motor
3. Subbase
4. Shock mounts
5. Intake filter
6. Intercooler
7. Aftercooler
8. Safety valve
9. Water separator
10. Prefilter
11. Check valve
12. Purifier
13. Priority valve
14. Manometer
15. Pressure switch
16. Solenoid valve
17. Silencer
18. Pneumatic drain vale
19. Filling panel
20. Filling hose
21. Filling valve
22. Yoke

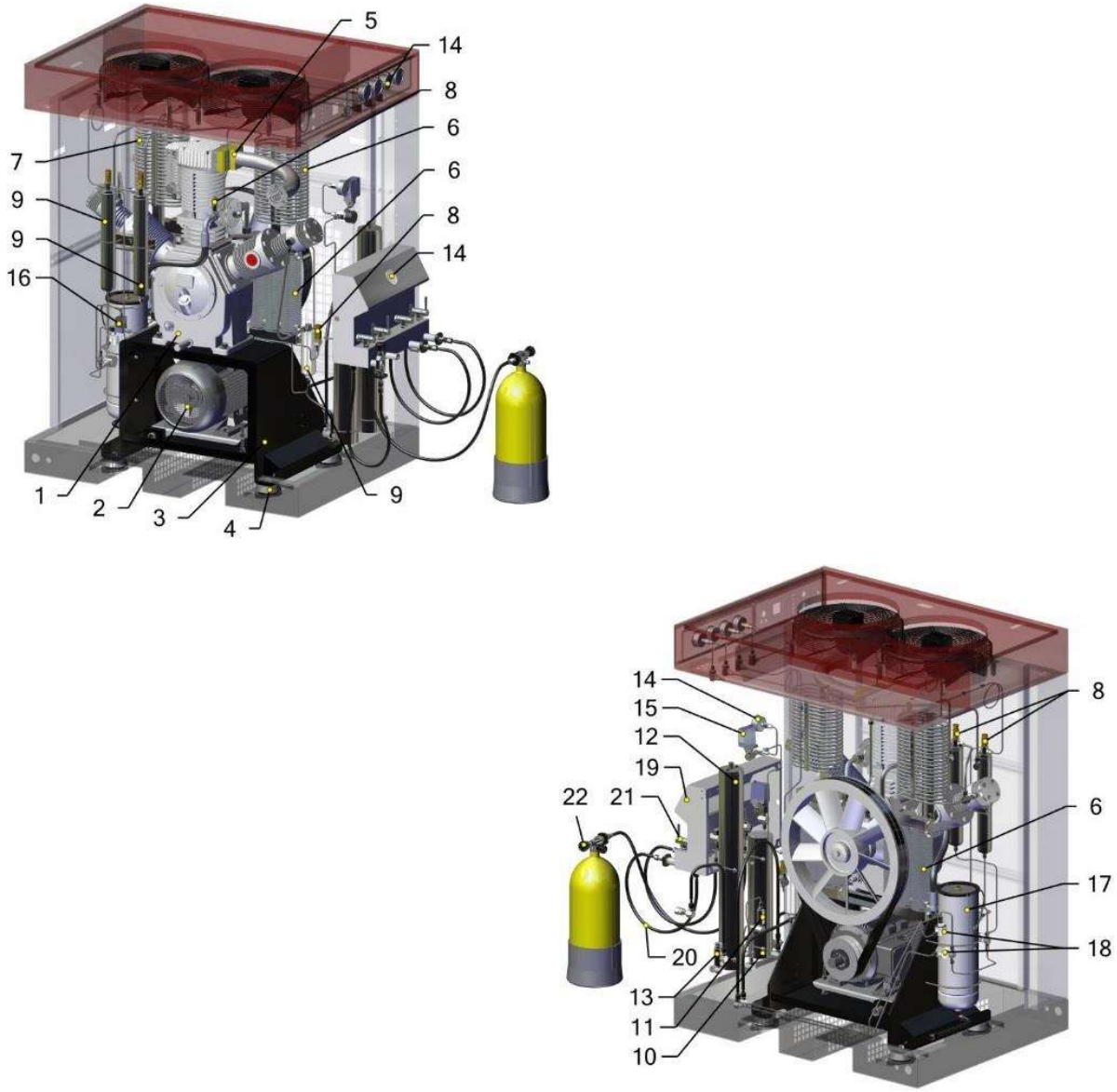


Figure 4 – W4 series compressor general layout (air cooled)

W4 series (water cooled-canopy) compressor unit involves the main groups below;

1. Compressor unit
2. Electric motor
3. Subbase
4. Shock mounts
5. Intake filter
6. Intercooler
7. Aftercooler
8. Safety valve
9. Water separator
10. Prefilter
11. Check valve
12. Purifier
13. Priority valve
14. Manometer
15. Pressure switch
16. Solenoid valve
17. Silencer
18. Pneumatic drain vale
19. Filling panel
20. Filling hose
21. Filling valve
22. Yoke

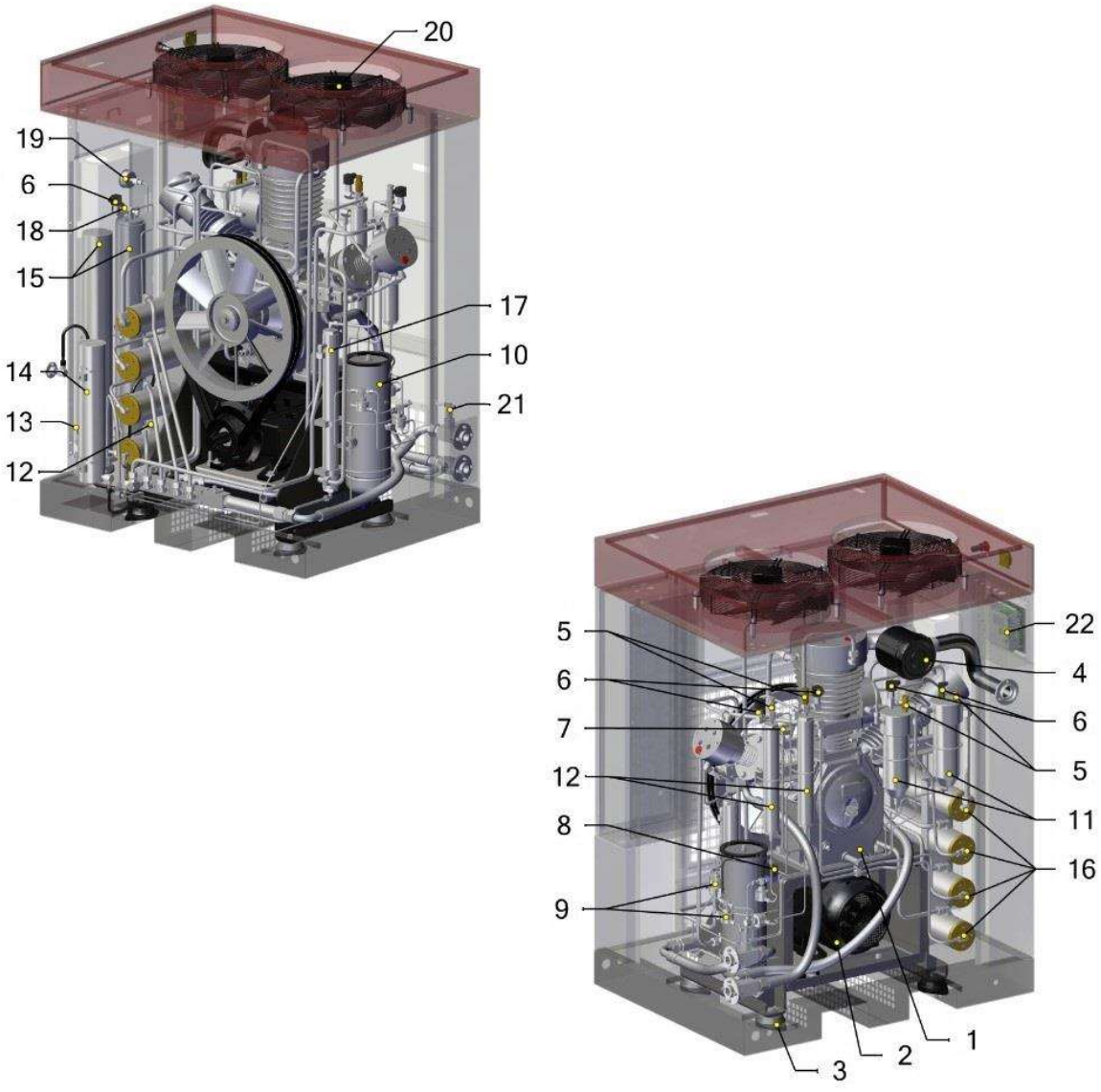


Figure 5 – W4 series compressor general layout (water cooled)

2.2. Technical Data

The model design for W4 series canopy compressors are based on the below data;

Compressor	W4 Series						
Medium	Breathing air / Compressed air						
Intake pressure	Atmospheric						
Filter system	P61 Purifier						
Operating pressure (bar)	225 (3260 psi)			310 (4500 psi)			415 (6020 psi)
Free Air Delivery (FAD) (l/min)	450	600	685	600	685	850	625
Motor power (kW)	7,5	11	15	11	15	18,5	15
Speed (rpm)	600	740	830	720	830	850	830
Diameter of motor pulley	Ø 155 (11 kW) , Ø 179 (15 kW) , Ø 195 (18,5 kW)						
Belt dimension	22x2150 (11 kW) , 22x2175 (15 kW, 18,5 kW)						
Diameter of compressor pulley	Ø 600						
Piston stroke	101,6 mm						
Number of stage	4						
Number of cyl.	3						
Cylinder bore (1st stage)	114,28 mm						
Cylinder bore (2nd stage)	96,95 mm						
Cylinder bore (3rd stage)	25,40 mm						
Cylinder bore (4th stage)	14,28 mm						
Oil capacity	4 liters						
Operating temp.	0/+50 ºC						
Weight (kg)	800	810		815	1000	1020	820
Dimensions, WxLxH	88x135x166 cm (air cooled) 96x127x171 cm (water cooled)						

2.3. Process and Instrumentation (P&I) Diagram

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.

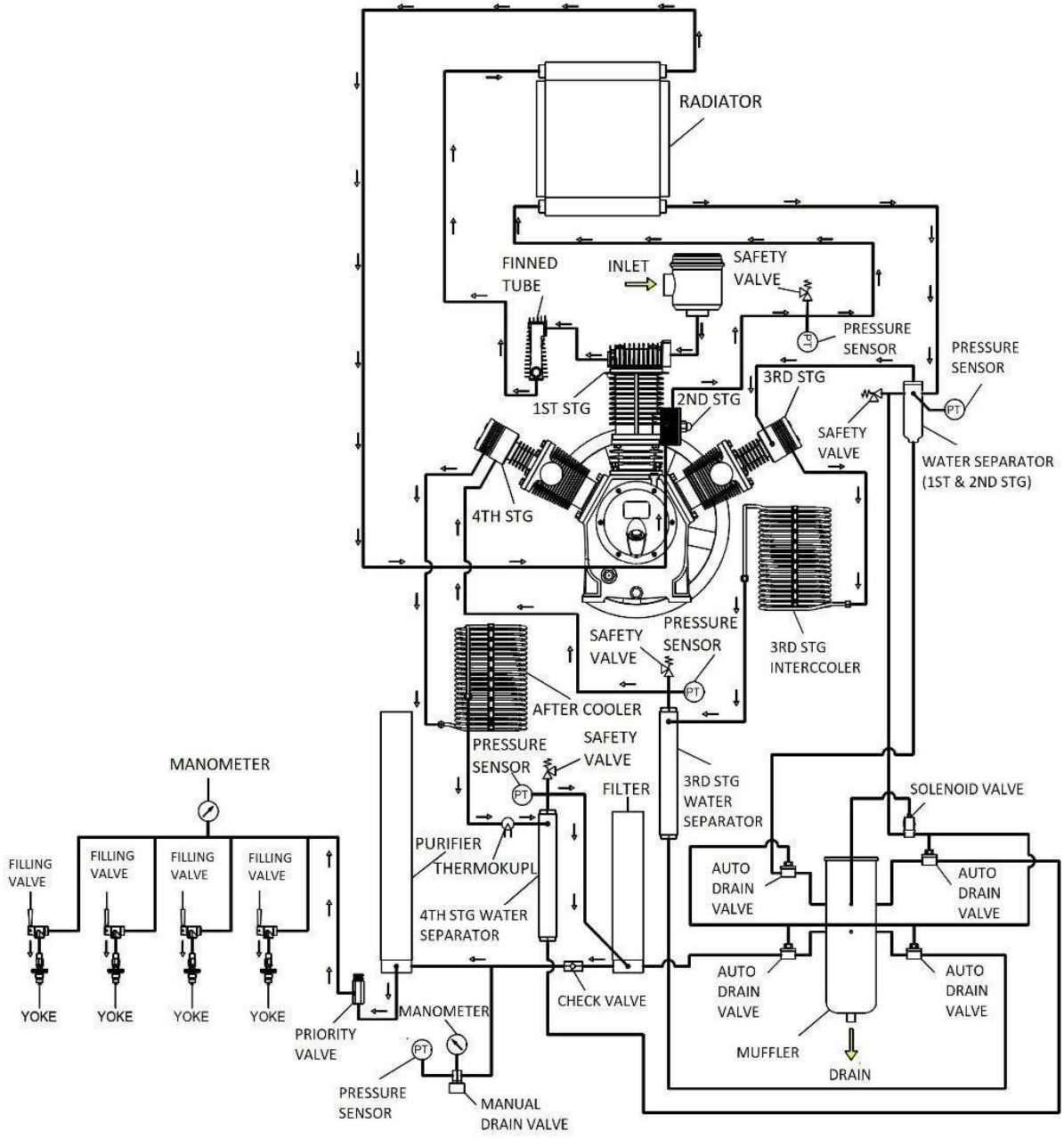
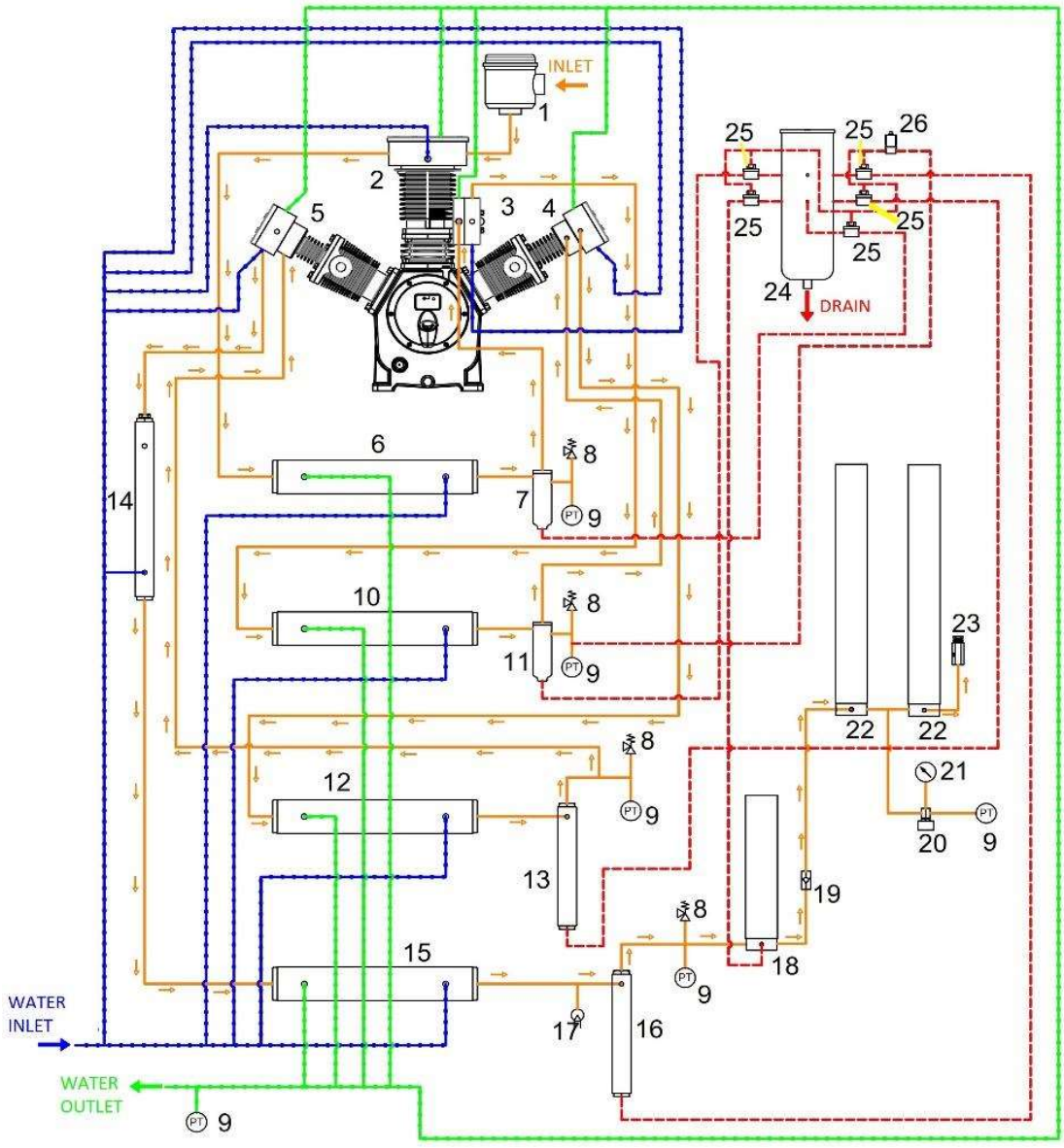


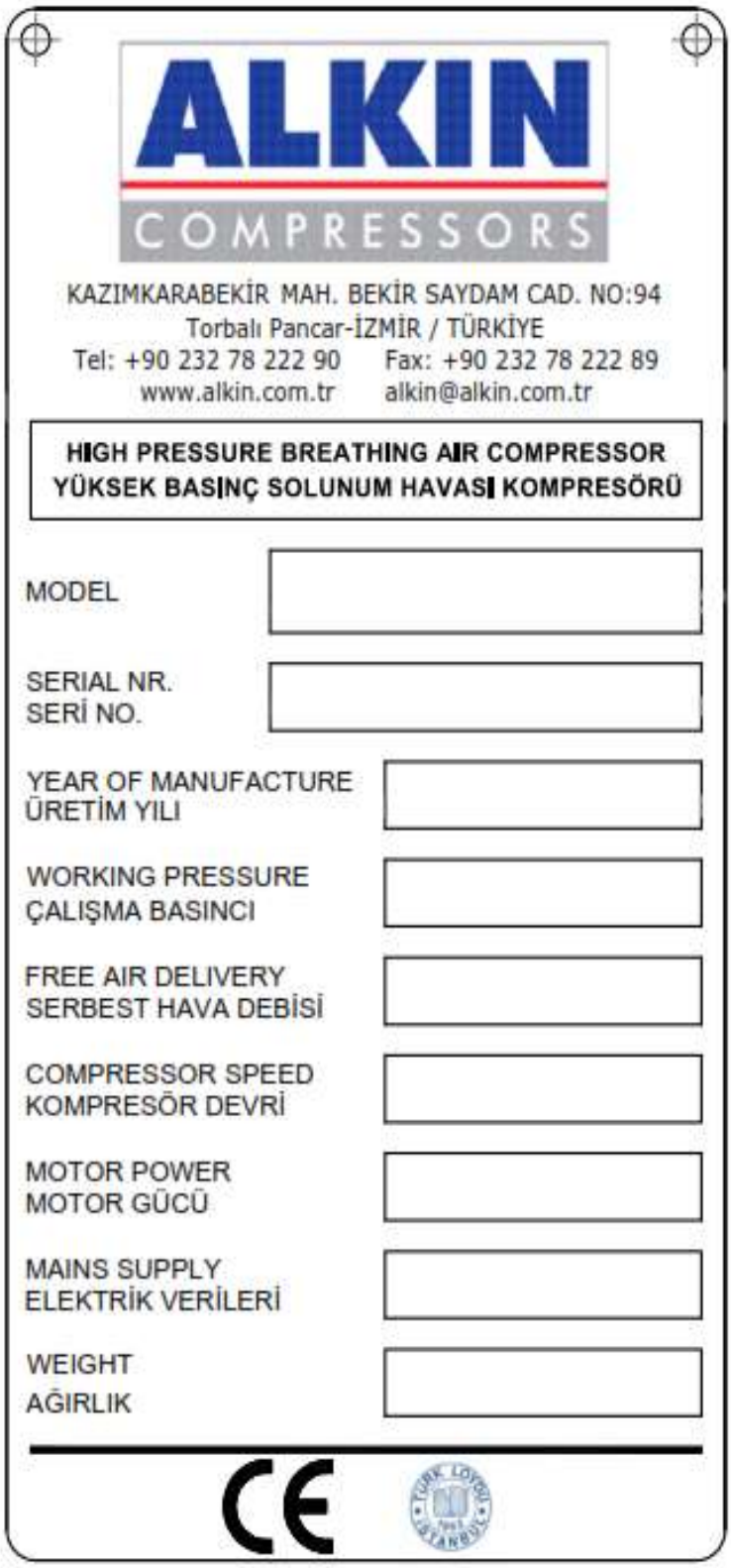
Figure 6 – W4 series compressor P&I diagram (air cooled)



1- Intake Filter
2- 1st Stg
3- 2nd Stg
4- 3rd Stg
5- 4th Stg
6- 1st Stg Heat Exchanger
7- 1st Stg Water Separator
8- Safety Valve
9- Pressure Sensor
10- 2nd Stg Heat Exchanger
11- 2nd Stg Water Separator
12- 3rd Stg heat Exchanger
13- 3rd Stg Water Separator
14- Inter Heat Exchanger
15- 4th Stg Heat Exchanger
16- 4th Stg Water Separator
17- Heat Sensor
18- Prefilter
19- Checkvalve
20- Drain Valve
21- Manometer
22- Purifier
23- Priority valve
24- Muffler
25- Pnomatic Valve
26- Solenoid Valve

Figure 7 – W4 series compressor P&I diagram (water cooled)

2.4. Identification of the Compressor



2.5. Principles of Operation

The P&I diagram must be carefully examined in order to understand the principle of operation.

Air Cooled

The air is drawn at atmospheric pressure through the inlet filter into the 1st stage cylinder on the down-stroke of the piston. The piston's upstroke action causes compression, and air is driven out of the cylinder through the 1st stg discharge valve and then the manifold. Air will then pass through the finned tube and radiator between the 1st and 2nd stages and into the 2nd stage compression chamber. Note that the 2nd stage compression chamber, unlike the other 3 cylinders, is the volumetric difference between the 2nd stage cylinder walls and the lower section of the piston. On the down-stroke of the same piston, the air contained in the 2nd stage compression chamber is compressed to the second stage pressure and forced through the 2nd stage valves + radiator + 2nd stage separator + 3rd stage inlet valve into the 3rd stage cylinder. Here, the air is compressed to the 3rd stage compression level. The air then is forced in a similar manner to the 4th stage cylinder where it is compressed to the final pressure level and forced out to the aftercooler, separator, to a pre-filter unit where it is cleaned of any particles and oil content, then passing through a check valve enters the purifier chamber, where it is purified and prepared to be used for breathing purposes.

Water Cooled

The air is drawn at atmospheric pressure, through the inlet filter into the 1st stage cylinder on the downstroke of the piston. The up-stroke motion of the piston will cause compression and the air will be forced out of the cylinder through 1st stage discharge valve and then the manifold. Air will than pass through the heat exchanger between the 1st and 2nd stages + 2nd stage water separator and into the 2nd stage compression chamber. Note that the 2nd stage compression chamber, unlike the other 3 cylinders, is the volumetric difference between the 2nd stage cylinder walls and the lower section of the piston. On the downstroke of the same piston, the air contained in the 2nd stage compression chamber is compressed to the second stage pressure and forced through the 2nd stage valves + 2nd stage heat exchanger + 2nd stage water separator + 3rd stage inlet valve into the 3rd stage cylinder. Here, the air is compressed to the 3rd stage compression level. The air than is forced in similar manner to the 4th stage cylinder where it is compressed to the final pressure level and forced out to the 4th stage heat exchanger, water separator, to a pre-filter unit where it is cleaned of any particles and oil content,

then passing through a check valve enters the purifier chamber, where it is purifier and prepared to be used for breathing purposes.

A priority (or minimum pressure valve) is located downstream of the purifier; this valve blocks air from leaving the purifier until the pressure reaches 120±10 bar, a pressure at which the purifying process is more efficient than at lower pressures. The air is then ready to be directed to a filling panel and with proper connections to the cylinders to be filled.

The intercoolers and the aftercoolers are designed to dissipate the heat generated from the previous compression cycle, reducing the air temperatures, allowing the water vapor to condensate and settle in the bottom sections of the water separators. The 3 moisture separators and the pre-filter unit are equipped with an automatic drain valve. The drain valve is a 3-way pneumatic valve controlled by a 3-way solenoid valve. This solenoid valve sends or removes the control air from the drain valves, thus letting them open or close. The solenoid itself is controlled by a sequential timer relay in the electric panel. The dual time adjustments on this relay allows to adjust the duration (t1~ 10 min) during which the solenoid will remain energized (=the drain valve will remain closed), and the length of time (t2~ 5 seconds) during which the solenoid will become de-energized (=the drain valve will open and perform the drain function).

The oil level can be monitored on a sight gauge provided on the right bottom side of the crankcase (next to the Low oil level switch). The oil level can also be checked through the dipstick found in the filling plug. In principle, the level of oil has to be up to the filling plug thread. A low oil level switch is provided to protect the compressor from a lack of oil in its sump. When the oil level drops, the switch cuts off (opens its contacts), thus cutting the control circuit of the motor starter, and stops the electric motor. A signal lamp is provided to indicate that the motor stopped as a result of a low oil level.

2.6. Lubrication System

A splash lubrication system is used for lubrication. The bottom of the connecting rod has a stick that travels in oil, and the connecting rod lubricates the stages by carrying the oil upstream with the crankcase oil. Due to maintenance table periods, replace the compressor's oil. This is critical for the compressor's long-term performance.

2.7. Major Components

2.7.1. Compressor unit

Crankcase:

This is the frame that holds everything (crankcase, connecting rod, etc.) on it. It also holds the lubricating oil for the system. The cylinders are mounted on it. The crankshaft is placed in the bearing housings, which are a part of the crankcase. This part does not require any maintenance or repairs; however, it must be cleaned inside when the oil is changed. It should be replaced if there is visible damage.

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Crankshaft:

It's an overhung type, which means the bearings are on one side and the crankpin (which houses the connecting rods) is on the other. This feature allows usage of single piece connecting rods which are far more accurate and safer than split con rods. Crankshafts with large bearings and low speeds have a very long life. Replace this part when the life of the bearings is over.

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Connecting Rods:

In W4 series compressors, there are three connecting rods, two of which are the same and the third one is with a stick at the bottom part that serves as the lubricating stick. Connecting rods move with the rotation of the crankshaft and the bottom of the connecting rod has a stick that moves up and down in the oil to lubricate the system. The bushings on Connecting Rods are made of a high-quality copper-bronze alloy. When these bushings are abraded, you should replace the connecting rods.

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Cylinders:

They are made of high-grade casting materials, machined, and honed to fine tolerances for long service life, and cast separately. The compression cylinders on the 3rd stg and 4th stg are mounted on the guide cylinder to guide the guide piston. However, have the cylinders tested with proper testing equipment in general overhaul periods and replace them if exceeding the tolerance limits mentioned in the parts list or having a visible fault.

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Oil level switch:

The crankcase contains the oil level switch. If the oil level lowers, this switch is a dependable control system that will cut off the motor's input current. When the oil level is low, a led on the control panel will light. Add the manufacturer-recommended compressor oil to the crankcase and press the "Reset" button on the control panel to restart the compressor. By pressing "Start," the relay will be turned off and the compressor can be started. There is no maintenance need for this switch. Replace it with a new one if it is defective. When replacing the switch, make sure the arrow's orientation is facing down. It is located on the hexagonal side of the switch.

There is an interlocking relay in the electrical panel to make sure that the compressor is restarted without adding oil to the crankcase and that the engine stops is not a false warning or a temporary problem. Do not change the electrical connections of this switch. Without pressing the "Reset" button, the compressor cannot be turned on.

Valve Complete:

The entire valve is positioned on top of the cylinders and contains valves as well as up and down coverings. These complete valves should be maintained periodically and replaced if required. The valves must be replaced in every general overhaul period. The valves can be replaced by either ALKIN Service personnel or a trained client.

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Breather:

Every piston-type machine has some compression leakage into the crankcase through the rings. There is a breather system to prevent the pressure built up in the crankcase. The crankcase is connected to the inlet of the air compressor by a copper line, which allows for breathing.

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Pistons:

Connecting rods connect the 1st, 2nd, 3rd and 4th stage pistons to the crankshaft. With the crankshaft's action, pistons move up and down, compressing the air inside the cylinders. Have the pistons tested with proper testing equipment in general overhaul periods and replace them if exceeding the tolerance limits mentioned in the parts list or having a visible fault.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Safety Valves:

At the end of each stage of the compressor unit, there are safety valves. Working and leakage tests are performed on all safety valves, and working pressure is set accordingly. As a result, the safety valves prevent danger in the event of a compressor pressure rise. 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. Using foam water, check the safety valves for leaks during every general overhaul and replace if necessary.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Intake Filter:

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

2.7.2. System

Subbase:

Four shock mounts support the chassis, which houses the engine and compressor. The compressor and engine are connected via a belt pulley system. With the usage of four vibration and shock absorbers, vibration in the compressor and electric motor is kept to a minimum.

The Canopy:

The semi-open canopy is designed to carry the various components, as well as the electrical panel, and to allow the system to be lifted through the pallet jack holes. For a longer life, it is electrostatically painted. It has four readily removable door panels that allow you to access all of the contents of the canopy quickly and efficiently.

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.

Motor

W4 series compressors can be driven by electric motor or diesel engine. They are belt-driven.

IMPORTANT:

Please look at the "Diesel Engine User Manual" attached to the compressor instruction manual for maintenance periods and actions to be taken.

Pressure Switch:

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.

Auto Drain Valves:

The automatic drain incorporates a small piston with high pressure in the bottom and low pressure on top; the surface where low pressure acts 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.

Radiator / Intercoolers and Aftercooler:

These are the cooling tubes or radiator 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 air occurred in stages under pressure.

Purifier:

This is the filtration system that purifies the compressed air to produce breathing air that meets the required standards for breathing air quality (EN 12021:2014). The purifier receives compressed air from the compressor stages. A replaceable cartridge which contains the consumables performing the filtration is placed in the purifier housing. Consumables inside the cartridge remove the oil, odor, and water condensate from the compressed air. Purifier cartridge should be replaced frequently to prevent a loss in air quality. Compressor can work safely between 0°C and 50°C. Lower temperatures can produce blockages, while higher temperatures can reduce the efficacy of the purifier. Other elements will also have an impact on the purifier's lifespan. Every 80 hours of use, we recommend replacing the purifier cartridge.

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. Whether the priority valve opens or not should be checked according to the periods in the control table.

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)

W4 series compressors can be equipped with programmable logical controllers (PLC) to ensure uninterrupted production. AirMaster Q2 and FIT model PLCs are used in our compressors that comply with the European Machinery EMC Directive, EMC 2014/30/EU and LVD2014/35/EU.

NOTE: Enter the **“ 3535 ”** as a password in the User menu (P9.04) to set the high pressure operation and purifier maintenance time for AirMaster Q2 PLC.

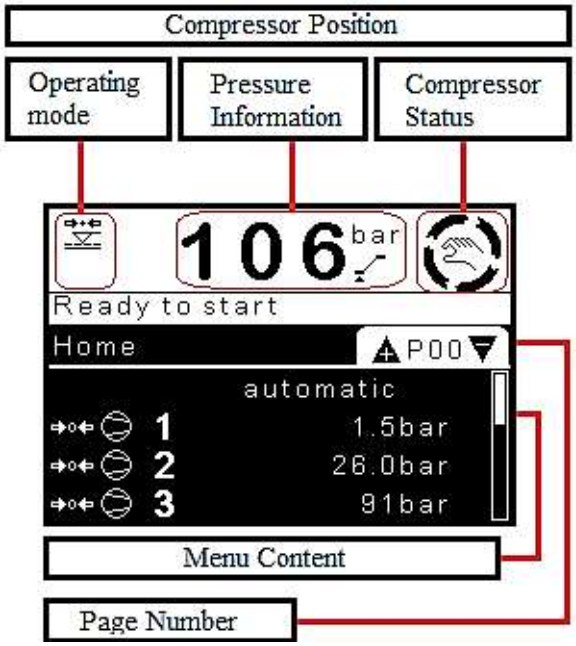
2.8.1. User Interface

Q2	FIT	Fonksiyon
		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

The UP, CANCEL, ENTER and DOWN buttons may have alternative associated functions dependent on screen view or menu. The current function of each button, if different from default, is shown on the lower 'Navigation' toolbar.

The START and STOP buttons always have the same function regardless of screen view or menu.

2.8.2. Graphic Display (AirMaster Q2)



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 (AirMaster Q2)

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.

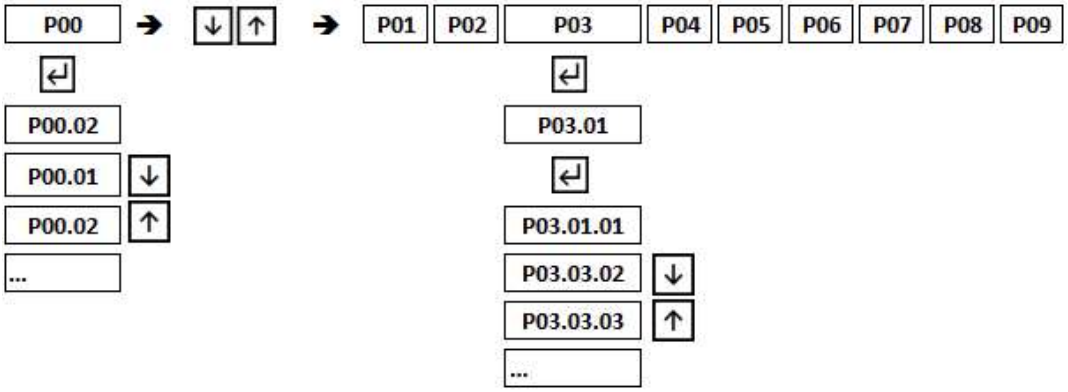
Additionally the menu tab extends to identify the navigation location. For example:

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

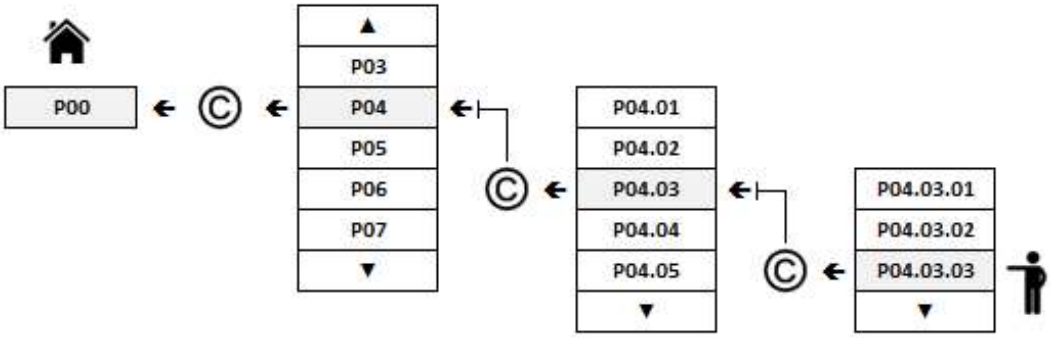
Note: Menu content items are only visible when the Airmaster™ is appropriately configured.

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

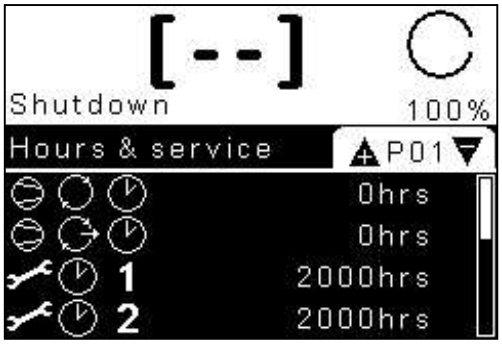
Progress in Menu



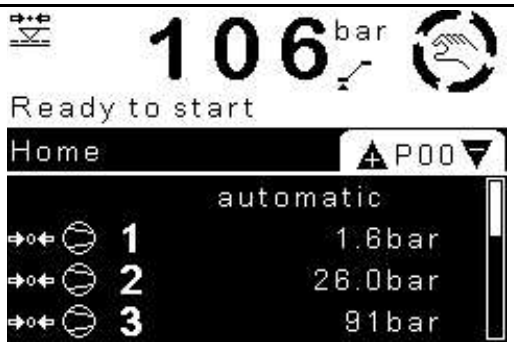
Back to previous Menu



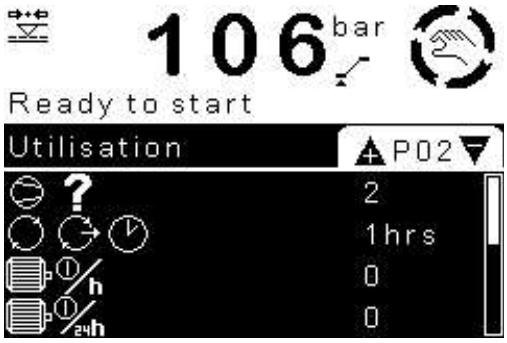
PAGE NO (P00) is on the top right of the screen. P00 is the main screen.



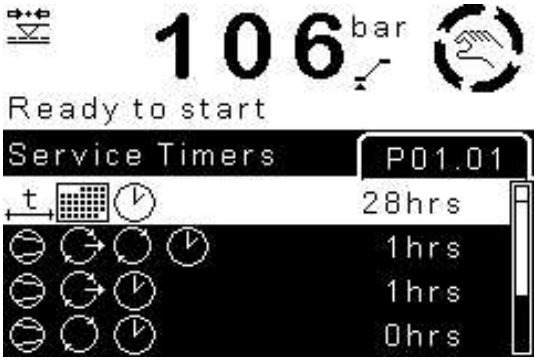
Use the ENTER key and ESCAPE key to navigate between menu page navigation and menu content navigation.



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

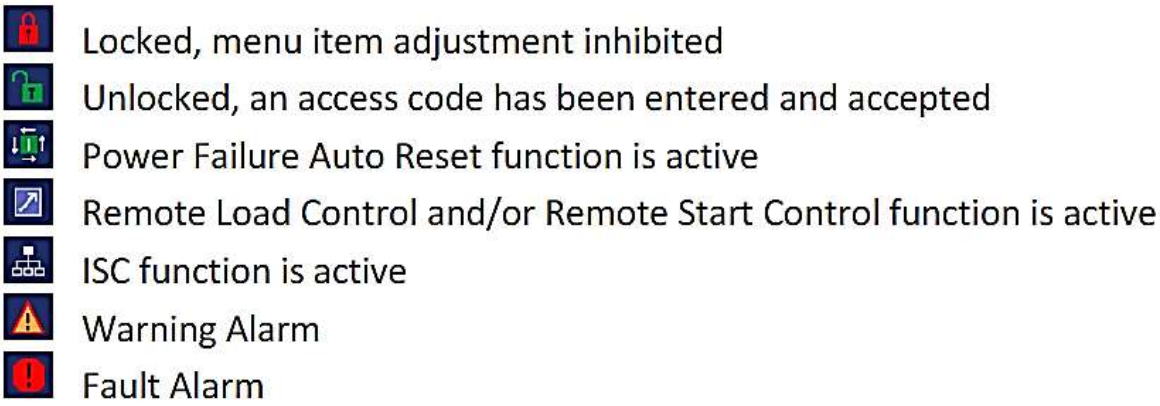
E:2131 EMERCENCY STOP
Displayed when the inlet pressure reach the value P17.81 parameter

2.8.4. Display (AirMaster FIT)

The status and navigation toolbars are always displayed on every screen view.

Display:
1: Status Toolbar
2: Navigation Toolbar
3: Status
4: Active Function Icons
5: List or Menu Items

Status Toolbar Icons:



Home Screen

After power-up, the controller will display the 'Home' screen.

When in 'Pressure Switch' mode the 'Home' screen will be the 'Operational' screen.

To view operational values press the UP or DOWN button (More); The 'Operational' screen will be displayed.

Operational Screen

Press 'DOWN' (More) to view more available parameter values in the 'Operational' list. The number and type of available parameters is dependent on configuration and options. Press 'CANCEL' (Exit) to exit the operational screen and return to the 'Home' screen (only applicable to

Pressure Sensor mode). When a value is out of range '---' will be displayed.

2.8.5. Menu Mode Structure and Navigation (AirMaster FIT)

From the 'Operational' screen press 'ENTER' (Menu) to enter the menu mode structure.

The menus and menu items displayed is dependent on configuration and options. All available menus and menu items can be viewed without entering an access code. An access code is required for menu item adjustment.

To adjust a menu item value or option Press 'UP' or 'DOWN' to highlight the menu item then press 'ENTER' to select the menu item; see 'To Adjust a Parameter Value or Select an Option'.

To return to the 'Home' screen from any menu structure screen, press and hold the 'CANCEL' button for longer than two seconds. If a parameter or option is being modified, and the modified value has not been entered and saved, the modified value or option will be abandoned, and the original setting maintained. Any access code that has been entered and accepted will be cancelled. Any shown alarm that isn't active anymore will be cleared.

To Adjust a Parameter Value or Select an Option

Press 'UP' or 'DOWN' (Adjust) to adjust a value or select an option. When kept pressing, the value will change increasingly faster.
After adjustment press 'ENTER' (Save) to permanently save the value or option.
Press 'CANCEL' (Cancel) to quit an adjustment and return to the menu items screen.

2.8.6. User Menu (AirMaster FIT)

Operational

Parameter	Explanation	Unit
P01.01	Load	bar/psi/kPa/MPa/mbar
P01.02	Offload	bar/psi/kPa/MPa/mbar
P01.03	Drain time	second
P01.04	Drain interval	second
P01.05	Fan on	ºC / ºF
P01.06	Fan off	ºC / ºF
P01.07	Active light level	-
P01.08	Timeout light level	-
P01.09	Screen timeout	second
P01.10	Pressure unit	bar/psi/kPa/MPa/mbar
P01.11	Temperature unit	ºC / ºF
P01.12	Alarm logs	yes / no
P01.14	Language	TUR / ENG / FR / IT / NL

P01.01: It is the load pressure value of the machine.
P01.02: It is the idle pressure value of the machine
P01.03: It is the evacuation time when operating in load and idle position.
P01.04: How long does it take to evacuate when in the load and neutral position?
P01.05: It is the temperature value at which temperature the cooling fan will be activated.
P01.06: It is the temperature value at which the cooling fan will turn off.
P01.07: It is the light level when the screen is active
P01.08: It is the light level when the screen is passive
P01.09: Transition time from active screen to passive screen
P01.10: Pressure unit to be used

P01.11: Temperature unit to be used
P01.12: In the Alarm Logs menu; clears faults, alarms, warnings
P01.14: Available languages options

• Parameters P01.05 & P01.06 and P01.03 and P01.04 are displayed if any relay is assigned to the "FAN or DRAIN" function. Each 2 functions can be programmed to 2 different relays.
The evacuation time is half of the value set in the P01.03 parameter when the machine is in the idle position, and the evacuation interval is; It works for 10 times the value set in P01.04 parameter.

• If the Load and Unload pressures do not reach the desired values, please contact the compressor service.

Alarm Log

The last 16 fault and warnings/alarms given by the machine are displayed in this menu.

Faults and warnings are listed chronologically. The last incoming fault is defined as the 1st fault.

If the cursor is placed on any fault or warning encountered, that fault or warning:

- In which position the machine is faced with this malfunction or warning,
- Instant pressure information at the time of failure or warning,
- Shows the total operating hours at the time of the Fault or Warning.

2.8.7. Alarm Codes (AirMaster FIT)

Start Barrier	
S 3500	[DI] Start Barrier
S 3502	Controls Studio Connection Active
Working Barrier	
R 1000	[DI] Working Barrier
R 2130	Inlet Pressure Low
R 2131	Inlet Pressure High
R 2132	Inlet Pressure Low
R 2133	Inlet Pressure High
R 3123	Low Temperature Welded Working Barrier
R 3161	1. Stage Pressure High
Load Barrier:	
L 0129	Low Temperature Overload Barrier
L 2132	Inlet Pressure Low
L 2133	Inlet Pressure High

Alarms:		**Malfunctions** :	
A 0050	[DI] Driers	E 0005	[P2] Inlet Pressure Sensor
A 0088	Main Engine Power	E 0007	[DI] Pressure
A 0119	Outlet Pressure High	E 0010	[DI] Emergency Stop
A 0129	Temperature High	E 0030	Cover Open
A 0210	[DI] Warning	E 0039	Inlet Oil Pressure
A 0261	1. Stage Pressure High	E 0040	Oil Level
A 2030	[DI] Air filter	E 0050	[DI] Driers
A 2035	[DI] Separator	E 0070	[DI] Fan Motor
A 2040	[DI] Oil filter	E 0082	Main Motor Over Current
A 2131	Inlet Pressure High	E 0083	Main Motor Phase Imbalance
A 2816	Power Outage	E 0084	Main Motor Low Current
A 4801	Service Hour: Service 1	E 0085	Fan Motor Low Current
A 4802	Service Hour: Service 2	E 0086	Fan Motor Over Current
A 4803	Service Hour: Service 3	E 0088	Main Motor Power
A 4804	Service Hour: Service 4	E 0090	Phase Sequence
A 4805	Service Hour: Service A	E 0091	L1 Phase
A 4806	Service Hour: Service B	E 0092	L2 Phase
A 4807	Service Hour: Service C	E 0093	L3 Phase
A 4808	Service Hour: Service D	E 0115	[P1] Output Pressure Sensor
A 4809	Service Hour: Air Filter	E 0119	Output Pressure High
A 4810	Service Hour: Oil Filter	E 0125	[T1] Temperature Sensor
A 4811	Service Hour: Separator	E 0129	Temperature High
A 4812	Service Hour: Air/oil Filter	E 0220	[DI] Malfunction
A 4813	Service Hour: Filter	E 0251	1. Stage Low Pressure Low
A 4814	Service Hour: Oil	E 0261	1. Stage Low Pressure High
A 4815	Service Hour: Cooler	E 0271	[P2] 1st Stage Sensor
A 4816	Service Hour: Lubrication	E 0821	Short Circuit AI/DI
A 4817	Service Hour: Belt Pulley	E 0866	Voltage Supply Low Voltage
A 4828	Purifier Filter	E 1803	[DI] Phase Sequence
A 4829	Service Hour: Revised	E 1887	[DI] Main Motor
A 5000	Defaults	E 1903	[DI] Temperature
		E 2030	[DI] Air Filter
		E2035	[DI] Separator
		E 2040	[DI] Oil Filter
		E 2131	Inlet Pressure High

Note:
1.] DI: Digital Input Connection
2.] Alarm / Warning and Fault codes are listed as numerator.

MAINTENANCE

The product should only be cleaned with a soft cloth moistened with water or with a 50% water 50% alcohol solution. The use of any substance containing corrosive acids or alkalis is strictly prohibited. Unplug all power sources before cleaning the product.

2.9. Description of Controls

W4 Series compressors can be operated by 2 different controls.

2.9.1. Manual start/stop

Compressor can be started or stopped by pressing the start / stop button on the control panel.

2.9.2. Auto start/stop

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 cut in to restart the compressor.

2.9.3. Auto drain

W4 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. Handling and Installation

2.10.1. Unpacking

To simplify handling and transportation, the compressor is placed in a cardboard box and placed on a pallet.

2.10.2. Handling

The compressor can be carried to the appropriate usage area after being unwrapped from its packing. To move the product, a forklift or a pallet jack will be needed.

2.10.3. Inspection

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

- Check if any damage exists during shipping, handling, etc.
- Check the compressor nameplate to verify the equipment confirms the working conditions.
- Check the electrical motor nameplate to verify the compliance with the available power and electrical supply.
- Check the compressor if it is filled with oil or not.
- Check the purifier if the cartridge is installed or not.
- Check if the intake filter is installed.

The compressor frame is equipped with shock mounts and thus a machine base or special means of securing the compressor are not necessary

2.10.4. Location

The location, where the compressor is installed determines to a considerable extent the overall performance and service life of the unit.

IMPORTANT:

The compressor should be located in an area that is sheltered, solid and dry, well ventilated, not exposed to high ambient temperatures, airborne contaminants such as dust, fumes, lint, vapor, steam, gases, engine exhaust, and another contaminant.

IMPORTANT:

If ambient temperature exceeds 50^{o}C, air conditioning will be necessary.

NOTE:

It will be required to install an air intake extension extending in from the outdoors or a location with the specified ventilation requisites if the compressor is positioned in a location without the ventilation requirement described in section 2.9.4 "Location".

The floor must be flat and capable of taking the load of the system weight. Install the compressor at least 60 cm distance to surrounding walls, to ensure 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.

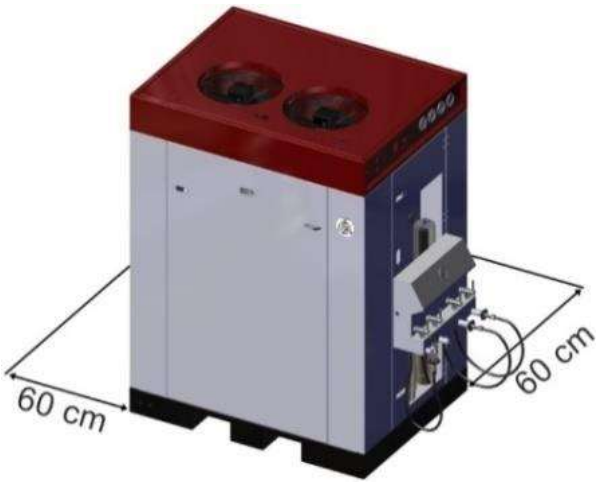


Figure 8 – W4 series compressors layout

2.10.5. 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 a 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 causing danger.

2.10.6. Electrical controls

IMPORTANT:

Although all electrical instructions are 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 ensure that the first start-up will be trouble-free. Make the following checks before attempting any startup:

- Check line voltage. Verify that the compressor motor corresponds with these specifications.
- Check the electrical motor nameplate to verify compliance with the available power and electrical supply.
- Check the tightness of all electrical connections including those in the electrical panel of the compressor.
- At startup, check the direction of rotation to ensure that the 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 to the compressor if it runs in this position for a long time as the cooling airflow 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.

2.10.7. 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 more than six months for any reason and stored idle during this time, it is suggested to do the following steps before putting it out of reach to keep it in good condition:

- Store the compressor in a dry, clean, and sheltered indoor area.
- Remove the dust cap from the inlet port.
- Start the compressor 2 times a month 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 that may enter.
- For long-term storage, please view the electric / petrol engine the manufacturer's instructions.

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. Attempting to store the purifier without evacuating it may damage the purifier's cartridge or even make it unusable.

If the compressor will be started up after a long time of storage, it is suggested to do the following steps before starting to fill 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 normal service.

NOTE:

If the compressor has been stored with the old oil inside for more than 2 years, it should be drained before running and replaced with fresh 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 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, 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 4 liters of oil should be loaded during each replacement.**

RECOMMENDED OILS

Compressor Oil	Brand	Type	Quantity
Anderol 755	Anderol	Synthetic	4 liters
Anderol 750	Anderol	Synthetic	4 liters
Corena S4 P100	Shell	Synthetic	4 liters
Energol RC-R-150	BP	Semi Synthetic	4 liters
Chemlube 751	Ultrachem	Synthetic	4 liters
LM 750	Luqui Moly	Synthetic	4 liters
Airtech RX 150	Smith and Allan	Synthetic	4 liters
EP FG BREATECH-100	Miles Lubricants	Food Grade	4 liters
Ecosyn CE 155	Wipa Chemicals International N.V.	Synthetic	4 liters

Anderol 755

ANDEROL 755 is an ISO 150 synthetic di-ester based compressor lubricant specifically designed to provide long term lubrication in air and process gas compressors. It provides outstanding performance characteristics in splash lubricated reciprocating compressors.

PROPERTIES	TEST METHOD	ANDEROL 755
ISO VG	ASTM D-2422	150
Viscosity, cSt		
@ 40 ºC	ASTM D 445	136,3
@ 100 ºC	ASTM D 445	12.6
Pour point, ºC	ASTM D 97	-39
Flash point, COC, ºC	ASTM D 92	264
Density, 15°C kg/l	ASTM D 4052B	0.964
Demulsibility, @ 82°C, mL oil/water/emulsion (min)	ASTM D 1401	10

- For more information please refer to the material safety data sheet (MSDS).
- 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 adapt 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 W4 series compressors are supplied with greased and sealed bearings. They do not any need further maintenance.

2.13. Adjustment

Pressure switch adjustment

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. The 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. If required, replace and return the old one for reconditioning to the manufacturer or to a dealer nearest you.

• 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.

2.14. Cylinder filling instructions

CAUTION:

Fill only cylinders which;
- the required test information is marked by the manufacturer.
- hydrostatic pressure tested.
- not deformed for reasons such as humidity etc.

- Start the compressor.
- Close the manual drain valves on the 2nd and 3rd stage water separators (do not necessarily do it if the unit is automatic drain controlled.)
- Read the oil pressure on the oil pressure gauge and make sure that the oil pressure goes up to 4 to 10 Bar. Close the Purifier Manual Drain Valve, if open.
- Connect and fix the Filling Hose to the bottle as the filling valve is in closed position. Open the filling valve on the filling hose and then the bottle valve when the pressure reaches 150-200 Bar on the pressure gauge on the filling hose.
- Close the bottle valve first and then the filling valve when the bottle pressure reaches the desired pressure (max. working pressure.)
- Air inside the filling hose is automatically released by the filling valve when the filling valve is closed.
- Disconnect the filling hose connected to the bottle and stop the compressor when you finish the filling process.
- Compressor will automatically stop if it's automatic start/stop controlled.
- Drain the condensate collected inside the 2nd and 3rd stage water separators every 7 minutes manually and at the end of the filling process. It would be drained automatically if the unit has automatic drain control.

Figure 7 – W4 series compressors tube filling

CAUTION!

- To avoid increased CO_2 contents in the compressed breathing air, we recommend “scavenging the purifier” before connecting and filling the air bottles. Before each bottle fill, make sure that no bottle is connected, open the filling valves for about 1 to 2 minutes and let the compressed air escape into the open air.

Hold the respective filling hose tightly before opening the filling valve, to avoid any uncontrolled and potentially dangerous whipping.

- The CO_2 value in the compressor room will increase quickly due to the fact that one or more people in the compressor room is working, smoking and inadequate ventilation etc. For these reasons mentioned for your own security, breathing air bottles should not be filled in compressor rooms where insufficient fresh air conditions have not occurred.

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 it by closing the appropriate valves.

NOTE !

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.

CAUTION !

Even if the compressor is completely off during maintenance and repair work, it must be protected against unexpected restart. Disconnect the power cable and make sure the main switch is in the off position.

Checklist for Energy Efficiency in Compressed Air System

1. By placing compressors in well-ventilated areas or by drawing cool air from the outside, you may ensure that the air entering the compressor is not warm and humid. Power consumption will grow by 1% for every 4°C increase in air inlet temperature.
2. Regularly clean the air intake filters. Pressure drop across the filter will result in reduction in compressor efficiency.
3. Install manometers outlet of the filter and keep an eye on the pressure drop to determine when the element needs to be replaced.
4. Consider the use of air dryers to remove moisture.
5. Fouled inter-coolers reduce compressor efficiency and cause more water condensation in air receivers and distribution lines resulting in increased corrosion. The intercoolers must be regularly cleaned.
6. Compressor free air delivery test (FAD) must be performed on a regular basis to compare the operational capacity to the design capacity and to determine whether corrective action is necessary.
7. Two-stage or multistage compressors should be taken into consideration because they use less power than single stage compressors while producing the same amount of air.
8. To save energy, if possible, reduce the compressor's delivery pressure.
9. Maintain the smallest range possible between the load and unload pressure settings.
10. Automatic timer-controlled drain traps waste compressed air every time the valve opens. Therefore, drainage frequency should be optimized.
11. The performance of the compressor is greatly impacted by leaks in the compressed air line. As a result, periodical leak checks should be performed.
12. Instead of supplying air through extensive pipelines, a smaller specialized compressor can be constructed at the load point, which is located distance from the primary compressor building.
13. Operating pneumatic equipment above the recommended operating pressure not only loses energy but can also result in excessive component wear, which further consumes energy.

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 check 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
	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
	Check the check valve, replace with a new one, if necessary	11
	Check priority valve, replace with a new one, if necessary	12
	Check belts, replace with a new one, if necessary	
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.
80 hours / 3 months	1	Purifier (P61) cartridge Note: Refilling time of the cartridge may vary according to the ambient temperature and humidity.	1 pcs.	14
500 hours / 1 year	1	Intake filter element	1 pcs.	04
	2	Prefilter change	1 pcs.	15
	3	Oil change	4 liters	16
	4	Filling valve overhaul with repair kit	4 pcs.	-
2000 hours / 2 years	1	Calibrate auto drain valves (pneumatic valves) with auto drain maintenance kit.	1 set	17
	2	Piston Ring	1 set	Contact with ALKIN
	3	Check the valves (stage) at every 2000 hours / 2 year. If necessary, replace with new ones.	1 set	
	4	Gasket	1 set	
	5	O-ring	1 set	
	6	Silencer filter	1 pcs	
	7	Check valve	1 pcs	11-01
4000 hours / 4 years	1	Cylinders	1 set	Contact with ALKIN
	2	Pistons	1 set	
	NOTE: Cylinders and pistons will be checked every 4000 hours / 4 years and replaced with new one if necessary.			
	3	Connecting rod	1 set	
	4	Safety valves	1 set	09-01
	5	V-belt	2 pcs	13

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

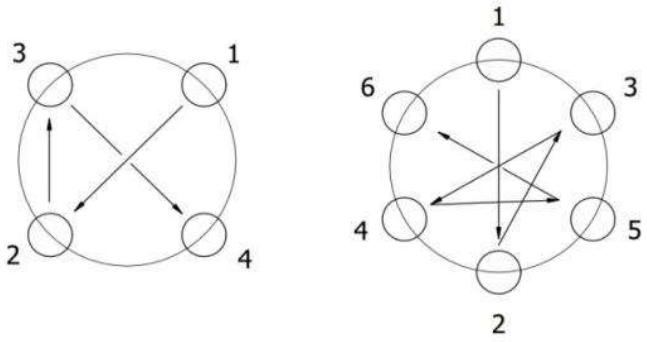


Figure 10– Tightening order

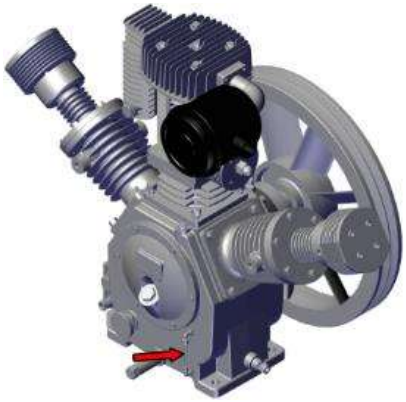
3.3. Maintenance Instructions

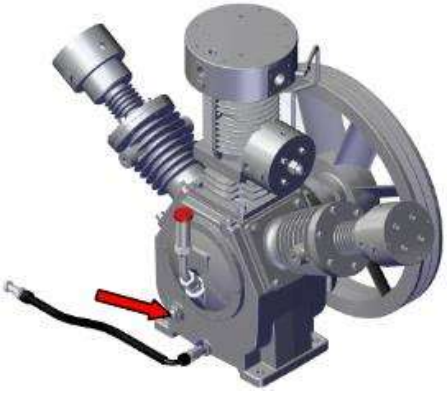
Before attempting any maintenance or service work, isolate the compressor by switching off the power and blowing down the pressure inside all equipment like the filters, purifiers, piping, etc. If a bank system exists, isolate it by closing the appropriate valves.

3.3.1. Oil level check

Instruction no	01
Instruction name	Oil Level Check
List of tools required	None
Parts list to be used in replacement	None

- Oil level can be visually checked through oil level glass in the front of crankcase. Oil level should be below the red line.
- If the oil level is not within the minimum and maximum ranges, drain or add the crankcase.





3.3.2. Leak check

Instruction no	02
Instruction name	Leak Check
List of tools required	Sponge, foam water
Parts list to be used in replacement	None

- 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

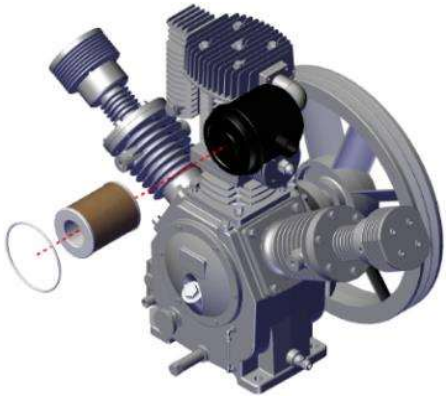
Instruction no	03
Instruction name	Auto Drain Valves Check
List of tools required	None
Parts list to be used in replacement kit	None

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

3.3.4. Intake filter check and intake filter element replacement

Instruction no	04
Instruction name	Intake Filter
List of tools required	Clean cloth
Parts list to be used in replacement kit	New intake filter cartridge

- Check intake filter element every week and clean with pressurized air from inside towards outside. Depending on ambient temperature and humidity, replace filter element at 500 hours / every year.
- Unscrew the wing nut, remove the cover, and the cartridge to remove the suction filter cartridge. Clean the suction filter housing thoroughly before installing the new cartridge. Do not clean the filter cartridge with high pressure air, as small holes that are not visible on the filtration paper may cause damage to the filter cartridge. Dirt will pass through these small holes and damage your compressor.



3.3.5. V-Belt alignment check

Instruction no	05
Instruction name	V-belt Tension Check
List of tools required	None
Parts list to be used in replacement kit	None

- 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.

NOTE: Too tight belt causes excessive radial load on the motor. The motor overheats and consumes more power. The belt may break, or the motor may burn due to excessive tension.

If the belt tension is low, the belt may slip over the pulley and become hot and break. If the belt slips on the pulley, it prevents the compressor from reaching the sufficient circuit and causes the desired air capacity not to be obtained.

3.3.6. Components check

Instruction no	06
Instruction name	Components Check
List of tools required	Appropriate tools
Parts list to be used in replacement kit	None

- 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 Cleaning
List of tools required	Cloth
Parts list to be used in replacement kit	None

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

3.3.8. Current check

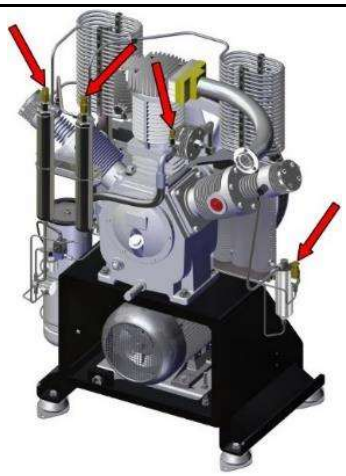
Instruction no	08
Instruction name	Current Check
List of tools required	Ampere meter
Parts list to be used in replacement kit	None

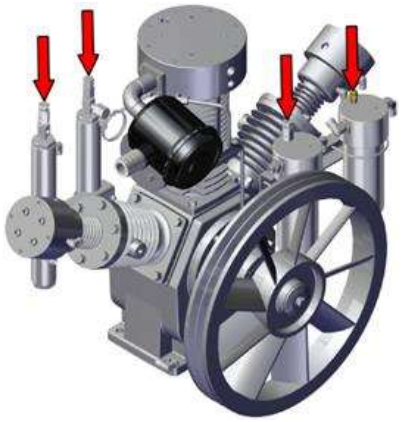
- The compressor is operated at full load (maximum pressure level) and at this time, each phase is measured one by one at the ends of the compressor's supply cable (L1, L2, L3) with an ammeter. The measured values are compared with the motor values.

3.3.9. Safety valve check

Instruction no	09
Instruction name	Safety Valve Check
List of tools required	foam water
Parts list to be used in replacement kit	None

- 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	No 15-24 wrench, foam water
Parts list to be used in replacement kit	New safety valve

- Remove the problematic safety valve with the appropriate tool (No 15 wrench for 1st stg, no 24 wrench for 2nd, 3rd and 4th stg). 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.

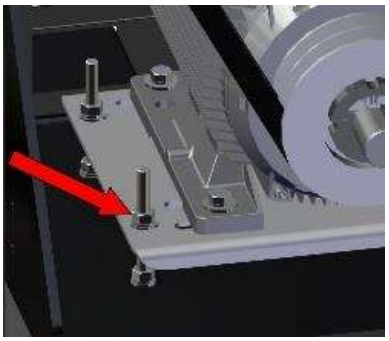
3.3.10. Oil seal replacement

Instruction no	10
Instruction name	Oil seal replacement
List of tools required	No 19, 22,24 wrench
Parts list to be used in replacement kit	New oil seal

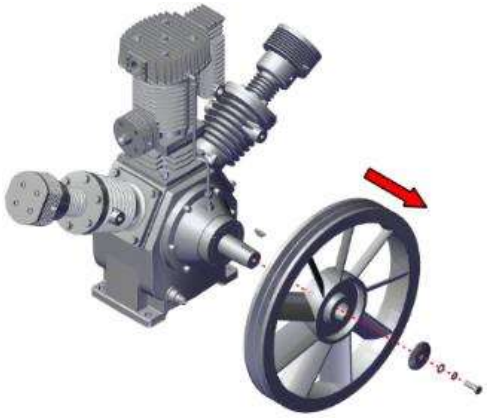
- The compressor is stopped. All pressurized parts are discharged.

- The compressor covers are removed.

- Remove the engine belts by loosening the engine cradle with no. 19 wrench.



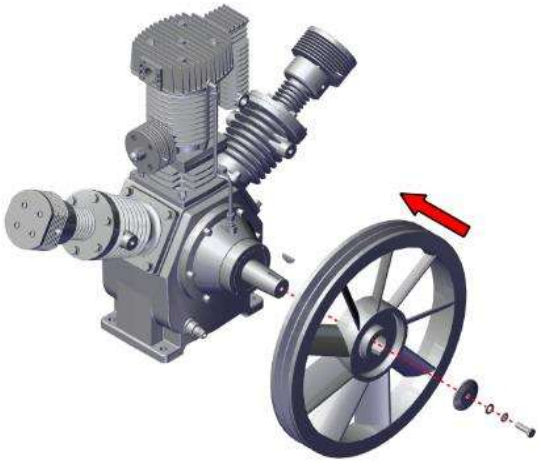
- Loosen the bolt on the compressor pulley with no. 22/24 wrench. The loosened bolt is not completely removed (since the crankshaft is tapered, it may come suddenly when pulling the pulley. Therefore the bolt should not be removed.). The pulley is removed from the crankshaft. The disengaged pulley is completely dislodged by a person and the wedge on the crank is kept in place.



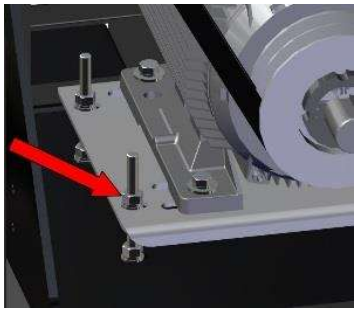
- The seal is removed from the place where it is graveled, even if it is damaged with a large screwdriver and hammer. The old seal is removed and a new one is taken. The outer and inner diameter of the seal is lightly lubricated with grease.

It is flattened into place with a round material or apparatus suitable for the lubricated seal.

- The seal is wiped with a cloth.
- The wedge pulley is attached to the pulley. Then, the pulley are inserted into the wedge channel with the help of two people. When installing, care should be taken that the wedge does not come off. The pulley washer and bolt are manually installed in place and tightened with no. 22 / 24 wrench.



- The compressor is attached to the pulley belts. Tighten the belt tensioning nuts with no. 19 wrench on the engine skid to tension the belts. Tension control of belts is made.



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

3.3.11. Check valve check

Instruction no	11
Instruction name	Check Valve Check
List of tools required	No. 14 wrench, foam water
Parts list to be used in replacement kit	None

If the check valve is missing, the following two conditions will occur.

- The muffler continues to purge air when the compressor stops.
- The pressure reading on the manometer indicating the purifier pressure on the filling panel decreases continuously.
- The compressor is started and the inlet pipe at the inlet of the check valve is removed with no. 14 wrench while there is pressure inside the purifier. Leak test is made with foamy water. If there is no leakage, the inlet pipe is reinstalled. 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	No 27 wrench, foam water
Parts list to be used in replacement kit	New check valve

- If check valve is leaking, remove it with no 27 wrench.
- 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
Parts list to be used in replacement	None

- Open all drain valves and start the compressor. Close all drain valves.
- When gauge on compressor's outlet hose is at 120±10 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 Repl.
List of tools required	No 14,19,27,32 wrench
Parts list to be used in replacement kit	New priority valve

- Stop the compressor and verify complete depressurization.
- Priority valve is located at the outlet of purifier.
- Remove all hoses with no 19 wrench or pipes with 14 wrench connected to priority valve.
- Remove nipple connected to the priority valve with no. 27 wrench.
- The nipple is removed using the no. 19 wrench which the priority valve is connected. The nipple is separated from the priority valve with 32 and 19 wrench when the priority valve has been removed. (The nipple that was removed will be reapplied)
- The compressor is started and the elbow to which the removed priority valve is connected is cleaned with pressure. Then the compressor is stopped.
- Using the 19 and 32 wrench, the priority valve nipple is tightened into place and then brought back to the position before removal.
- Wrap teflon tape on the new priority valve and put it on its place and tighten with 19 and 32 wrench. Reconnect all hoses and pipes connected to priority valve.
- Start the compressor. New priority valve should allow air flow at 120±10 bar.

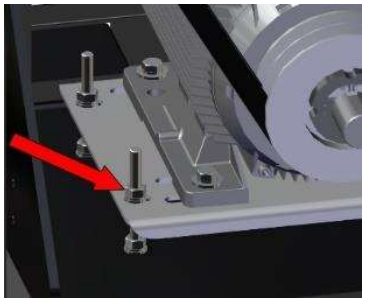
3.3.13. V-Belt replacement

Instruction no	13
Instruction name	V-belt Replacement
List of tools required	No 10, 19 wrench
Parts list to be used in replacement kit	New V-Belt

- Stop the compressor and verify complete depressurization.
- The two rear and side covers of the compressor are opened with the canopy cover switch and the ground wire connected between the covers and the canopy is removed with no 10 wrench.
- The compressor pulley casing is removed with the no 10 wrench.
- Loosen the motor tensioning bolt nut from the rear cover inward with an open-ended no 19 wrench.

- Remove belts from flywheel and install new ones.

- The engine tension nut bolt held by the no 19 wrench is tightened until the belts are tensioned.



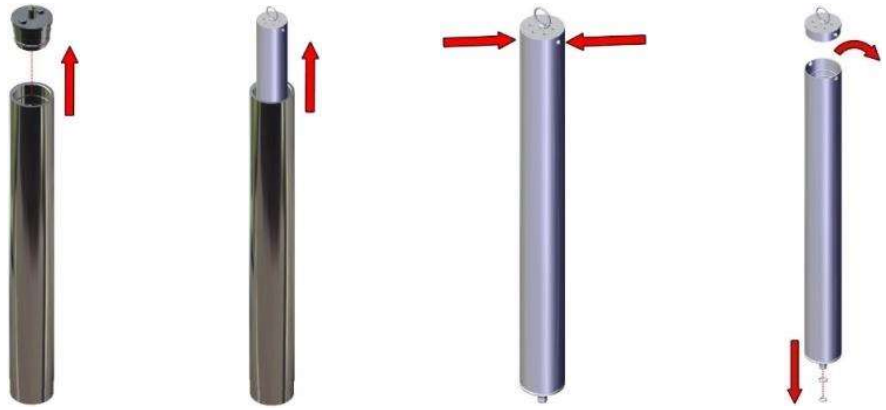
- Turn the pulley a few turns manually and check the tension of the belt. The removed pulley is attached to the housing and the compressor is started. Check that the pulley is operating in the correct direction.

3.3.14. Purifier cartridge refill kit replacement

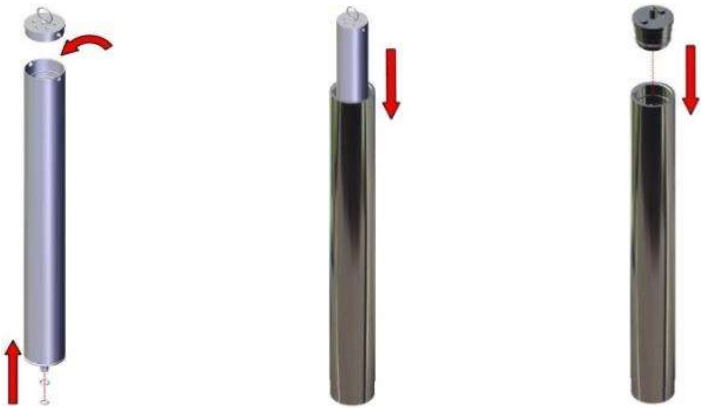
Instruction no	14
Instruction name	Purifier Cartridge Replacement
List of tools required	Lint free cloth
Parts list to be used in replacement kit	New cartridge

Purifier Cartridge Refill

- The compressor is switched off at the main switch.
- Relieve the pressure in the purifier from the manual relief valve.
- The cover on the purifier top cover is loosened by approximately 2.5 cm and pulled upwards with a suitable screwdriver, etc., between the disassembly apparatus with the help of a tool.
- The purifier is removed by turning the left and right cartridge upwards by turning it to the left and right with the help of the release wire on the cartridge.
- 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 if damaged.
- Empty inside of the purifier cartridge and clean the perforated sheet.
- The inside of the cartridge can be cleaned with compressed air. (Never use gasoline and similar chemical products.)
- Refill the cartridge according to the cartridge kit filling instructions.
- The top cover is inserted into the cartridge by pushing the pins.
- Insert the purifier cartridge into the purifier bottom cover, making sure that the O-rings are fully seated.
- The purifier top cover is screwed into the purifier by turning it clockwise using the socket and bolts.
- Purifier relief valve is closed by turning clockwise.
- The compressor is started.
- The purifier pressure is controlled by a pressure gauge.



Purifier Cartridge Replacement

- The compressor is switched off. The pressure in the purifier is discharged from the manual relief valve. 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.

- Insert the purifier cartridge into the purifier bottom cover, making sure that the O-rings are fully seated.
- The purifier top cover is screwed into the purifier by turning it clockwise using the socket and bolts.
- Purifier relief valve is closed by turning clockwise.
- The compressor is started.
- The purifier pressure is controlled by a pressure gauge.

3.3.15. Filter element (Prefilter) replacement

Instruction no	15
Instruction name	Filter element change
List of tools required	Lint free cloth
Parts list to be used in replacement	Filter element

- 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.
- 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, the inside of the filter housing is cleaned with a clean lint-free cloth.

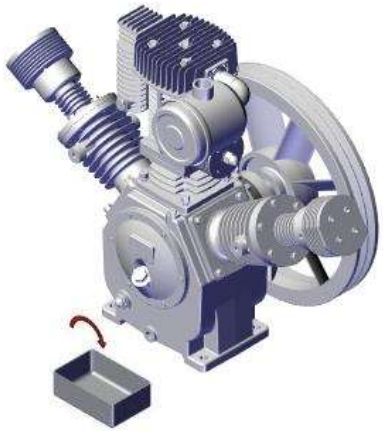
- The filter element is lubricated with molykote oil to make it easy to fit into the housing and placed by turning left and right.
- The top cover is attached to the filter body. The cover is tightened by turning it clockwise until it is the same as the upper level of the filter.

3.3.16. Oil change

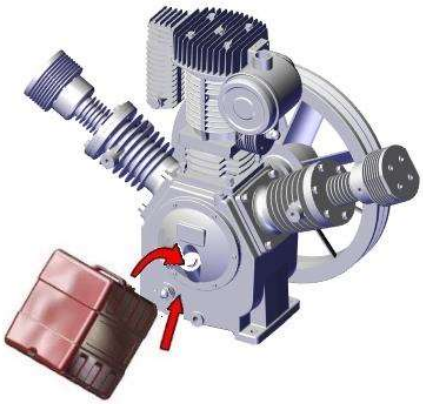
Instruction no	16
Instruction name	Oil Change
List of tools required	Lint free cloth, no 19, 27 wrench, funnel
Parts list to be used in replacement	Anderol 755

- If the compressor is cold, start the compressor for 10-15 minutes and wait for the oil inside the compressor to warm up. When the oil is cold, no change is performed.

- The front cover of the compressor is opened with the canopy cover switch. The ground wires in the covers must be disconnected.
- Unscrew the oil filler plug by turning it counterclockwise with no 19 wrench.
- Place the funnel under the oil drain plug and place a container of at least 5 liters at the end of the funnel.



- Unscrew the oil drain plug with no 27 wrench.
- Allow the oil to drain completely.
- After the oil is completely drained, tighten the oil drain plug with the appropriate wrench. Take the new ANDEROL 755 oil and fill it up to the point on the oil level indicator. Tighten the oil filler plug into place.

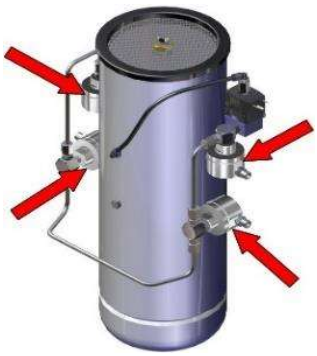


- The previously removed canopy back cover is replaced and locked with the canopy switch.
- The grounding cables are plugged in and tightened with the appropriate allen key.

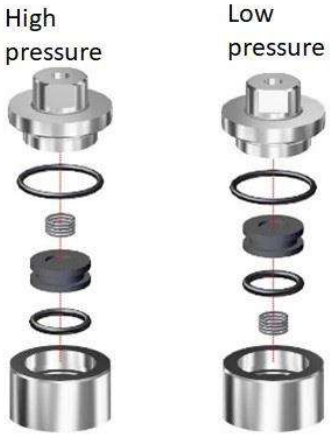
3.3.17. Auto drain valve adjustment with repair kit

Instruction no	17
Instruction name	Auto Drain Valve Adjustment with Repair Kit
List of tools required	No 14, 24 wrench
Parts list to be used in replacement	Repair kit

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



- Remove the piping of auto drain valve with no 14 wrench.
- Remove the auto drain valve head with no.24 wrench 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.



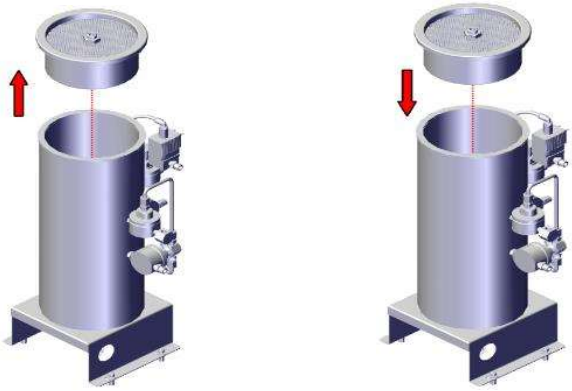
- Tighten the valve head with no.27 tool. After tightening, slightly loosen it with rotating no.24 wrench counterclockwise. This is done so that the piston is well placed.
- Reconnect the piping of auto drain valve with appropriate tools.
- Start the compressor and verify that the drain valve is operating within drain intervals.

3.3.18. Muffler filter element replacement

Instruction no	18
Instruction name	Muffler filter element replacement
List of tools required	No 14, 24 wrench
Parts list to be used in replacement	New muffler filter element

- Stop the compressor.
- The M8 bolt on the filter is unscrewed with an appropriate wrench to remove the filter element from the muffler filter body. The M8 spring washer and M8 washer under the M8 bolt are removed.

- The new muffler filter element is installed on the muffler filter body.



- The M8 spring washer and M8 washer are attached to the muffler filter assembly's middle part.
- The washer is secured with an M8 bolt, which is then tightened.

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	Limit the air consumption to the capacity of the compressor.
• Worn piston rings	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 COMPRESSORS

ADDRESS: Kazım Karabekir mah. Bekir Saydam cad. No:94/1
35865 Torbalı / 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 : W32 SERIES

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

Standart No : EN 12100
EN 12021
EN 60204-1
EN 1012-1

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

Date: **01/01/2023**

Özcan GÜRSOY
Factory Manager

CE

WARRANTY CERTIFICATE

ALKIN Air/Gas Compressors and accessories are warranted for **two years** 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 COMPRESSORS
ALKIN KOMPRESÖR SAN.VE TİC.LTD.ŞTİ.
Cüneyibey Mh. Tabaş Yolu Küme Evleri No:3
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MORE THAN **120** COUNTRIES

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