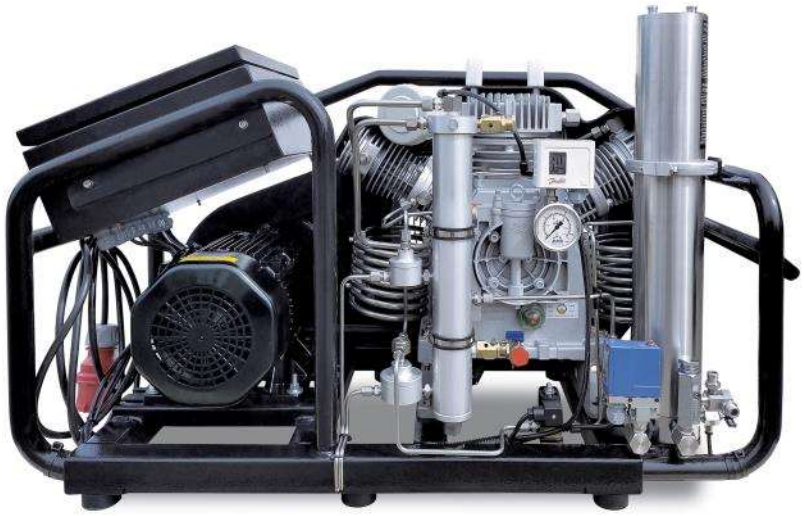
ALKIN COMPRESSORS

HIGH PRESSURE BREATHING AIR COMPRESSORS



W32 SERIES OPERATOR MANUAL

W32 SERIES HIGH PRESSURE BREATHING AIR COMPRESSOR MODELS

- ELECTRIC MOTOR -

- PETROL ENGINE –

- DIESEL ENGINE -

- CANOPY -

Quality Assurance is not an action but a habit for us….

ISO 9001
ISO 45001
BUREAU VERITAS
Certification

ALKIN COMPRESSORS

High Pressure Breathing Air Compressors

Operator Manual

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- W32-2023-01-

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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:

Pre-Sales Support Services	**After Sales Support Services**
pazarlama@alkin.com.tr	teknikservis@alkin.com.tr
+90 232 782 2290 (Ext: 206)	+90 232 782 2290 (Ext: 209)

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.

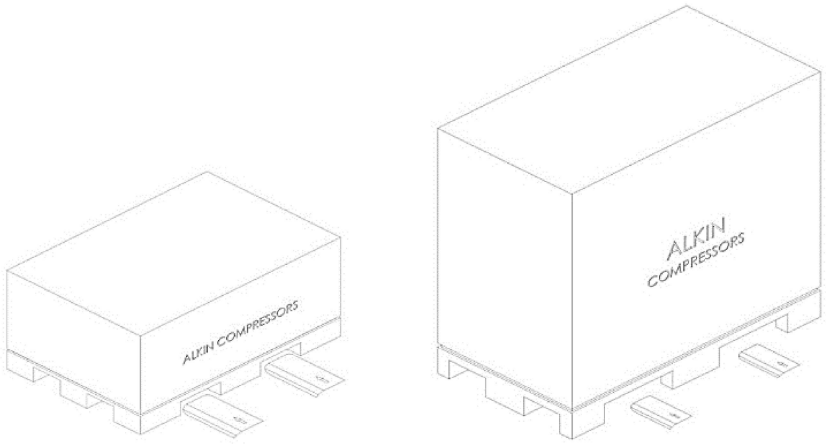


Figure 1 – Lifting and transporting by forklift

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

SECTION 2

ABOUT COMPRESSOR

2. General

W32 series compressors are three stage, reciprocating type, air-cooled, and forced lubricated compressors. The working pressure of these compressors varies from 150 bar (1500 psi) to 350 bar (5000 psi) depending on the cooling system and valve heads installed.

Important

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

This compressor is built with oversize intercoolers and an aftercooler to allow superior performance, longer life, lower operating and discharge temperatures. W32 compressor block is of three stages and three cylinders design. The cylinders are assembled in a “W” form where 1st stage is in the center, 2nd stage is on the right, and 3rd stage is on the left side looking from the purifier side.

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

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

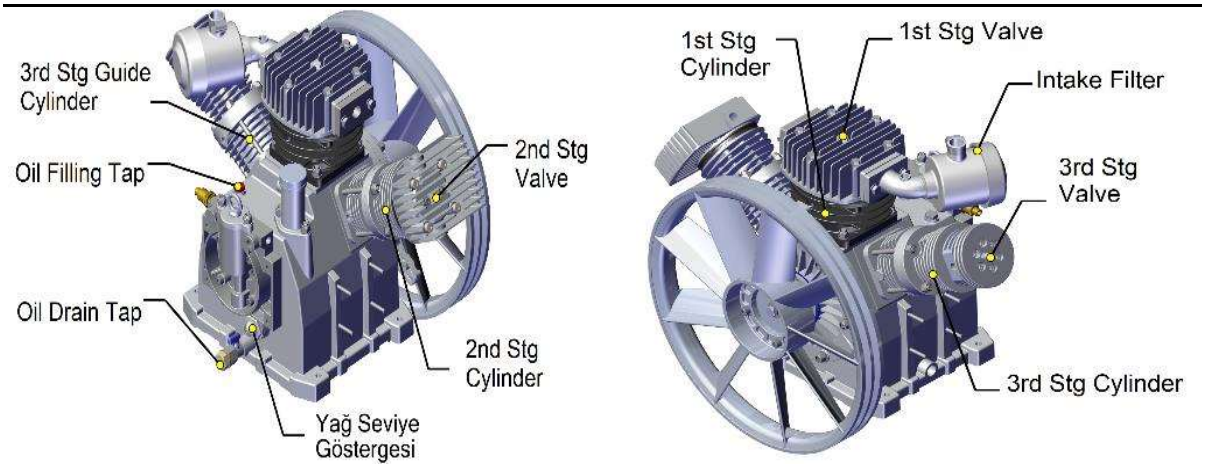


Figure 2 – Compressor Unit

NOTE:

On automatic drain-controlled compressors, the water condensate in the water separators and prefilter are drained automatically by the automatic drain valves. Opening intervals and duration are set by a time relay attached to the system (see the controls section). This time relay can be adjusted for both functions. According to the factory settings of the timer it is set to open for 5 seconds every 10 minutes.

To protect the system against unexpected pressure rises due to a malfunctioning valve or component, safety valves are installed after each stage and the final stage. These safety valves must be inspected periodically to ensure proper operation. W32 series compressors have valves on all stages. They are designed to have an unobstructed passage of air with no pressure loss. Particular attention must be paid to maintenance of the valves as these valves are one of the most critical parts for proper operation of the compressor. Do not use oils other than the recommended oils in this manual for keeping the valves clean and free of carbon collection. Inappropriate oils may cause carbonization which will occur on the valve discs and springs, resulting in improper sealing of valves. This will increase the operating temperatures which will cause the oil to deteriorate in a shorter time.

W32 – 7 – 225 – P4

- P4: P: purifier (4: P41 type)
- 225: Operating pressure in bar (multiply by 14,5 to get this value in Psi)
  Basic two pressures are;
  225 bar (3260 psi)
  310 bar (4500 psi)
  If different pressure is required, specify in the model designation like: W32-7-300-P2; which means the compressor you want should operate at 300 bar.
- 7: Motor power (kW)
- W32: W indicates the cylinder configuration to be of W type (three cylinders); 3 indicates 3 stages, and 2 indicates this compressor to have two free air outlets.

2.1. Compressor Unit

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

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

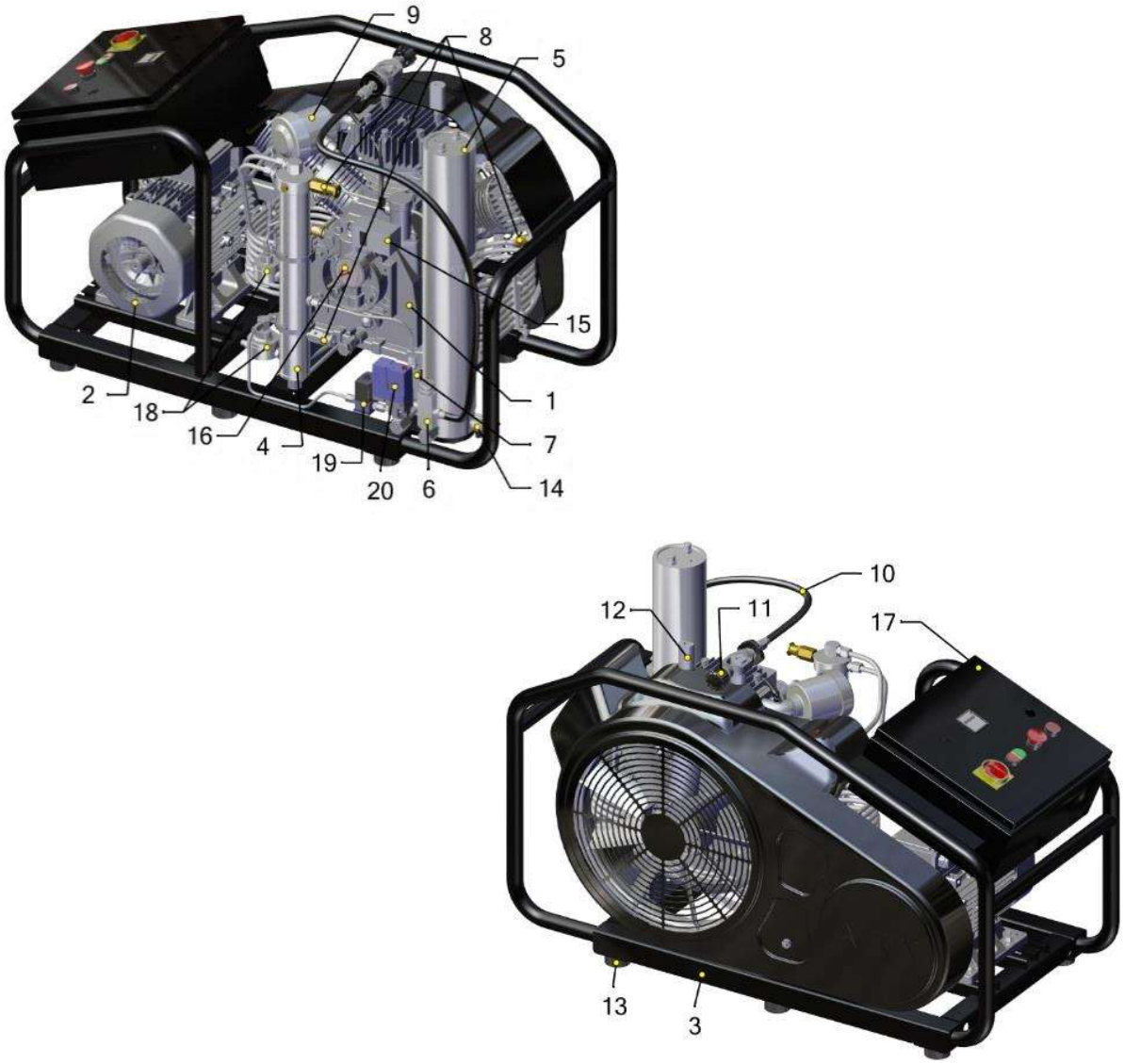


Figure 3 – W32 series compressor general layout (electric motor)

Note: Automatic drain system and auto start/stop can be installed on compressor(s) upon request.

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

1. Compressor unit
2. Petrol engine
3. Subbase
4. Water seperator
5. Purifier
6. Priority valve
7. Check valve
8. Safety valve
9. Intake filter
10. Filling hose
11. Filling vane
12. Filling manometer
13. Yoke
14. Shock mounts
15. Drain valve
16. Oil pressure switch
17. Oil pressure manometer
18. Control board
19. Battery
20. 20-Auto drain valve
21. Selonoid valve
22. Pressure switch

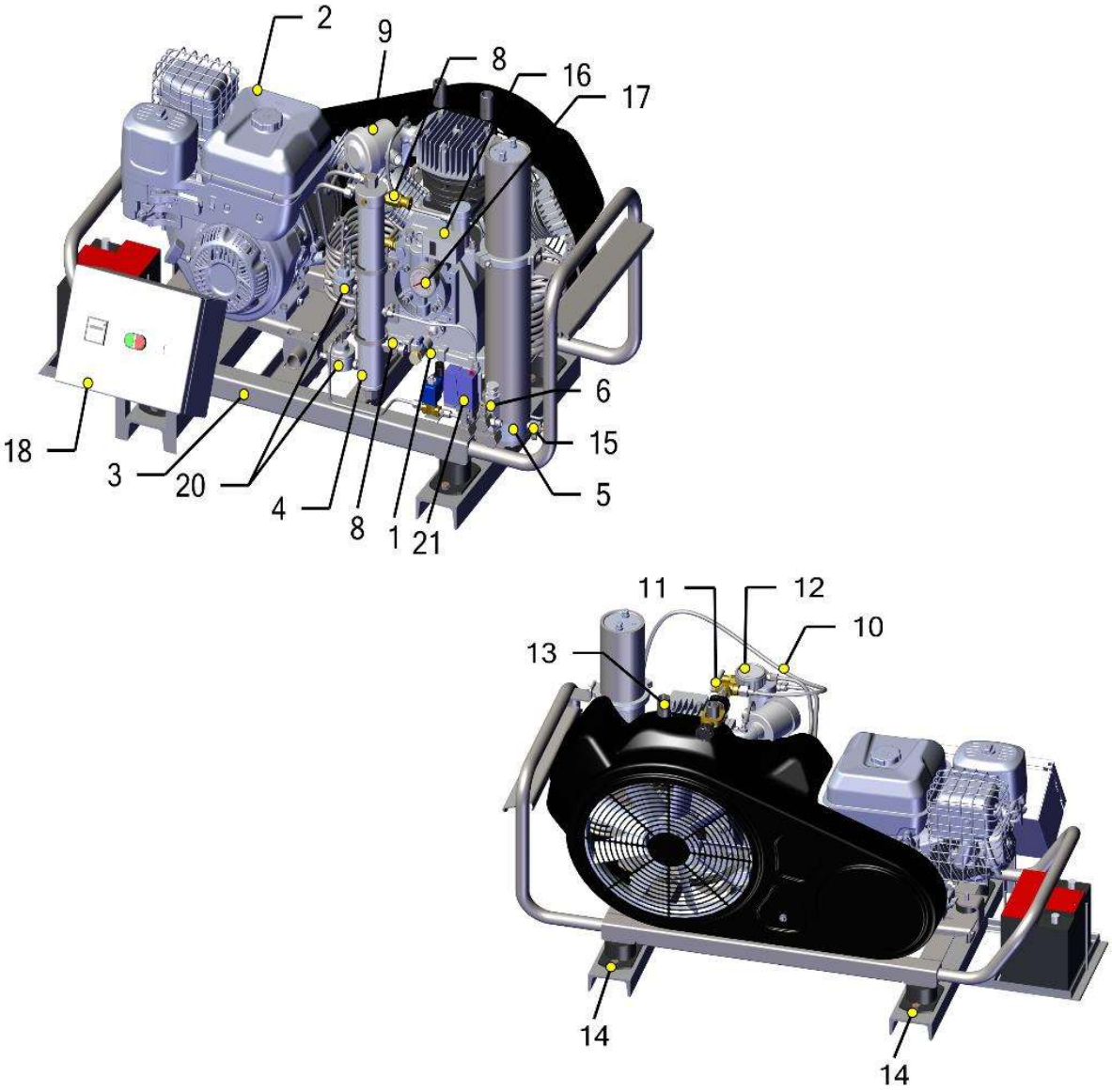


Figure 4 – W32 series compressor general layout (petrol engine)

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

1. Compressor unit
2. Diesel engine
3. Subbase
4. Water separator
5. Purifier
6. Priority valve
7. Check valve
8. Safety valve
9. Intake filter
10. Filling hose
11. Filling vane
12. Filling manometer
13. Yoke
14. Shock mounts
15. Drain valve
16. Oil pressure switch
17. Oil pressure manometer
18. Control board
19. Auto drain valve
20. Solenoid valve
21. Pressure switch
22. Battery

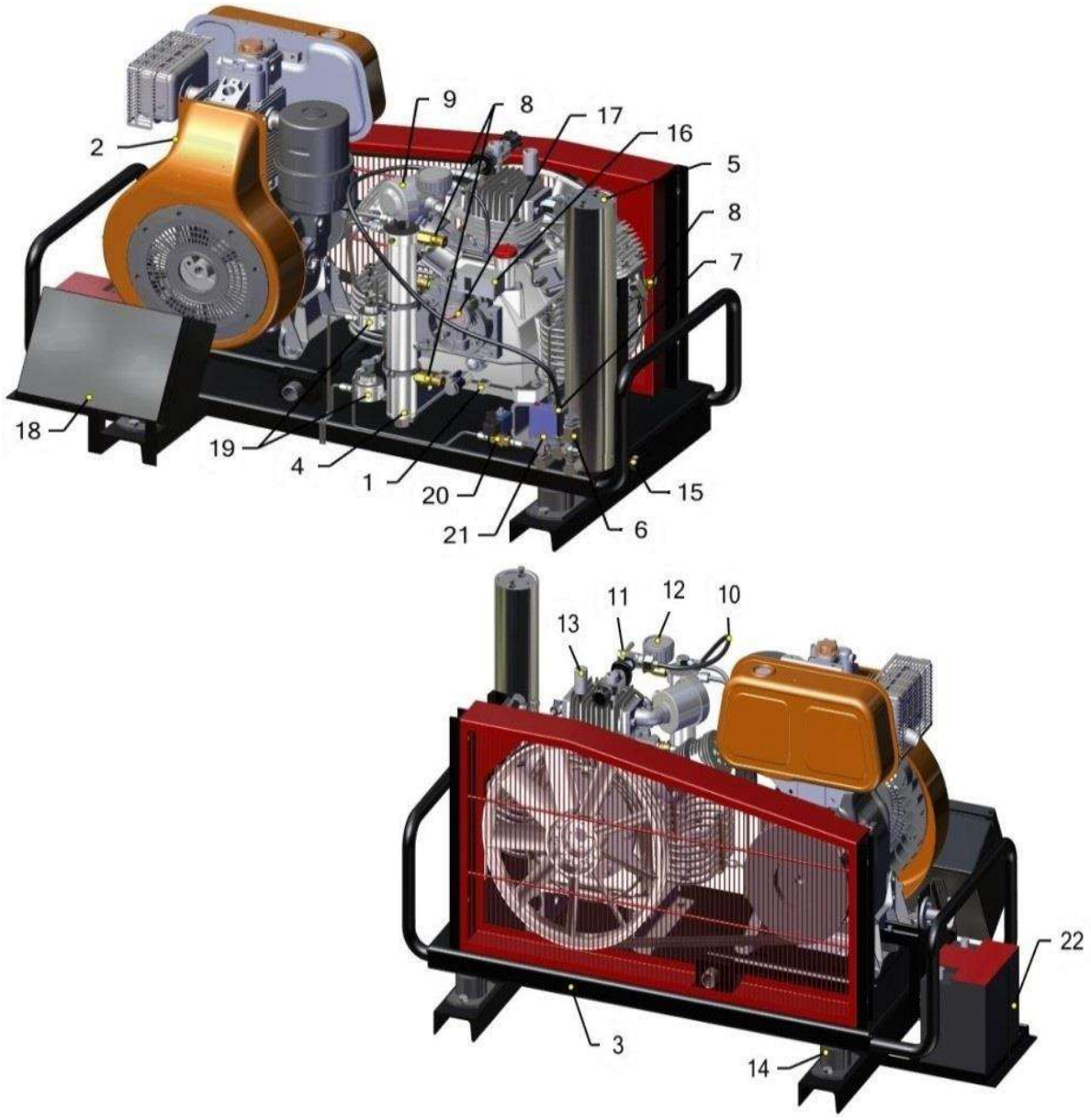


Figure 5 – W32 series compressor general layout (diesel engine)

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

1. Compressor unit
2. Intake filter
3. Safety valve
4. Auto drain valve
5. Silencer
6. Oil pressure switch
7. Electric motor
8. Shock mounts
9. Prefilter
10. Purifier
11. Check valve
12. Priority valve
13. Pressure switch
14. Manuel drain valve
15. Control board
16. Manometer panel
17. Filling vane
18. Filling hose

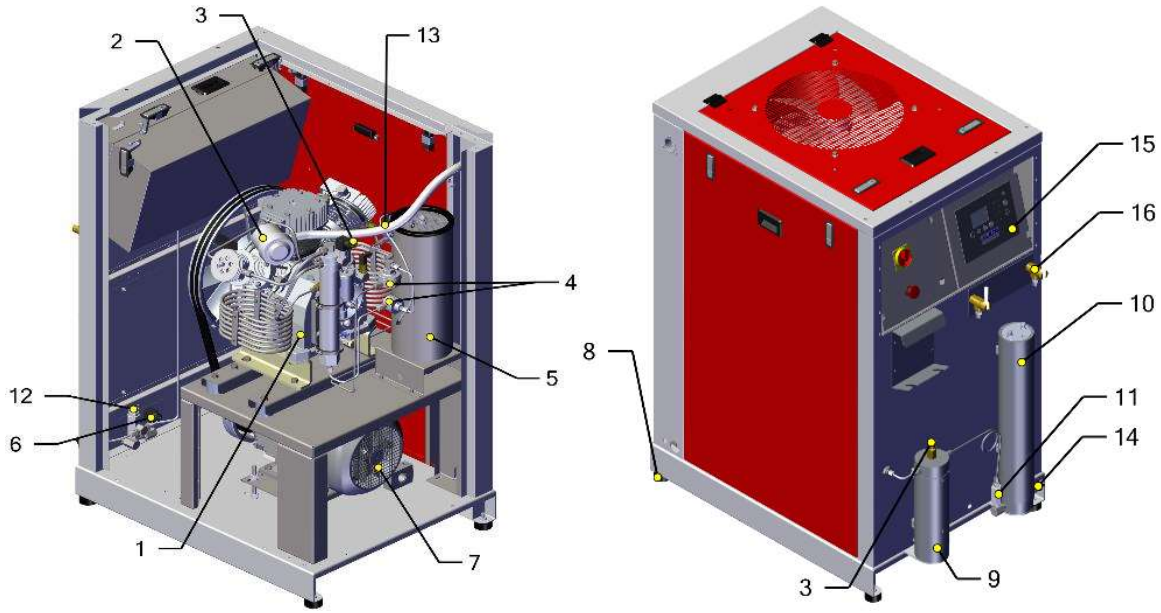


Figure 6 – W32 series compressor general layout (canopy)

2.2. Technical Data

The model design for W32 series compressors (electrical-canopy) is based on the below data.

Compressor	W32 Series		
Medium	Breathing air		
Intake pressure	Atmospheric		
Filter system	P41 Purifier		
Operating pressure	225 bar (3260 psi) - 310 bar (4500 psi)		
Free Air Delivery (FAD)	180 l/min (6,4 Cfm)	250 l/min (8,8 Cfm)	300 l/min (10,6 Cfm)
Motor power	4 kW (5,5 Hp)	5,5 kW (7,5 Hp)	7,5 kW (10 Hp)
Speed	1160 rpm	1450 rpm	1700 rpm
Diameter of motor pulley	Ø 178	Ø 235 Ø 220 (canopy)	Ø 260
Belt dimension	13x2000 ; 13x2050 (canopy)		
Diameter of compressor pulley	Ø 445		
1st stg pressure range	5-20 bar		
2nd stg pressure range	20-60 bar		
3rd stg pressure range	Outlet pressure		
Piston stroke	40 mm		
Number of stage	3		
Number of cylinder	3		
Cylinder bore (1st stg)	102 mm		
Cylinder bore (2nd stg)	38 mm		
Cylinder bore (3rd stg)	14 mm		
Oil capacity	3 liters		
Operating temp.	0/+50 ºC		
Weight	155 kg (elec. mtr) 350 kg (canopy)	165 kg (elec. mtr) 355 kg (canopy)	170 kg (elec. mtr) 360 kg(canopy)
Dimensions, WxLxH	51x111x68 cm (electric motor) 73x104x138 cm (canopy)		

The model design for W32 series (petrol engine) compressors is based on the below data.

Compressor	**W32 Series – Petrol Engine**		
Medium	Breathing air		
Intake pressure	Atmospheric		
Filter system	P41 Purifier		
Operating pressure	225 bar (3260 psi) - 310 bar (4500 psi)		
Free Air Delivery (FAD)	180 l/min (6,4 Cfm)	250 l/min (8,8 Cfm)	300 l/min (10,6 Cfm)
Motor power	6 Hp	9 Hp	13 Hp
Speed	1160 rpm	1450 rpm	1700 rpm
Diameter of motor pulley	Ø 178	Ø 200	Ø 235
Belt dimension	13x2000		
Diameter of compressor pulley	Ø 445		
1st stg pressure range	5-20 bar		
2nd stg pressure range	20-60 bar		
3rd stg pressure range	Outlet pressure		
Piston stroke	40 mm		
Number of stage	3		
Number of cylinder	3		
Cylinder bore (1st stg)	102 mm		
Cylinder bore (2nd stg)	38 mm		
Cylinder bore (3rd stg)	14 mm		
Oil capacity	3 liters		
Operating temp.	0/+50 ºC		
Weight	165 kg	175 kg	180 kg
Dimensions, WxLxH	51x120x68 cm		

The model design for W32 series (diesel engine) compressors is based on the below data.

Compressor	**W32 Series – Diesel Engine**	
Medium	Breathing air	
Intake pressure	Atmospheric	
Filter system	P41 Purifier	
Operating pressure	225 bar (3260 psi) - 310 bar (4500 psi)	
Free Air Delivery (FAD)	250 l/min (8,8 Cfm)	300 l/min (10,6 Cfm)
Motor power	9 Hp	13 Hp
Speed	1450 rpm	1700 rpm
Diameter of motor pulley	Ø 222	Ø 260
Belt dimension	13x2125	
1st stg pressure range	5-20 bar	
2nd stg pressure range	20-60 bar	
3rd stg pressure range	Outlet pressure	
Diameter of compressor pulley	Ø 445	
Piston stroke	40 mm	
Number of stage	3	
Number of cylinder	3	
Cylinder bore (1st stage)	102 mm	
Cylinder bore (2nd stage)	38 mm	
Cylinder bore (3rd stage)	14 mm	
Oil capacity	3 liters	
Operating temp.	0/+50 ºC	
Weight	195 kg	250 kg
Dimensions, WxLxH	51x135x80 cm	

2.3. Process and Instrumentation Diagram (P&ID)

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

This compressor is designed to operate at a “dual pressure” or a “single pressure” This is when the compressed air is used to fill all the cylinders at that single pressure.

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

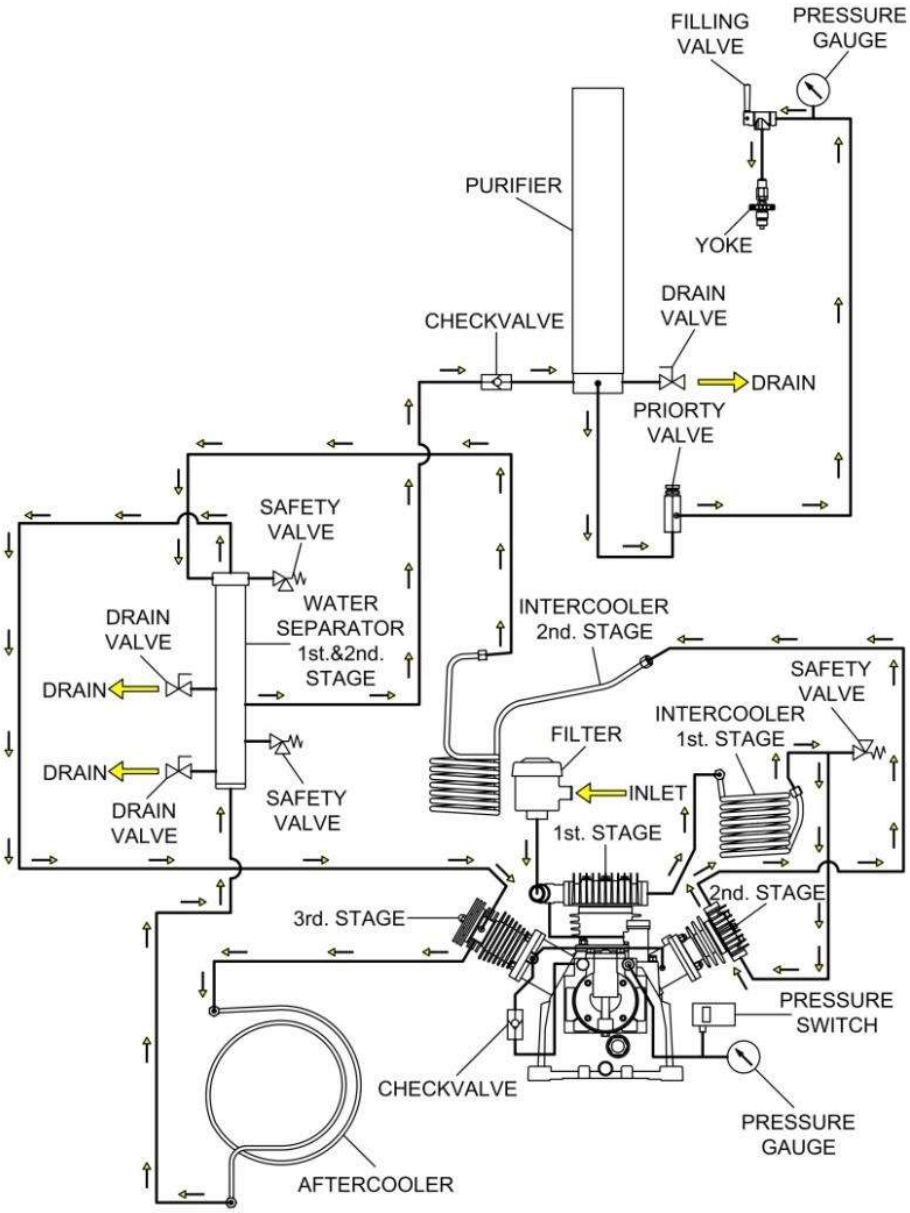


Figure 7 – W32 series compressor P&ID (standard)

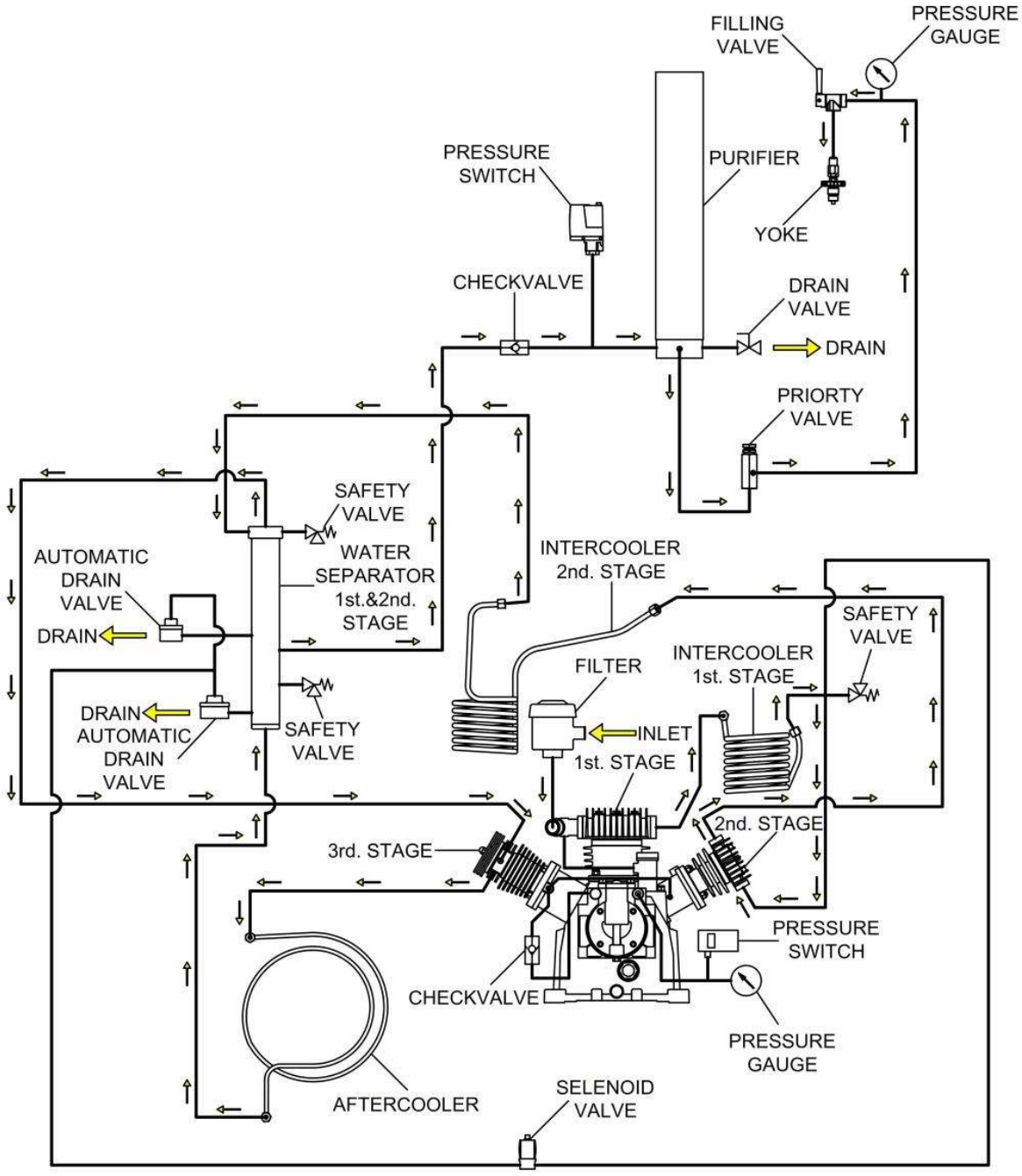


Figure 8 – W32 series compressor P&ID (auto drain)

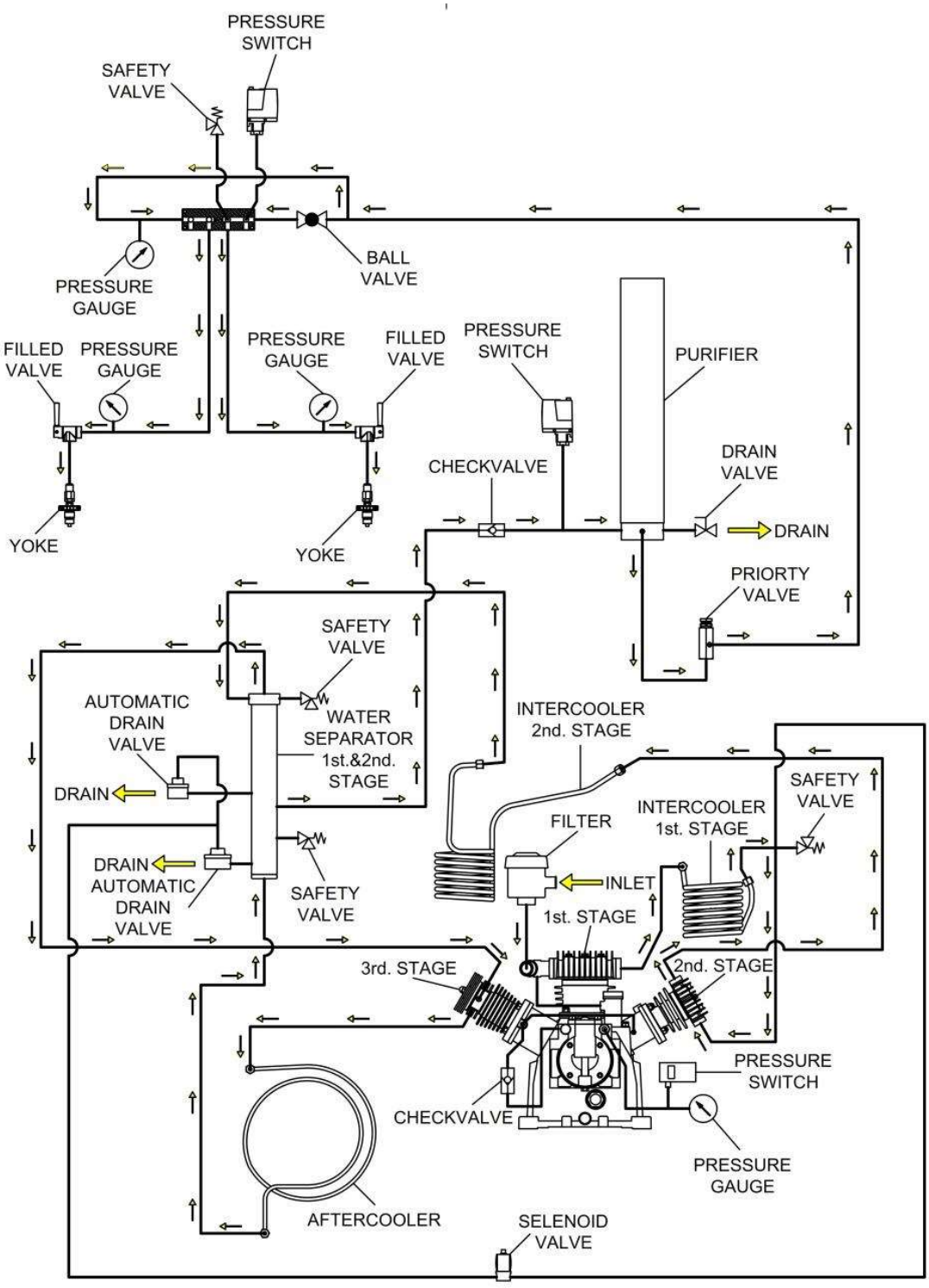


Figure 9 – W32 series compressor P&ID (dual pressure)

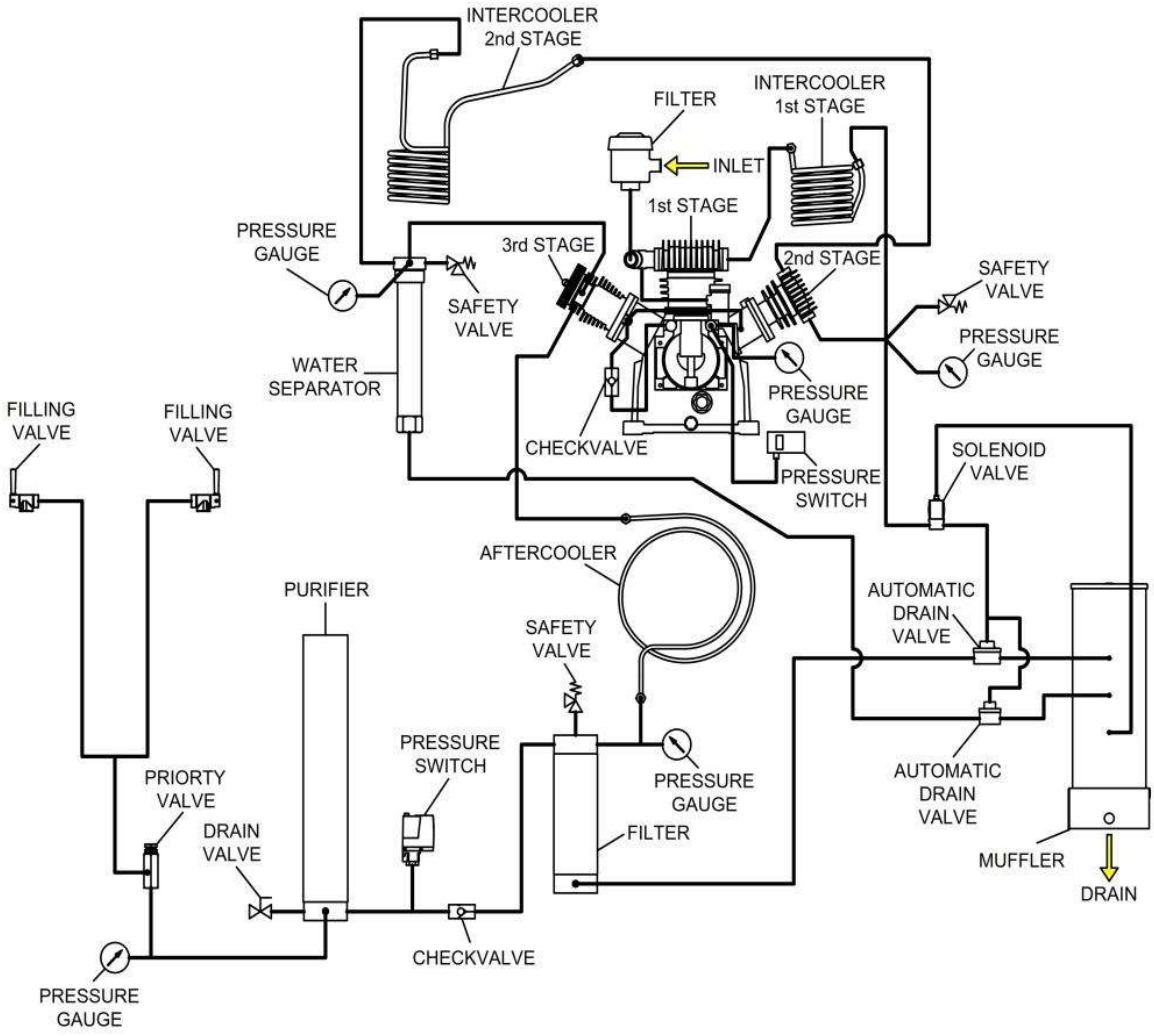


Figure 10 – W32 series compressor P&ID (standard)

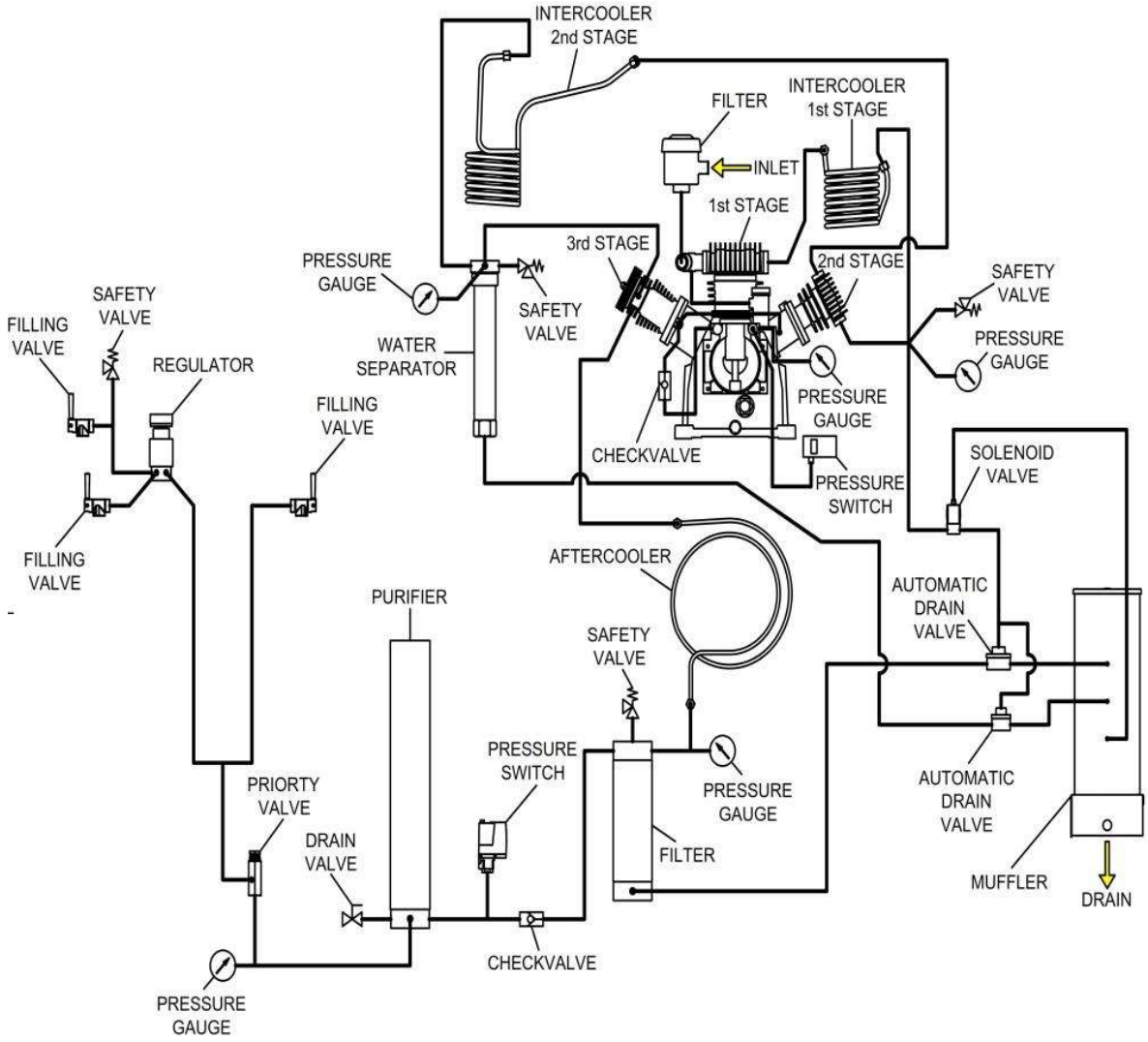
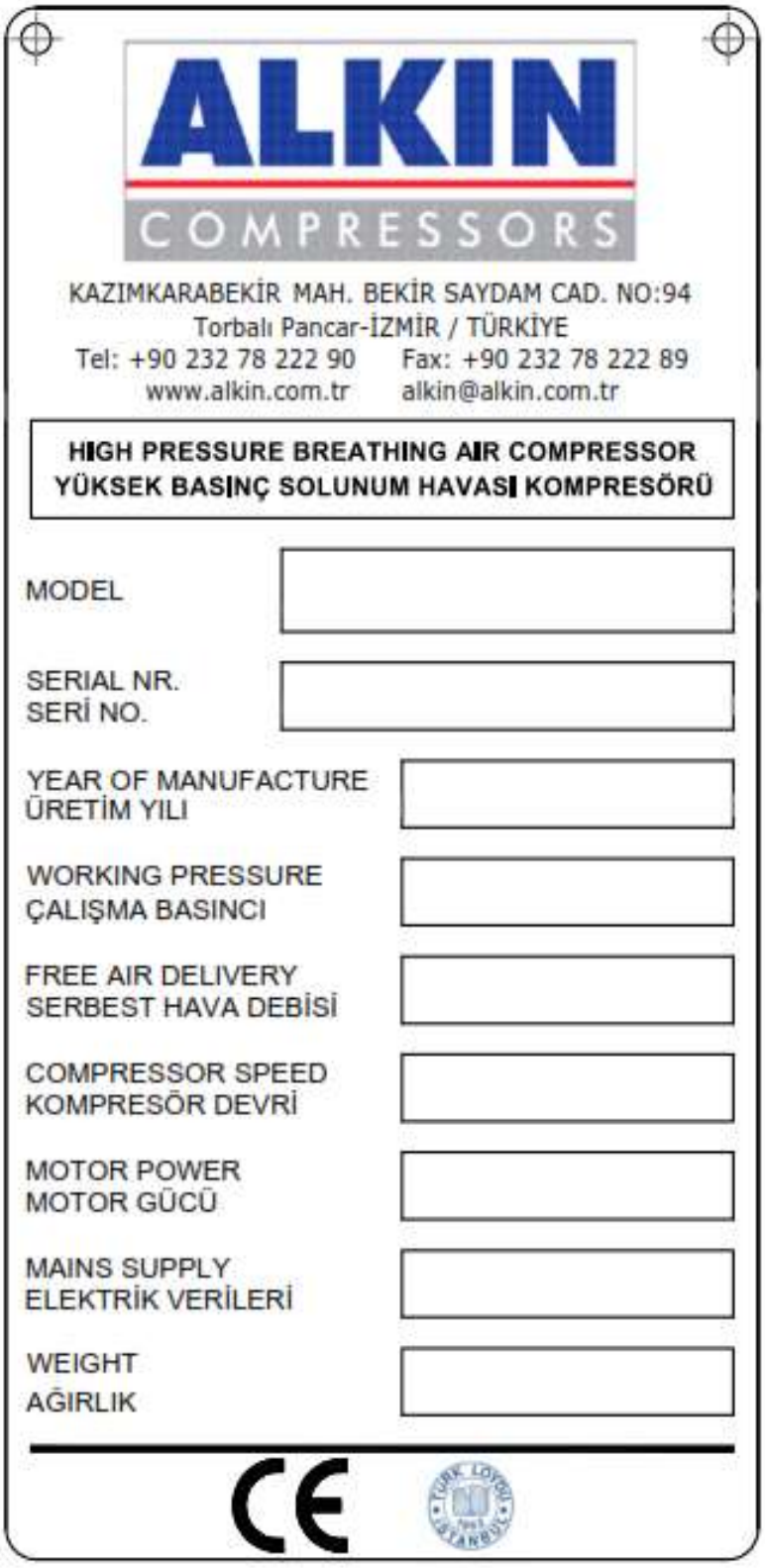


Figure 11 – W32 series compressor P&ID (with regulator)

2.4. Identification of the Compressor

Each compressor has an identification label attached to its frame.



2.5. Principles of Operation

The P&I diagram must be carefully examined in order to understand the principle of operation. The air is drawn at atmospheric pressure through the inlet filter into the 1st stg cylinder on the upstroke of the piston. The piston's upstroke action causes compression, and air is driven out of the cylinder through the 1st stg discharge valve. Air will then pass through the intercooler tubes between the 1st and 2nd stg and into the 2nd stg compression chamber. Here, the air is compressed to the 2nd stg compression level and forced through the 2nd stg valves + 2nd stg intercooler + water-oil separator + 3rd stg inlet valve into the 3rd stg cylinder. Here, the air is compressed to the final pressure level and forced out to the aftercooler+water-oil separator (pre-filter), then passing through a check valve enters the purifier chamber, where it is a purifier and prepared to be used for breathing purposes.

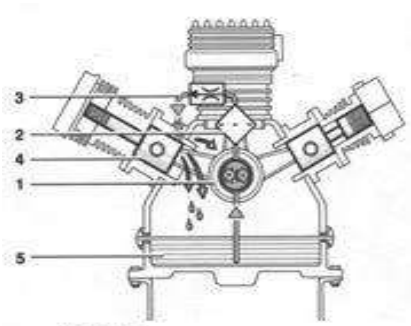
A priority (or minimum pressure valve) is located downstream of the purifier; this valve blocks air from leaving the purifier until the pressure reaches 120±10 bar, a pressure at which the purifying process is more efficient than at lower pressures. The air is then ready to be directed to a filling panel 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 water-oil separator (pre-filter) is equipped with either a manual drain or, an automatic drain valve, or both.

They should be drained by opening the manual drain valve every 10 minutes. The purifier should be drained after the filling process is completed for both manual and automatic drain-controlled models. On automatic drain-controlled compressors, purifier should be also manually drained by opening the manual drain valves at the bottom after the filling process is completed.

On automatic drain-controlled mariner and canopy compressors, water condensate in water separators and prefilter is drained automatically by automatic drain valves. The time period and duration for opening these drain valves are set by a timer. This timer allows making dual time adjustments for both functions. The factory setting is to open every 10 minutes for 5 seconds. Draining the condensate inside the purifier manually after each filling process is extremely important for getting a good quality breathing air and the life of the consumables inside the purifier cartridge. W32 series compressors are manually operated by the start/stop switches on the electric motor. W32 series with automatic start/stop models has a pressure switch that promises the compressor stops and restarts between the lower and upper-pressure limits.

The compressor oil level could be seen from the oil level sight glasses placed on both sides of the crankcase. As W32 series are forced lubricated compressors oil pressure could be checked also from the oil pressure gauge. Oil pressure should be from 4 to 10 Bar.

2.6. Lubrication System



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

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

NOTE:

The oil pump will only operate if the compressor rotates in the correct direction. Failure to do so will result in no oil pressure and damage to the entire compressor unit.

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.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

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.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Connecting Rods:

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

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Note:

Since the connecting rods are presented as a single set on the crank, the connecting rods will also be changed when the crank is changed.

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 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.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

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.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

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.

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Pistons:

Connecting rods connect the first, second, and third 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.

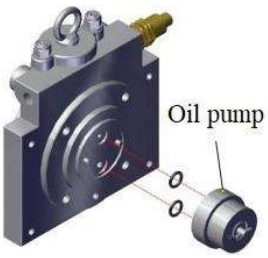
CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Oil Pressure Switch

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

CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE

Oil Pump



Compressor lubrication is enabled by an oil pump connected and driven by the crankshaft. The oil pump takes the oil from the crankcase and lubricates the 2nd and 3rd stages by pumping the oil to pass through the regulating valve and oil pump filter. Regulating valve promises the oil goes to the stages at the required pressure. Oil pressure can be observed from the oil pressure gauge Oil pressure should be 4 to 10 bar. On the W32 series electric models, oil pressure switch promises the electric motor to stop automatically when the oil pressure drops.

Intake Filter:

Inlet filter is used to filter the air particles in the first stage. In the maintenance intervals listed in the Maintenance Table, replace the inlet filter element

2.7.2. System

Subbase:

This is the part carrying the motor and compressor and has been supported with 4 shock mounts. The compressor and motor system work with a belt-pulley system.

Filling System:

The filling system consists of filling hoses resistant to high pressure, filling valve, yoke, pressure gauge, and DIN Adapter on the hoses which is required to connect and fill the SCBA cylinders. This system is designed so that 2 cylinders can be filled at the same time in W32 model compressors. The number of filling hoses can be increased upon request.

Motor

W32 series mariner compressors can be driven by electric motor, petrol or diesel engine. W32 series canopy compressors can be driven by electric motor. They are belt-driven.

IMPORTANT:

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

Control Board (Electric motor)

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

Control Board (Petrol/Diesel engine)

You can start, stop and observe the compressor through this panel.

Figure 12 – Control board

1- **Manual stop:** Stops the compressor
2- **Hour meter:** Indicates compressor operating hours
3- **Thermostat Set Value:** Automatic stop does not apply to W32 diesel compressor.
4- **Digital Temperature Display:** Shows the discharge air temperature
5- **Start Switch:** Starts the compressor
6- **Oil Temperature LED:** LED lights when oil temperature reaches critical level.
7- **Oil Level LED:** LED lights when oil level is low
8- **Switched LED:** LED is on when start switch is on.

Pressure Switch: (*for auto drain models*)

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: (*for auto drain models*)

The automatic drain incorporates a small piston with high pressure in the bottom and low pressure on top; the surface where low pressure acts is larger than the surface where the high pressure effectively acts on the piston. Therefore, the force on the top is larger and causes the piston to sit and seal the high-pressure vent port. The drain valves are controlled by a solenoid mounted on the pilot valve fitting. It receives compressed air from the 2nd stage air inlet and sends it over the 2 drain valves forcing them to close. When the solenoid is de-energized, it removes the control air over the top of the drain valve

pistons, allowing the high pressure acting from the bottom of the pistons, to open and perform drain operation.

Intercoolers and Aftercooler:

These are the cooling tubes/serpantines 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. There are two water separators on W32 series; between 2nd and 3rd stg.

Purifier:

This is the filtration system that purifies the compressed air to produce breathing air comply with breathing air quality standard (EN 12021:2014). Air compressed in the compressor stages finally enters the purifier. A refillable cartridge that contains the consumables performing the filtration is placed in the purifier housing. Refillable cartridges are more cost-effective and environmentally friendly compared to replaceable cartridges. 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. The compressor can work safely between 0°C and 50°C. Lower temperatures may cause blockage, and higher temperatures may diminish the purifier's efficiency. There will also be other factors that affect the purifier's life. We recommend replacing the purifier cartridge every 50 running hours/3 months. Condensate water in purifier should be drained with the manual drain valve after each cylinder is filled and the compressor is shut off.

Priority Valve:

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

W32 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.

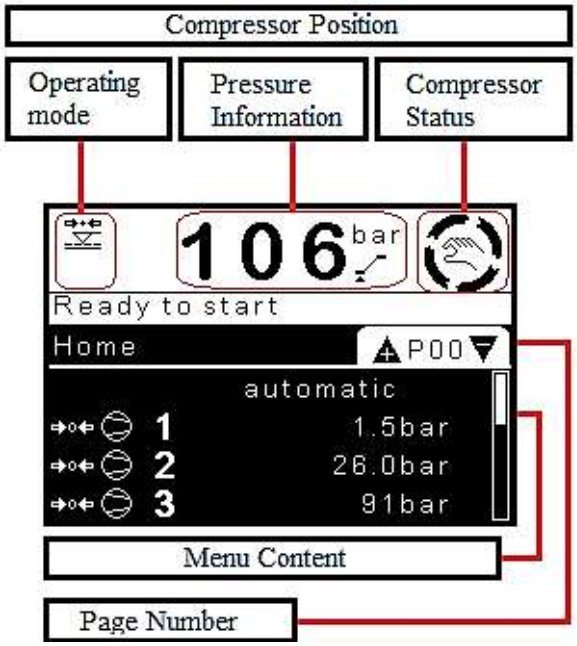
2.9. User Interface

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.

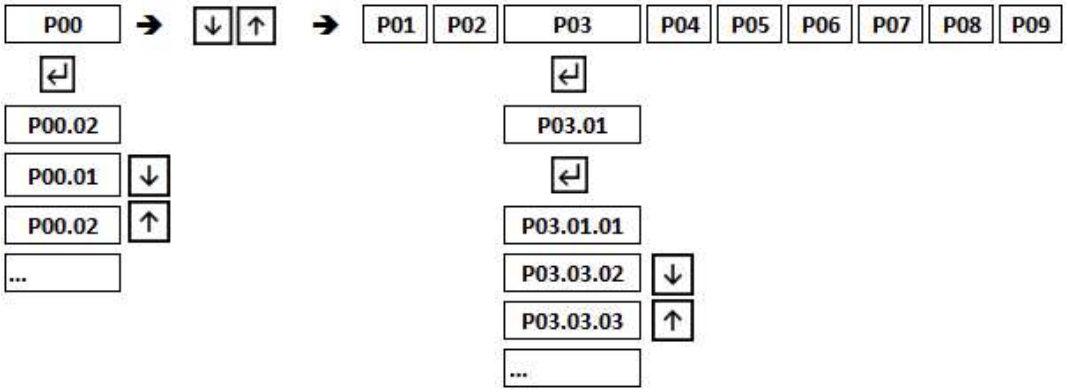
Additionally the menu tab extends to identify the navigation location. For example:

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

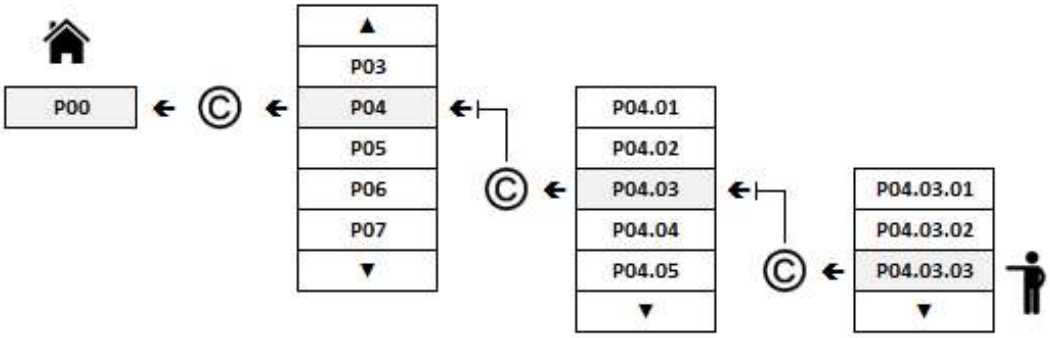
Note: Menu content items are only visible when the Airmaster™ is appropriately configured.

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

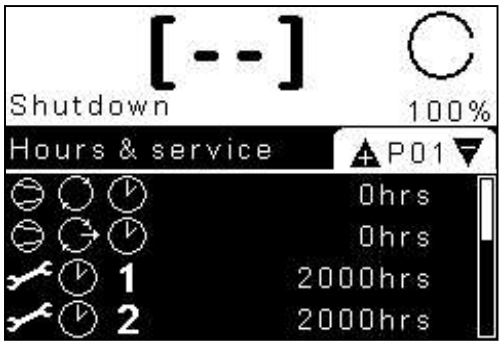
Progress in Menu



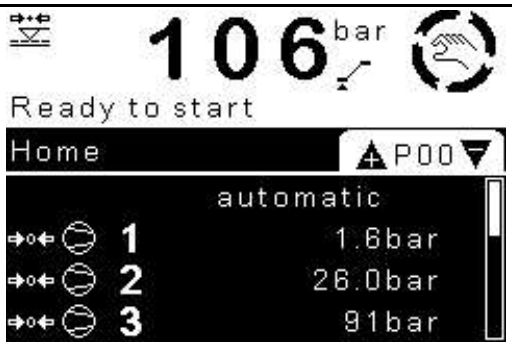
Back to previous Menu



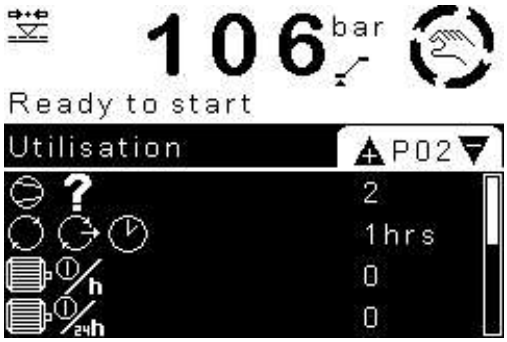
PAGE NO (P00) is on the top right of the screen. P00 is the main screen.



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).

<u>Menu P00:</u> 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

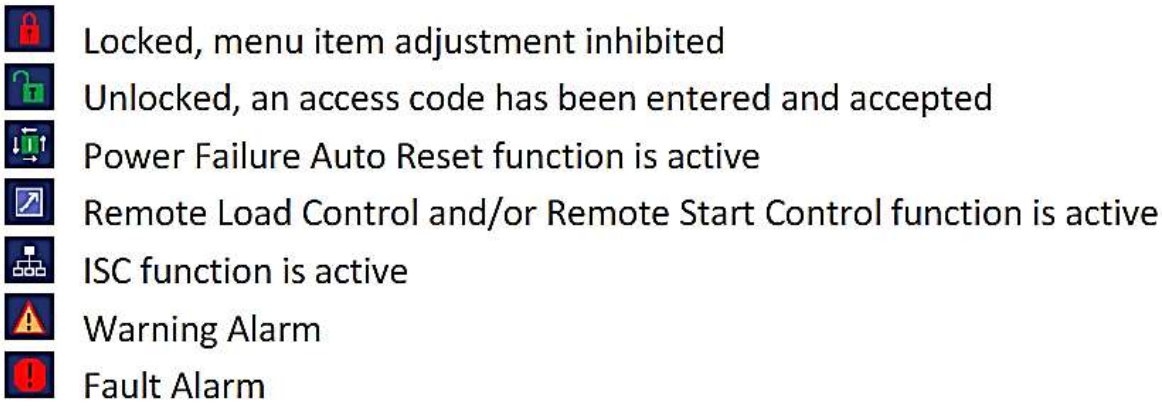
E:2131 EMERCENCY STOP
Displayed when the inlet pressure reach the value P17.81 parameter

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.

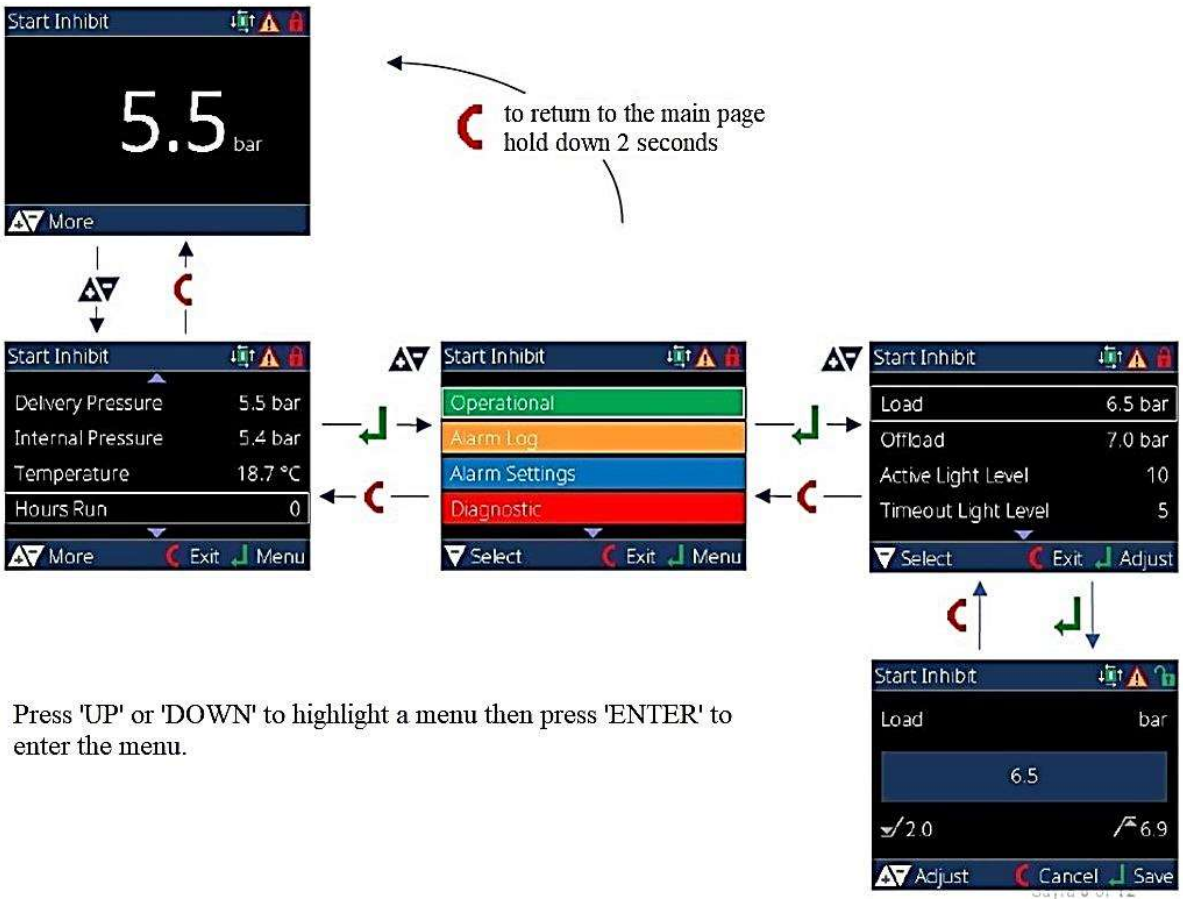
Operational Screen

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	°C / °F
P01.06	Fan off	°C / °F
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	°C / °F
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

2.9.1. Operation control

In W32 series compressors, starting control is done in 2 ways.

I. Manuel start/stop

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

II. Manuel 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.

2.9.2. Drain control

I. Manuel drain

At regular intervals, the manual discharge valves under the purifier and the water separator on the compressor are manually opened, allowing the collected water and oil to be discharged.

II. Auto drain

Springs in automatic drain valves are over the piston in high pressures and under the piston in low-pressure valves. Thus, 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. Automatic drain valves are controlled by a solenoid. It receives compressed air from the 2nd stg air inlet and sends it over 4 drain valves forcing them to stay closed. When the solenoid is de-energized, it removes the control air on the top of the drain valve pistons, allows the high pressure acting from the bottom of the pistons, to open and perform drain operation. 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 (t1~7 min) which the solenoid will remain energized (=the drain valve will remain closed),

and the duration (t2 ~ 6 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, a pallet jack, or two persons will be needed. Use the carry handles to lift the compressor. If lifting the compressor manually is necessary, ensure two people are doing it.

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 50ºC, 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 (see article 2.10.5).

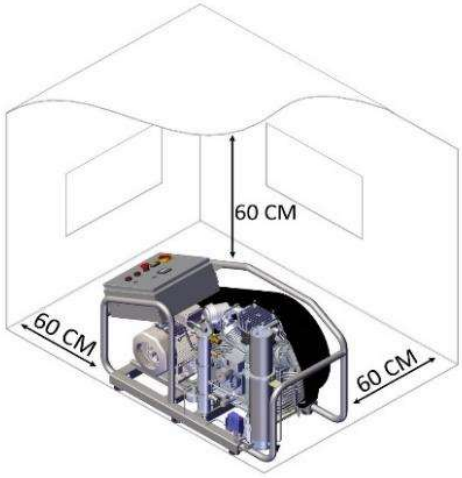


Figure 13 – W32 series compressors layout

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.

- Make sure that you have read this manual carefully and understand it. If you have any questions, contact ALKIN.
- Make sure that all the preparations described in the installation section of this manual have been made.
- Ensure that cooling air can flow freely.
- Check the oil level in the crankcase.
- Check the pressure switch and make sure that the pressure adjustments are set at the proper start-stop pressures.
- Rotate the compressor flywheel several times by hand to see that it is free and working properly.
- Keep all objects such as tools, rugs, etc. away from the compressor.
- Check the Purifier if the cartridge is installed.
- Press the start button to start the compressor. Check and verify that there is no abnormal vibration or any abnormal sounds.
- Check the direction of rotation. Rotation must be in the direction of the arrow marked on the crankcase and flywheel. If the direction is wrong, immediately stop the compressor by pushing the Stop button and contact an authorized electrician.
- Let the compressor run without producing pressure while the purifier drain valve is open for 10 minutes to observe if any abnormalities in the operation of the compressor exist. This way lubrication of all parts will be complete.
- Check the possible leaks in piping. If there is any leak stop the compressor and let it cool down.
- At the end of 10 minutes of running the compressor free, close the purifier drain valve allowing the pressure to rise. Check the last stage safety valve is operating properly 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.

To fill cylinders, please read Cylinder Filling Instructions.

2.12.2. Oil Recommendation

The oil level should be checked before each start up. **Top up to the overfill point when required 3 liters of oil should be loaded during each replacement.**

RECOMMENDED OILS

Compressor Oil	Brand	Type	Quantity
Anderol 755	Anderol	Synthetic	3 liters
Anderol 750	Anderol	Synthetic	3 liters
Corena S4 P100	Shell	Synthetic	3 liters
Energol RC-R-150	BP	Semi Synthetic	3 liters
Chemlube 751	Ultrachem	Synthetic	3 liters
LM 750	Luqui Moly	Synthetic	3 liters
Airtech RX 150	Smith and Allan	Synthetic	3 liters
EP FG BREATECH-100	Miles Lubricants	Food Grade	3 liters
Ecosyn CE 155	Wipa Chemicals International N.V.	Synthetic	3 liters

Anderol 755 – Compressor Oil

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.

2.13.1. 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.

2.13.2. Motor lubrication

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

2.13. Adjustment

Pressure switch adjustment (for auto drain models)

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

Adjustment is done by rotating the Red Adjustment Screw.

You can adjust the 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 a 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 the 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.

- Check that the refill hose and relevant fitting are in good condition.
- 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.)
- Close Purifier manual drain valve if it is open.
- Read the oil pressure on the oil pressure gauge and make sure that the oil pressure goes up to 4 to 10 bar.
- Connect and fix the filling hose to the bottle as the filling valve is in closed position.
- Close the cylinder valve first.
- Open the lever on the filling valve.
- Open the cylinder valve on the filling hose when the pressure reaches operating pressure on the pressure gauge placed on the filling hose.
- Stop compressor (compressor will auto stop if auto start/stop controlled) and close the cylinder valve first and then the filling valve when the bottle pressure reaches the desired pressure (max. working pressure).

- Release the pressure in the filling valve and disconnect the filling system from the cylinder. Drain the condensate collected inside the 2nd and 3rd stg Water separators (It would be drained automatically if the unit has automatic drain control).

CAUTION!

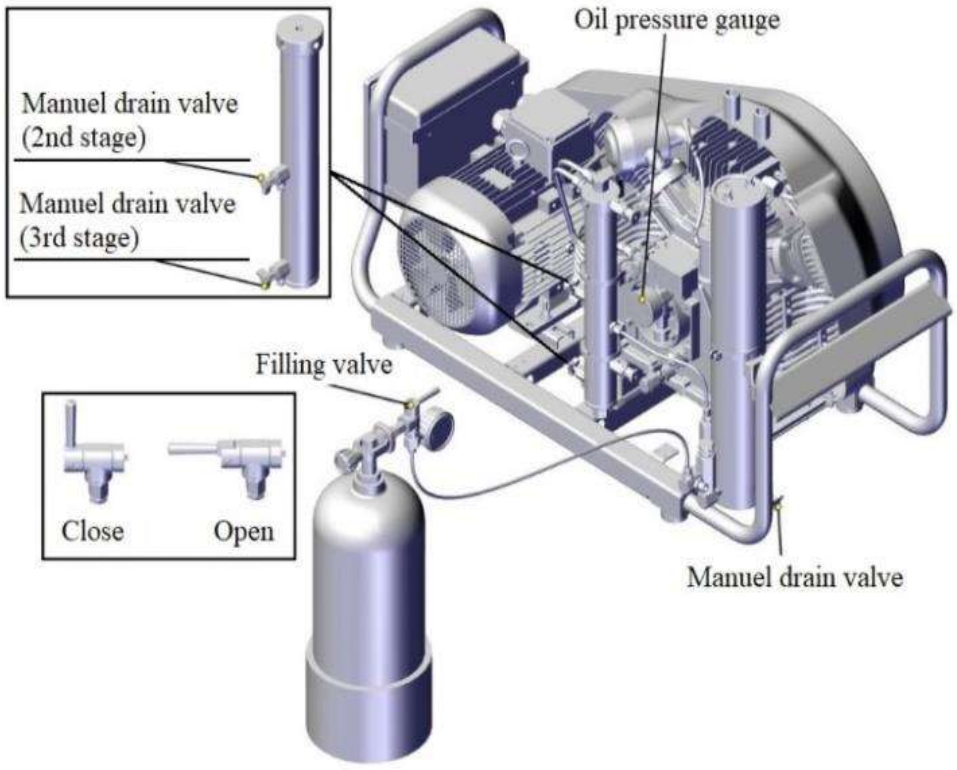
- To avoid increased CO_2 contents in the compressed breathing air, we recommend "scavenging the purifier" before connecting and filling the air bottles. Before each bottle fill, make sure that no bottle is connected, open the filling valves for about 1 to 2 minutes and let the compressed air escape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

CAUTION

If you need to fill at 200 bar, right after a filling at 300 bar, release the pressure at filling valve for a short time until pressure goes down below 200 bar.



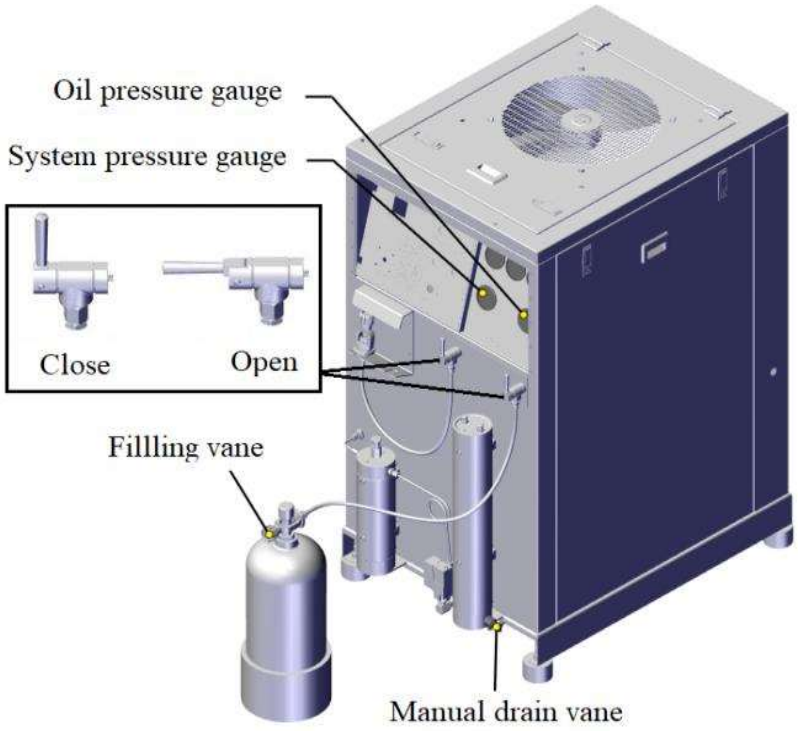


Figure 14 – W32 series compressors tube filling

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 checked to see if they are draining for 5 seconds at every 10 minutes. CONSULT ALKIN IF UNSURE.	03
	Open the manual drains beneath water separators at every 10 minutes to drain condensate water.	-
Weekly	Check intake filter	04
	Check V-belt	05
	Check the tightness of the fasteners	06
	Clean intercoolers and aftercooler and flywheel	07
	Check current	08
	Check the tightness of the cable connections	-
1000 hours / 1 year	Check safety valves, replace if necessary.	09 09-01
	Inspect the stage valves, clean if there are any dirt or carbon deposits in the valves.	-
	Check the oil check valve, replace with a new one, if necessary	10 10-01
	Check the check valve, replace with a new one, if necessary	11 11-01
	Check priority valve, replace with a new one, if necessary	12
	Check belts, replace with a new one, if necessary	13
	Check oil seal, replace with a new one, if necessary	14
5 years	Purifier should be tested by authorized third parties in accordance with the Pressure Equipment Directive (PED).	-

3.1.2. Replacement Table

Replacement time	No	Explanation	Qty.	Inst. no.
50 hours / 3 months	1	Purifier (P21) cartridge for 4kw electric motor W32 mariner models **Note**: Refilling time of the cartridge may vary according to the ambient temperature and humidity.	1 pcs.	15
80 hours / 6 months	1	Purifier (P41) cartridge for 5,5kw-7,5 kw electric motor W32 mariner models **Note**: Refilling time of the cartridge may vary according to the ambient temperature and humidity.	1 pcs.	15
500 hours / 1 year	1	Oil change	3 liters	16
	2	Oil filter element	1 pcs.	17
	3	Intake filter element	1 pcs.	04
	4	Filling valve overhaul with repair kit	2 pcs	-
1000 hours / 1 year	1	Calibrate auto drain valves (pneumatic valves) with auto drain maintenance kit. (For auto drain models.)	1 set	18
	2	Piston Ring	1 set	Contact with ALKIN
	3	Check the valves (stage) at every 1000 hours / 1 year. If necessary, replace with new ones.	1 set	
	4	Gasket	1 set	
	5	O-ring	1 set	
2000 hours / 2 years	1	Cylinder	1 set	Contact with ALKIN
	2	Piston	1 set	
	NOTE: Cylinders and pistons will be checked every 2000 hours / 2 years and replaced with new one if necessary.			
4000 hours/4 years	1	Safety valves	1 set	09-01
	2	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

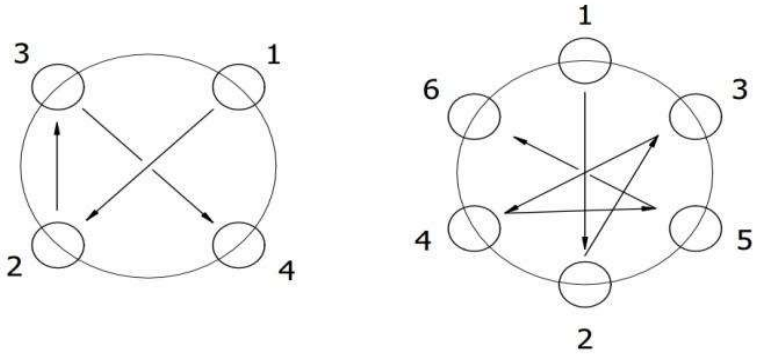


Figure 15 – Tightening order

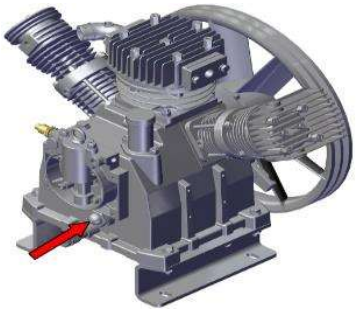
3.3. Maintenance Instructions

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

3.3.1. Oil level check

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

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



- Refill oil if needed.
- The compressor is started, and it is observed that the oil rises from the pressure manometer. The pressure should be between 4 bar and 10 bar. If the pressure does not exceed 4 bar within 2 minutes, the W32 series compressor will stop automatically.

3.3.2. Leak check

Instruction no	02
Instruction name	Leak Check
List of tools required	Bowl, sponge, foam water
Parts list to be used in replacement kit	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

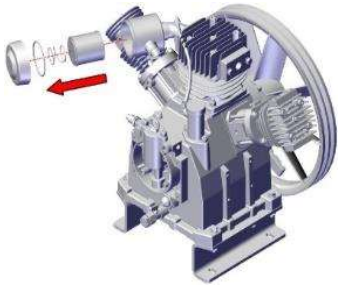
Instruction no	03
Instruction name	Auto Drain Valves Check
List of tools required	None
Parts list to be used in replacement kit	None

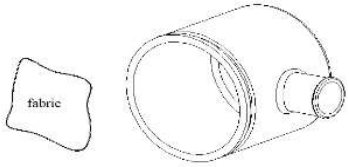
- While working, compressor should drain for 5 seconds at every 10 minutes.

3.3.4. Intake filter check and intake filter element replacement

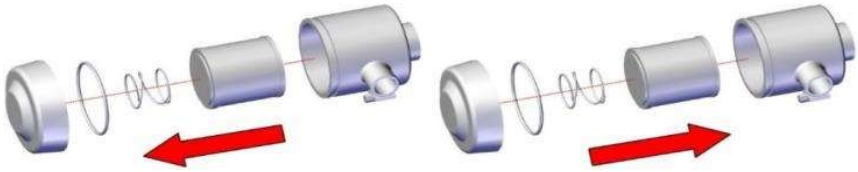
Instruction no	04
Instruction name	Intake Filter Check
List of tools required	Clean cloth
Parts list to be used in replacement kit	New intake filter element

- Check intake filter element at every 500 running hours / 1 year and clean with pressurized air from inside towards outside. Depending on ambient temperature and humidity, replace filter element at most every three months.
- Suction filter cover is turned counterclockwise. The cover is removed from the place by taking precautions against the possibility of spring under the cover.





- The inside of the suction filter body is cleaned with air. The suction filter element is rotated at an angle of 45 degrees and reinstalled. When doing this, check whether the O-ring in the filter is in place.



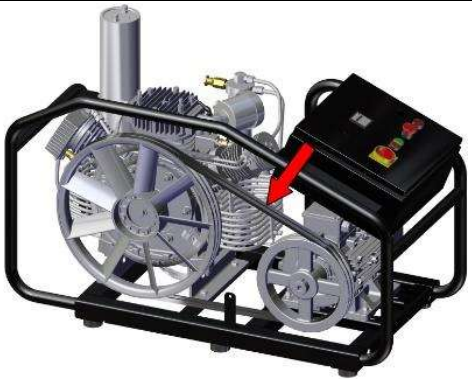
Note

Before changing the suction filter completely, turn the dirty part during weekly checks and put the clean part on the suction part. Do this until there is no clean part in the filter element. Then replace it with a new one based on the replacement time in the maintenance chart.

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.



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
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	appropriate tools, foam water
Parts list to be used in replacement kit	New safety valve

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

3.3.10. Oil check valve check

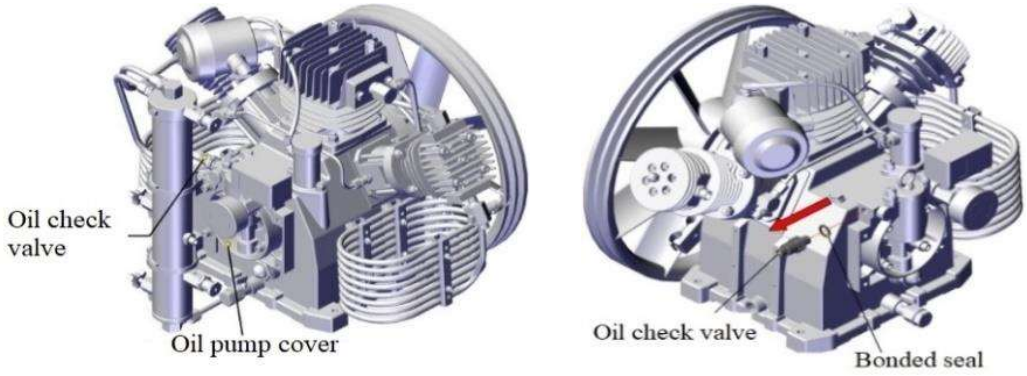
Instruction no	10
Instruction name	Oil check valve check
List of tools required	-
Parts list to be used in replacement kit	Nano

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

3.3.10.1. Change oil check valve

Instruction no	10-01
Instruction name	Change oil check valve
List of tools required	No. 14, 22 wrench
Parts list to be used in replacement kit	New oil check valve

- Compressor is stopped and pressures are discharged.
- Wait 2-3 minutes after the compressor is stopped.
- When the compressor is viewed from the front, the outlet pipe of the oil check valve on the left side of the oil pump cover is removed with the no. 14 wrench.
- Unscrew oil check valve with no. 22 wrench.
- Remove the bonded seal at the bottom of the removed oil check valve on the cover. Then the new one is installed.
- The new oil check valve is installed with the no. 22 wrench.
- The previously removed outlet pipe is re-tightened with a no. 14 wrench.
- The compressor is started, and the pressure gauge is checked to see if the oil pressure rises within 2 minutes. If the oil pressure rises, there is no problem. If the pressure does not rise within 2 minutes, the compressor will stop automatically.



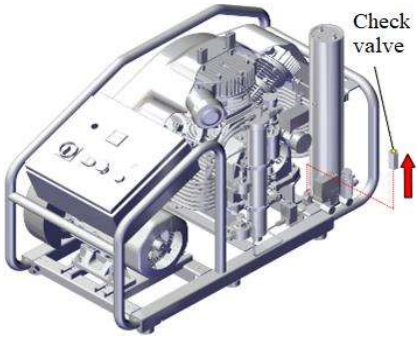
3.3.11. Check valve check

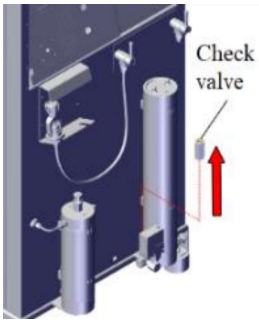
Instruction no	11
Instruction name	Check Valve Check
List of tools required	14 wrench, foam water
Parts list to be used in replacement kit	None

- Start the compressor. When purifier is pressurized, remove check valve inlet pipe with no. 14 wrench. Check for leaks with foam water. Reconnect the pipe if no leaks with the help of no. 14 wrench. 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. 22 wrench
Parts list to be used in replacement kit	New check valve





- If check valve is leaking, remove it with no. 22 wrench.
- Clean its place and install the new check valve with the help of no. 22 wrench.
- Start the compressor. Check for leaks with foam water.

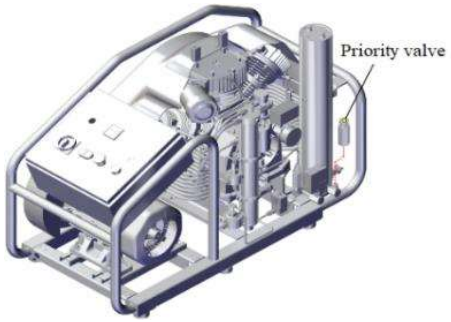
3.3.12. Priority valve check

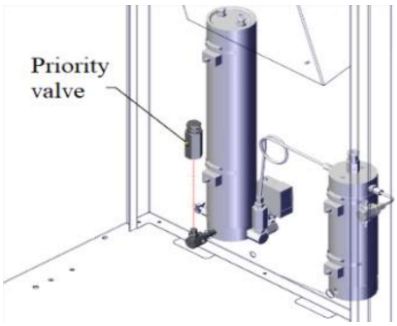
Instruction no	12
Instruction name	Priority Valve Check
List of tools required	None
Parts list to be used in replacement kit	None

- 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.

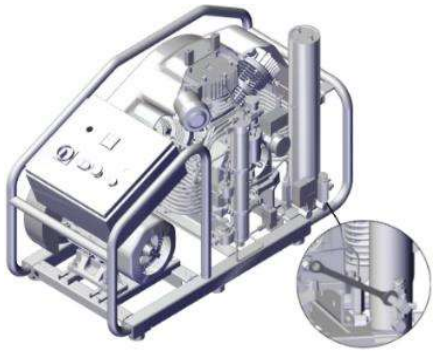
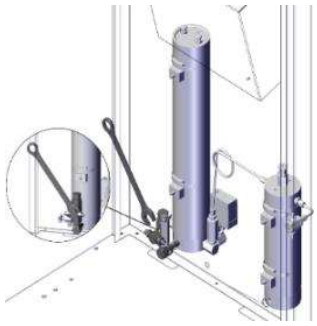
3.3.12.1. Priority valve replacement

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

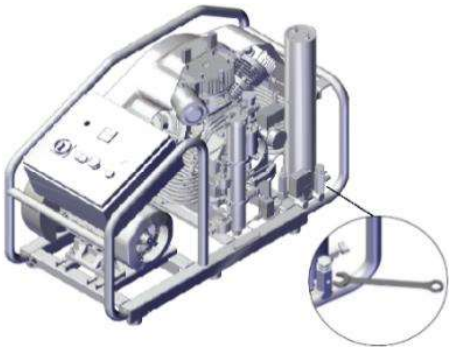
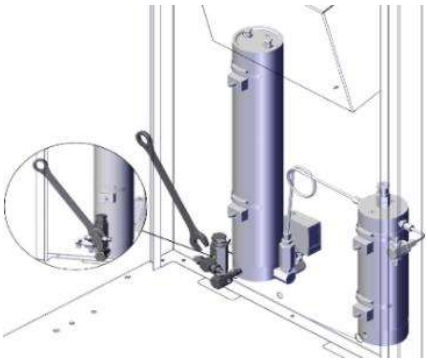




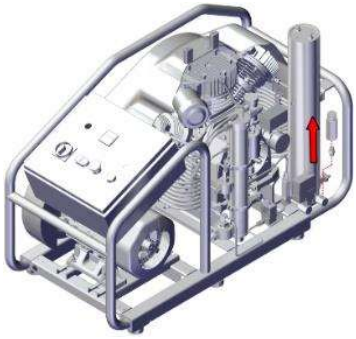
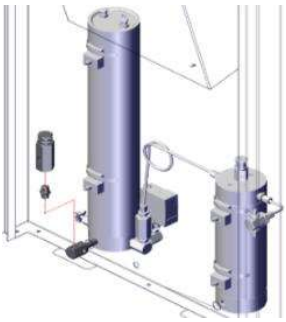
- Stop the compressor and verify complete depressurization.
- Priority valve is located at the outlet of purifier.
- Remove all hoses and pipes connected to priority valve with no. 14 wrench.
- Remove nipple connected to the priority valve with no. 27 wrench.

- 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.

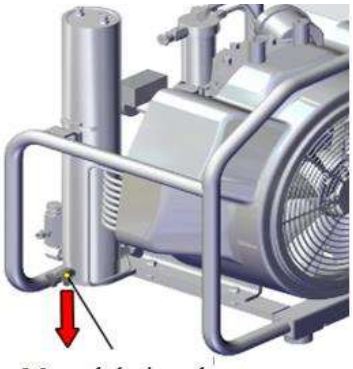



- Wrap teflon tape on the new priority valve and put it on its place and tighten with 19 and 32 wrench. Reconnect all hoses and pipes connected to priority valve.
- Start the compressor. New priority valve should allow air flow at 120±10 bar.

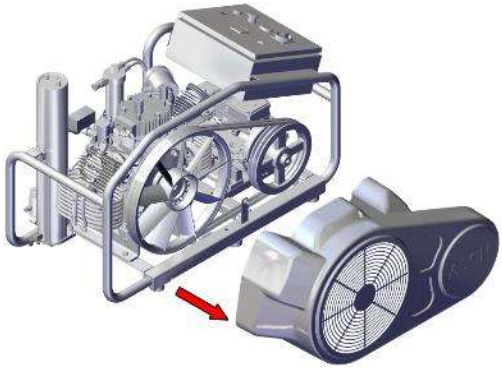
3.3.13. V-Belt replacement

Instruction no	13
Instruction name	V-belt Replacement
List of tools required	No. 5 allen wrench
Parts list to be used in replacement kit	New V-Belt

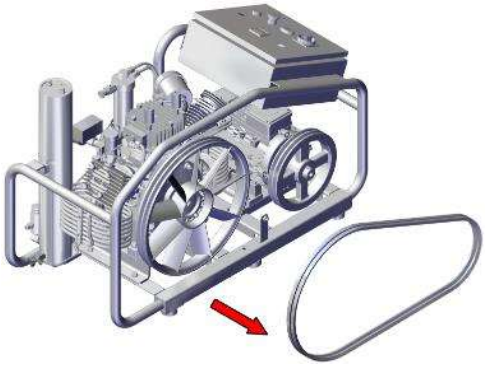
- Stop the compressor and verify complete depressurization.

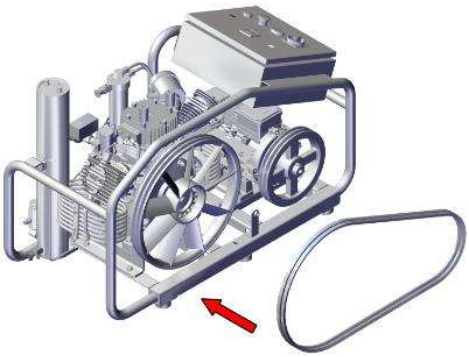


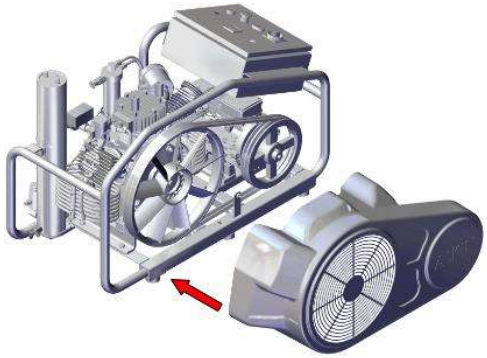
- Remove flywheel grid with no. 5 allen wrench.



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



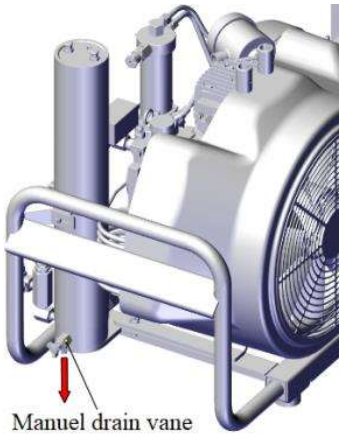


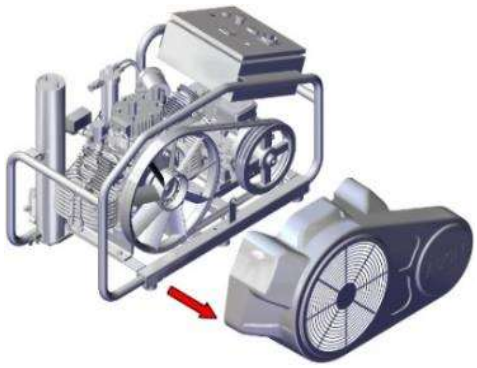


3.3.14. Oil seal replacement

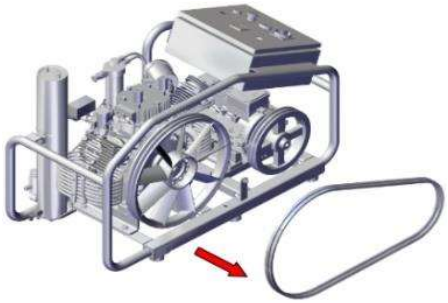
Instruction no	14
Instruction name	Oil Seal Replacement
List of tools required	No. 3, 4 and 5 allen wrench, 14 wrench
Parts list to be used in replacement kit	New oil seal

- Remove the bolts on the compressor housing using no. 5 allen wrench and remove the housing.

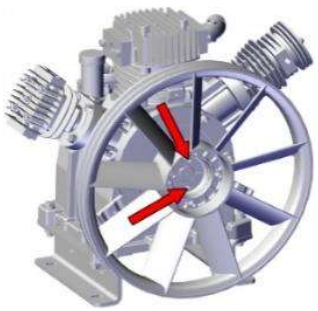


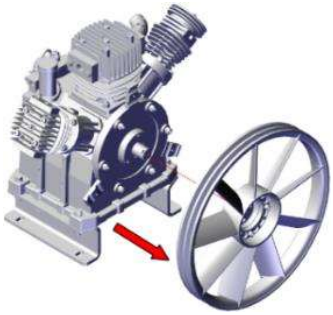


- Remove the engine belts by loosening the engine cradle with the help of 14 wrench.

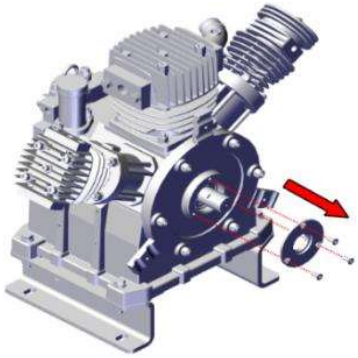


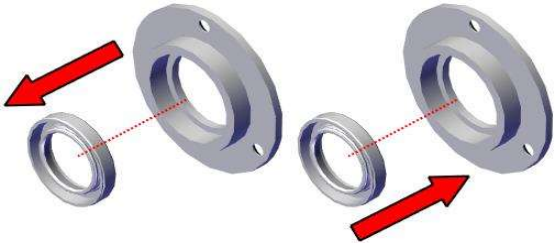
- Loosen setscrews on compressor pulley hub with no. 5 allen wrench. Unscrew one of the setskur bolts and insert into the third hole on the pulley and tighten. As a result, the pulley is loosened and when the bolt is tightened, pull the pulley and remove it.



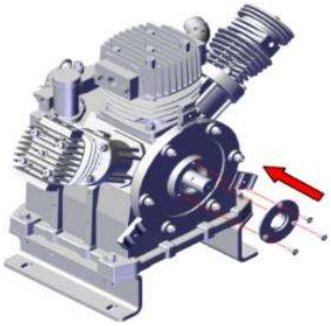


- Remove the bolts on the seal cover by applying force counterclockwise with no. 4 allen wrench and remove it from the crankcase with a thin screwdriver.

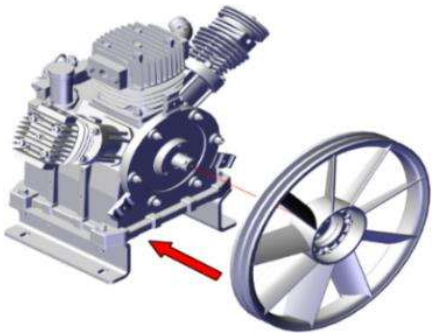


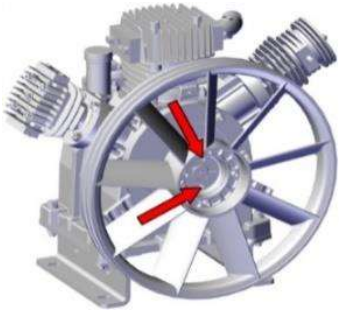


- Remove the old seal from the seal cover and install a new one. Then lubricate the compressor with its own oil.
- Insert the seal cover onto the shaft and engage.
- Tighten the screws by applying force in a clockwise direction with the help of 3 allen wrench.

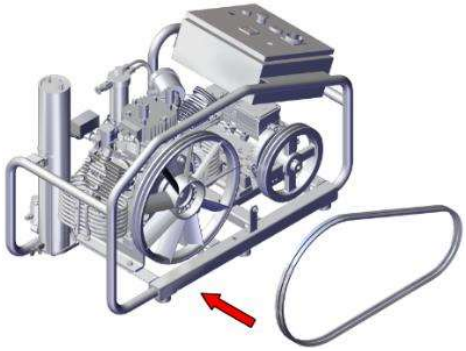


- Fit the pulley on the shaft and remove the clearance by reciprocating the setscrews used to remove the pulley. Align the pulley with the motor pulley and tighten the setscrews mutually.

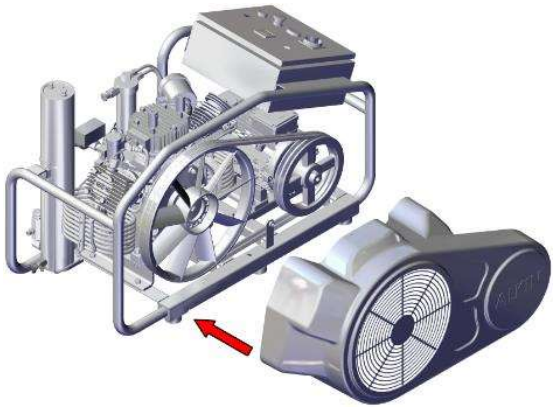




- Reinstall the pulley belts and tension the engine.



- Engage the pulley housing and tighten the bolts using the no. 5 allen wrench.



3.3.15. Purifier cartridge refill kit replacement

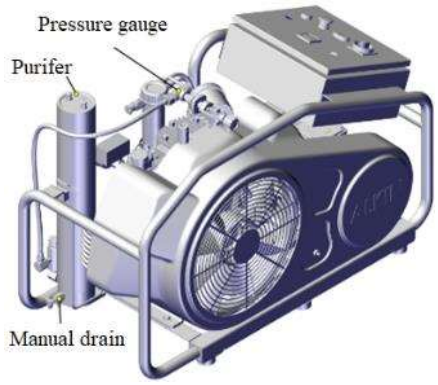
Instruction no	15
Instruction name	Purifier Cartridge Replace
List of tools required	Appropriate tools
Parts list to be used in replacement kit	New purifier cartridge

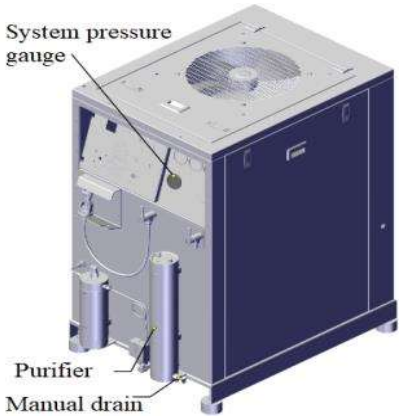
- The compressor is switched off at the main switch.
- Relieve the pressure in the purifier from the manual relief valve near the bottom of the Purifier.

- 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.

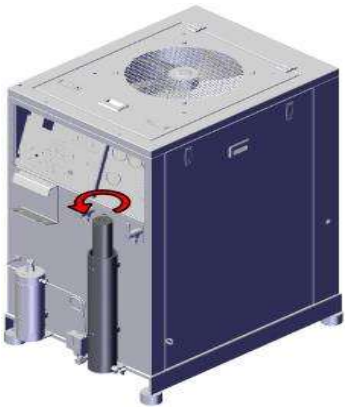
- The Purifier is removed by turning the left and right cartridge upwards by turning it to the left and right with the help of the release wire on the cartridge.
- Clean the inside of the Purifier cartridge and the perforated sheet.
- Refill the cartridge according to the cartridge kit filling instructions.
- Place the pad on the perforated sheet on the cartridge adapter.
- Fill 150 g of Molecular Sieve onto the felt.
- Place pad on molecular sieve.
- Fill 190 grams of Activated Carbon on the pad.
- Pad is placed on Activated Carbon.
- 240 g Molecular Sieve is added to the pad.
- Place pad on molecular sieve.
- Add 190 grams of Activated Carbon onto the Molecular Sieve.
- Pad and stainless perforated sheet are placed on top of Activated Carbon, respectively.
- The spring is placed on the perforated sheet.
- The cartridge is inserted into the cartridge by pushing the pins of the top cover inward.
- The cartridge is attached to the bottom cover so that the large O-rings are on the top and the small one on the bottom.
- 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 or automatic pressure switch.

Purifier cartridge refill kit replacement (for 5.5 kW and 7.5 kW compressors)



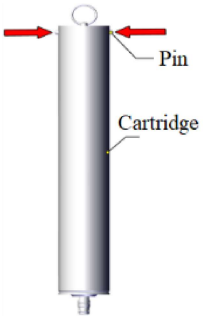


- The compressor is switched off. The pressure in the purifier is discharged from the manual relief valve under the purifier. Operation is started after the pressure inside the purifier is zero.
- The key on the Purifier top cover or the bolts on the cover are unscrewed by turning it counterclockwise with the help of an apparatus.
- The top cover is removed and wiped with a clean lint-free cloth. The purifier cartridge in the purifier body is then removed by turning it counterclockwise with the aid of the wire on the cartridge.



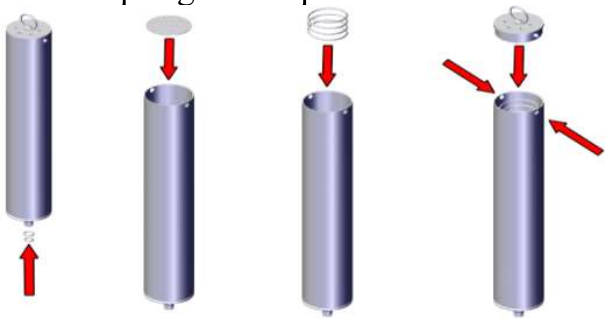
- The inside of the Purifier body is cleaned with a lint-free cloth.

- The top cover of the removed purifier cartridge is pushed inward on the pins on either side of the cartridge body to release the cover. Care must be taken against the danger of the spring under the cover being ejected.



The removed cartridge top cover is cleaned and stored in one place.

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

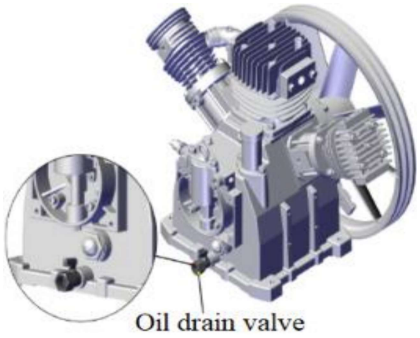


- New O-rings are attached to the end of the purifier cartridge which is completed and lubricated with compressor oil.
- Hold the wire from the top of the cartridge and insert it into the purifier body by turning it left and right.
- The Purifier top cover is installed so that the pins snap into place.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

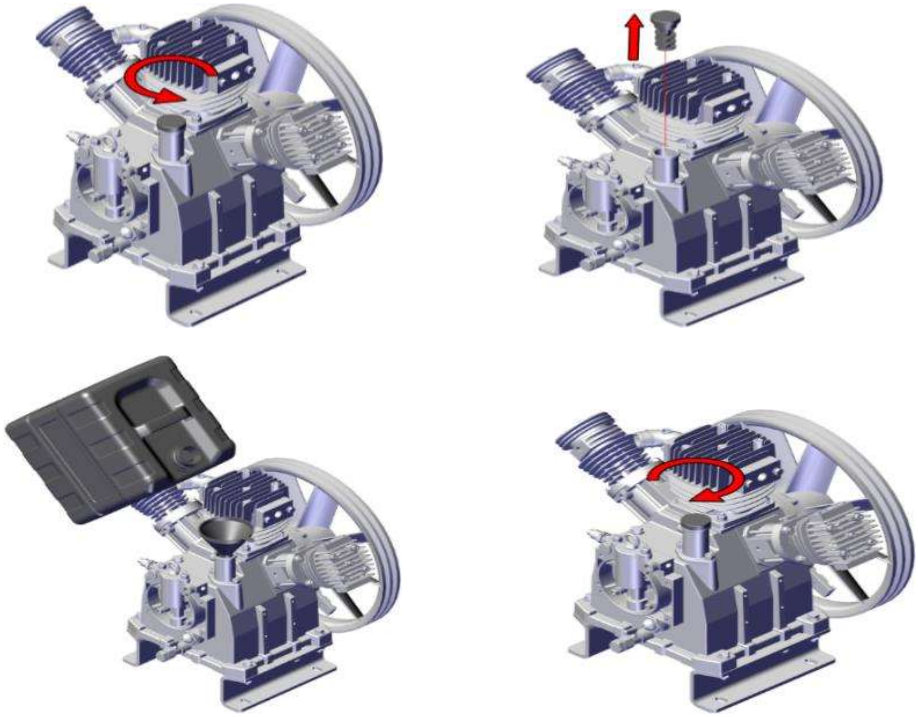
3.3.16. Oil change

Instruction no	16
Instruction name	Oil Change
List of tools required	cloth
Parts list to be used in replacement kit	New compressor oil

- If the compressor is cold, start the compressor for 15-20 minutes and wait for the oil inside the compressor to warm up. When the oil is cold, no change is performed.
- When viewed from the front of the compressor, the oil drain valve cover is opened with no. 27 wrench on the side of the sump and the oil is drained into a container. The oil in the sump is expected to drain well.



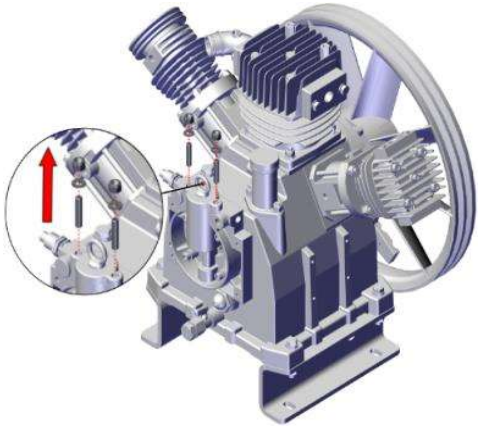
- The oil drain valve is closed.
- Remove the oil filler cap on the crankcase counterclockwise. Then add 3 liters of ANDEROL 755 by checking the oil level. The oil filler plug is closed by tightening it clockwise.

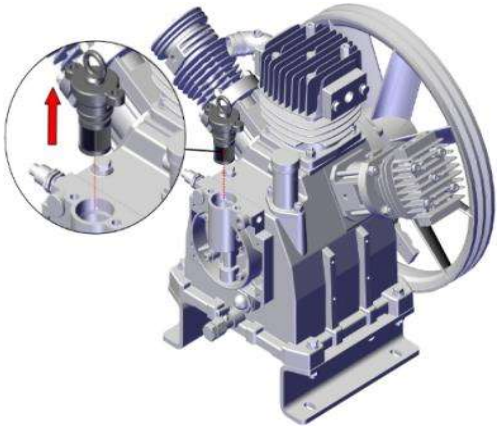


3.3.17. Oil filter replacement

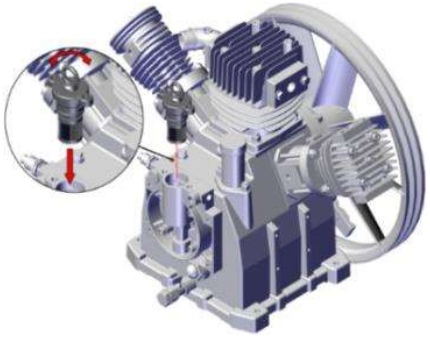
Instruction no	17
Instruction name	Oil Filter Replacement
List of tools required	cloth
Parts list to be used in replacement kit	New oil filter

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





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

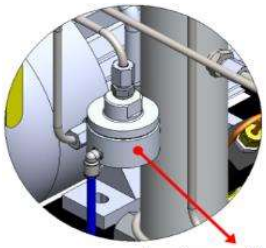


- Then, 2 pieces of M8 hex head nuts and washers are tightened and the cover is fully seated. This completes the process.
- The compressor is started. The oil pressure should rise after 5-10 seconds. If the oil pressure does not rise within the given limits within 1 minute, there is a problem. If the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

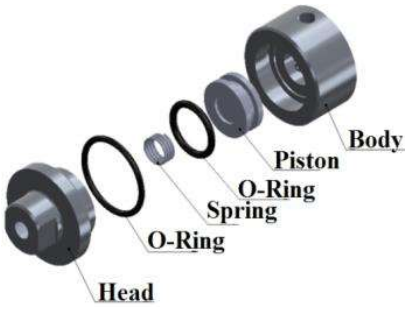
3.3.18. Auto drain valve adjustment with repair kit

Instruction no	18
Instruction name	Auto Drain Valve Adjustment with Repair Kit
List of tools required	No. 14, 19 , 27 wrench
Parts list to be used in replacement kit	New auto drain valve

- Stop the compressor.
- Verify complete depressurization of pressure equipment.
- Remove the piping of auto drain valve with no 14. wrench, nippels with no. 14-19 wrench.



- Remove the auto drain valve head with no.27 tool with counterclockwise rotation.
- Remove from the auto drain valve old pistons and spring and clean auto drain valve ass'y with pressurized air.
- Take the new piston and spring from the manufacturer's repair kit. Verify that o-ring on the auto drain valve head is installed (and oiled). Then, install the new piston Teflon side downwards onto the assy. Then, install the spring onto the spring housing on the piston.
- Tighten the valve head with no.27 tool. After tightening, slightly loosen it with rotating no.27 tool counterclockwise. This is done so that the piston is well placed.
- Reconnect the piping of auto drain valve with no. 14 wrench, nippels with no. 14-19 wrench.
- Start the compressor and verify that the drain valve is operating within drain intervals.



SECTION 4

TROUBLESHOOTING

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

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

4.3 COMPRESSOR KNOCKS	
• Crankshaft bearing failure	Replace bearings or crankshaft assembly.
• Connecting rod journal bearings worn	Replace the connecting rods; if worn, replace the crankshaft bushing center as
• 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

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 COMPRESSORS ALKIN KOMPRESÖR SAN.VE TİC.LTD.ŞTİ.
Cüneyibey Mh. Tabaş Yolu Küme Evleri No:3
Menderes / İZMİR 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 KOMPRESÖR SAN.VE TİC.LTD.ŞTİ.
Cüneyibey Mh. Tabaş Yolu Küme Evleri No:3
Menderes / İZMİR Tel: 0 232 [illegible] 90
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