



# HIGH PRESSURE BREATHING AIR COMPRESSORS

---



## *W31 SERIES OPERATOR MANUAL*

---



# W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSOR MODELS

---



- MARINER -



- VERTICAL -



- PETROL ENGINE -



- DIESEL ENGINE -





# ALKIN COMPRESSORS

## High Pressure Breathing Air Compressors

---

### Operator Manual

© This manual or any parts thereof cannot be copied by any means or used for any other purposes other than servicing ALKIN W31 series compressors unless specific written permission of ALKIN® is received.

© ALKIN COMPRESSORS

Kazım Karabekir mah. Bekir Saydam cad. No : 94/1 35865

Torbalı, IZMİR

Phone : +90 232 782 22 90

Fax : +90 232 782 22 89

[www.alkin.com.tr](http://www.alkin.com.tr)

[www.alkin-compressors.com](http://www.alkin-compressors.com)

- W31-2023-01-ENG-

# CONTENTS

<b>GENERAL INFORMATIONS.....</b>	<b>2</b>
1. General .....	2
1.1. General Safety Information .....	2
1.2. Safety Tags .....	3
<b>ABOUT COMPRESSOR.....</b>	<b>8</b>
2. General .....	8
2.1. Compressor Unit.....	10
2.2. Technical Data.....	15
2.3. Process and Instrumentation Diagram (P&ID).....	18
2.4. Identification of the Compressor .....	21
2.5. Principles of Operation.....	22
2.6. Lubrication System.....	23
2.7. Major Components .....	23
2.7.1. Compressor unit .....	23
2.7.2. System.....	25
2.8. Description of Controls .....	28
2.8.1. Operation control .....	28
2.8.2. Drain control .....	28
2.9. Handling and Installation .....	29
2.9.1. Unpacking.....	29
2.9.2. Handling.....	29
2.9.3. Inspection.....	29
2.9.4. Location .....	29
2.9.5. Piping .....	30
2.9.6. Electrical controls .....	31
2.9.7. Wiring .....	31
2.10. Storage.....	31
2.11. Operation.....	33
2.11.1. Initial start-up procedure.....	33
2.11.2. Oil Recommendation.....	34
2.11.3. Extremely cold ambient temperatures .....	35
2.11.4. Motor lubrication.....	35
2.12. Adjustment .....	35
2.13. Cylinder filling instructions.....	36
<b>MAINTENANCE.....</b>	<b>39</b>
3. General .....	39
3.1. Maintenance Table .....	41

3.1.1.	Check Table .....	41
3.1.2.	Replacement Table.....	42
3.2.	Torque Values .....	43
3.3.	Maintenance Instructions.....	43
3.3.1.	Oil level check .....	43
3.3.2.	Leak check .....	44
3.3.3.	Auto drain valve check.....	44
3.3.4.	Intake filter check.....	44
3.3.5.	V-Belt alignment check.....	44
3.3.6.	Components check .....	45
3.3.7.	Serpentines, Intercoolers and aftercooler, flywheel cleaning .....	45
3.3.8.	Current check .....	45
3.3.9.	Safety valve check .....	46
3.3.9.1.	Safety valve replacement.....	46
3.3.10.	Check valve check .....	46
3.3.10.1.	Check valve replacement.....	46
3.3.11.	Priority valve check .....	47
3.3.11.1.	Priority valve replacement.....	47
3.3.12.	V-Belt replacement.....	47
3.3.13.	Purifier cartridge refill kit replacement.....	48
3.3.14.	Oil change.....	48
3.3.15.	Intake filter replacement.....	49
3.3.16.	Auto drain valve adjustment with repair kit.....	49

**TROUBLESHOOTING ..... 51**

**DECLARATION OF CONFORMITY**

**WARRANTY CERTIFICATE**

# 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 Alkin Compressors. For any questions, please feel free to call our Torbalı plant, in İzmir-Turkey.

Here are the contact details:

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

**After Sales Support Services**  
teknikservis@alkin.com.tr  
+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.

## **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.



# W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

## 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

# W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

## 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.

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

### 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.

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

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

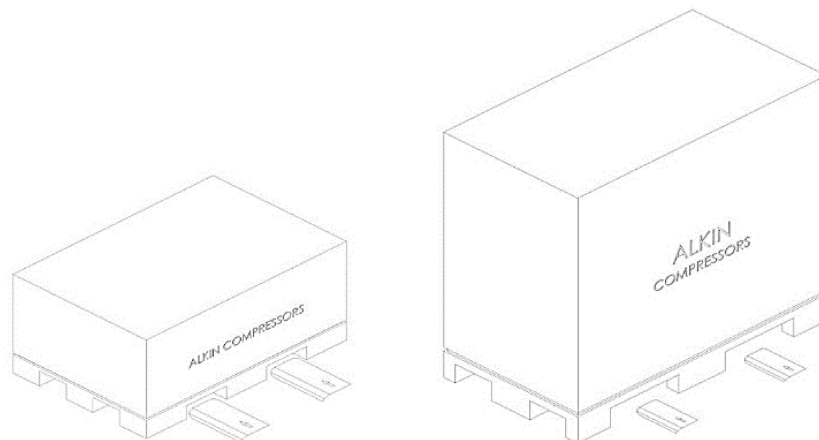


Do not use air from this compressor for breathing unless it is equipped with proper purification equipment. Make sure that Purifier Cartridge is installed inside the Purifier Housing. Operate the compressor only in well-ventilated areas. Lubricants used in this compressor are typical synthetic oil. Accidental 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

## **W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS**

---

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**

Alkin 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 Alkin 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



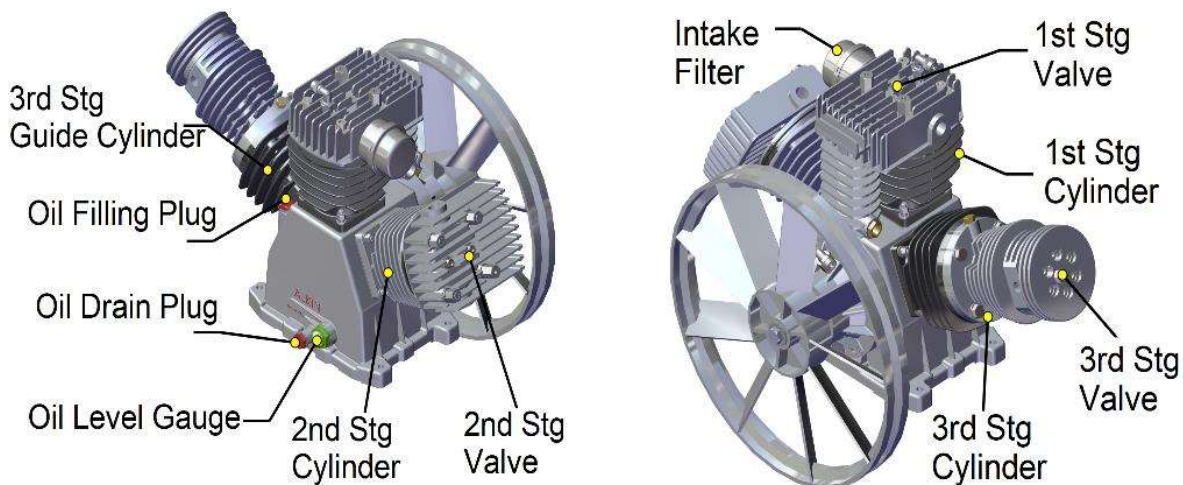
## **ABOUT COMPRESSOR**

### **2. General**

W31 series compressors are three-stage, reciprocating type, air-cooled, and splash lubricated compressors. The working pressure of these compressors can be between 10 bar (1500 psi) and 350 bar (5075 psi) depending on valves and the cooling system. Do not attempt to modify the compressor to operate at higher pressure without the written approval of ALKIN. Failure to do so may result in heavy damage to equipment, injury, or death.

W31 series compressors are built with oversized intercoolers and aftercooler to allow superior performance, longer life, and lower operating and discharge temperatures.

W31 series compressors are designed and manufactured with three stages and three cylinders. Cylinders from “W” shape. From the front view, the first stage is in the middle, the second stage is on the right and the third stage is on the left.



**Figure 2 – W31 compressor stages**

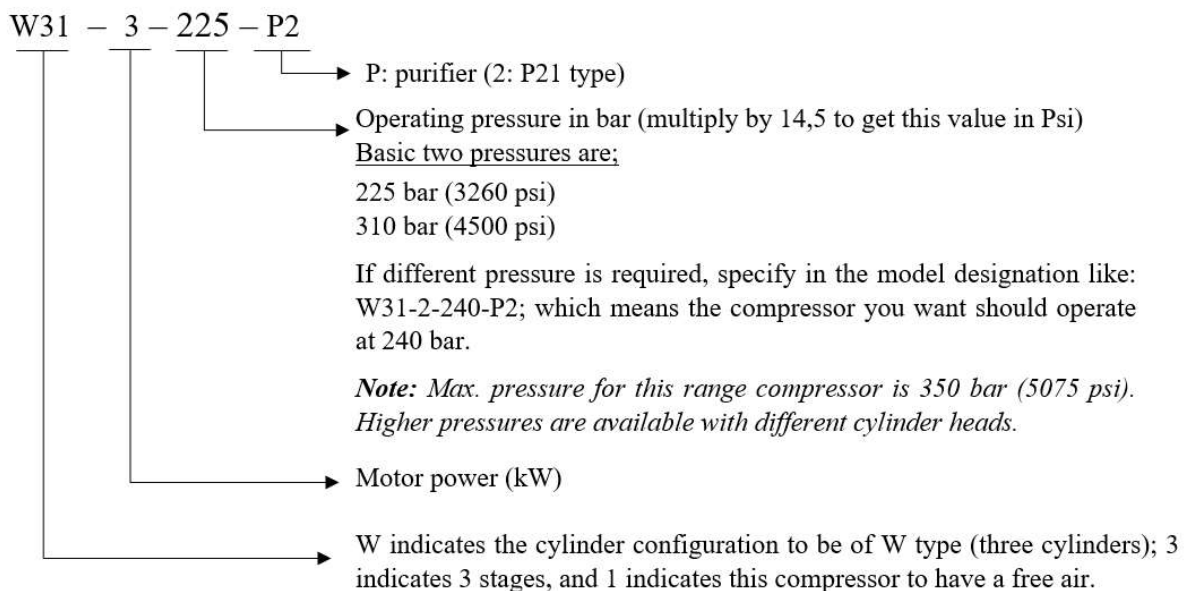
## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

W31 series compressors are designed and manufactured with intercooler located between 1<sup>st</sup> and 2<sup>nd</sup> stage cylinders, and an aftercooler located at the 3<sup>rd</sup> stage outlet. There are water separators at the outlet of the 2<sup>nd</sup> stage intercooler and at the outlet of the 3<sup>rd</sup> stage aftercooler. Water separators are connected to auto drain valves that periodically drain the condensate water. The duration and frequency of opening of these drain valves are determined by the time relay located in the electric panel. This time relay can be set for both functions.

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

W31 series compressors are equipped with stainless valves at each stage that are designed to maintain the airflow without any loss of pressure. They are easy to maintain and replace. The maintenance of valves is especially important as they are the main parts in the proper and problem-free working of compressors. Lubricants not approved by ALKIN can prevent valves from working properly due to the accumulation of carbon on springs and washers. Valves not working properly will cause an increase in working temperature and the deterioration of lubricant, thus in return, will further break down the valves.

Max working pressure is 350 bar and, it is dangerous and strictly prohibited to set a value higher than 350 bar. **ALKIN COMPRESSORS** will not be held liable for any problems resulting from acting otherwise.



# W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

## 2.1. Compressor Unit

W31 series MARINER compressor unit involves the main groups below;

- |                    |                                       |
|--------------------|---------------------------------------|
| 1. Compressor unit | 12. Filling valve                     |
| 2. Electric motor  | 13. Filling manometer                 |
| 3. Subbase         | 14. Yoke                              |
| 4. Water separator | 15. Shock mount                       |
| 5. Purifier        | 16. Control panel                     |
| 6. Priority valve  | 17. Start-Stop                        |
| 7. Check valve     | 18. Hour meter                        |
| 8. Aftercooler     | 19. Carrying handle                   |
| 9. Safety valve    | 20. 2 <sup>nd</sup> stage drain valve |
| 10. Intake filter  | 21. 3 <sup>rd</sup> stage drain valve |
| 11. Filling hose   | 22. Purifier drain valve              |

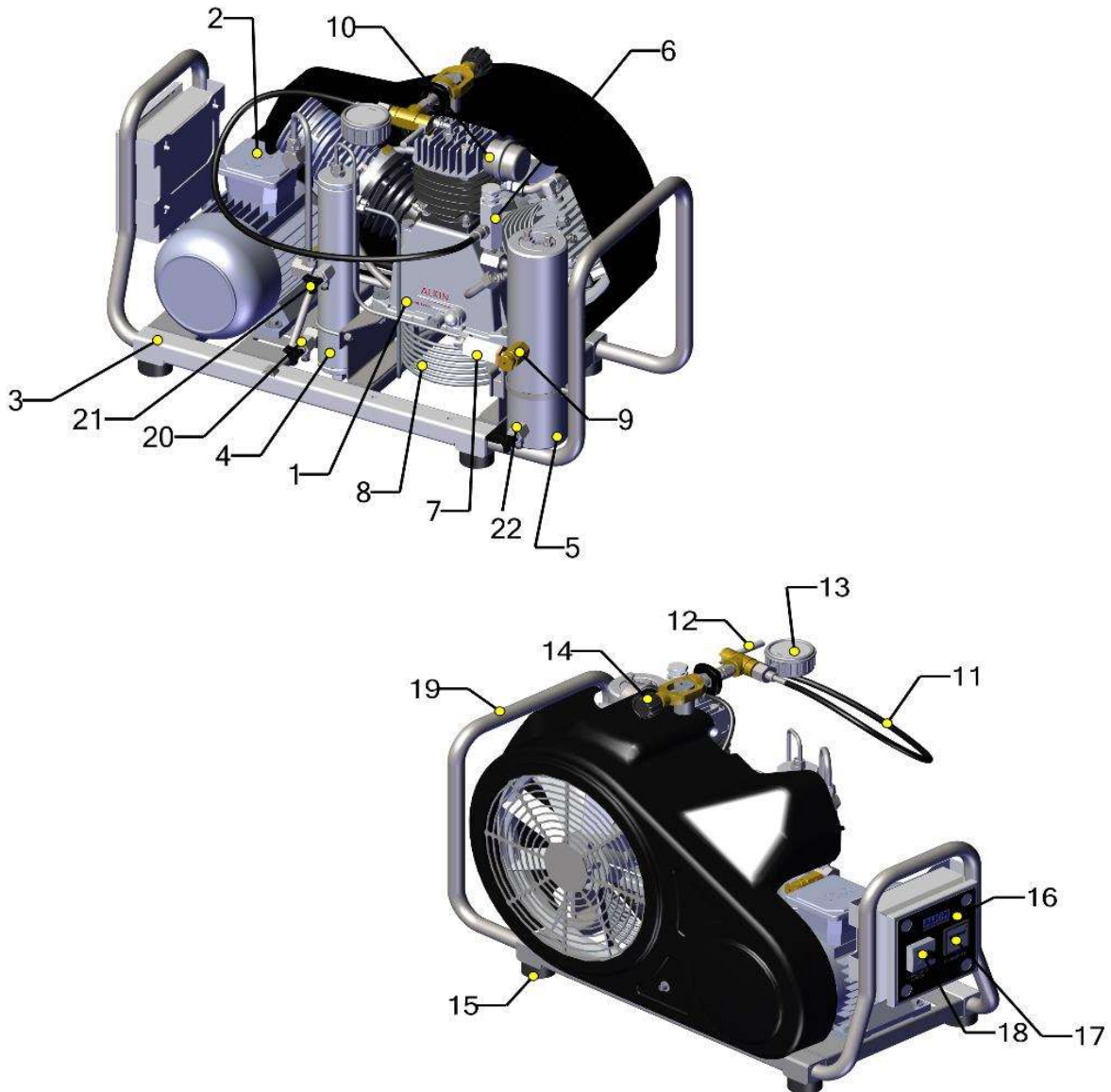
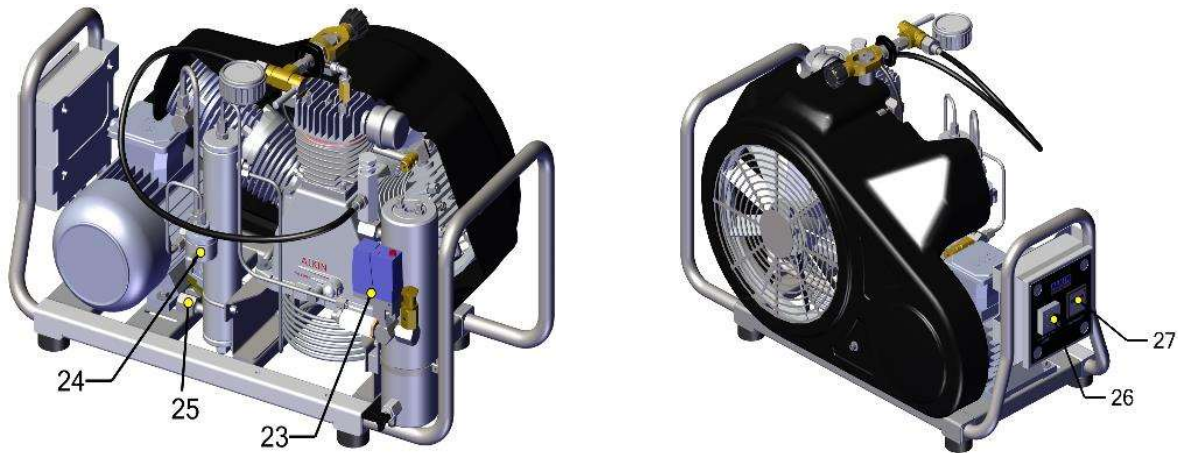


Figure 3 – W31 series compressor general layout (standard)

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

- 23. Pressure switch
- 24. Drain solenoid
- 25. Auto drain valve

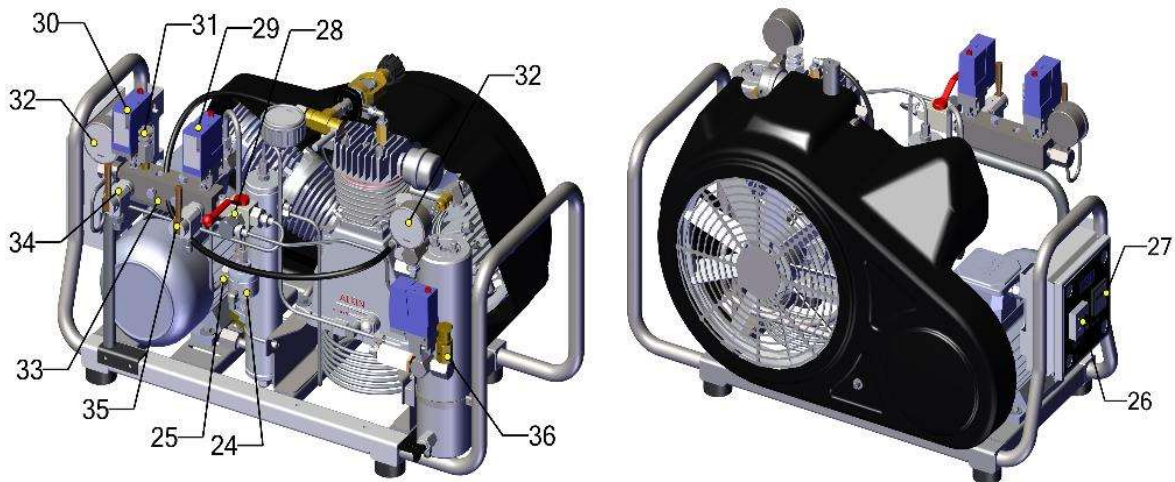
- 26. Start-Stop
- 27. Hour meter



**Figure 4** – W31 series compressor general layout (auto drain)

- 28. Pressure selecting valve
- 29. 300 bar pressure switch
- 30. 200 bar pressure switch
- 31. 300 bar safety valve
- 32. Pressure valve

- 33. Filling manifold
- 34. 200 bar filling valve
- 35. 300 bar filling valve
- 36. 200 bar safety valve



**Figure 5** – W31 series compressor general layout (double pressure)

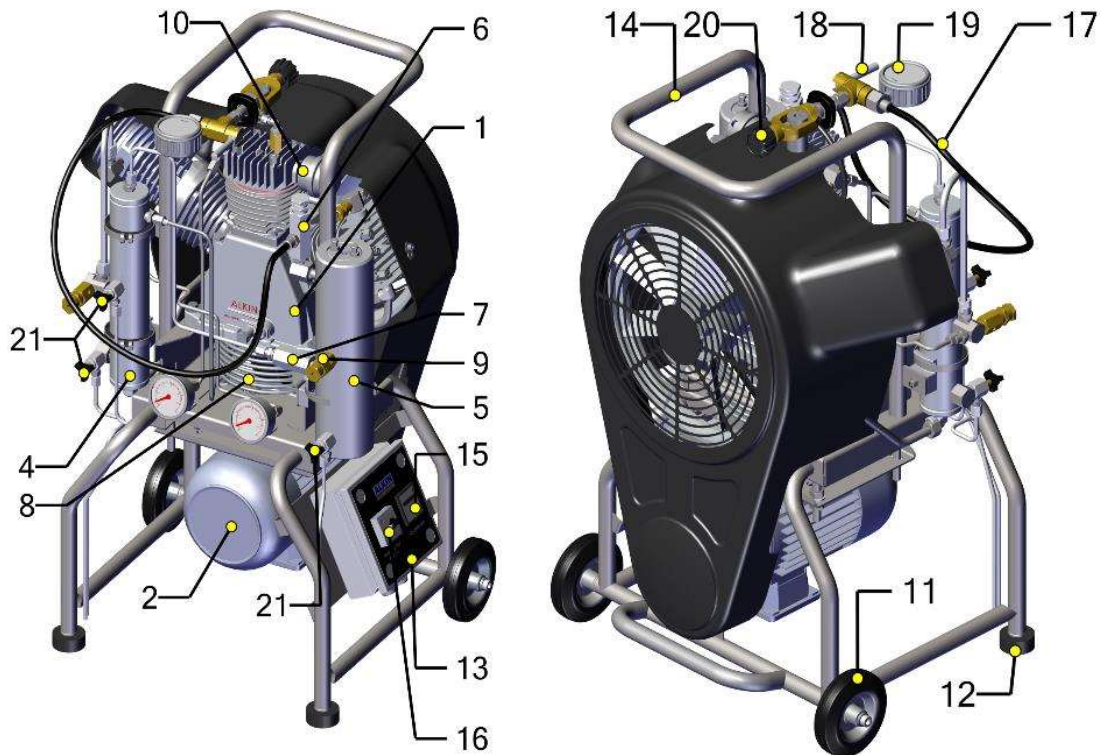
**Note:** Auto start/stop can be installed on compressor(s) upon request.



## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

W31 series VERTICAL 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. Aftercooler
9. Safety valve
10. Intake filter
11. Carriage wheel
12. Shock mount
13. Control panel
14. Carrying handle
15. Working hour
16. Start-Stop
17. Filling hose
18. Filling vane
19. Filling manometer
20. Yoke



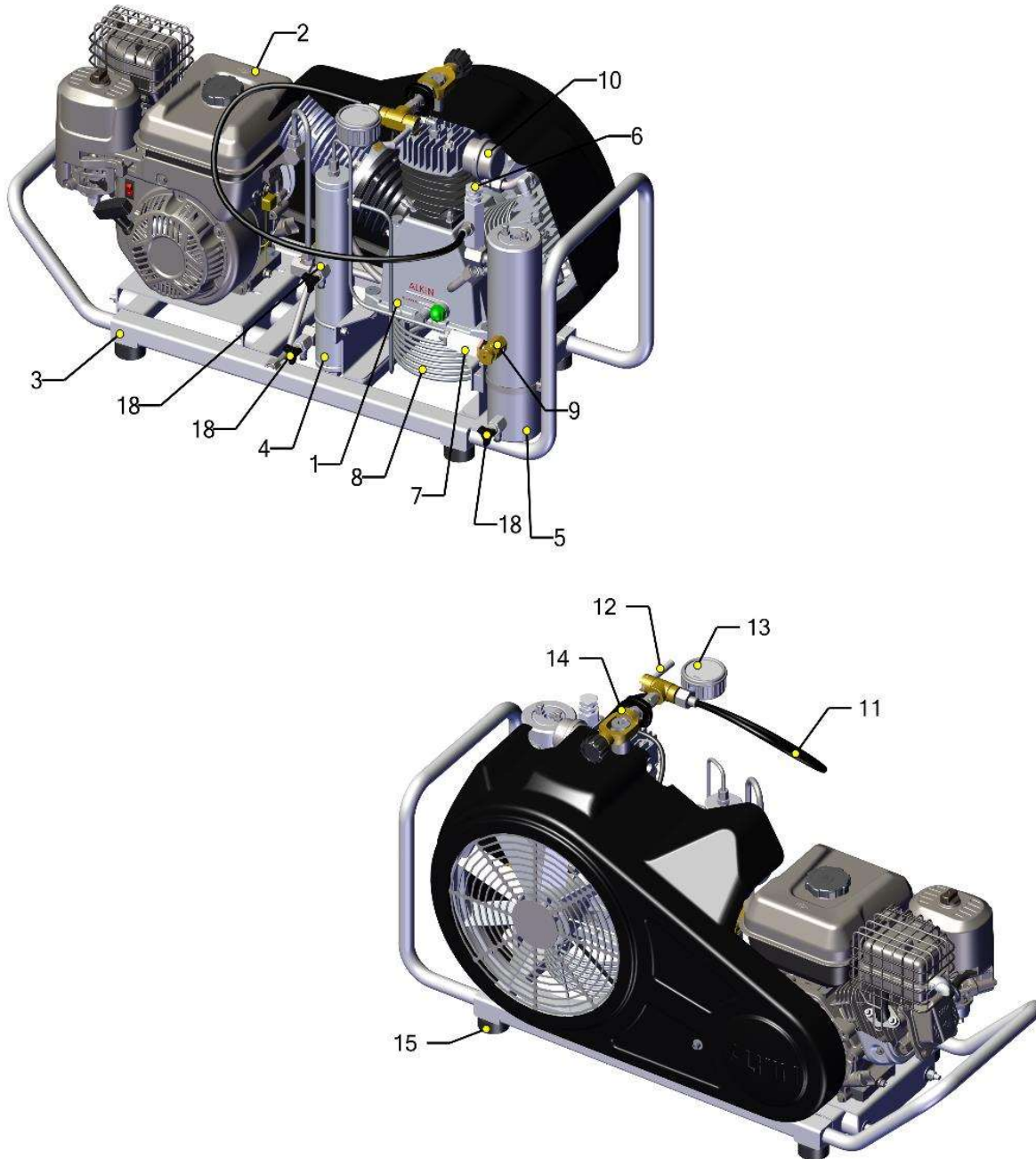
**Figure 6** – W31 series compressor general layout (standard)



## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

W31 series PETROL ENGINE compressor unit involves the main groups below;

1. Compressor unit
2. Petrol engine
3. Subbase
4. Water separator
5. Purifier
6. Priority valve
7. Check valve
8. Aftercooler
9. Safety valve
10. Intake filter
11. Filling hose
12. Filling valve
13. Filling manometer
14. Yoke
15. Shock mount
16. Carrying handle
17. Purifier drain valve
18. Manual drain valve



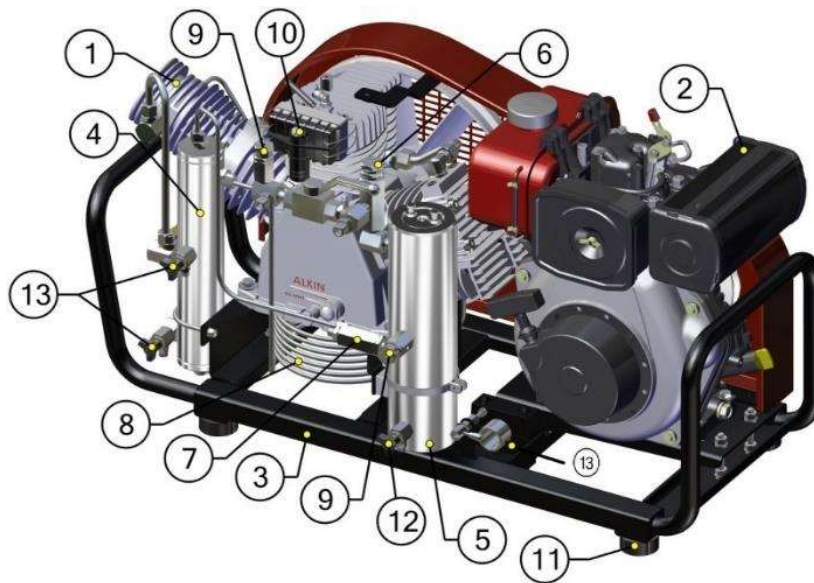
**Figure 7** – W31 series compressor general layout (petrol engine)

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

W31 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. Aftercooler
9. Safety valve
10. Intake filter
11. Shock mount
12. Purifier drain valve
13. Manual drain valve



**Figure 8** – W31 series compressor general layout (diesel engine)

**W31 SERIES**  
**HIGH PRESSURE BREATHING AIR COMPRESSORS**

**2.2. Technical Data**

The model design for W31 series (mariner and vertical) compressors are based on the below data.

<b>Compressor</b>	<b>W31 Series</b>	
Medium	Compressed air / Breathing air	
Intake pressure	Atmospheric	
Outlet number	1	
Filter system	P21 Purifier	
Operating pressure	225 bar (3260 psi)	310 bar (4500 psi)
Max. operating pressure	350 bar (5076 psi)	
Free Air Delivery (FAD)	100 l/min (3,5 Cfm)	140 l/min (4,9 Cfm)
Motor power	2,2 kW (3 Hp)	3 kW (4 Hp)
Speed, rpm	1050	1350
Diameter of motor pulley, mm	Ø 130	Ø 160
Belt dimension	13x1450	13x1475
1 <sup>st</sup> stage pressure range, bar	3.5 – 4.5	
2 <sup>nd</sup> stage pressure range, bar	30 – 40	
3 <sup>rd</sup> stage pressure range, bar	Outlet pressure	
Diameter of compressor pulley	Ø 350	
Piston stroke, mm	40	
Number of stages	3	
Number of cylinders	3	
Cylinder bore (1 <sup>st</sup> stage), mm	66	
Cylinder bore (2 <sup>nd</sup> stage), mm	38	
Cylinder bore (3 <sup>rd</sup> stage), mm	14	
Oil capacity, l	0,5	
Operating temperature	0/+50 °C	
Weight		
Dimensions, W x L x H, mm	430x840x530 (Mariner) 490x590x870 (Vertical)	

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

The model design for W31 series compressors (Petrol Engine) are based on the below data.

<b>Compressor</b>	<b>W31 Series – Petrol Engine</b>	
Medium	Compressed air / Breathing air	
Intake pressure	Atmospheric	
Outlet number	1	
Filter system	P21 Purifier	
Operating pressure	225 bar (3260 psi)	310 bar (4500 psi)
Max. operating pressure	350 bar (5076 psi)	
Free Air Delivery (FAD)	100 l/min (3,5 Cfm)	145 l/min (5,1 Cfm)
Motor power	6,5 Hp	
Speed	1100 rpm	1350 rpm
Diameter of motor pulley, mm	Ø 125	
Belt dimension	13x1600	
1 <sup>st</sup> stage pressure range, bar	3.5 – 4.5	
2 <sup>nd</sup> stage pressure range, bar	30 – 40	
3 <sup>rd</sup> stage pressure range, bar	Outlet pressure	
Diameter of compressor pulley	Ø 350	
Piston stroke, mm	40	
Number of stages	3	
Number of cylinders	3	
Cylinder bore (1 <sup>st</sup> stage), mm	66	
Cylinder bore (2 <sup>nd</sup> stage), mm	38	
Cylinder bore (3 <sup>rd</sup> stage), mm	14	
Oil capacity, l	0,5	
Operating temperature	0/+50 °C	
Weight, kg		
Dimensions, WxLxH, mm	525x1040x530	

**W31 SERIES**  
**HIGH PRESSURE BREATHING AIR COMPRESSORS**

The model design for W31 series compressors (Diesel Engine) are based on the below data.

<b>Compressor</b>	<b>W31 Series – Diesel Engine</b>	
Medium	Compressed air / Breathing air	
Intake pressure	Atmospheric	
Outlet number	1	
Filter system	P21 Purifier	
Operating pressure	225 bar (3260 psi)	310 bar (4500 psi)
Max. operating pressure	350 bar (5076 psi)	
Free Air Delivery (FAD)	100 l/min (3,5 Cfm)	140 l/min (4,9 Cfm)
Motor power	5,5 Hp	
Speed	1100 rpm	1350 rpm
Diameter of motor pulley, mm	Ø 125	
Belt dimension	13x1600	
1 <sup>st</sup> stage pressure range, bar	3.5 – 4.5	
2 <sup>nd</sup> stage pressure range, bar	30 – 40	
3 <sup>rd</sup> stage pressure range, bar	Outlet pressure	
Diameter of compressor pulley	Ø 350	
Piston stroke, mm	40	
Number of stages	3	
Number of cylinders	3	
Cylinder bore (1 <sup>st</sup> stage), mm	66	
Cylinder bore (2 <sup>nd</sup> stage), mm	38	
Cylinder bore (3 <sup>rd</sup> stage), mm	14	
Oil capacity, l	0,5	
Operating temperature	0/+50 °C	
Weight, kg		
Dimensions, WxLxH, mm	435x905x505	



# W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

## 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.

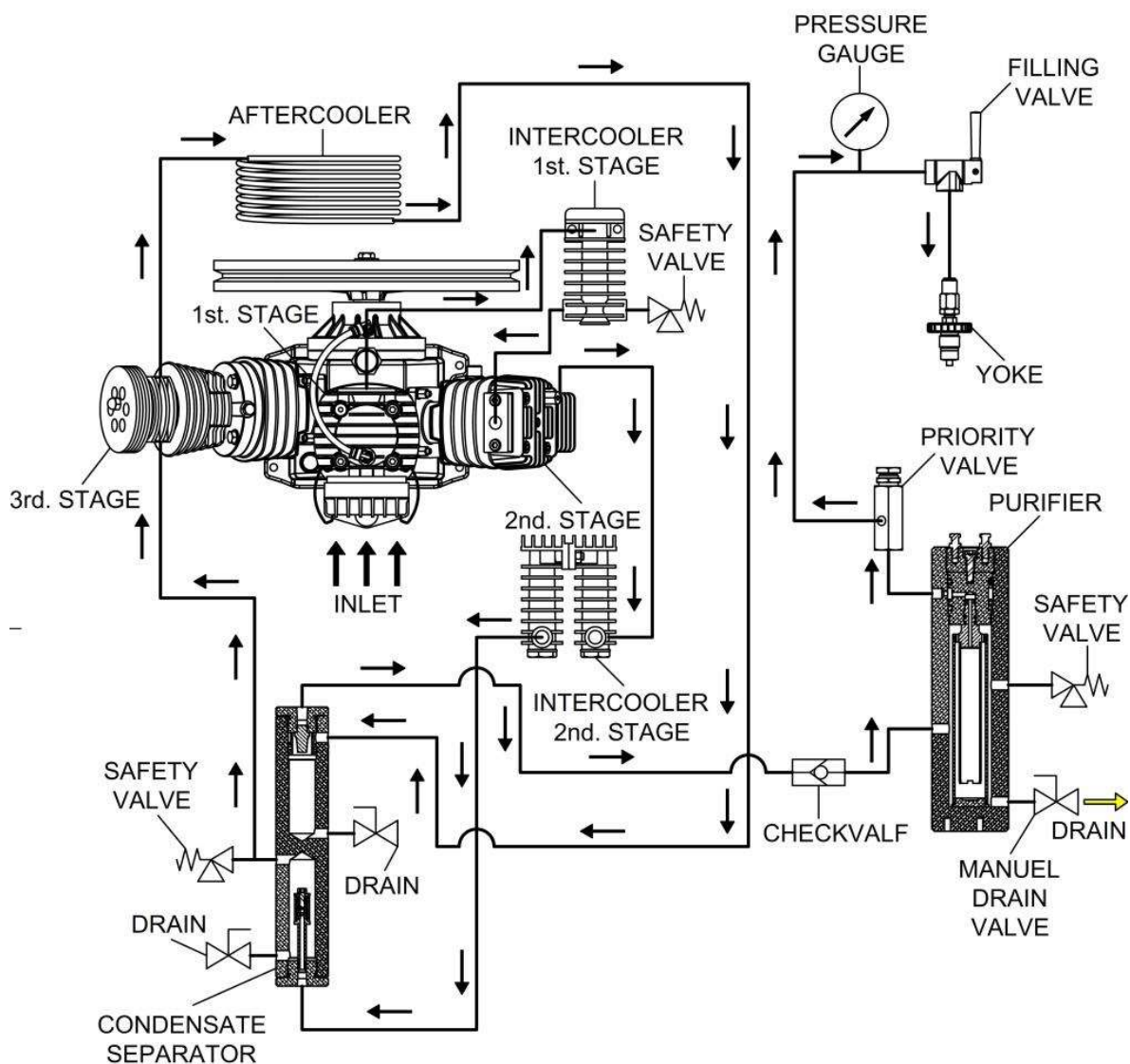
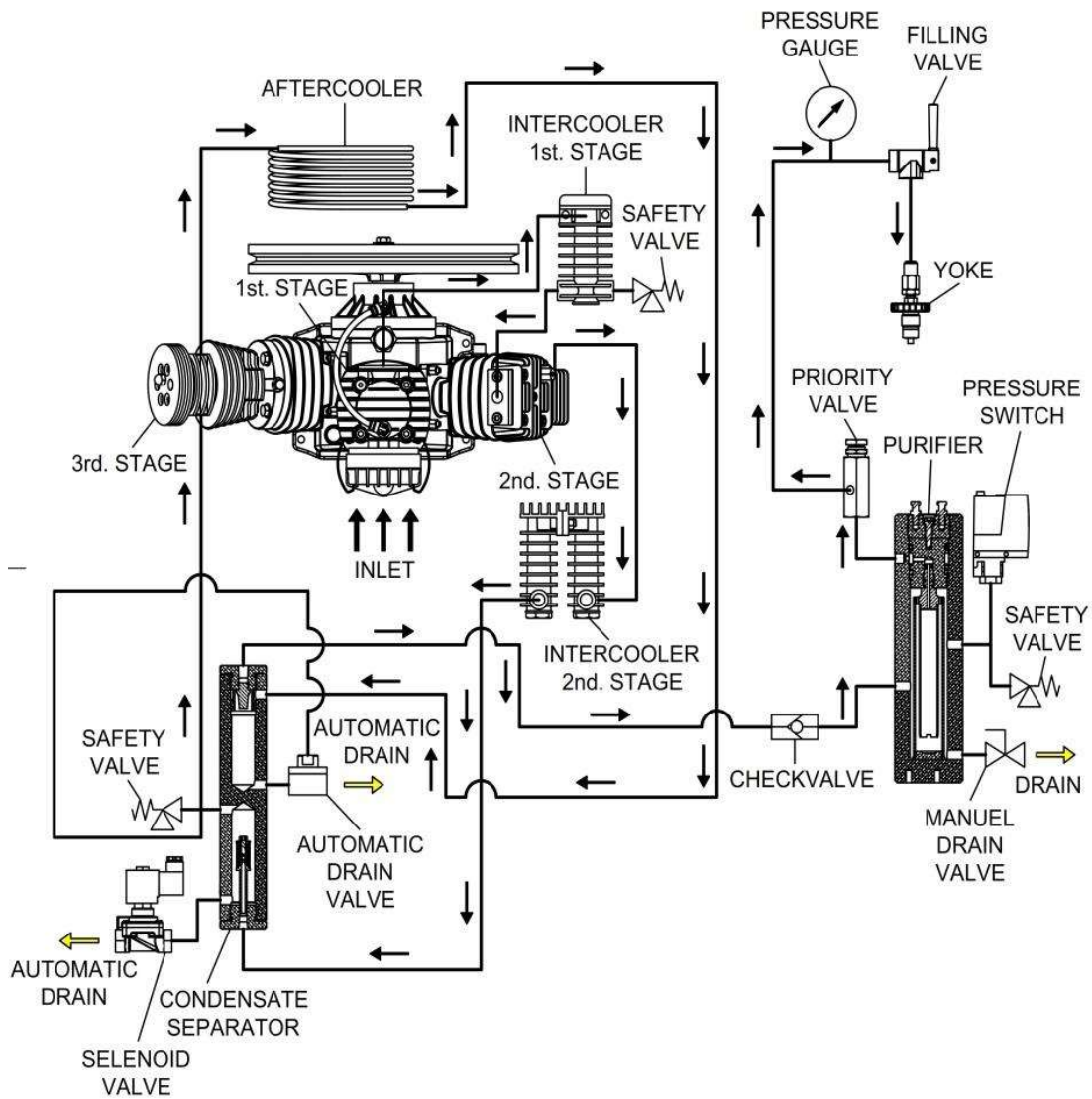


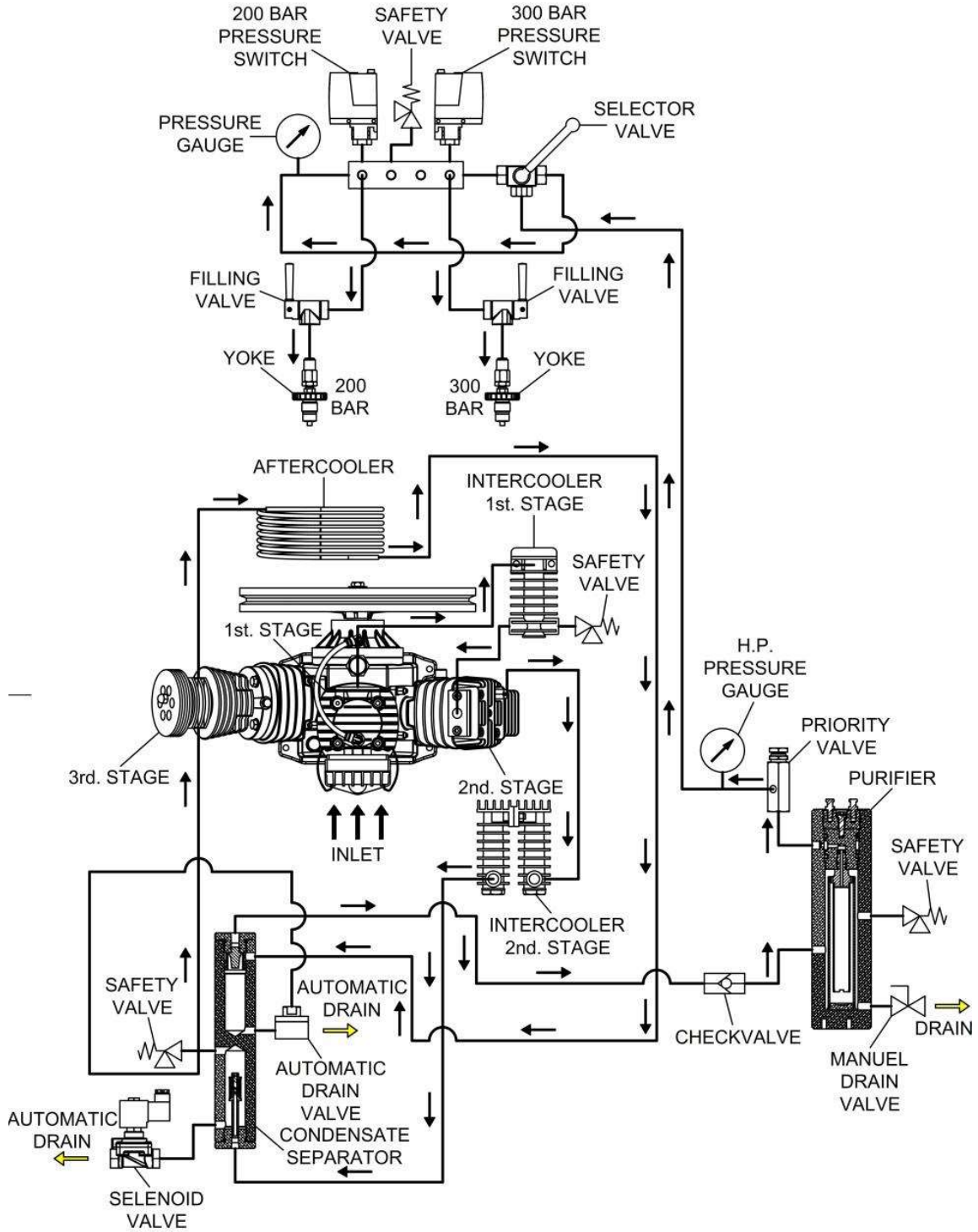
Figure 9 – W31 series compressor P&ID (standard)

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**



**Figure 10 – W31 series compressor P&ID (auto drain)**

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**






**Figure 11 – W31 series compressor P&ID (dual pressure)**

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

**2.4. Identification of the Compressor**

Each compressor has an identification label attached to its frame.

	
KAZIMKARABEKİR MAH. BEKİR SAYDAM CAD. NO:94 Torbalı Pancar-İZMİR / TÜRKİYE Tel: +90 232 78 222 90 Fax: +90 232 78 222 89 www.alkin.com.tr alkin@alkin.com.tr	
<b>HIGH PRESSURE BREATHING AIR COMPRESSOR YÜKSEK BASINÇ SOLUNUM HAVASI KOMPRESÖRÜ</b>	
MODEL	<input type="text"/>
SERIAL NR. SERİ NO.	<input type="text"/>
YEAR OF MANUFACTURE ÜRETİM YILI	<input type="text"/>
WORKING PRESSURE ÇALIŞMA BASINCI	<input type="text"/>
FREE AIR DELIVERY SERBEST HAVA DEBİSİ	<input type="text"/>
COMPRESSOR SPEED KOMPRESÖR DEVRİ	<input type="text"/>
MOTOR POWER MOTOR GÜCÜ	<input type="text"/>
MAINS SUPPLY ELEKTRİK VERİLERİ	<input type="text"/>
WEIGHT AĞIRLIK	<input type="text"/>
 	

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

### 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 1<sup>st</sup> stg cylinder on the downstroke of the piston. The piston's upstroke action causes compression, and air is driven out of the cylinder through the 1<sup>st</sup> stg discharge valve. Air will then pass through the intercooler tubes between the 1<sup>st</sup> and 2<sup>nd</sup> stg and into the 2<sup>nd</sup> stg compression chamber. Here, the air is compressed to the 2<sup>nd</sup> stg compression level and forced through the 2<sup>nd</sup> stg valves + 2<sup>nd</sup> stg intercooler + water-oil separator + 3<sup>rd</sup> stg inlet valve into the 3<sup>rd</sup> 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.

The drain valve is a 3-way pneumatic valve controlled by a 3-way solenoid valve. This solenoid valve sends or removes the control air from the drain valves, thus letting them open or close. The solenoid itself is controlled by a sequential timer relay in the electrical panel. The dual time adjustment on this relay allows to adjust the duration during which the solenoid will remain energized (=the drain valve will remain closed), and the length of time during which the solenoid will become de-energized (=the drain valve will open and perform the drain function).

The condensate water should be drained by using the manual drain valve located below the purifier when the compressor is operating every ten minutes. This should be done even for mariner models with auto drain feature. Moreover, when the



compressor is shut off, this should be done to drain the compressed air into the purifier. The compressor can be started or stopped with the start / stop button located on the electric panel. Oil level can be seen by Oil Level Glass located on the front side of the crankcase. Oil level should be checked daily.



## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

### 2.6. Lubrication System

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

### 2.7. Major Components

#### 2.7.1. Compressor unit



##### **Crankcase:**

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

*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:**

In W31 Series compressors, there are three connecting rods, two of which are the same and the third one is with a stick at the bottom part that serves as the lubricating stick. Connecting rods move with the rotation of the crankshaft and the bottom of the connecting rod has a stick that moves up and down in the oil to lubricate the system. The bushings on Connecting Rods are made of a high-quality copper-bronze alloy. When these bushings are abraded, you should replace the connecting rods.

*CONSULT ALKIN COMPRESSORS FOR REPLACEMENT OR MAINTENANCE.*

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

### 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 3<sup>rd</sup> 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*

### 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.

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

### 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*

### 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.

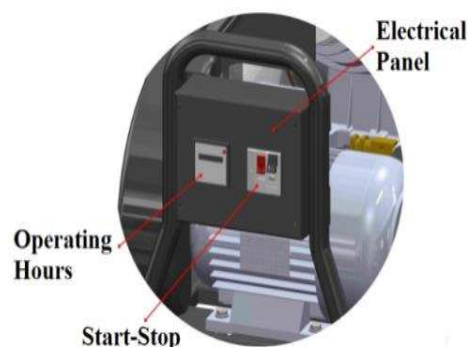
#### Filling System:

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. The number of filling hoses can be increased upon request.

#### Water Separators:

They remove the water condensate from the compressed air occurred in stages under pressure. There are two water separators on W31 series; between 2<sup>nd</sup> and 3<sup>rd</sup> stg.

#### Control Panel (Mariner- Vertical)



The control panel is located on the left side, at the upper part of the electric motor, when viewed from the crankcase side of the marine type of compressor. In the vertical type of compressor, it is located on the right side of the electric motor when viewed from the crankcase side. All electrical equipment that starts the engine and controls the system is located here. The compressor's operating hours are displayed on the hour meter, which serves as a point of reference for scheduled maintenance. There is an hour meter on the control panel.



## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

### Control Panel (Petrol Engine):

The control panel is located in front of the petrol engine and viewed from the side of the crankcase.

- a. Panel ignition switch
- b. Hour meter
- c. Start/stop
- d. Emergency stop



### Pressure Switch: (for auto drain models)



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

### 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 2<sup>nd</sup> 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.

### Motor:



The compressor can be driven by an electric motor, petrol or diesel engine and is 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.

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

### **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.*

### **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.

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

### 2.8. Description of Controls

#### 2.8.1. Operation control

In W31 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 cut 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.

#### 2.8.2. 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 2<sup>nd</sup> 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.

## **2.9. Handling and Installation**

### **2.9.1. Unpacking**

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

### **2.9.2. 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.

### **2.9.3. 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.

### **2.9.4. Location**

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

#### **IMPORTANT:**

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

#### **IMPORTANT:**

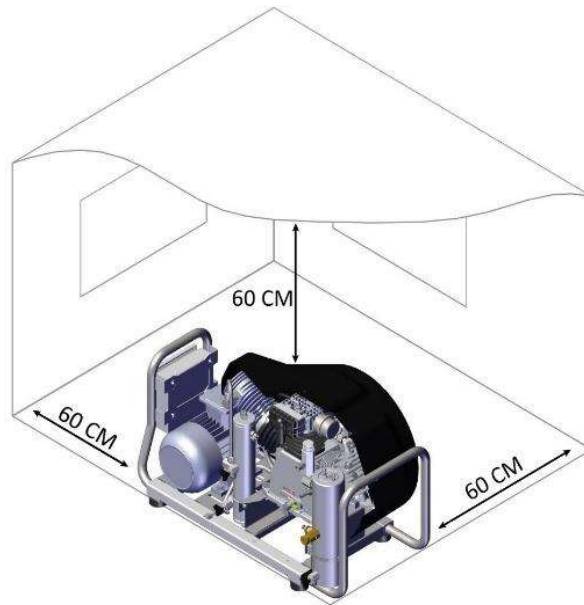
If ambient temperature exceeds 50°C, air conditioning will be necessary.

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

### 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 2.9.5).



**Figure 11** – W31 series compressors layout

### 2.9.5. 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.

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

**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.

### 2.9.6. 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.

### 2.9.7. 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.

### 2.10. 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:

## **W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS**

---

- 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.

## **2.11. Operation**

### **2.11.1. Initial start-up procedure**

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

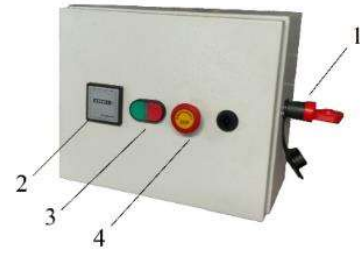
- Make sure that you have read this manual carefully and understand it. If you have any questions, contact ALKIN.
- Make sure that all the preparations described in the installation section of this manual have been made.
- Ensure that cooling air can flow freely.
- Check the oil level in the crankcase.
- 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.



## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

### Petrol Engine

- Check the oil level in the crankcase. If missing, please add.
- Energize the control panel by turning clockwise the ignition switch (1) on the panel.
- Start the compressor by pressing the start button (3) on the panel.
- The hour meter (2) and the solenoid valve are activated after the compressor starts.
- The compressor will stop at the set pressure by the pressure switch when the filling is finished.



### **NOTE:**

Turn off the energy in the panel by turning counterclockwise the ignition switch after the filling process is over in order not to discharge of battery.

### 2.11.2. Oil Recommendation

The oil level should be checked before each start up. **Top up to the overfill point when required 550 ml of oil should be loaded during each replacement.**

### RECOMMENDED OILS

Compressor Oil	Brand	Type	Quantity
Anderol 755	Anderol	Synthetic	550 ml
Anderol 750	Anderol	Synthetic	550 ml
Corena S4 P100	Shell	Synthetic	550 ml
Energol RC-R-150	BP	Semi Synthetic	550 ml
Chemlube 751	Ultrachem	Synthetic	550 ml
LM 750	Luqui Moly	Synthetic	550 ml
Airtech RX 150	Smith and Allan	Synthetic	550 ml
EP FG BREATTECH-100	Miles Lubricants	Food Grade	550 ml
Ecosyn CE 155	Wipa Chemicals International N.V.	Synthetic	550 ml

### **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.

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

PROPERTIES	TEST METHOD	ANDEROL 755
ISO VG	ASTM D-2422	150
Viscosity, cSt		
@ 40 °C	ASTM D 445	136,3
@ 100 °C	ASTM D 445	12.6
Pour point, °C	ASTM D 97	-39
Flash point, COC, °C	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 from the compressor manufacturer.
- Do not mix different brands and types 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.

**2.11.3. Extremely cold ambient temperatures**

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

**2.11.4. Motor lubrication**

Electric motors on ALKIN W31 series compressors are supplied with greased and sealed bearings. They do not any need further maintenance.

**2.12. 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-

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

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 adjustments. 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 it.

### 2.13. 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.

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

### Standard Cylinder Filling

- Check that the refill hose and relevant fitting are in good condition.
- Start the compressor.
- Close 2<sup>nd</sup> & 3<sup>rd</sup> stg manual drain valves if it is open. (Do not necessarily do it if the unit is automatic drain controlled.)
- Close Purifier manual drain valve if it is open.
- 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 2<sup>nd</sup> and 3<sup>rd</sup> stg Water separators (It would be drained automatically if the unit has automatic drain control).



### CAUTION!

- To avoid increased CO<sub>2</sub> 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<sub>2</sub> 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.

## **W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS**

---

### **Dual Pressure Cylinder Filling**

#### **200 bar cylinder filling instruction**

- Set the pressure selection valve to 200 bar and start the compressor.
- Close Purifier manual drain valve if it is open.
- Connect and fix the 200 bar Filling Hose to the cylinder.
- Close the cylinder valve first. Open the 200 bar lever on the filling valve.
- Open the cylinder valve when the pressure reaches 200 bar on the pressure gauge on the filling hose.
- The compressor will auto stop when the bottle pressure reaches the desired pressure.
- Close the cylinder valve first.
- Close the filling valve. The air inside the filling hose is automatically released by the filling valve when the filling valve is closed.
- Disconnect the cylinder.

#### **300 bar cylinder filling instruction**

- Set the pressure selection valve to 300 Bar and start the compressor.
- Close Purifier manual drain valve if it is open.
- Connect and fix the 300 Bar Filling Hose to the cylinder.
- Close the cylinder valve first. Open the 300 bar lever on the filling valve.
- Open the cylinder valve when the pressure reaches 300 bar on the pressure gauge on the filling hose.
- The compressor will auto stop when the bottle pressure reaches the desired pressure.
- Close the cylinder valve first.
- Close the filling valve. The air inside the filling hose is automatically released by the filling valve when the filling valve is closed.
- Disconnect the cylinder.

#### **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.

## **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.

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

**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, 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 check valve, replace if necessary	10 10-01
	Check priority valve, replace if necessary	11 11-01
	Check belts, replace if necessary	12
	Check oil seal, replace if necessary	Contact with ALKIN
5 years	Purifier should be tested by authorized third parties in accordance with the Pressure Equipment Directive (PED).	-



**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

**3.1.2. Replacement Table**

Replace ment time	No	Explanation	Qty.	Instruction no.
50 hours / 3 months	1	Purifier Cartridge Note: Refilling time of cartridge may vary depending on the ambient temperature and humidity.	1 pcs.	13
250 hours / 1 year	1	Oil change	550 ml	14
	2	Intake filter element	1 pcs.	15
500 hours / 1 year	1	Filling valve overhaul with repair kit	1 set	Contact with ALKIN
1000 hours / 1 year	1	Piston Ring	1 set	Contact with ALKIN
	2	Check the valves (stage) at every 1000 hours / 1 year. If necessary, replace with new ones.	1 set	
	3	Gasket	1 set	
	4	O-ring	1 set	
2000 hours / 2 years	1	Cylinder	1 set	Contact with ALKIN
	2	Piston	1 set	
		<b>NOTE:</b> Cylinders and pistons will be checked every 2000 hours / 2 years and replaced with new one if necessary.		
4000 hours / 4 years	1	Safety valve	1 set	09-01
	2	V-belt	1 pcs	12

**CAUTION!**

**Please be advised that compressors that are not maintained according to ALKIN maintenance tables above would be out of warranty.**

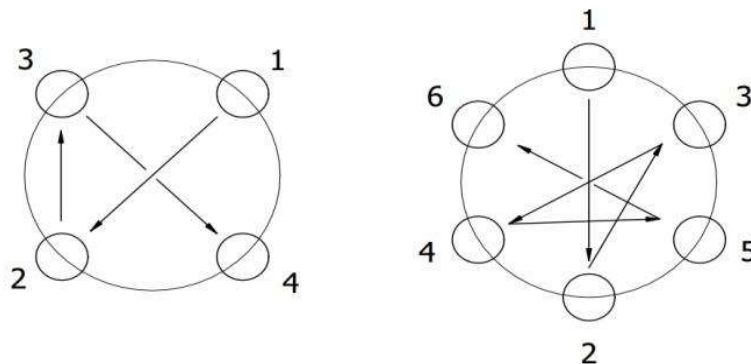
**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

**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 12 – Tightening order**

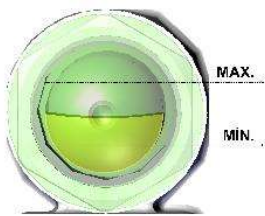
**3.3. Maintenance Instructions**

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

**3.3.1. Oil level check**

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

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**



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

**3.3.2. Leak check**

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

Instruction no	04
Instruction name	Intake Filter Check
List of tools required	Lint-free cloth
Parts list to be used in replacement kit	None

- Check intake filter element every week and clean with pressurized air from inside towards outside. Depending on ambient temperature and humidity, replace filter element at most every three months.

**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

## W31 SERIES HIGH PRESSURE BREATHING AIR COMPRESSORS

---

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

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

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

### 3.3.6. Components check

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

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

### 3.3.7. Serpentine, Intercoolers and aftercooler, flywheel cleaning

Instruction no	07
Instruction name	Serpentine, Intercoolers
List of tools required	Cloth
Parts list to be used in replacement kit	None

- Clean dust on serpentine, 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

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

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

---

**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	Teflon tape, app. wrench
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. Check valve check**

Instruction no	10
Instruction name	Check Valve Check
List of tools required	Appr. tools, foam water
Parts list to be used in replacement kit	None

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

**3.3.10.1. Check valve replacement**

Instruction no	10-01
Instruction name	Check Valve Replace
List of tools required	Appropriate tools, foam water
Parts list to be used in replacement kit	New check valve

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

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

**3.3.11. Priority valve check**

Instruction no	11
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.

**3.3.11.1. Priority valve replacement**

Instruction no	11-01
Instruction name	Priority Valve Repl.
List of tools required	None
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.
- Remove priority valve with appropriate tool. Clean its place.
- Wrap teflon tape on the new priority valve and put it on its place and tighten with appropriate tool. Reconnect all hoses and pipes connected to priority valve.
- Start the compressor. New priority valve should allow air flow at 120±10 bar.

**3.3.12. V-Belt replacement**

Instruction no	12
Instruction name	V-belt Replacement
List of tools required	Appropriate tools
Parts list to be used in replacement	New V-belt

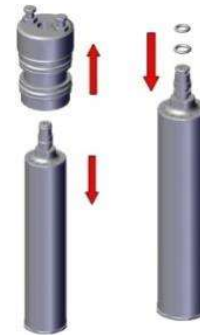
- Stop the compressor and verify complete depressurization.
- Remove flywheel grid with appropriate tools.
- Remove belts from flywheel and install new ones. Rotate flywheel by hand to check tension.
- Reconnect flywheel grid with appropriate tools. Start the compressor and check the proper rotation.

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

**3.3.13. Purifier cartridge refill kit replacement**

Instruction no	13
Instruction name	Purifier Cartridge Replace
List of tools required	Appropriate tools
Parts list to be used in replacement	P21 Purifier Refill Kit or new cartridge

- Stop the compressor and verify complete depressurization of purifier with manual drain.
- Verify purifier gauge is 0.
- Rotate the screws counterclockwise to remove purifier head. (When removing the head, purifier cartridge will come along.)
- Remove the cartridge from the head.
- A new cartridge is inserted if a replaceable type cartridge is used.
- If a refillable cartridge is used, it must have its chemical components changed in accordance with the illustrated instructions included in the cartridge refill kit that was provided to you.
- Oil the O-rings with appropriate oil and install them onto purifier head.
- Purifier top head O-rings and threads, and purifier ass’y threads are cleaned and oiled, assembled. After tightening for 20 mm, you may need a wrench to tighten properly.
- Then loosen it by quarter turn back.



**IMPORTANT:**

It is required to use CO-fixing filtration cartridges, which can be provided upon request, if the compressor is operated in an environment where CO (exhaust fumes) may be present.

**WARNING :**

The filtration cartridge are classified as special waste : they must be disposed of in compliance with the anti-pollution standards in force.

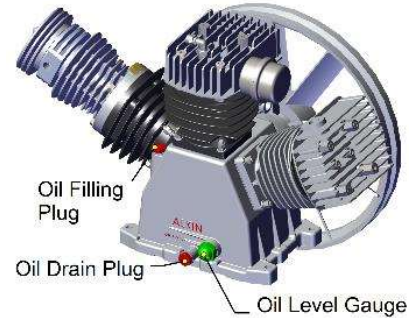
**3.3.14. Oil change**

Instruction no	14
Instruction name	Oil Change Instructions
List of tools required	Funnel, bowl, 17 wrench
Parts list to be used in replacement	Anderol 755 oil



**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

- Start the compressor and run for 5 minutes to warm up the oil. Then stop the compressor.
- Remove oil filling plug with a no.17 wrench.
- Put a funnel and a bowl below the oil drain plug.
- Remove oil drain cap with a no.17 wrench.
- Wait until all oil is drained.
- Reinstall oil drain plug with a no.17 wrench.
- Fill with new ANDEROL 755 oil.
- Reinstall oil filling plug with a no.17 wrench.



**3.3.15. Intake filter replacement**

Instruction no	15
Instruction name	Intake Filter Replacement
List of tools required	Clean cloth
Parts list to be used in replacement	Intake filter element

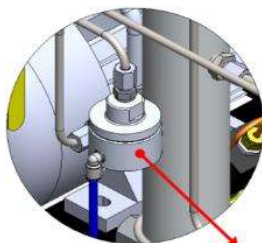
- Remove the top cover of the inlet filter by turning it clockwise.
- Remove the air filter cartridge.
- Replace the cartridge with new one.
- Place the top cover into place. Fix it in place by turning it counterclockwise.



**3.3.16. Auto drain valve adjustment with repair kit**

Instruction no	16
Instruction name	Auto Drain Valve Adjustment with Repair Kit
List of tools required	14, 19 and 22 wrench
Parts list to be used in replacement	

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



**Automatic  
Drain Valve**

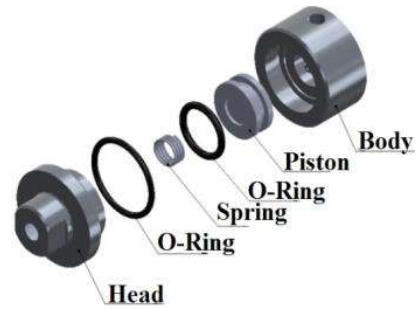
- Remove the auto drain valve head with no.22 wrench with counterclockwise rotation.
- Remove from the auto drain valve old pistons and spring and clean auto drain valve ass'y with pressurized air.

## W31 SERIES

### HIGH PRESSURE BREATHING AIR COMPRESSORS

---

- 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.22 tool. After tightening, slightly loosen it with rotating no.22 tool counterclockwise. This is done so that the piston is well placed.
- Reconnect the piping of auto drain valve with no. 14 wrench, and fittings with no. 19 wrench.
- Start the compressor and verify that the drain valve is operating within drain intervals.



## **TROUBLESHOOTING**

### **4.1 COMPRESSOR DOES NOT WORK**

- |                                      |  |
|--------------------------------------|--|
| • No power                           | Control power line and 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.<br>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.       |

## W31 SERIES

### HIGH PRESSURE BREATHING AIR COMPRESSORS

#### 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.<br>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.   |

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

**4.8 AIR FROM INTAKE**

- |  |                             |
|--|-----------------------------|
| <ul style="list-style-type: none"> <li>• Broken 1<sup>st</sup> stg. inlet valve</li> </ul> | Replace its spring and disc |
|--|-----------------------------|

**4.9 INSUFFICIENT AIR AT THE POINT OF USE**

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Leaks or restrictions</li> </ul>     | Check for leaks and restrictions in the piping and hoses.         |
| <ul style="list-style-type: none"> <li>• Restricted air intake</li> </ul>     | Replace the intake filter element                                 |
| <ul style="list-style-type: none"> <li>• Slipping belts</li> </ul>            | Tighten the belts.  |
| <ul style="list-style-type: none"> <li>• Excessive air consumption</li> </ul> | a. Limit the air consumption to the capacity of the compressor.   |
| <ul style="list-style-type: none"> <li>• Worn piston rings</li> </ul>         | b. Increase your air capacity with an additional compressor unit. |
| <ul style="list-style-type: none"> <li>• Worn cylinders</li> </ul>            | Replace piston rings.   |

**4.10 PRESSURE VESSELS DO NOT HOLD THE PRESSURE WHEN THE COMPRESSOR IS UNLOADED**

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Check valve leaks</li> </ul>                   | Relieve the pressure vessels and replace the check valve. |
| <ul style="list-style-type: none"> <li>• Excessive leaks in the plant piping</li> </ul> | 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**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Sheaves misaligned</li> </ul>          | Realign the motor sheave and the flywheel.               |
| <ul style="list-style-type: none"> <li>• Belts too tight</li> </ul>             | Adjust tension   |
| <ul style="list-style-type: none"> <li>• Belts too loose</li> </ul>             | Adjust tension   |
| <ul style="list-style-type: none"> <li>• Sheave or crankshaft wobble</li> </ul> | Check for worn or bent crankshaft, keyway or sheave bore |

**4.12 EXCESSIVE DISCHARGE AIR TEMPERATURE**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Dirty valves / carbon on valves</li> </ul>            | Remove valves; clean or replace.  |
| <ul style="list-style-type: none"> <li>• Dirty intercoolers and/or cooling surfaces</li> </ul> | Clean cooling surfaces of the cylinders, intercoolers, and aftercooler. |

## W31 SERIES

### HIGH PRESSURE BREATHING AIR COMPRESSORS

• 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.

**W31 SERIES  
HIGH PRESSURE BREATHING AIR COMPRESSORS**

**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 DOES 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









## DECLARATION OF CONFORMITY

**2014/35/EU - 2006/42/EC**

**MANUFACTURER:** ALKIN COMPRESSORS

**ADDRESS:** Kazım Karabekir mah. Bekir Saydam cad. No:94/1  
35865 Torbalı / İZMİR

Alkin 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** : W31 SERIES

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

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

**ALKIN** ALKIN KOMPRESOR  
SAN.VE TİC.LTD.ŞTİ.  
Cuneyibey Mh. Taşas Yolu Küme Evler No:3  
Menderes / İZMİR Tel: 0 232 784 2690  
Menderes V.D.: 05470389118  
Mersis No: 28010300000000000000

**Date:** 01/01/2023

**Özcan GÜRSOY**  
Factory Manager







MORE THAN **120** COUNTRIES  
**33** YEARS  
OF EXPERIENCE



ALKIN COMPRESSORS

Kazım Karabekir mah. Bekir Saydam cad. No: 94/1 35865

Torbalı-İzmir, TÜRKİYE

Phone : +90 232 782 2290 Fax : +90 232 782 22 89

[www.alkin-compressors.com](http://www.alkin-compressors.com)