

 (704) 660-0334

Appropriate solutions for all your **compressed air needs**



OPERATOR MANUAL FOR OABC D COMPRESSORS (18-45) kW

www.ozenairtech.com

 **ozen**
AIR TECHNOLOGY
EXCLUSIVELY COMPRESSED AIR SOLUTIONS

TABLE OF CONTENTS

| | | | |
|---------------------------------------------------------|-----------|------------------------------------------------------------|-----------|
| 1. CHAPTER / SAFETY | 6 | 5. CHAPTER / MAINTENANCE | 60 |
| 1.1 SAFETY SYMBOLS AND GENERAL SAFETY MEASURES | 6 | 5.1 PREVENTIVE MAINTENANCE INTERVALS..... | 60 |
| 2. CHAPTER / INSTALLATION | 10 | 5.1.1 GENERAL DESCRIPTION | 60 |
| 2.1 HANDLING AND INSTALLATION OF THE COMPRESSOR..... | 10 | 5.1.2 DAILY MAINTENANCE | 61 |
| 2.2 VENTILATION AND COOLING..... | 16 | 5.1.3 WEEKLY MAINTENANCE..... | 61 |
| 2.3 SERVICE AIR PIPES..... | 19 | 5.1.4 COMPRESSOR MAINTENANCE INTERVALS..... | 62 |
| 2.4 ELECTRICAL CONNECTION..... | 20 | 5.1.4.1 AIR-END AND MOTOR..... | 63 |
| 2.4.1 ELECTRIC DIAGRAM | 22 | 5.1.4.2 OIL SPECIFICATIONS, CHECK AND REPLACEMENT | 63 |
| 2.5 INSTALLATION CONTROLS..... | 23 | 5.1.4.3 OIL FILTER AND SPIN-ON SEPARATOR REPLACEMENT | 68 |
| 2.5.1 OIL LEVEL CHECK..... | 23 | 5.1.4.4 INSPECTION AND REPLACEMENT OF SAFETY VALVE | 71 |
| 2.5.2 MOTOR ROTATION DIRECTION CONTROL | 25 | 5.1.4.5 REPLACEMENT OF MINIMUM PRESSURE VALVE..... | 72 |
| 3. CHAPTER / THE SYSTEM OF COMPRESSOR | 26 | 5.1.4.6 REPLACEMENT OF THERMOSTATIC VALVE..... | 73 |
| 3.1 INTRODUCTION / DEFINITION..... | 26 | 5.1.4.7 INSPECTION AND CLEANING OF COOLING GROUP..... | 74 |
| 3.2 COMPONENTS..... | 27 | 5.1.4.8 OIL TEMPERATURE SENSOR REPLACEMENT | 75 |
| 3.2.1 MOTOR & AIR-END GROUP | 27 | 5.1.4.9 MAINTENANCE AND REPLACEMENT | |
| 3.2.1.1 ELECTRIC MOTOR | 27 | OF CABINET FILTERS AND HOSES | 75 |
| 3.2.1.2 MK-80 AIR-END COMPONENT..... | 28 | 6. CHAPTER / FAILURES AND SOLUTIONS | 76 |
| 3.2.1.3 COUPLING..... | 31 | 7. CHAPTER / TECHNICAL DATA | 84 |
| 3.2.1.4 MK-80 MOTOR FLANGE..... | 31 | 7.1 COMPRESSOR NAMEPLATE | 84 |
| 3.2.1.5 FLANGE COVER..... | 31 | 7.2 COMPRESSOR DATA..... | 85 |
| 3.2.1.6 BASE PLATE..... | 31 | 7.3 POWER CABLE DIMENSIONS..... | 86 |
| 3.2.1.7 MK-80 WATER TANK..... | 31 | 7.4 PRELIMINARY FUSE ON SITE..... | 87 |
| 3.2.2 COOLING SYSTEM..... | 32 | 7.5 FUSE SPECIFICATIONS AS PER COMPRESSORS..... | 88 |
| 3.2.3 OPERATOR PANEL..... | 32 | | |
| 3.2.4 CC21 ELECTRONIC CONTROL..... | 33 | | |
| 3.2.5 ELECTRICAL CABINET | 37 | | |
| 3.2.5.1 INVERTER | 39 | | |
| 3.2.6 COMPRESSOR CABINET | 40 | | |
| 4. CHAPTER / HOW IT OPERATES | 42 | | |
| 4.1 GETTING STARTED..... | 42 | | |
| 4.2 CONTROL PANEL..... | 44 | | |
| 4.2.1 MAESTRO 30 CONTROL PANEL DISPLAY | 45 | | |
| 4.2.2 MAESTRO 30 CODES AND DESCRIPTIONS OF ALARMS | 46 | | |
| 4.2.3 MAESTRO 30 MAINTENANCE CODES | 49 | | |
| 4.2.4 MAESTRO 30 DESCRIPTION OF THE STATUS | | | |
| IMAGES ON THE HOME SCREEN..... | 50 | | |
| 4.2.5 CONTROL PANEL USER SETTINGS | 52 | | |
| 4.2.6 CONTROL PANEL OPERATION SETTINGS..... | 54 | | |
| 4.3 DAILY OPERATING INSTRUCTIONS..... | 57 | | |
| 4.4 DISCHARGE PROCEDURE..... | 58 | | |

THE DETAILS THAT DELIVER THE RIGHT RESULTS...

EXPERIENCE

Ozen Air Technology, with its industry experience of half-a-century and its large portfolio of compressed air products, provides reliable, efficient, and smart solutions

TRUST

Ozen's dedication to customer satisfaction has helped the company to build lasting relationships of trust and loyalty with its customers.

DURABLE AND EFFICIENT

All of the compressed air equipment in Ozen's portfolio have proven their durability under the toughest conditions. They provide high-quality, high-efficiency air.

QUALITY

Consistently manufacturing high-quality products is one of Ozen's fundamental tenets. To that end, Ozen continuously enhances its quality policies.



TECHNOLOGY

Ozen Air Technology is innovative. It always uses up-to-date technologies in compliance with world-standards.

R & D

With its creative team and competent infrastructure, Ozen is capable of developing its own technology through collaborations with several universities.

STRONG SERVICE NETWORK

Ozen Air Technology believes in maintainability. Its customers can enjoy uninterrupted manufacturing thanks to its accessible, fast, and reliable service network.

COMPETITIVE

Ozen Air Technology acts in favor of its customers. Providing them with leverage is one of Ozen's strong suits.

RESPECT FOR THE ENVIRONMENT

Striving for a sustainable future, Ozen Air Technology selects for environmentally friendly practices and takes all necessary precautions while structuring its work processes.

SAFETY

CHAPTER 1

1.1 SAFETY SYMBOLS AND GENERAL SAFETY MEASURES

This manual must be read in its entirety and completely understood in order to operate the compressor safely and correctly. The safety instructions must be read carefully and all warnings must be to be strictly adhered to. Follow all local requirements, such as lock-out/tag-out procedures and the wearing of proper personal protection equipment, before attempting to service this equipment.



HOT OIL AND COMPRESSED AIR

Before replacing the separator, make sure the system is switched off and the air in the system is completely evacuated. Otherwise, when the system is loosened, there may be an explosion or skin burns when touched.



FLAMMABLE OIL

Exercise caution when working near or with oil. Do not expose oil to open flames and refrain from smoking near oil storage areas.



ELECTRIC POWER

Do not apply power until the installation is complete. Compressor must be properly grounded and adhere to local electrical codes.



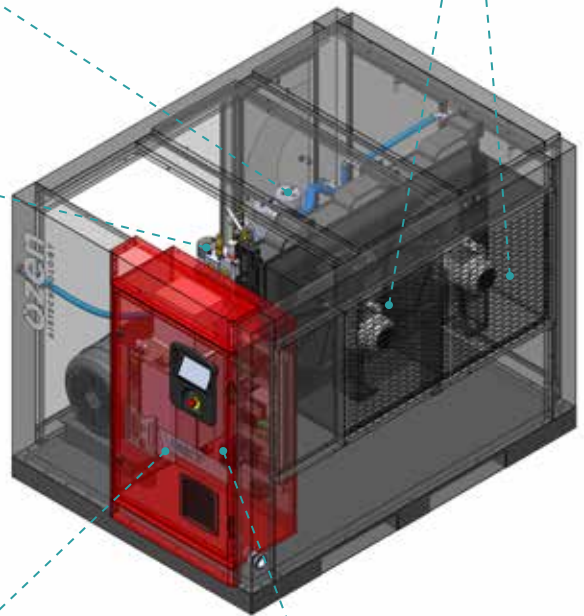
ELECTRIC SHOCK

Make sure that the power is disconnected and proper lock-out/tag-out is performed before connecting the compressor to the power supply or before servicing. Do not open the electrical cabinet cover before the power is turned off.



ROTATING PARTS

Make sure that your hands and body are kept safely away from the fan area before operating the compressor. Severe injuries can occur if your hands or body are stuck in the rotating parts.



HAND CAUGHT IN THE COVER

Exercise caution when removing or installing machine panels. Panels can become pinch points, especially when the machine is operating.

HOT SURFACES

Touching hot surfaces can cause severe burns and injuries. Avoid contacting until machine has cooled.



FIRE

Perform proper oil level checks per the maintenance schedule. A low oil level may cause the machine to overheat. Although the oil has a high auto-ignition value, fire can occur in very extreme cases. Proper grounding is required on all electrical circuits.

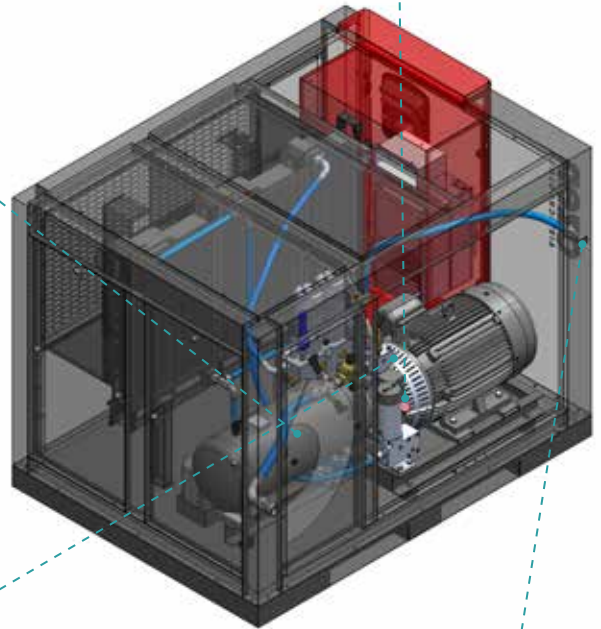


HOT OIL PRESSURE

Before replacing the compressor oil, stop the compressor and make sure that the air is completely evacuated.



OIL LEVEL CHECK



ROTATING PARTS

Make sure that your hands and body are kept safely away from the drive coupling area before operating the compressor. Severe injuries or death may occur in cases when your hands or body are caught in the rotating parts.



RESPIRATORY DISORDERS

Air discharged from the air compressor may contain oil and particulates. It is hazardous to directly inhale the air from the compressor.



COMPRESSED AIR

The air pressure exiting the compressor may be powerful. Ensure that the air outlet is tight and properly sealed before operating the compressor.

SAFETY

CHAPTER 1

GENERAL WARNING ICONS



IMPORTANT!

This symbol and the word "IMPORTANT!" contain important information about the use of the compressor. Read the information in these sections thoroughly for the compressor to be operated efficiently.



ATTENTION!

This symbol and the word "ATTENTION!" indicate the possible hazards that may be caused to the person and the environment. Failure to observe the warnings in this section may cause personal injury.



DANGER!

This symbol and the word "DANGER!" indicate the potential hazards that may be encountered. If ignored, it may result in serious personal injury or death.

GENERAL SAFETY ICONS

Read the general safety icons and descriptions carefully before using your compressor. Observe the safety notes in the sections in which you see these icons. Failure to observe safety icons may result in injury or death.











HOT OIL AND COMPRESSED AIR

Machine contains hot oil and compressed air. Exercise caution when performing any service work or repair. System pressure must always be completely relieved any time the system is opened. Failure to do so may result in equipment damage, person injury, or death.



FLAMMABLE OIL

Machine contains hot oil under pressure. Exercise caution whenever working with the oil system and never perform any service or repair while machine is under pressure or in operation.

| | |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>ROTATING PARTS Keep away from the rotating parts (fan, etc.) when the compressor is running. Contact with rotating parts may result in serious bodily harm or death.</p> |
|  | <p>ROTATING PARTS Keep away from the rotating parts (belt and pulley system, etc.) when the compressor is running. Contact with rotating parts may result in serious bodily harm or death.</p> |
|  | <p>ELECTRIC SHOCK Do not come into contact with live electrical components and/or cables. Doing so will result in electric shock, leading to severe injury or death. Always wear appropriate PPE (Personal Protective Equipment) per NFPA 70E and local regulations.</p> |
|  | <p>PINCH POINT Keep hands away from the openings when removing or installing machine panels, especially when the machine is in operation. Suction from the machine may cause fingers or body parts to become pinched, causing injury.</p> |
|  | <p>HOT SURFACES Do not touch the hot surfaces of the compressor when the compressor is operative or inoperative. Doing so may cause injuries.</p> |
|  | <p>RESPIRATORY DISORDERS Do not breathe compressed air discharge. It is not meant for breathing air and can cause respiratory damage.</p> |
|  | <p>EARPLUG USE Use earplugs while the compressor is running. Otherwise, you may experience hearing loss.</p> |
|  | <p>ELECTRIC POWER Do not perform any work or repairs on live electrical circuits. Always remove electrical power, perform lock-out/tag-out procedures, wear proper PPE, and take safeguards to provide protection against electrical shock. Electrical shock will cause serious injury or death.</p> |

INSTALLATION

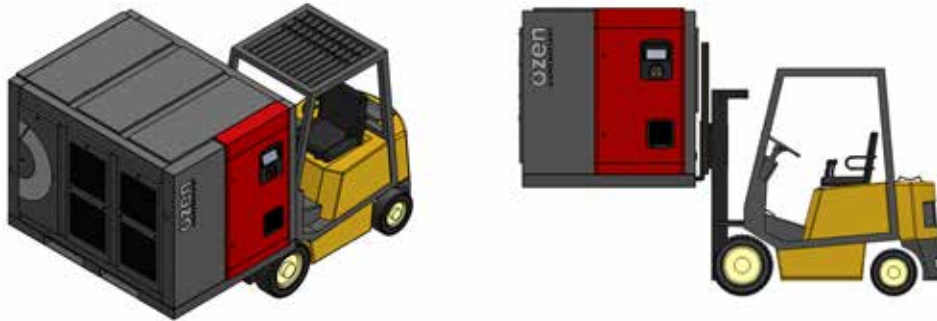
CHAPTER 2

2.1 HANDLING AND INSTALLATION OF THE COMPRESSOR

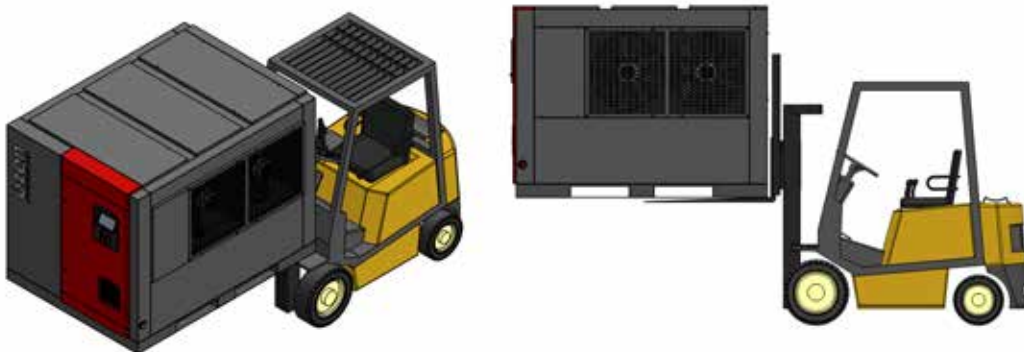
Compressors can be transported by crane or forklift. Compressors may fall or be tipped due to improper transport. This will cause serious damage to the compressor and/or personal injury or even death.

Transport of the compressor by forklift:

TRANSPORT METHOD FOR THE OABC D COMPRESSORS WITH FORKLIFT



PROPER TRANSPORTATION



IMPROPER TRANSPORTATION

- ▶ For the stable lifting of the compressor, the forks of the forklift must be equally inserted into the forklift slots located on the sides of compressors and lifted. If the directions are not followed, the compressor can overturn and cause serious damage to the compressor or personal injury.
- ▶ The forklift's lifting mast must not be inclined forward when lifting the compressor.
- ▶ The front and rear floor openings of the compressor are not intended for the forklift. Do not use them for lifting purposes. Only use the forklift slots on the sides reserved for the forklift.
- ▶ Select a suitable forklift that is recommended for the weight of the compressor.

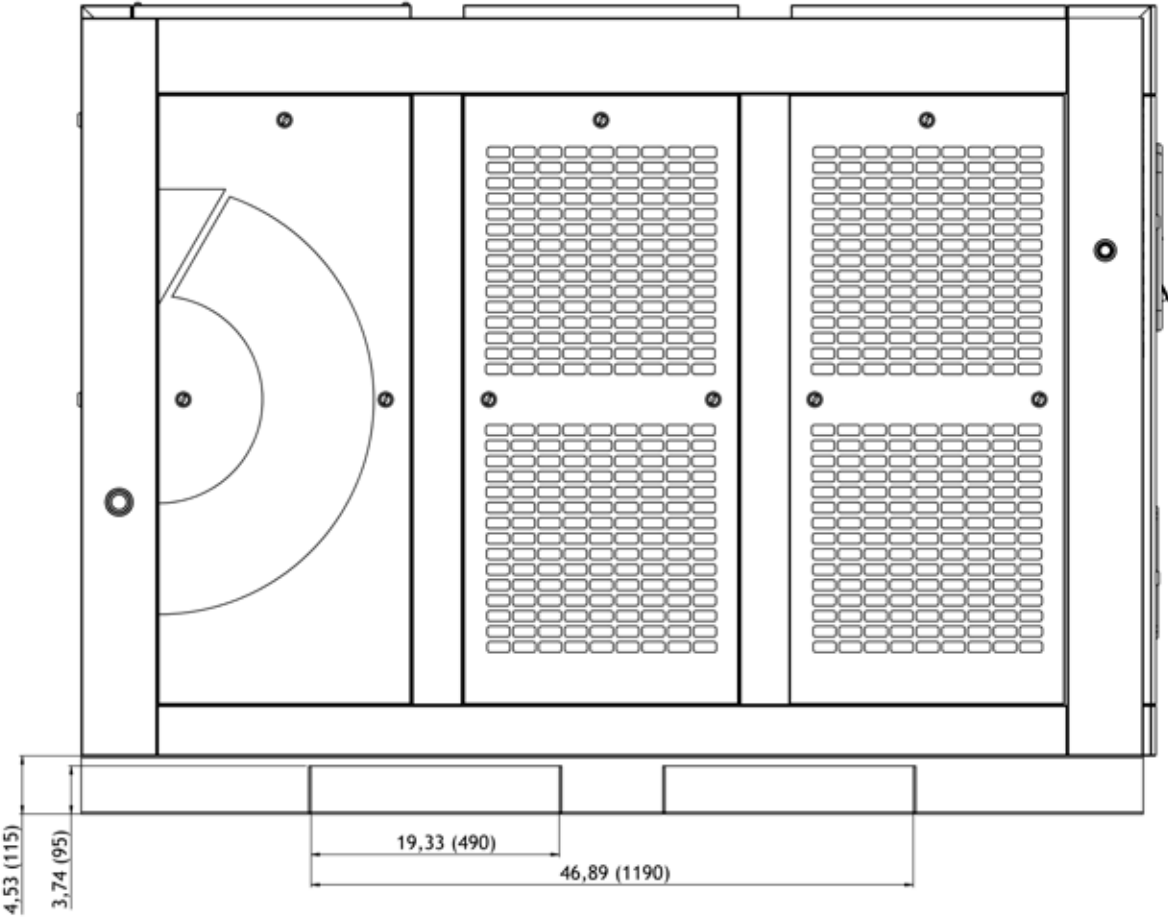


ATTENTION!

If the weight of the truck to be used to transport the compressor transport is not selected according to the size of the compressor, then the forklift may incline forward and tip over due to excess weight. This will lead to substantial material damage and/or personal injury.

INSTALLATION

CHAPTER 2



NOTE: Unless noted otherwise, all measurements in FIGURES are in inches (mm)

Transportation of the compressor by crane:



- ▶ In order to lift the compressor in a balanced way, ropes or straps should be placed through the forklift slots that are on the front and back of the compressor. Ropes and straps should be of equal length.
- ▶ While the ropes/straps are being set, wood slats need to be placed between the ropes and cabinet as shown in FIGURE-6. This will prevent damage to the cabinet.
- ▶ Since both sides of compressor aren't suitable to be lift by crane, please only use the forklift slots that are on the front and back of the compressor.



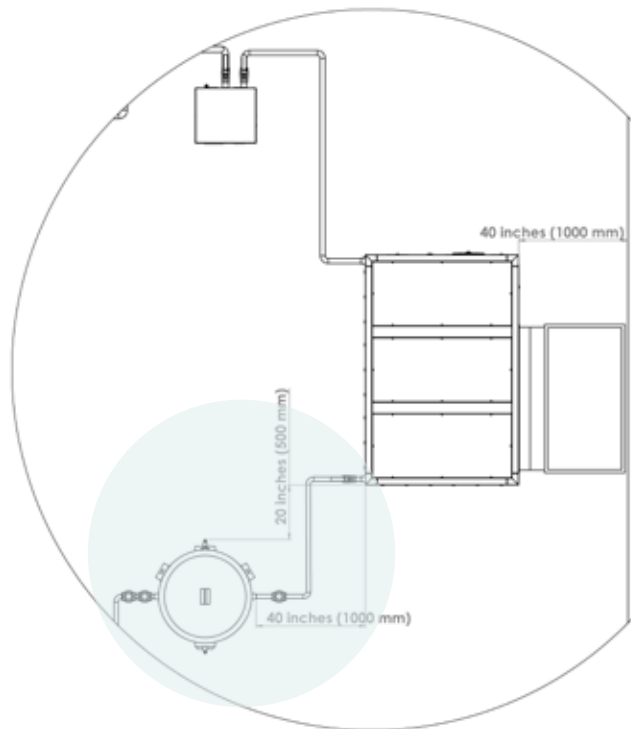
ATTENTION!

Do not stand under or near the compressor when transporting the compressor by crane. Failure of the lifting devices will cause the load to fall, causing personal injury or death.

INSTALLATION

CHAPTER 2

Installation of the compressor:



The following considerations should be taken into account before locating the compressor:

- ▶ The floor for the compressor must be flat.
- ▶ Ensure that the dimensions and ventilation of the compressor room are appropriate.
- ▶ The compressor room must have enough lighting.
- ▶ Provide the appropriate power supply to the compressor.
- ▶ Take appropriate fire precautions per local laws and regulations.
- ▶ Compressor accessibility must adhere to recommended clearances and all escape routes and rescue equipment must be accessible.
- ▶ The compressor room must be free of dust.
- ▶ No electrical or electromagnetic devices that may cause disturbances should be around the compressor room.
- ▶ Make sure that the compressor is not directly exposed to rain, moisture, and extreme low and high temperatures.
- ▶ Ensure that the compressor is not directly placed in a corrosive environment.
- ▶ Provide the compressor room with a fixed or portable crane in order to facilitate the maintenance and servicing operations.

**ATTENTION!**

The temperature and humidity (climatic conditions) of the environment in which the compressor is to be placed has an effective role in the operation of the compressor. Ensure that adequate protection is provided to the ambient conditions that affect the operation of the compressor.

When locating the compressor:

- ▶ The compressor must have a minimum clearance of 40 inches (1000 mm) between the walls and the other components in the room (if any) to allow for unobstructed air intake and discharge. There must be at least 60 inches (1500mm) between compressor and the roof. These are very important dimensions for easy servicing. Service personnel may not be able to fulfill their work if these dimensions are less.
- ▶ Install separate lines for the condensate drains of the compressor, dryer, filters, and air receiver. Otherwise, water may gather in the vicinity of the air compressor.
- ▶ The air inlet sides of the compressor cabinets must always face in the direction of cool air. Take this into consideration when designing the layout of the room and placement of the compressor.
- ▶ The room where the compressor is to be operated must have an appropriate air flow. The compressor must not draw in the hot air that is discharged from compressor. The clean and cool air entering the room must have a velocity of less than 13 ft/sec (4 m/sec.).
- ▶ On the models equipped with an aftercooler, there may be some oil in the water that is discharged from the compressor. An oil/water separator may be required before disposing the water into the drain. Check the local environment and safety standards that you are subject to.

INSTALLATION

CHAPTER 2

2.2 VENTILATION AND COOLING

The heat generated by the air compressor can quickly increase the compressor room ambient temperature beyond the maximum rated ambient temperature for the machine. In order to prevent this, ventilation for the compressor room must be provided. Please refer to the Cooling & Ventilation Data chart in Table-1.

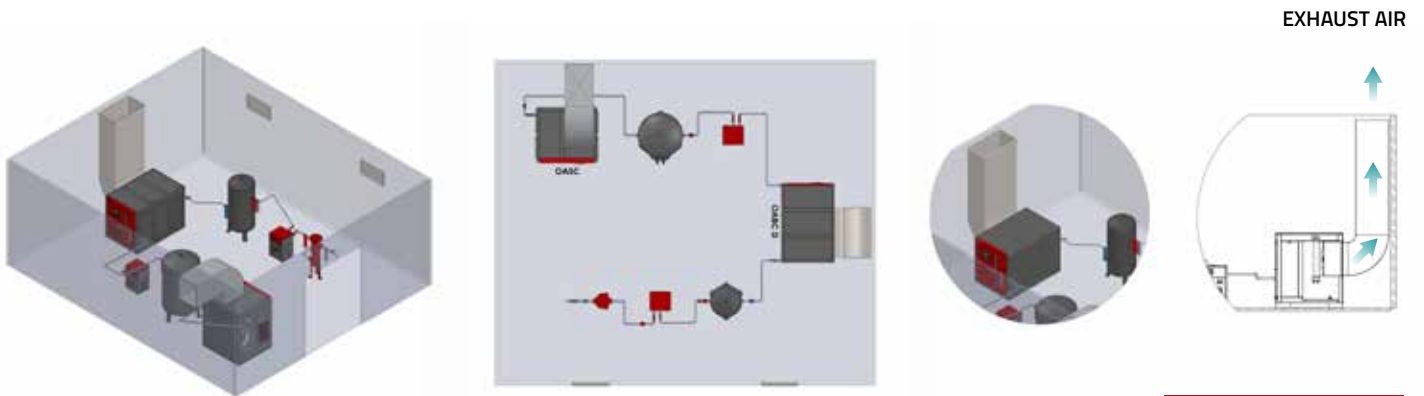


FIGURE A

OABC D 18-45

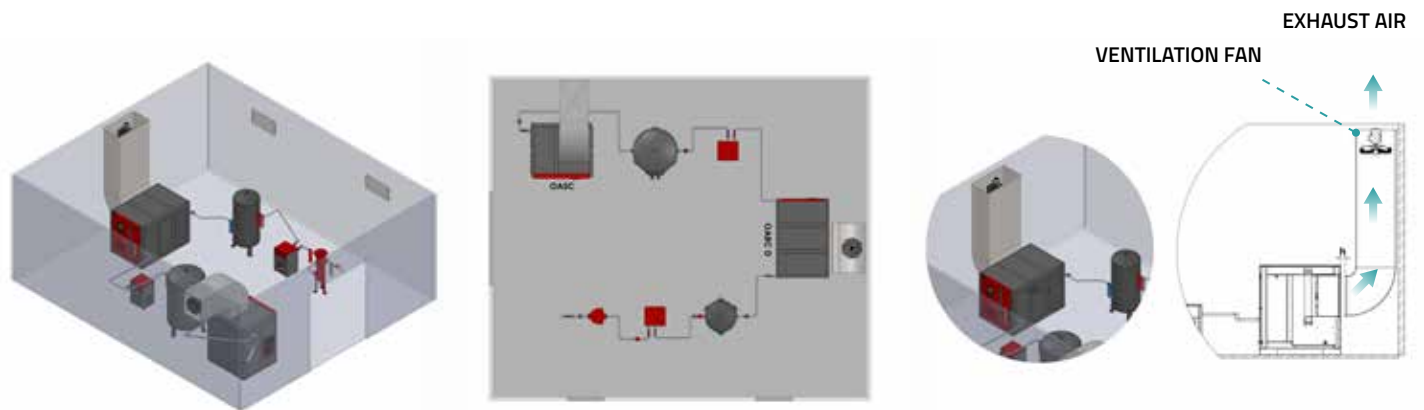


FIGURE B

OABC D 18-45

The compressor room ventilation blowers are recommended to be on the air intake side of the compressor. This allows the compressor to reach clean air more easily and quickly.

Avoid long runs of ducting and keep bends to a minimum, especially those that are 90 degrees. Ducting must be at least as large as the opening on the hot air discharge of the compressor and must be over-sized in instances of long runs and excessive bends. Failure to do so will result in back-pressure being applied to the cooling fan, which will cause the compressor to overheat. Refer to Table-1 for cooling data and back-pressure limits to assist in sizing and engineering of duct work.

If the difference between the outlet pressure of suction fan in the compressor and the outlet pressure of the ventilation duct system is less than defined value below at Table-1, then FIGURE A is preferred. If greater, then FIGURE B is preferred.

If FIGURE B is preferred, the gap (h) between the compressor and ventilation hood must range between 8-12 inches (200 - 300 mm).

| Cooling & Ventilation Data | | | | | |
|---------------------------------------|-------------------------------------------------------------------|-------------------|--------------------|--------------------|--------------------|
| Model: | OABC D 18 | OABC D 22 | OABC D 30 | OABC D 37 | OABC D 45 |
| Ambient Temperature Max. °F (°C) | 100 (38) | 100 (38) | 100 (38) | 100 (38) | 100 (38) |
| Heat generation BTU/hr (kW) | 63,124.62 (18.5) | 75,067.12 (22) | 102,364.26 (30) | 126,249.25 (37) | 153,546.39 (45) |
| Air Exhaust cfm (m ³ /min) | 8800 (250) | 8800 (250) | 8800 (250) | 17600 (500) | 17600 (500) |
| Fan Capacity | Ventilation Type A cfm (m ³ /min) | N/A | N/A | N/A | N/A |
| | Ventilation Type B cfm (m ³ /min) | 9180 (260) | 9180 (260) | 9180 (260) | 18000(510) |
| | Ventilation Type C (without duct) cfm (m ³ /min) | 19400 (550) | 19400 (550) | 19400 (550) | 38850(1100) |
| | Pressure loss allowed " H ₂ O (Pa) | 0.12 (30) | 0.12 (30) | 0.12 (30) | 0.12 (30) |

Table 1

In order to prevent the re-circulation of hot air exhaust, the inlet air vent to the compressor room must not be located on the same wall as the hot air exhaust. It is best to locate the two vents on opposite walls for cross-ventilation or at least on an adjacent wall, as shown on the figures.

Air intake grills installed in the compressor room must be designed so as to prevent ingress of water (rain) and debris (leaves, dust, etc.)

INSTALLATION

CHAPTER 2

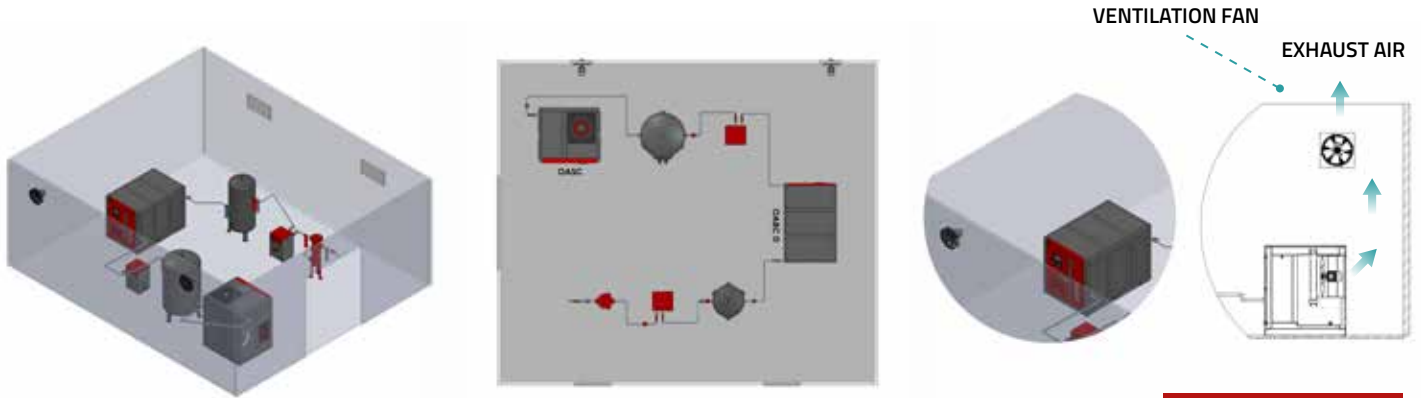


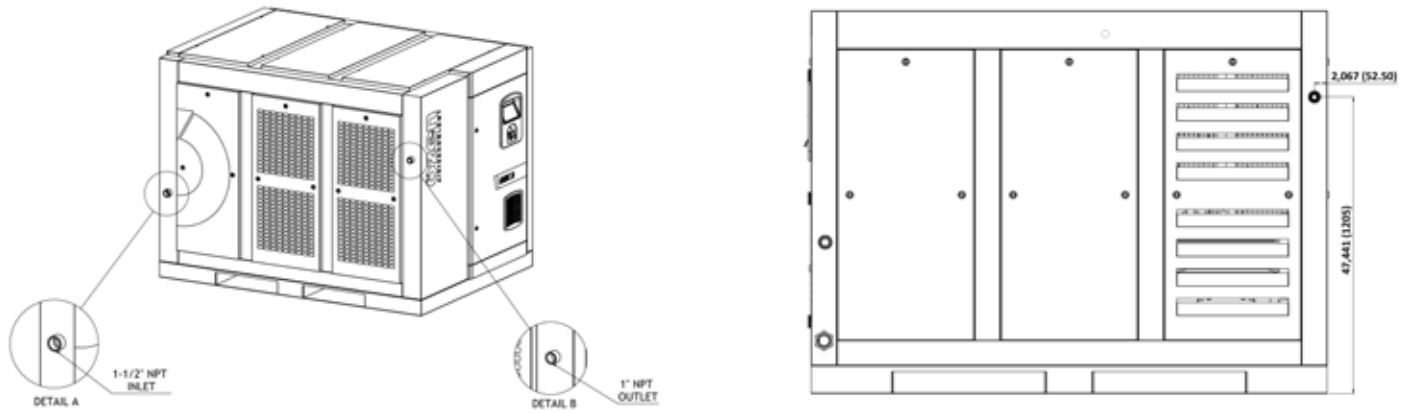
FIGURE C

OABC D 18-45

When a fan is used for the purpose of hot air exhaust removal, the capacity of the fan must be as close as possible to that of the air compressor cooling fan. Failure to size the exhaust fan properly will result in the pulling of a vacuum in the room or inadequate evacuation of the hot air exhaust, which may result in overheating of the compressor.

Placement of the intake and discharge grills may differ from the figure due to actual placement of the air compressor.

2.3 SERVICE AIR PIPES



Compressor service air outlet is found on the back of OABC D series. Dimensions are defined in Table 2.

| MODEL | SERVICE AIR PIPE SIZE |
|-----------|-----------------------|
| OABC D 18 | 1" NPT |
| OABC D 22 | 1" NPT |
| OABC D 30 | 1" NPT |
| OABC D 37 | 1" NPT |
| OABC D 45 | 1" NPT |

Table-2



IMPORTANT!

The table located on the left shows the NPT pipe size of the Ozen Air Technology's rotary screw air compressors mentioned in this manual.

System piping size must never be smaller than the size of the air compressor discharge. Reducing the piping size will result in overpressurization of the compressor.

INSTALLATION

CHAPTER 2

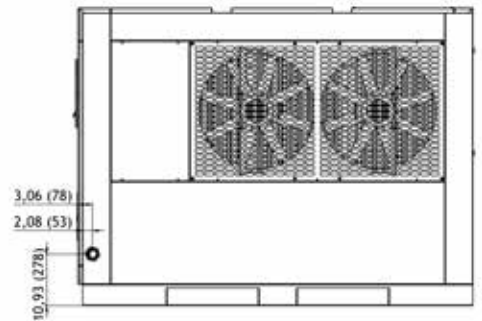
2.4 ELECTRICAL CONNECTION



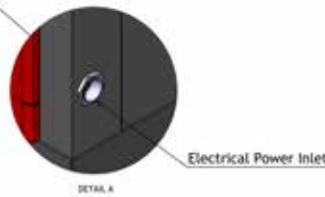
DANGER!

Always verify that the power supply is de-energized when making any electrical connections. Failure to do so may result in electric shock, which will cause bodily harm or death.

All electrical connections should be made by a Licensed Electrician or a qualified Ozen Distributor Service Professional. Incoming power connection must be made through the cabinet penetration shown below in Detail A.



DETAIL A



Fulfill the power connection with cables having UL-Standard as per electrical connection diagram. Carefully examine the data in the electrical diagram. Check that your supply network is in compliance with this data. Maximum voltage deviation is +/- 10%, maximum voltage drop when compressor is started is 10%, and maximum sustained voltage drop after the compressor is running is 6%. Maximum voltage imbalance is 3% and maximum current imbalance is 5%.

Note: All measurements are in inches (mm)



When selecting the power cable size, refer to the Total Loaded Power for the main motor which is specified in the “Engineering Data Sheets”.

Use the Table in Chapter 7.3 to select the electrical cable. This table shows the power connection cable dimensions for each kW motor. All cabling, main fuses, and main breakers must be sized applicable to local electrical codes. Any references in this manual are suggestions, only.

When connecting the power cables, ensure that they are properly secured so as not to create a tripping hazard.

Make sure that the power cables are securely tightened to the connection terminals.

If the phase connections are wrong, either the motor will turn in the opposite direction or the compressor will not operate. Check the rotation direction of the motor when you operate the compressor for the first time. If the rotation direction is not correct, swap two of the incoming power lines to reverse rotation.

Always verify that the machine is wired to the correct voltage that matches your incoming power by checking the label inside the electrical panel door and the compressor data tag located on the outside of your compressor. To convert your compressor to a different voltage, please contact your local Ozen Distributor.

A fused disconnect or circuit breaker according to PRELIMINARY FUSE ON SITE - PFS (A) list and code requirements must be provided by the customer. The PFS (amps) value is contained in the table in section 7.4.



ATTENTION!

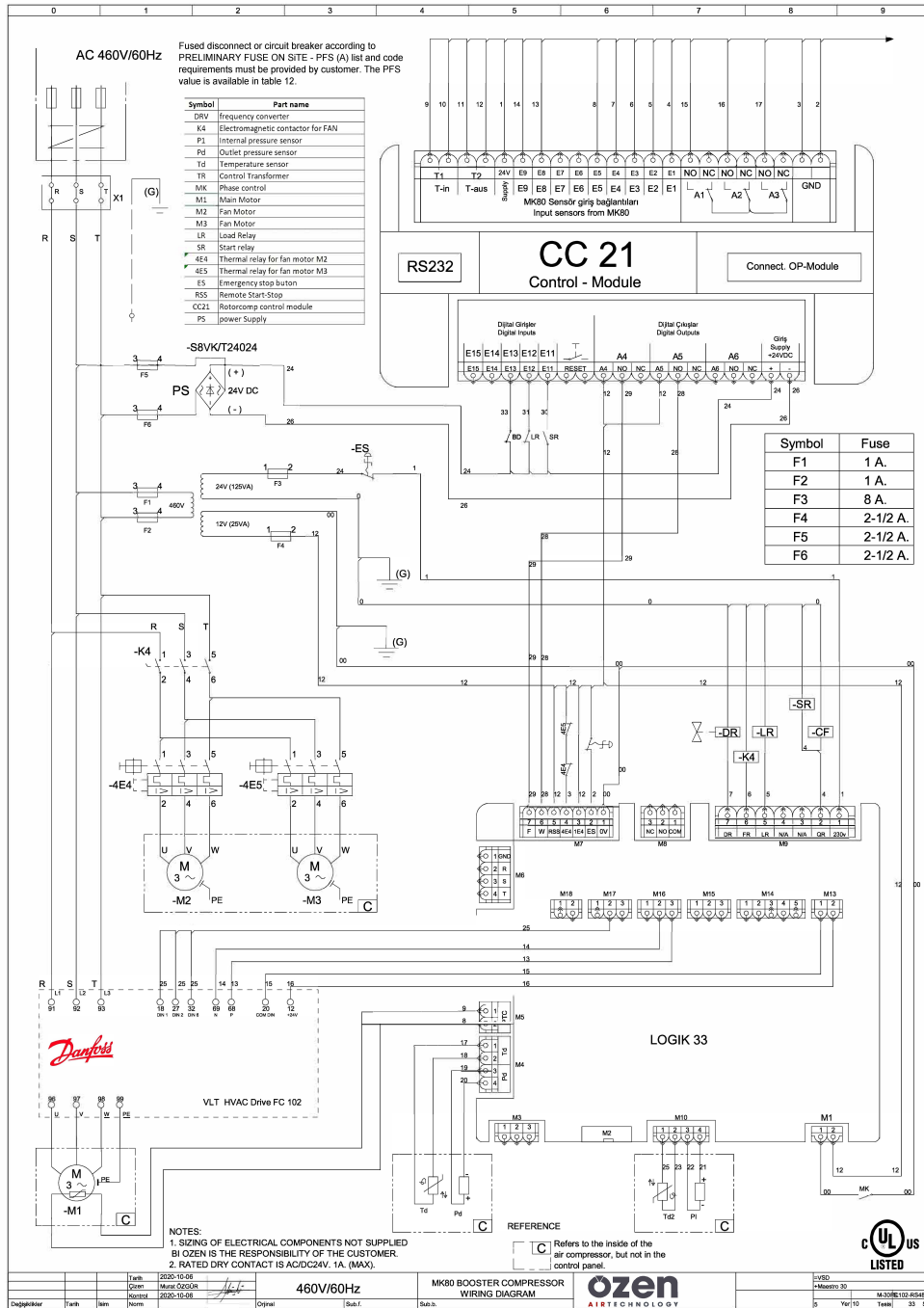
The grounding cable must be attached to the terminal block during the installation of incoming power. The terminal reserved for the grounding cable is located next to the incoming power phase connections. If this is not completed, the entire compressor can become electrified and electric shock can occur, causing bodily injury or death.

INSTALLATION

CHAPTER 2

2.4.1 ELECTRIC DIAGRAM

ELECTRIC DIAGRAM FOR OABC D 18-45



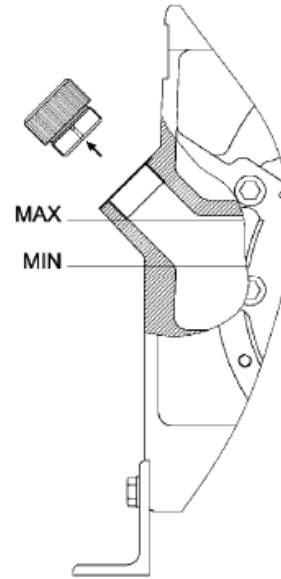
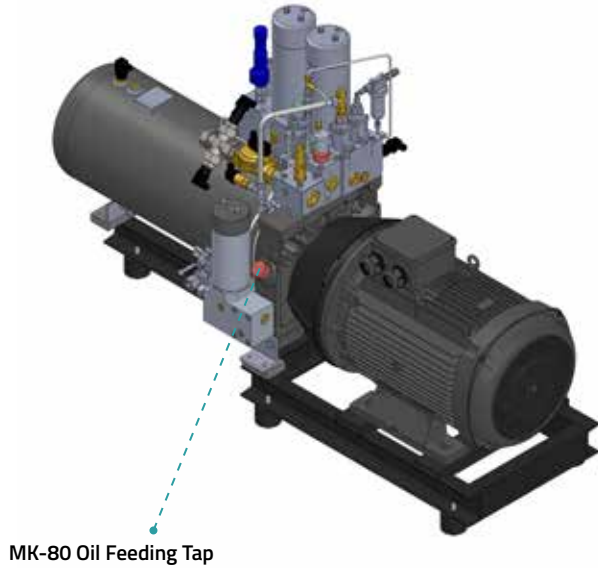
2.5 INSTALLATION CONTROLS

2.5.1 OIL LEVEL CHECK

- ▶ The oil required for the operation of the compressor is present inside the MK-80 separator tank. However, check the oil level before the first start-up.
- ▶ Check the oil level when the compressor is not operating. The correct oil level can not be determined when the compressor is operating. Allow at least 10 minutes after the compressor has stopped operating before checking the oil level. Make sure that the internal pressure is 0 psi.
- ▶ Check the oil level on the oil fill tap located on the separator tank.
- ▶ The required oil level is defined on the 2D drawing below. Oil level should be at the middle of the min and max level.

INSTALLATION

CHAPTER 2



✓ full Tank



✗ Empty Tank

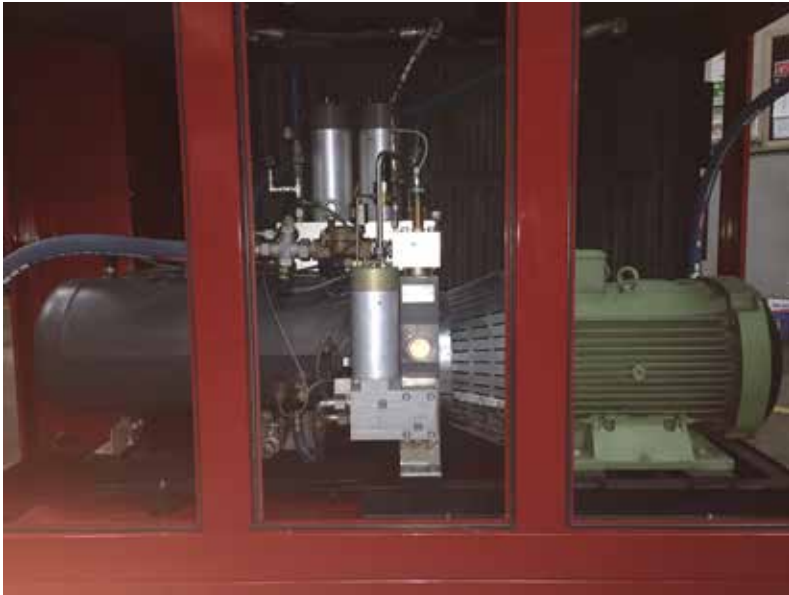


ATTENTION!

If you have added oil after checking the oil level, do not operate the compressor without making sure that the oil plug is screwed in and tightened.
Do not operate the compressor with any panels removed.



2.5.2 MOTOR ROTATION DIRECTION CONTROL



Although Ozen Air Technology installs phase reversal protection to ensure proper motor rotation on each and every compressor that is manufactured, it is recommended to manually verify that correct motor rotation is established. Verify correct rotation according to the arrow decal placed on the motor.

A phase sequence relay communicates with the Maestro controller and will prevent starting of the compressor if incorrect rotation is sensed.



ATTENTION!

Do not operate the compressor with any cabinet panels removed.



THE SYSTEM OF COMPRESSOR

CHAPTER 3

3.1 INTRODUCTION/DEFINITION

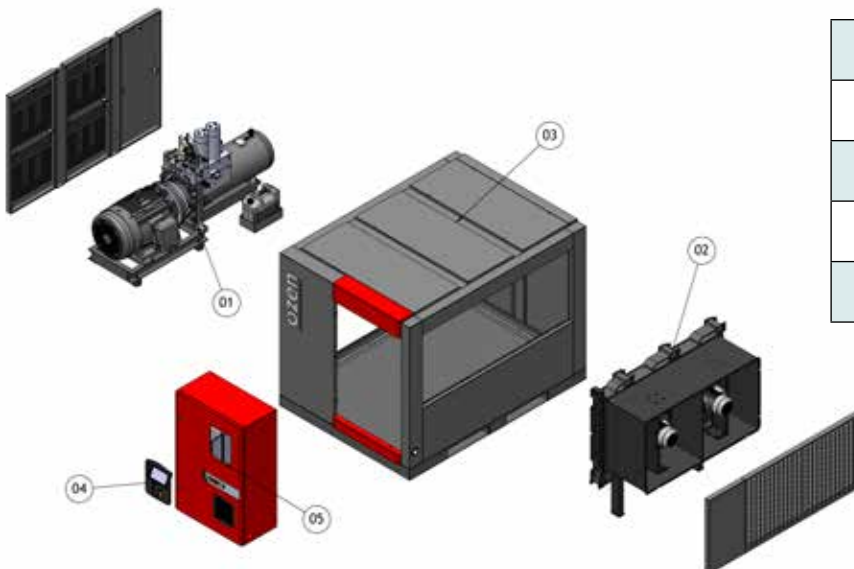
This chapter shows the general components constituting Ozen Air Technology rotary screw air compressors. Ozen Technology compressors are air-cooled, oil-injected, electric motor driven screw compressors.

All components of the Ozen Air Technology screw air compressors are assembled in a closed steel sheet-metal casing providing sound insulation.



IMPORTANT!

The overall appearance and structure of all casings for the compressors ranging between 18.5 kW and 45 kW, are the same. The appearance and position of the components in the assembly may differ from the picture.



| | |
|----|-----------------------|
| 01 | Motor & Air-end Group |
| 02 | Cooling System |
| 03 | Compressor Cabinet |
| 04 | Operator Panel |
| 05 | Electric Cabinet |

3.2 COMPONENTS

3.2.1 MOTOR & AIR-END GROUP



| | |
|----|-------------------------|
| 01 | Electric Motor |
| 02 | MK-80 Air-End Component |
| 03 | Coupling |
| 04 | MK-80 Motor Flange |
| 05 | Flange Cover |
| 06 | Base Plate |
| 07 | MK-80 Water Tank |

The Mk-80 air-end component discharges compressed air at 580 psi. The system requires pre-pressurization with a rotary screw compressor. The system discharges some amount of water due to vaporization of the high pressure and temperature air. The condensate is discharged to the water tank, in which the level is controlled by sensors.

The entire Motor & Air-End Group is assembled on a baseplate. You may see the detailed picture of the Motor & Air-End Group in the parts manual.

3.2.1.1 ELECTRIC MOTOR

The electric motor is selected by the appropriate voltage, frequency, and motor speed according to the customer requirements. The electric motor drives the rotation of the air-end rotors and, hence, the production of compressed air.

All Ozen Air Technology compressors utilize electric motors that are listed as NEMA Premium Efficiency.

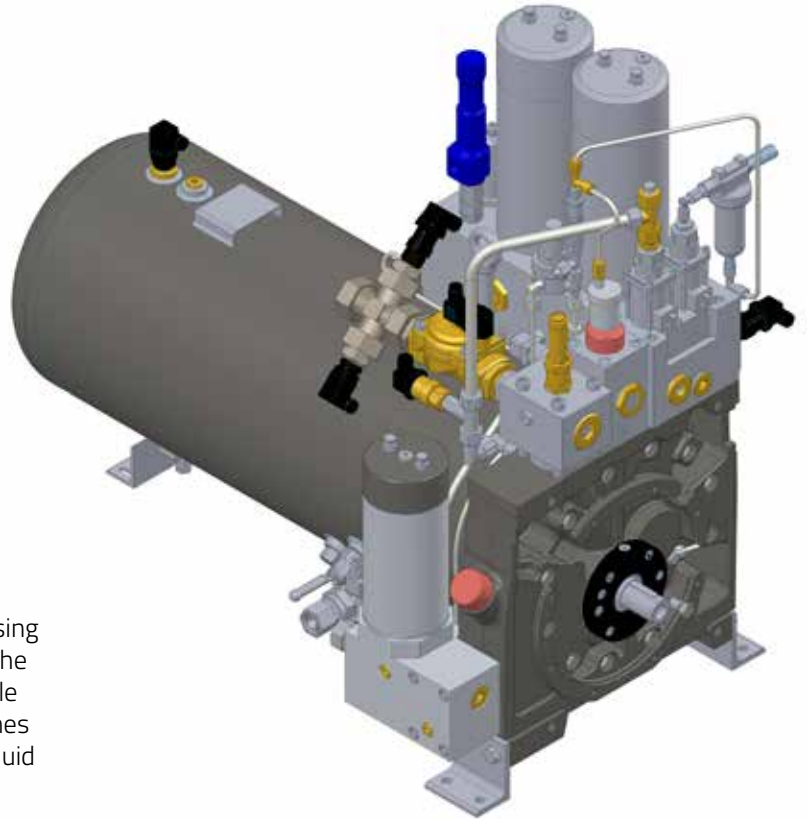
Motor efficiencies can be found in the Engineering Data Sheets by compressor model.

The maintenance and replacement of the motor bearings are to be made in accordance with the maintenance chart.

THE SYSTEM OF COMPRESSOR

CHAPTER 3

3.2.1.2 MK-80 AIR END COMPONENT

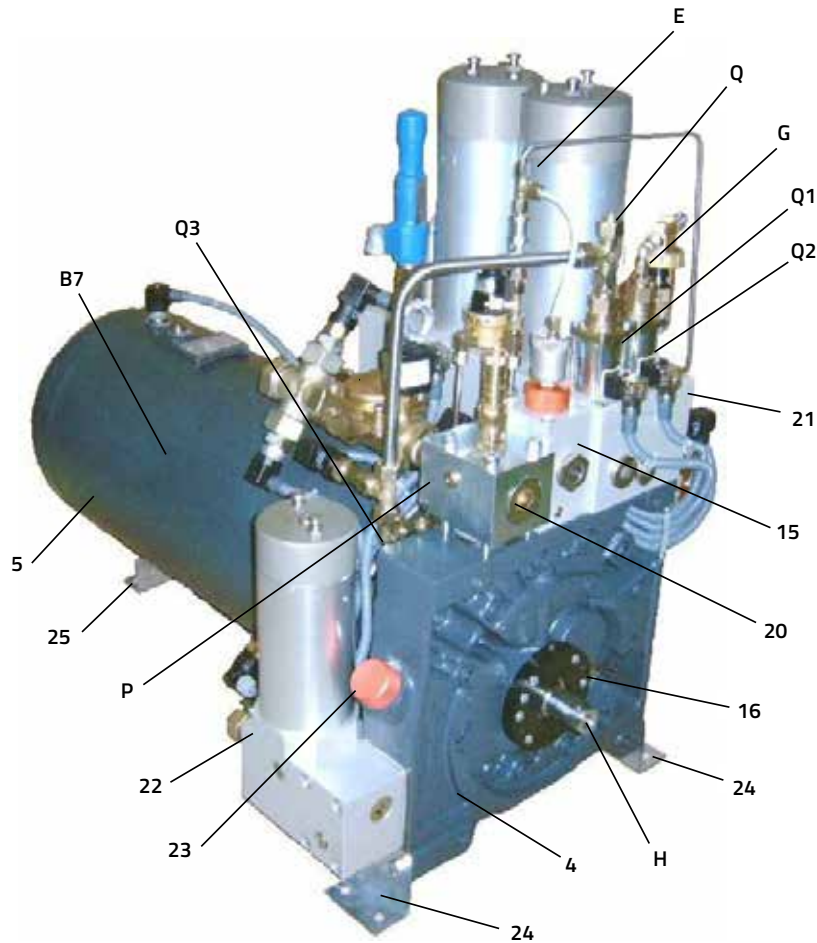


The air-end rotors are encapsulated and consist of a female and a male rotor, which are capable of compressing air up to 40 bars. There are helical lobes protruding on the male rotor while indented helical ducts are on the female rotor. The male rotor, driven by the electric motor, meshes with and drives the female rotor and ensures that the fluid is pushed through and compressed within the housing.

In the booster compressors, there are 3 solenoid valves controlling the input, output, and idle operation of the system. The inlet solenoid valve remains closed until the air pressure entering into the system reaches 4 bar (58 psi.) When the inlet pressure value exceeds 4 bar (58 psi,) the compressed air reaches the air-end through the inlet flange once the solenoid inlet valve is opened. The air pressure can reach a maximum of 40 bar (580 psi) at the discharge of the air-end.

During the machine's idle operation, the input valve is automatically closed and the idling solenoid valve (which is the 2nd solenoid valve) is opened. This keeps the system ready to rapidly produce compressed air again, when needed, by simply repositioning those valves. In case of no air requirement, idling booster is operated for 500 sec. then the system automatically turns itself off.

When the booster is shut off, the inlet solenoid valve is closed. In addition to the idling valve which is open the output valve is automatically opened and the compressed air in the machine starts to be discharged.



MK80-10 view to compressor housing side

- 4 Compressor housing
- 15 Oil reservoir - shaft seal
- 20 Inlet flange
- 22 Oil filter block
- 24 Compressor foot, front side

- 5 Separator vessel
- 16 Front cover with shaft seal
- 21 Separator head
- 23 Oil filler cap
- 25 Compressor foot, rear side

B7 Outlet temperature sensor

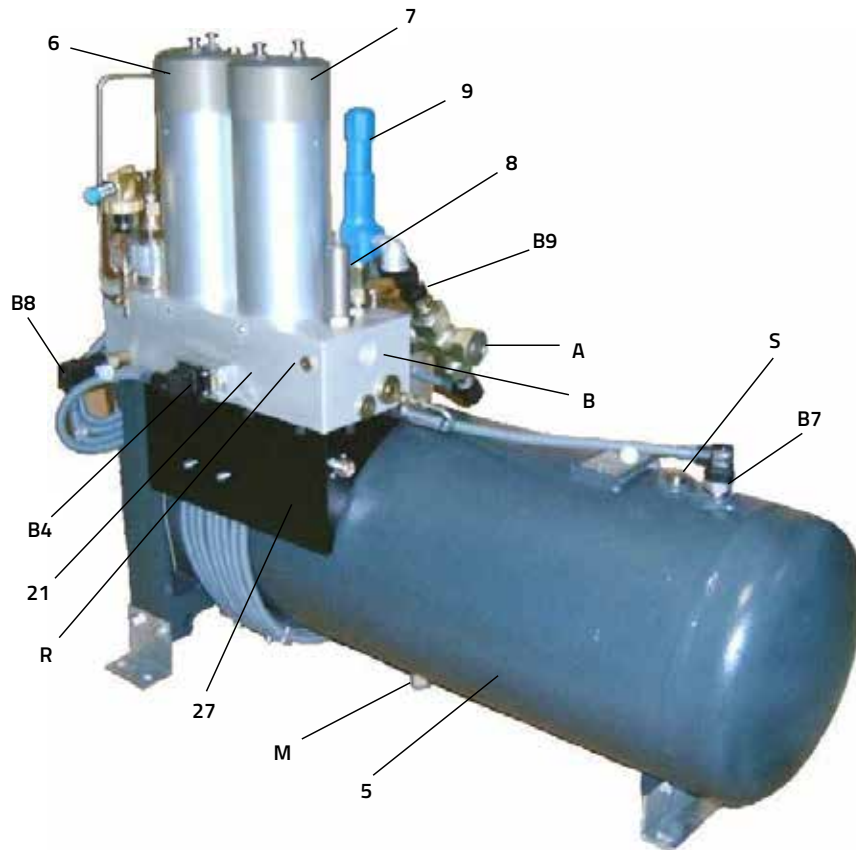
- Q1 Idle solenoid valve
- Q2 Discharge solenoid valve
- Q3 Inlet solenoid valve

- E Connection for shaft seal bleed pipe
- G Connection for discharge pipe
- P Test port (G 1/4") for inlet temperature

- Q Test port for bypass pressure H
- Drive shaft

THE SYSTEM OF COMPRESSOR

CHAPTER 3



MK80-10 view, electrical panel side

- 5 Separator vessel
- 7 Fine separator element 2
- 9 Outlet safety valve (option)

- 6 Fine separator element 1
- 8 Minimum pressure valve
- 21 Separator head
- 27 Electric panel

- B4 Maintenance switch - fine separator element
- B8 Pressure switch - discharge

- B7 Outlet temperature sensor
- B9 Pressure switch - supply pressure

- A Supply pressure connection G 1 ¼"
- R Measuring point outlet pressure (G ¼")
- M Oil discharge

- B Connection for air discharge G 1"
- S Measuring point outlet temperature (G ")



3.2.1.3 COUPLING

Coupling: This is an element that transfers the rotating movement between shafts operating on the same axis. It is used to connect the motor shaft and the MK-80 shaft to each other, transferring the rotational actuation to the MK-80.



3.2.1.4 MK-80 MOTOR FLANGE

Connecting flange: It centers the two components that are connected by the coupling and prevents the whole load from being placed on the coupling.



3.2.1.5 FLANGE COVER

Flange cover: This is a safety cover.



3.2.1.6 BASE PLATE

Baseplate: Manufactured from sheet metal plates and engineered to support the drivetrain assembly to ensure longevity and proper operation.



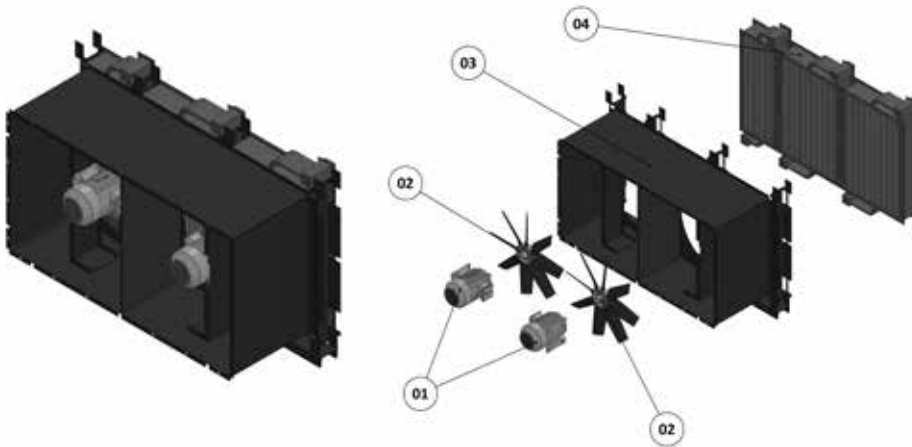
3.2.1.7 MK-80 WATER TANK

Water tank: Storage tank for the water condensed from the MK-80.

THE SYSTEM OF COMPRESSOR

CHAPTER 3

3.2.2 COOLING SYSTEM

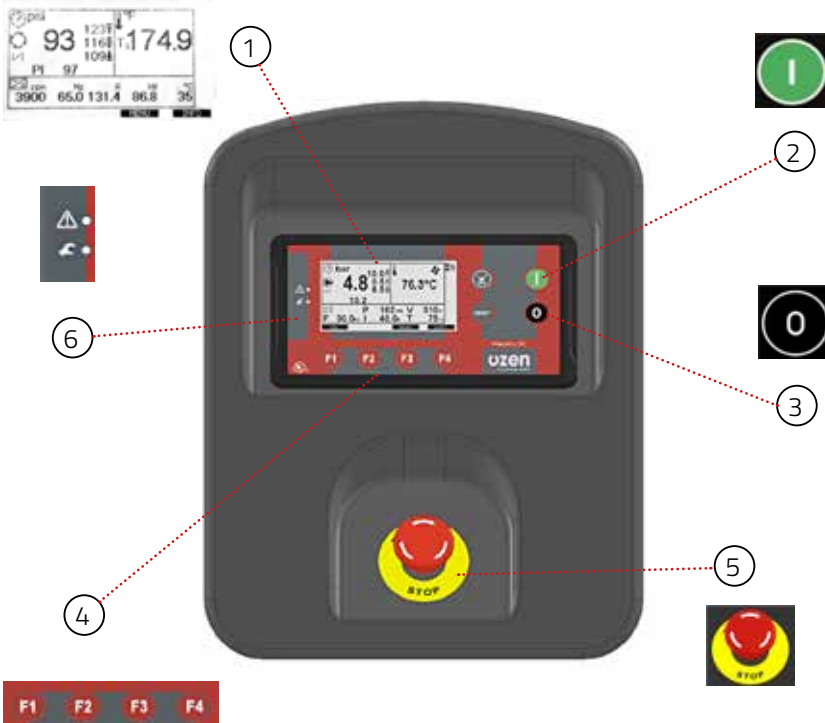


| | |
|----|------------------|
| 01 | Fan motors |
| 02 | Axial fans |
| 03 | Ventilation hood |
| 04 | Cooler |

- ▶ Air and oil are cooled in the cooler, which is a part of the cooling system.
- ▶ The cooled oil is sent back to the system, whereas the cooled air is sent out of the compressor and delivered to the plant air system.

3.2.3 OPERATOR PANEL

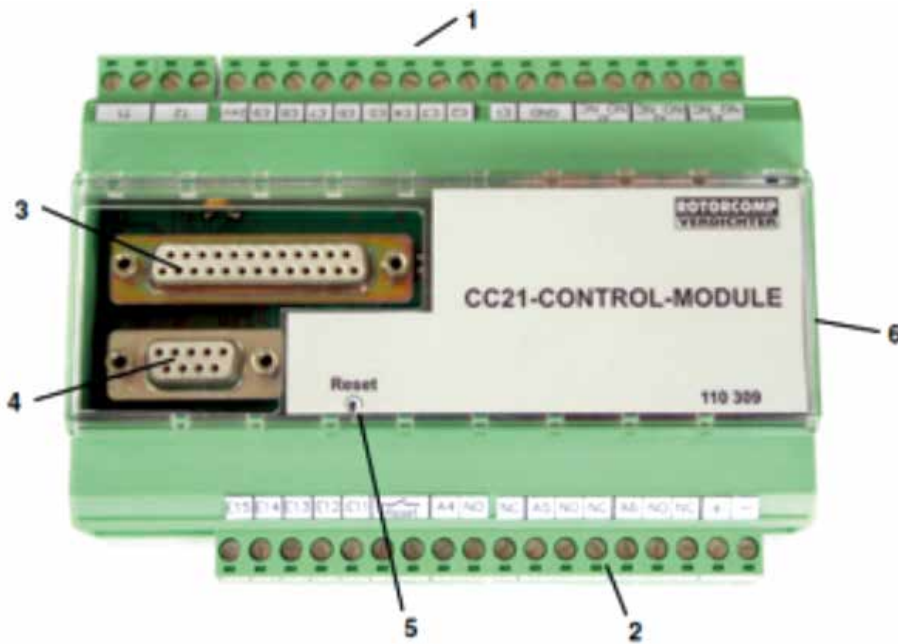
- ▶ The compressors included in this manual use the Maestro 30 control panel.
- ▶ Below, you will find general information about the Maestro 30.



- 1 Digital display: There are values (such as pressure in the air tank and temperature at screw oil outlet,) error codes (in case of any faults,) symbols (such as a fan symbol while the fan is running,) and text.
- 2 Start button: It is the button used to start the compressor.
- 3 Stop button: It is the button used to stop the compressor.
- 4 Menu keys: This is the in-menu navigation keys used when attempting to make any settings or when entering the menu for error codes.
- 5 Emergency stop: This is used to shut down the compressor immediately in case of any emergency encountered. Do not use this for normal stopping!
- 6 Compressor warning/alarm/malfunction LED (red color.)

3.2.4 CC21 ELECTRONIC CONTROL

The CC21 is an electronic control specially designed to control the valves and to monitor the function of the OABC D booster compression module in conjunction with the Maestro 30 controller. It is comprised of the CC21-CONTROL-MODULE and CC21-OP-MODULE, which is the LED display. Both are mounted inside the OABC D electrical panel.

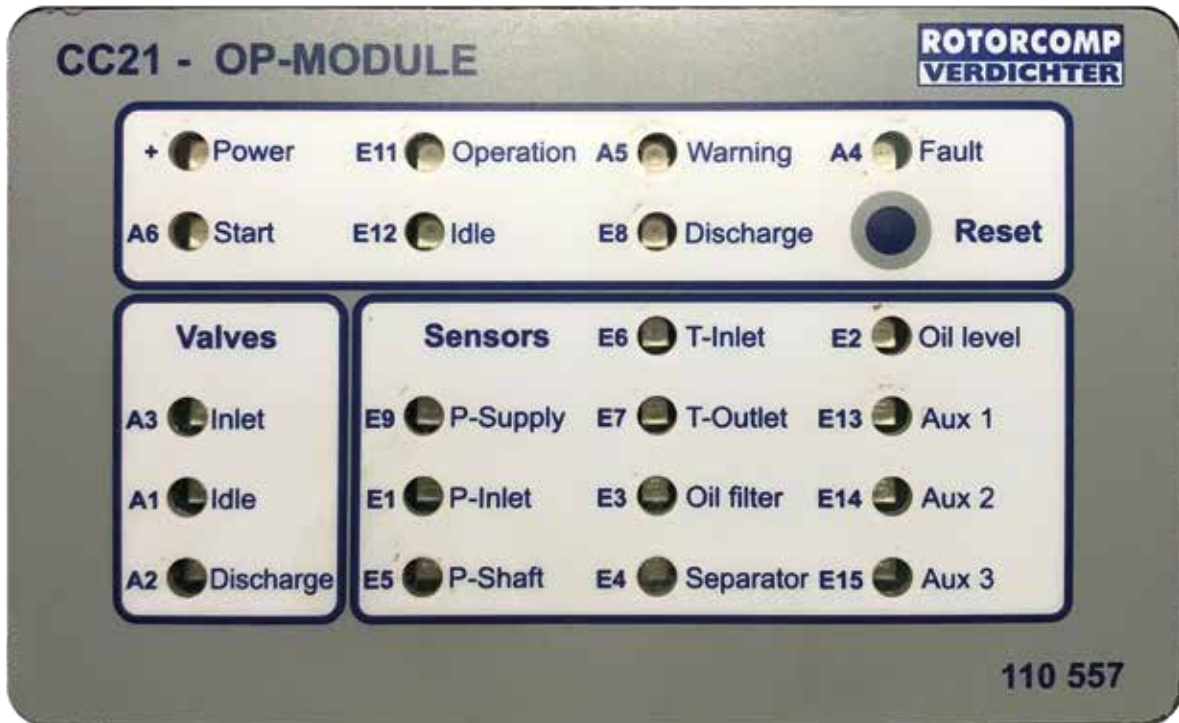


- 1 Terminal connector
- 2 Terminal connector
- 3 Socket connector
- 4 Socket connector (not used)
- 5 Reset button
- 6 Name plate, side-mounted

CC21 - Control Module

THE SYSTEM OF COMPRESSOR


CHAPTER 3





























CC21 - OP Module (LED Display)

- ▶ The LEDs are grouped according to their function. The alpha-numerical marking to the left of the LED corresponds to the respective input or output of the CC21-Control-Module. To the right of the LED is the designation of the LED. The power supply for the CC21 is 24VDC +/- 10% and it provides the following functions:
- ▶ Monitoring of the safety related functions of the booster compression module such as inlet and outlet temperature, inlet pressure, and oil level. LED A4 is illuminated in case of any fault.
- ▶ Control of valves when the system is idling. When the booster is idling, the inlet solenoid valve must be closed, and the idle solenoid valve must be open in order to provide the differential pressure to ensure proper lubrication.
- ▶ Control of the pressure discharge procedure so that air can escape from the oil slowly after shutdown of the booster. This prevents foaming of the oil.
- ▶ Allowing of the start release only when sufficient inlet pressure (4 bar or 58 psi) is available.

LED display for operating condition and valves

 = LED on

| LED display | Funcion | Stop | Load operation | Idle | Fault |
|-----------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| + ⊗ Power | Continous light → Power supply = o.k. |  |  |  |  |
| A4 ⊗ Fault | Continous light → Fault. | | | |  |
| A5 ⊗ Warning | Continous light → Warning |  |  |  | |
| A6 ⊗ Start | Continous light → Start release |  |  |  | |
| E8 ⊗ Discharge | Continous light → Discharge operation Flashing → Fault of the proussure switch |  | | |  |
| E11 ⊗ Operation | Continous light → Operation (compressor running) Flashing → Supply Voltage too low (<18V) | |  |  | |
| E12 ⊗ Idle | Continous light → Idle operation |  | |  |  |
| A1 ⊗ Idle | Continous light → Idle valve is switched on (valve closed = load operation) | |  | | |
| A2 ⊗ Discharge | Continous light → Discharge valve is switched on (valve closed = load operation) |  |  |  |  |
| A3 ⊗ Inlet | Continous light → Inlet valve is switched on (valve open = load operation) | |  | | |

-  LED off is supply pressure <4bar, Sensor-LED E9 is flashing
-  LED on only during discharge operation
-  LED on only if compressor control system signals idle operation
-  LED on only in case of a warning
-  LED on only in case interruption of the discharge procedure. LED E8 is then on as well.

Start Release

The CC21 will only allow the OABC D booster to be started when there is sufficient supply pressure at the inlet solenoid valve. At that time, the following LEDs will be continuously lit: + Power, A6 Start, and E12 Idle.

THE SYSTEM OF COMPRESSOR

CHAPTER 3

Sensor LED display

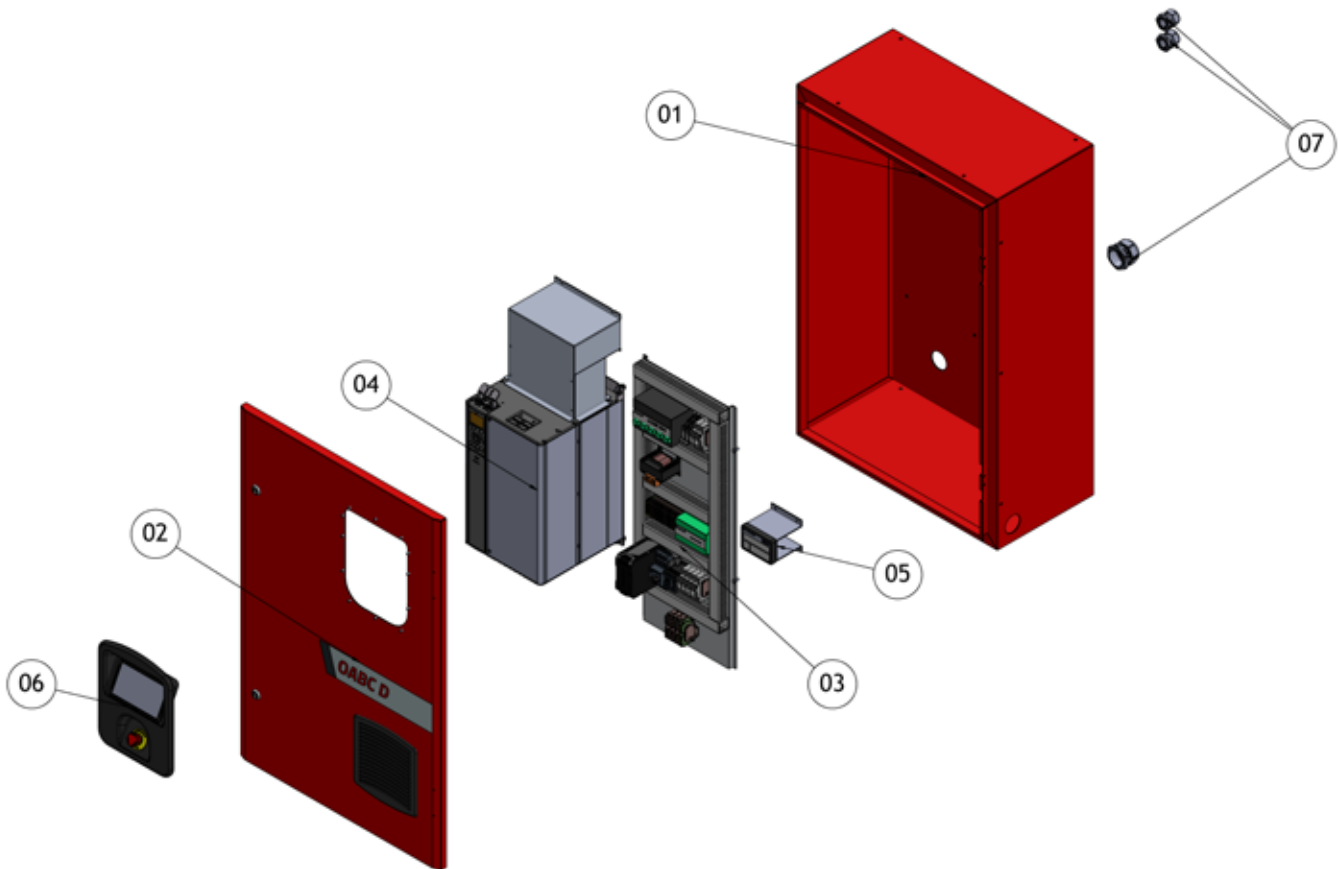
The LEDs of the sensors start flashing as soon as a sensor signals a fault message. Once a warning of fault is triggered the respective LED lights continuously.

| LED display | Funcion |
|-----------------|--------------------------------------------------------------------|
| E1 ⊗ P-Inlet | Inlet pressure too low |
| E2 ⊗ Oil Level | Oil level too low |
| E3 ⊗ Oil Filter | Oil filter catridge must be changed |
| E4 ⊗ Separator | Separator cadridge(s) must be changed |
| E5 ⊗ P-Shaft | Shaft sealing ring leaking |
| E6 ⊗ T-Inlet | Inlet temperature too high |
| E7 ⊗ T-Outlet | Outlet temperature too high |
| E9 ⊗ P-Supply | Supply pressure too low |
| E13 ⊗ Aux 1 | External input (from customer source), resp. Backup-System from RC |
| A14 ⊗ Aux 2 | External input (from customer source) |
| A15 ⊗ Aux 3 | External input (from customer source) |

Important Notes:

- ▶ Faults and warnings can be reset with the RESET push button only when the reason for the fault has been corrected.
- ▶ If the CC21 detects a fault, LED A4 will be lit, along with the associated fault LED, such as Oil Level, and the Maestro controller will display "SHUT OFF FOR CC21 FAULT". The fault must be cleared on both the CC21 and Maestro Controller.

3.2.5 ELECTRICAL CABINET



The control panel is located on the electrical cabinet door. The connecting cables of the motor enter through the cable gland at the back of the electrical cabinet.

The connecting cables for the incoming power enter the electrical cabinet through the cable gland on the bottom right side of the electrical cabinet.

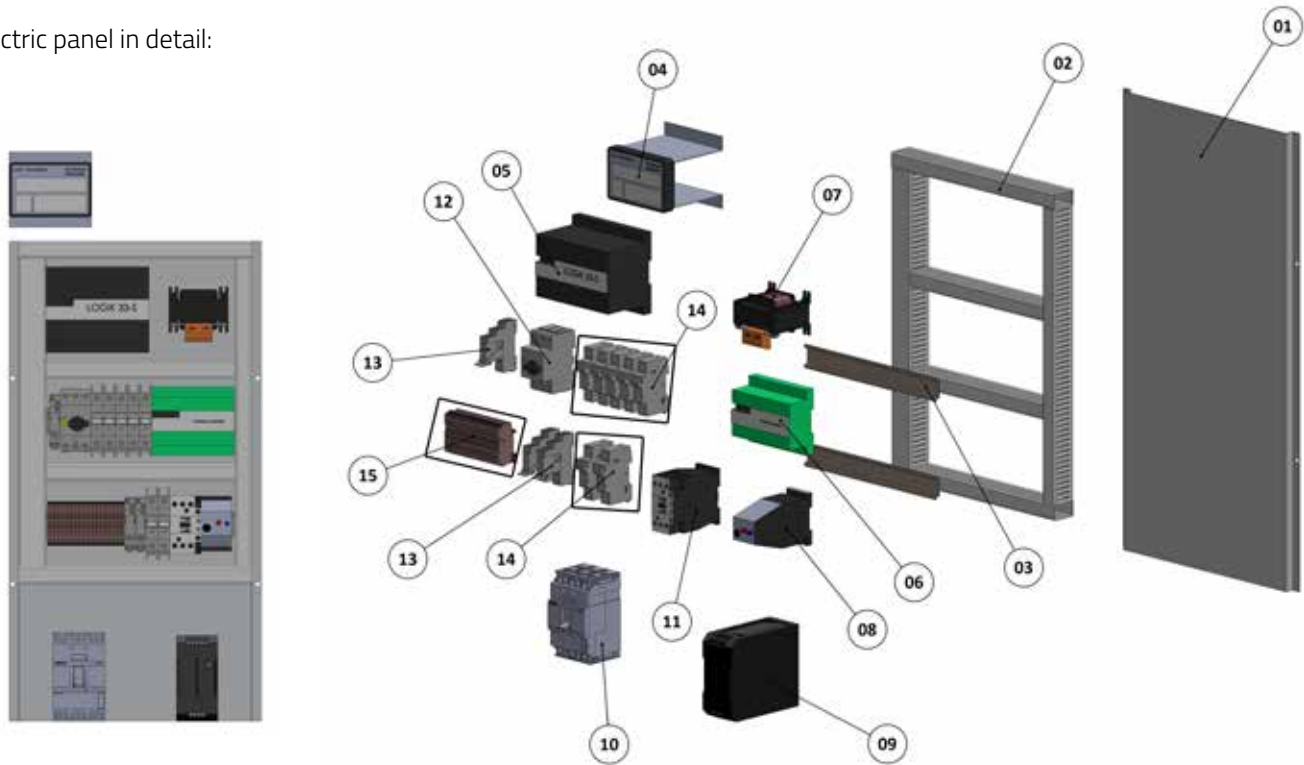
NEMA 1 cabinets are used as standard. Contact your local Ozen Distributor for higher-level electrical cabinets.

| | |
|----|-------------------------|
| 01 | Electrical Cabinet |
| 02 | Electrical Cabinet Door |
| 03 | Electrical Assembly |
| 04 | Inverter |
| 05 | CC21 Control Module |
| 06 | Control Panel |
| 07 | Cooling Fan |
| 08 | Cable Glands |

THE SYSTEM OF COMPRESSOR

CHAPTER 3

Electric panel in detail:



| | |
|----|-----------------------------------|
| 01 | Electrical Back-Panel |
| 02 | Cable Tray |
| 03 | DIN Rail |
| 04 | CC21 Control Module |
| 05 | Maestro 30 Control Panel |
| 06 | Control Module |
| 07 | Transformer |
| 08 | Thermal Relay |
| 09 | Power Supply |
| 10 | Main Contactor |
| 11 | Fan Contactor |
| 12 | Fan Switch |
| 13 | System Relays |
| 14 | Fuse Group |
| 15 | Terminal Blocks for Control Group |

3.2.5.1 INVERTER

Pressurized air production represents the major part of energy costs. In fact, almost half of the electricity consumed by a company which produces pressurized air may be used by a compressor. Energy saving is becoming increasingly important for companies seeking increased efficiency.

Inverters used in screw compressors are known as frequency convertors. In order to realize a perfect regulation of the motor, the supply voltage should be proportionately changed with the supply voltage frequency.

Advantage of inverters:

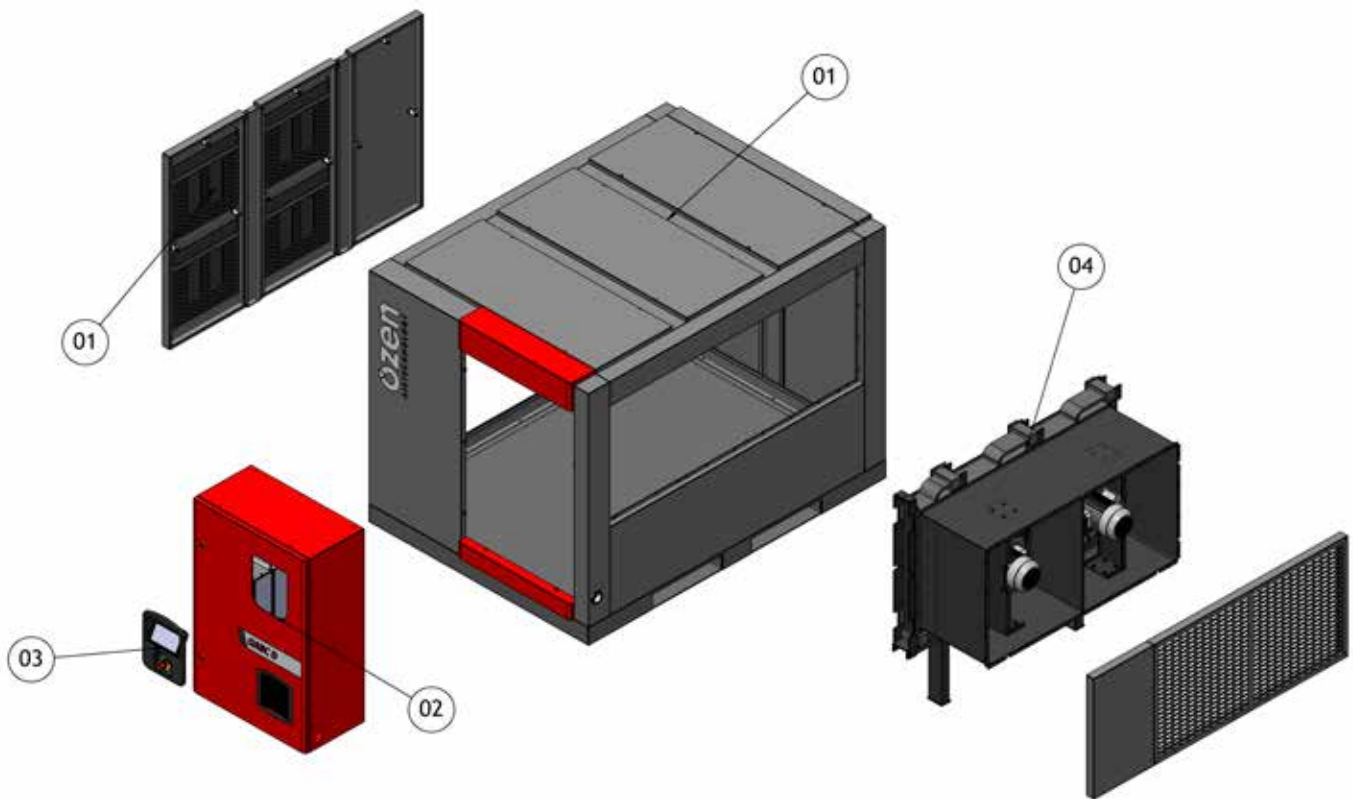
- Provides energy savings of 35%, on average.
- Protects the compressor from problems which may arise from high/low voltage.
- Keeping the motor speed continuously under control ensures a consistent flow rate from the compressor.
- Keeping the motor properly under control extends the motor life.
- Losses in idle and slow running modes are eliminated.



THE SYSTEM OF COMPRESSOR

CHAPTER 3

3.2.6 COMPRESSOR CABINET



| | |
|----|---------------------------|
| 01 | Compressor Cabinet |
| 02 | Electrical Cabinet |
| 03 | Maestro Controller |
| 04 | Compressor Cooling System |

- ▶ The compressor cabinet is produced by cutting and bending steel sheets of different thicknesses.
- ▶ The cut and bent steel sheets are then brought together and assembled using bolts, nuts, and washers.

HOW IT OPERATES

CHAPTER 4

4.1 GETTING STARTED



ATTENTION!

Before operating the compressor:

Ensure that all cable connections are correct and properly tightened.

Ensure that no foreign material was left in the machine or electrical cabinet.

Ensure that ground connections were made and are tight.

Ensure that piping connections are made and tight, including the installation of a discharge isolation valve and drip leg.

Check the oil level.

Check compressor for oil leaks.

To start the compressor:

- ▶ Verify that the emergency stop button is not engaged. To do this, rotate the red button clockwise. If it was engaged, the button will pop up.
- ▶ Press the start button on the control panel.
- ▶ At this stage, do not forget to check motor rotation direction as per Section 2.5.3.
- ▶ If the compressor does not start, check the screen on the controller. It will show the reason for the failure to start by displaying an error code.
- ▶ If an error code is displayed, you can see the cause of the error in Section 4.2 Control Panel.



ATTENTION!

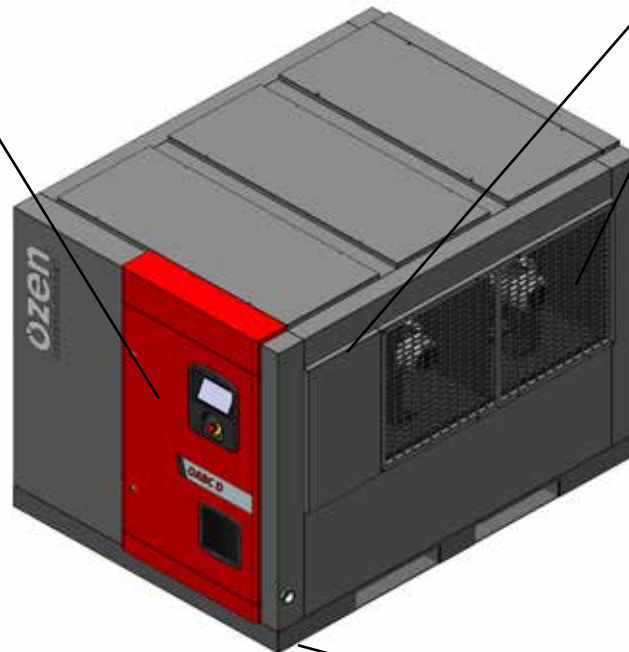
Never operate the compressor without the panels in place and guards installed.





Ensure that the emergency stop button has been reset.

Make sure that all covers are closed before operating the compressor!



Operation of the compressor is controlled by a Maestro 30 control panel.

The Maestro 30 control panel is a PLC based control unit, which is specially designed for the compressor industry.

Verify that the electrical cables are of the proper size and secured properly to the gland.

HOW IT OPERATES

CHAPTER 4

4.2 CONTROL PANEL



> MAESTRO 30

An overview of the appearance of the Maestro 30 control panel exterior is given in Section 3.2.3

The Maestro 30 control panel is exclusively produced for Ozen Air Technology and is designed for easy control of the compressor. The Maestro 30, which is generally mentioned in Section 3.2.3. OPERATOR PANEL, will be described in detail in this section.

The Maestro 30 control panel:

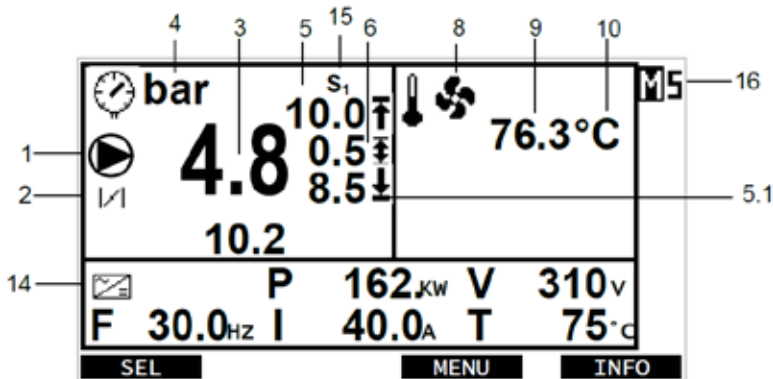
- Controls the compressor.
- Shows the ideal service intervals for the compressor.
- Protects the compressor.

The Maestro 30 controller, along with the the sensors, overloads, etc., within the compressor, provides protections for the compressor. It will stop the compressor if an unsafe condition is sensed and will notify the user of the problem by displaying an error code. Never defeat any safety measures provided with this compressor and/or controller.

Alarms will stop the compressor, warnings will not. Always investigate the cause of alarms before attempting to re-start the compressor. Always obey warnings and take measures to clear them as soon as possible.

Please notify your local Ozen Distributor to schedule service when you see a maintenance warning on your Maestro 30 controller.

4.2.1 MAESTRO 30 CONTROL PANEL DISPLAY



MEANING OF ICONS

1. Compressor ON (blinking if the compressor is going to stop or run. It's not visualized if the compressor is OFF.)
2. Load solenoid valve open.
3. Line pressure. (PSI / bar)
4. Units of the pressures. (PSI / bar)
5. Stop pressure. (PSI / bar)
- 5.1 Start pressure. (PSI / bar)
6. Pressure differential. (PSI / bar)
7. Detection of the pressure by the auxiliary pressure transducer: in the example above configured as absolute pressure.
8. Fan ON.
9. Air-end discharge temperature.
10. Units of the temperatures. (°F / °C)
11. Detection of the temperature by the auxiliary temperature probe: in the example above configured as differential temperature
13. Start – stop by timer
14. Data from the inverter (as indicated by the icon) for serial connection only: (F) working frequency, (P) power, (V) motor voltage, (I) motor amp draw and (T) temperature of the inverter's heat sink.
15. Level of pressure band the compressor is working.
16. Master/Slave operation enabled. Letters relating to the current operation of the compressor is shown in reverse: Letter in white on a black background.

HOW IT OPERATES

CHAPTER 4

4.2.2 MAESTRO 30 CODES AND DESCRIPTIONS OF ALARMS

ALARMS THAT DIRECTLY SHUT OFF THE COMPRESSOR

| CODE | MESSAGE | CAUSE | ACTION |
|------|-------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 1 | EMERGENCY STOP | Emergency stop button open (IN 1) | Release emergency stop button. |
| 2 | THERMAL MOTOR | Thermal motor overload open (IN 2) | Motor thermal overload relay (1E4) malfunction or high motor current present. Contact your local Ozen Distributor. |
| 3 | THERMAL FAN | Thermal fan open (IN 3) | Fan thermal overload relay (4E4) malfunction or high fan motor current present. Contact your local Ozen Distributor. |
| 8 | HIGH PRESSURE | Working pressure over set (WP2) | Contact your local Ozen Distributor. |
| 9 | TEMP. PROBE FAILURE | Air end temperature probe failure | Contact your local Ozen Distributor. |
| 10 | HIGH TEMPERATURE | Air end temperature over set (WT1) | Contact your local Ozen Distributor. |
| 11 | LOW TEMPERATURE | Air end temperature lower than set (WT5) | Increase the ambient temperature. If this does not remedy problem, contact your local Ozen Distributor. |
| 12 | POWER OFF | Signalled on power up in case of power off while compressor was on and selected as manual restart | Check the electric cable connections. If this does not remedy problem, contact your local Ozen Distributor. |
| 14 | LOW VOLTAGE | Power supply to the controller lower than 9V (-40%); reset accepted only when power over 10.5V (-30%) | Check the control voltage. Reset if the voltage is over 10.5 V |
| | SHUT OFF FOR CC21 FAULT | REFER TO THE CC21-OP-MODULE LED FOR SPECIFIC FAULT | CONTACT YOUR LOCAL OZEN DISTRIBUTOR |

Table-3

ALARMS THAT SHUT OFF THE COMPRESSOR AFTER 30 SECONDS

| CODE | MESSAGE | CAUSE | ACTION |
|------|------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| 20* | SEPARATOR FILTER | Differential pressure switch separator filter open (IN6) | Separator filter blocked. Replace separator elements. If this does not remedy problem, contact your local Ozen Distributor. |
| 21 | MOTOR TEMPERATURE | Input PTC open | Motor over temperature Contact your local Ozen Distributor. |
| 22 | PRESS. TRANSD. FAILURE | Working pressure transducer failure | Contact your local Ozen Distributor. |
| 24 | SAFETY | Timer CAF elapsed, alarm detected only if the parameter Safety is set to YES | Contact your local Ozen Distributor. |
| 80 | DRIVE SHUT OFF | Drive shut off (shut off from serial communication and/or IN10 open.) Follow the drive alarm string in case of serial connection | Contact your local Ozen Distributor. |
| 81 | DRIVE ALARM | Non shut off alarm on drive (from serial connection.) Follow the drive alarm string if available | Contact your local Ozen Distributor. |
| 83 | DRIVE COMMUNICATION | No communication to the drive. Check out wiring and serial setting on the drive. | Contact your local Ozen Distributor. |

Table-3

HOW IT OPERATES

CHAPTER 4

WARNINGS

| CODE | MESSAGE | CAUSE | ACTION |
|------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 30 | DATA LOST | Default data are loaded on the controller (on power up check the data checksum in EPROM) | Contact your local Ozen Distributor. |
| 32 | TEMPERATURE WARNING | Temperature over set (WT2.) Automatic reset when temperature is below WT2 –5° C | Contact your local Ozen Distributor. |
| 33 | LOW VOLTAGE WARNING | Power supply to the controller below 10.5V (-30%) Automatic reset when the power rises over 12V (-20%) | Contact your local Ozen Distributor. |
| 34 | HIGH VOLTAGE | Power supply to the controller over 20.3V (+35%) Automatic reset when the power goes down below 19.3V (+30%) | Contact your local Ozen Distributor. |
| 37 | MULTIUNIT FAILURE | No communication or master failure. Each slave works independently. | Contact your local Ozen Distributor. |
| 65 | CLOCK FAILURE | Start and stop of the compressor have to be operated manually. The Master/Slave operation timer is controlled by the micro controller. | Contact your local Ozen Distributor. |
| 72 | SEP. FILTER WARNING | Delta P. over set (SP3.) Automatic reset with delta P < SP3 – 0.2 bar and auxiliary transducer enabled (S08=1.) | Contact your local Ozen Distributor. |
| 74 | DLS/SUMMER TIME | In case of time setting on power up or time change (at 2:00 am in the morning on the last Sunday of March and October) | Contact your local Ozen Distributor. |

Table-3

4.2.3 MAESTRO 30 MAINTENANCE CODES

It is possible to reset the maintenance error codes while the compressor is running. You can reset the error code that appears on the display by pressing the ENTER key on the Maestro 30 control panel.

When you see the maintenance error codes on the Maestro 30 screen, contact your local Oazen Distributor. Fulfillment of compressor maintenance on the scheduled time is very important for the service life of the compressor and it should be fulfilled without exceeding the maintenance time.

| CODE | DESCRIPTION | ACTION |
|------|----------------|--------------------------------------------------------|
| S-A | Service Plan A | See. 5. CHAPTER / 5.1.4 COMPRESSOR MAINTENANCE PERIODS |
| S-B | Service Plan B | See. 5. CHAPTER / 5.1.4 COMPRESSOR MAINTENANCE PERIODS |
| S-C | Service Plan C | See. 5. CHAPTER / 5.1.4 COMPRESSOR MAINTENANCE PERIODS |
| S-D | Service Plan D | See. 5. CHAPTER / 5.1.4 COMPRESSOR MAINTENANCE PERIODS |

Table-4

HOW IT OPERATES

CHAPTER 4

4.2.4 MAESTRO 30 DESCRIPTION OF THE STATUS IMAGES ON THE HOME SCREEN

POWER ON



The following image becomes active on the Maestro 30 home screen when the power is ON.

START THE COMPRESSOR



To start the compressor: To operate the compressor from the OFF position, you must press the Maestro 30 start button.



From this point, the home screen of the Maestro 30 will switch to the following display. (The pressure value is for visual purposes only. The compressor pressure value and the display may be different on your compressor.)



ATTENTION!

Do not operate the compressor with any cabinet panels removed.

STOP THE COMPRESSOR



To Stop Compressor: When you press the stop button, the compressor will shut down. If the compressor is loaded at the time the stop button is pressed, it will unload. There are unload and safety timers involved, so the time that the compressor runs after pressing the stop button will vary, based upon the times set points of these timers (which are password protected.) By default, the compressor will run unloaded for between 10 and 130 seconds, dependent upon the timers being satisfied and their set points. If the compressor is unloaded when the stop button is pressed, the compressor will continue to run unloaded until the timers are satisfied.

HOW IT OPERATES

CHAPTER 4

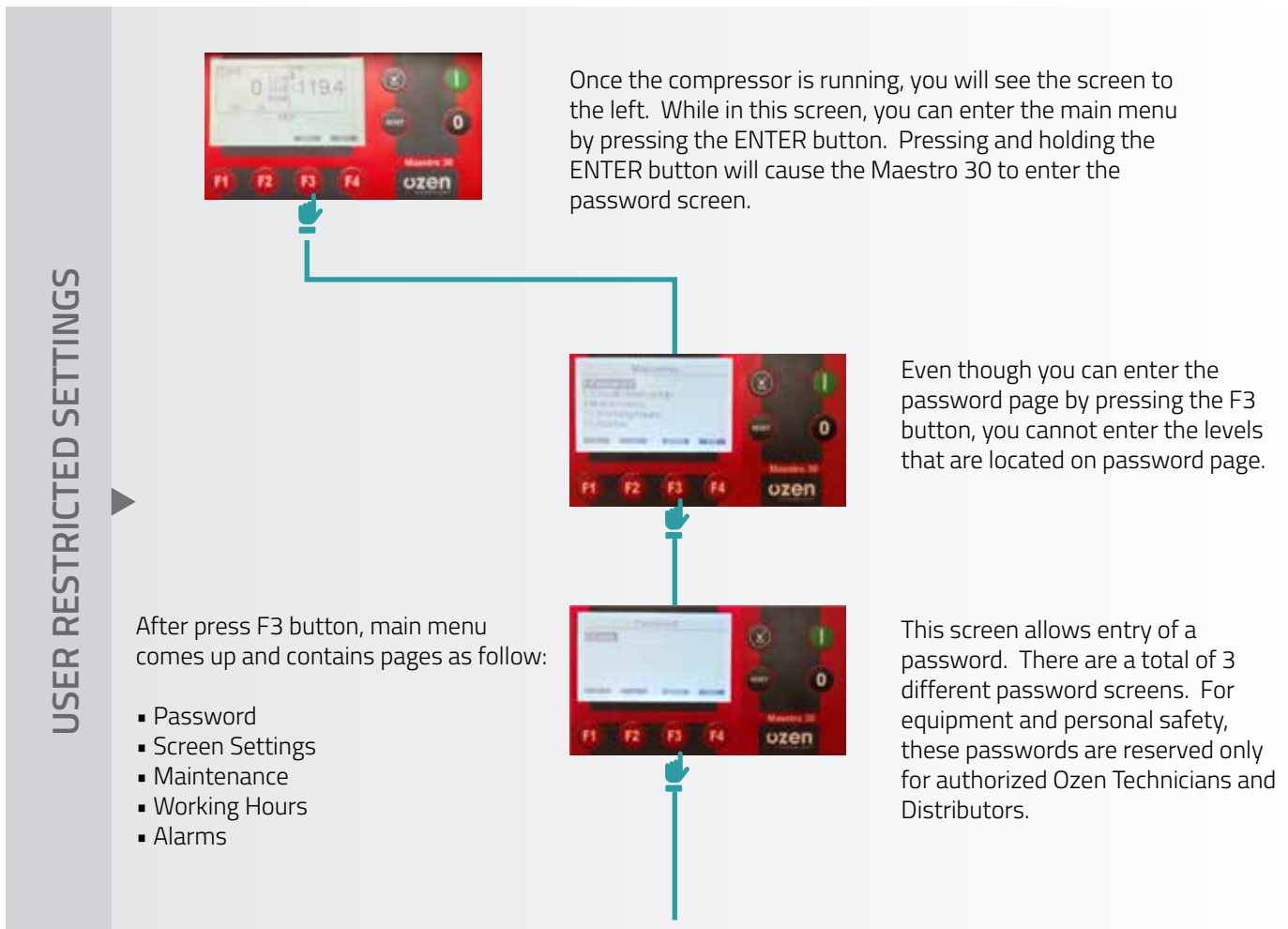
4.2.5 CONTROL PANEL USER SETTING

The Maestro 30 control panel is adjusted according to the user before the compressor leaves the Ozen factory.

The settings part of the Maestro 30 control panel is password-protected, which are only known to Ozen Technical Staff and Service Personnel. Entry of incorrect settings can present dangers to both personnel and equipment by disabling safety devices and allowing higher than rated pressures. This is why passwords are not provided to the user. The settings that the user can see and change are limited.

USER HOME SCREEN OF MAESTRO 30

When the compressor gives an alarm, you will see the alarm code on the screen. Reference the Codes and Descriptions of Alarms in section 4.2 Control Panel for more information on the alarm, as well as some helpful guidance on troubleshooting.



USER RESTRICTED SETTINGS



LEVEL 1
NO ENTRY!



LEVEL 2
NO ENTRY!



LEVEL 3
NO ENTRY!



HOW IT OPERATES

CHAPTER 4

4.2.6 CONTROL PANEL OPERATION SETTINGS

HOME SCREEN

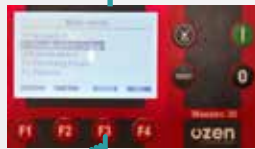
The main menu of Maestro 30 control panel is explained below:



You can navigate through the menu via the F3 button. After entering the main menu by pressing the F3 button, the screen changes to below. In order to reach other

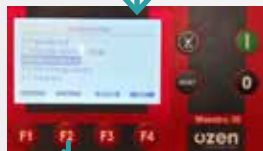


01-Information Menu: General information of compressor will be shown in this menu.



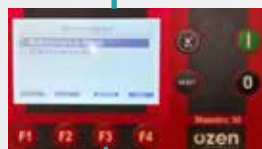
02-Screen Settings Menu

- Language of Control Panel
- Pressure and Temperature Units
- Screen Brightness
- Time and Date
- Daylight Saving Time



09- Maintenance Menu:

Maintenance periods and history can be found in this menu.



PRESSURE SETTINGS

PRESSURE SETTINGS



09-Maintenance Menu

- CAF > Air Filter Change Time
- COF > Oil Filter Change Time
- CSF > Separator Filter Change Time
- C-- > Oil Change Time
- C---h > Compressor Control Time
- BL > Bearing Control and Lubrication Time

10-Working Hour Menu

- Total Working Hour
- Working Hour on Load
- Working Percentage on Load
- Number of Start per Hour
- Flow
- Average Consumption

11- Alarm Menu:

The alarms can be found in this menu with details: hour, date and error code.



HOW IT OPERATES

CHAPTER 4

PRESSURE SETTINGS

Use of the HRS and F4 buttons:



Pressing the F4 button shows time, date and software version of Maestro 30.



When HRS button is pressed, working hours of compressor can be found. This is a shortcut of the user menu.



4.3 DAILY OPERATING INSTRUCTIONS

It is important to perform the daily checks on your compressor. This can prevent costly down-time of your system by uncovering potential issues before they become a problem.

Before operating your compressor:

- ▶ Check the oil level.

In the instance of low oil level, fill the compressor with the appropriate Ozen oil, following all safety precautions.

After starting the compressor:

- ▶ Make sure that there are no error codes on the control panel display.
- ▶ Check the pressure and temperature values on the control panel.
- ▶ Check for leaks and proper operation by observing the operation of the compressor for several minutes.
- ▶ Do not remove any components while the compressor is in operation.



ATTENTION!

When performing any operation on the compressor, stop the compressor and ensure that any residual air pressure has been relieved. Perform proper lock-out/tag-out procedure, wearing any required PPE per regulations. Always adhere to any local and national laws and safety regulations.



ATTENTION!

Do not operate the compressor with any cabinet panels removed.

HOW IT OPERATES

CHAPTER 4

4.4 DISCHARGE PROCEDURE

When the booster is shut down via the Maestro controller, the CC21 orchestrates a discharge procedure. This is to allow internal pressure to slowly bleed off, preventing foaming of the oil. This is accomplished by the following steps:

1. When the OABC D booster is stopped via the stop button on the Maestro controller (normal shutdown,) the discharge solenoid valve (Q2) is opened by the CC21 and the internal pressure is released to atmosphere through the silencer until it is lowered to approximately 2 bar (29 psi.)
2. The pressure switch (B8) then interrupts the discharge and the CC21 closes the discharge valve. This is held for approximately 2.5 minutes and provides time for the air trapped in the oil to escape, preventing foaming.
3. The discharge valve is opened again, and the residual pressure is released to atmosphere through the silencer.
4. LED 'E8 – Discharge' is lit during the entire discharge procedure. If this LED is lit, there is pressure inside the machine and pressure connections should not be loosened or removed, including the oil fill cap. **DANGER: Always verify that internal pressure has been relieved before breaking into any pressure connections!**
5. The discharge procedure lasts approximately 10 minutes. The OABC D booster should not be restarted during this time because the oil may foam. Starting of the machine with foam in the oil may cause damage and send oil/foam downstream into the air system.
6. Power must remain applied to the machine during the discharge procedure. If power is removed, the discharge procedure will be interrupted, and additional time may be needed for the oil foaming to subside. However, the internal pressure will still be relieved over time because the discharge solenoid valve is a normally-open valve. This is also true if the machine is stopped via the emergency stop button. Additional wait time may be required before restarting the machine to allow the oil foam to subside.
7. **Due to this discharge procedure, setting S01 (restart) in Compressor Setup of the Maestro controller should never be set to automatic (AUT). The Factory default is manual. (Man)**



DANGER!

Always verify that internal pressure has been relieved before breaking into any pressure connections. Failure to do so may result in equipment damage, personal injury, or death.

MAINTENANCE

CHAPTER 5

5.1 PREVENTIVE MAINTENANCE INTERVALS

5.1.1 GENERAL DESCRIPTION

- ▶ The compressor maintenance and repairs must be carried out as described in this manual.
- ▶ Genuine Ozen parts must be used for maintenance and repairs.
- ▶ Appropriate and correct tools and implements should be used for maintenance and repairs.
- ▶ Isolate the compressor from the pressure line by closing the compressor's air discharge valve and check that the compressor has an internal pressure of 0 Psi (no pressure) on the display of the Maestro 30 control panel.
- ▶ Disconnect the compressor from the power supply and always follow required lock-out/tag-out procedures and wear appropriate personal protective equipment (PPE) when performing any troubleshooting, maintenance, and/or repairs of the compressor. Always follow every safety precaution.
- ▶ Do not clean with any flammable solvents or ones that leave any type of residue. Cleaning should be performed with a soft, lint-free cloth and mild cleaners.
- ▶ Care should be taken to avoid leaving loose bolts, nuts and glands in the compressor after maintenance and repair. Equipment used in maintenance and repair of the compressor (screwdriver, etc.) should not be forgotten inside the compressor.
- ▶ Before performing any type of service work, you must thoroughly read and understand this manual. Failure to do so may result in voiding the warranty, personal injury, and/or equipment damage.
- ▶ For cases in which there are any issues that you cannot solve, please contact your nearest Ozen Distributor.



ATTENTION!

Maintenance of the compressor by unauthorized personnel or improperly trained personnel will void any warranty and may also result in equipment damage and/or personal injury



5.1.2 DAILY MAINTENANCE

- ▶ Check the oil level daily.
- ▶ If the oil level is low when the machine is off, add oil to bring it up to the proper level before running the machine.
- ▶ If oil loss is frequent, there is likely a problem with the compressor. Refer to the Faults and Solutions chapter for possible causes and solutions. Contact your local Ozen Distributor for service or repair.
- ▶ In the case of air leakage, the efficiency of the compressor will decrease and the noise level will increase. Contact your local Ozen Distributor for service or repair.
- ▶ Check daily to ensure that there are no warnings and/or errors on the controller.
- ▶ Perform a visual check of the compressor for proper operation daily.
- ▶ Do not remove any components of the compressor while it is running. Always stop the compressor, relieve pressure, and observe proper safety precautions before making any adjustments while performing the daily checks.



5.1.3 WEEKLY MAINTENANCE

- ▶ Clean the air filter element with compressed air. Do not use any type of cleaning solvents. You should clean the cooler fins with compressed air, exercising caution to prevent damage to the fins.
- ▶ You should check the oil level.
- ▶ You should empty water accumulated in the air tank.
- ▶ Visually inspect the hoses for air and oil leaks.



MAINTENANCE

CHAPTER 5

5.1.4 COMPRESSOR MAINTENANCE INTERVALS

The maintenance intervals of the compressor are as shown in the table below.

| Maintenance Intervals | Working Hours | | | | | | | | | | | | | | | | | SECTION | |
|--------------------------------------------------------------|---------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|---------|
| | 2000 | 4000 | 6000 | 8000 | 10000 | 12000 | 14000 | 16000 | 18000 | 20000 | 22000 | 24000 | 26000 | 28000 | 30000 | 32000 | 34000 | | 36000 |
| Oil Filter Replacement | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | 5.1.4.3 |
| Cooler Cleaning | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 5.1.4.7 |
| Coupling Check | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 3.2.1.3 |
| Electrical Connection Check | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 2.4 |
| Oil / Air Leakage Check | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 5.1.2 |
| Separator Replacement | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | 5.1.4.3 |
| Replacement of Cabinet Filters | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | 5.1.4.9 |
| Oil Plug O-Ring Replacement | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | 5.1.4.2 |
| Oil Change | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | 5.1.4.2 |
| Thermostatic Valve Maintenance Kit Replacement N28989 | | | | ✓ | | | | ✓ | | | | ✓ | | | | ✓ | | | 5.1.4.6 |
| Minimum Pressure Valve Maintenance Kit Replacement 89148 | | | | | | ✓ | | | | | | ✓ | | | | | | ✓ | 5.1.4.5 |
| Coax Valve (idle or Discharge) Maintenance Replacement 87325 | | | | | | ✓ | | | | | | ✓ | | | | | | ✓ | 6 |
| Coupling Replacement | | | | | | | | | | | | ✓ | | | | | | | 3.2.1.3 |
| Motor Bearings Seal Replacement * | | | | | | | | | | | | ✓ | | | | | | | 5.1.4.1 |
| Inlet solenoid Valve Replacement 110311 | | | | | | ✓ | | | | | | ✓ | | | | | | ✓ | 6 |
| Hose Replacement * | | | | | | | | | | | | ✓ | | | | | | | 5.1.4.9 |
| Air End Maintenance Kit Rotors 82825* | | | | | | | | | | | | | | | | | | ✓ | 5.1.4.1 |
| Maintenance Kit Non Return Valve N29147 * | | | | | | | | | | | | ✓ | | | | | | | 6 |
| Service Plan Code | S-A | S-B | S-A | S-C | S-A | S-D | S-A | S-C | S-A | S-B | S-A | S-D * | S-A | S-B | S-A | S-C | S-A | S-D * | 4.2.3 |

Table-5

The control panel alarm will display at each 2000 hour period for scheduled maintenance. This maintenance needs to be performed to maintain warranty and longevity of the compressor. Please contact with your local Ozen Distributor for Ozen genuine service kits and parts.

5.1.4.1 AIR-END AND MOTOR

It is recommended that electric motor and air-end rebuilds should be carried out when they complete 24000 working hours. The front and rear bearings are replaced during the motor rebuild.

All bearings, seals and bearing houses are replaced during the air-end rebuild. At the same time, rotors should be checked to determine if there is any wear or not and, if required, subject to rebuild.



5.1.4.2 OIL SPECIFICATION, CHECK AND REPLACEMENT

Defined oil replacement intervals are valid for standard operating conditions and nominal operating pressure.

Exposure of the compressor to external pollutants, operation at high temperature, and/or operation with low duty cycles may dictate a shorter time interval between oil changes. Contact your local Ozen Distributor for a more personalized estimate based upon your site conditions and machine operation.

| ZenLube 68 Grades | 68 |
|-------------------------------|-----------|
| Viscosity cSt @ 40°C | 64 |
| Viscosity cSt @ 100°C | 8.57 |
| Flash Point °F (°C) | 451 (233) |
| Demulsibility, 130 °F, 30 Min | 40/40/0 |
| Copper Corrosion, 24 Hr | 1a |
| Rust Test: Distilled Water | Pass |
| Rust Test: Salt Water | Pass |
| Foam Sequence I, II, III | 0/0/0 |

Table-6

| ZenLube Troya 68 Grades | 68 |
|----------------------------|-----------|
| Viscosity cSt @ 40°C | 67 |
| Viscosity cSt @ 100°C | 8.7 |
| Flash Point °F (°C) | 478 (248) |
| Copper Corrosion | 1a |
| Rust Test: Distilled Water | Pass |
| Rust Test: Salt Water | Pass |
| Foam Sequence I, II, III | 0/0/0 |

Table-7

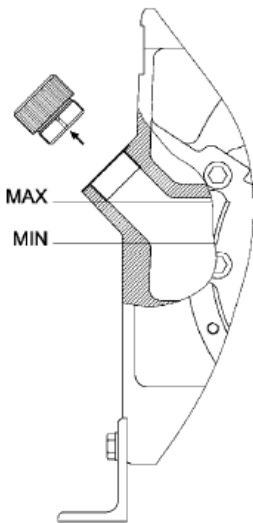
MAINTENANCE

CHAPTER 5

Oil Level Check and Addition

The correct amount of oil is placed in the compressors before they are delivered to the customer. However, there may be a decrease in the oil amount during transportation and/or after a certain period of operation. Ensure the oil level is correct before start up.

- ▶ The oil level is checked by way of the oil fill plug, which is located to the right of the oil filter housing and has a red cap.
- ▶ The oil level must be between the min and max marks, which are shown in the following figure. Oil level must only be checked when the machine is shut down and cooled down.



The required level of oil



ATTENTION!

The compressor must be stopped for a period of 20 minutes before checking the oil level.



▪ Oil Change and Addition



After removing the oil fill plug, the oil level is checked visually by looking in the oil filling passage. If you cannot see oil in the MK-80 separator tank (as in the figure below) oil must be added.



Oil Plug



The compressor oil must be changed every 8000 operating hours. At the end of 8000 operating hours, the compressor oil changes structurally and, if not replaced, the compressor's operating life is reduced. Compressors that are not serviced in accordance with the maintenance schedule will not be covered by warranty.

Note: The life of the compressor oil may vary between Ozen Air Technology's offerings. Please check with your local Ozen Distributor to verify the appropriate lifetime of the oil. Lifetime is determined by the site conditions, oil sample results, and/or type of oil used.

MAINTENANCE

CHAPTER 5



- ▶ In order to change the compressor's oil, the compressor must be stopped and the internal pressure in the separator tank needs to be completely evacuated.
- ▶ The cap nut in the oil discharge valve under the MK-80 separator tank is taken off. After taking off the cap nut the plug with o-ring is taken off.



After removing the drain cap and plug, attach the hose nozzle sent with your compressor to the valve.



After connecting the hose, open the valve and empty the oil until you are sure that there is no old oil left in the MK-80 separator tank.

- ▶ After emptying the oil in the system, the hose assembly must be removed. Completely close the drain valve and reinstall the drain plug and tighten.
- ▶ When adding oil, the process is performed by filling through the oil filling plug on the MK-80 separator tank.
- ▶ You may perform the oil filling process by use of a funnel.



- ▶ In the event of oil leak from oil filling plug, the o-ring on the oil plug should be replaced. There is no need to change the plug. Changing only the o-ring will be sufficient.
- ▶ If there is any question as to the correct type of oil to be used, please contact your local Ozen Distributor.
- ▶ Ensure that the oil fill cap is replaced and tight after checking or adding oil to the compressor.



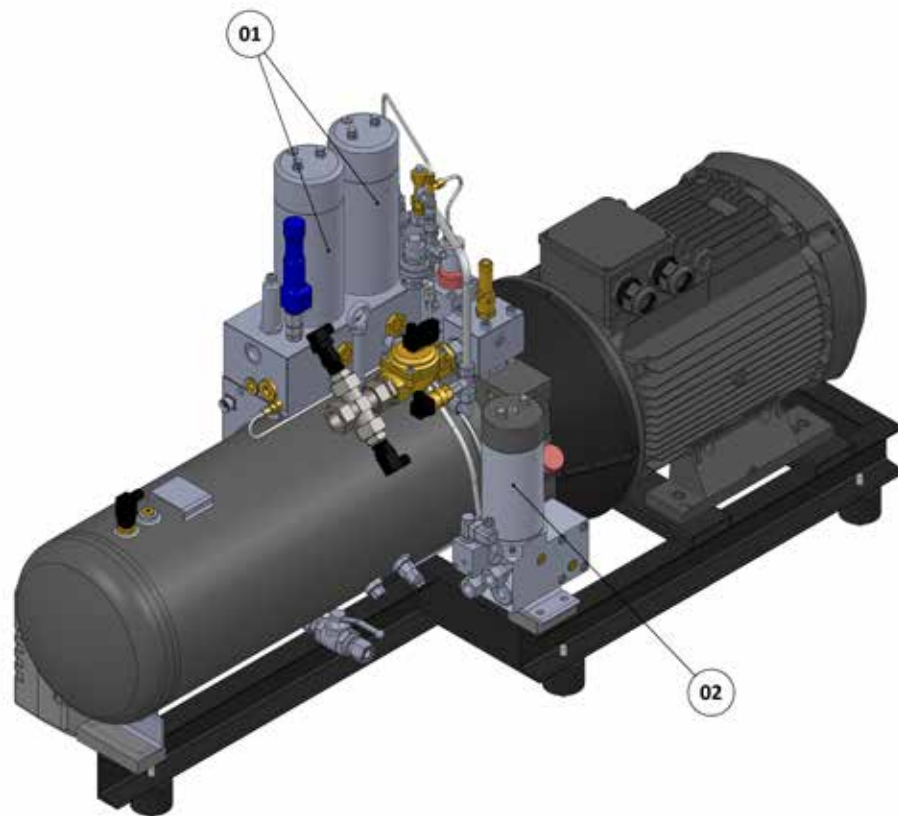
- ▶ If the oil level is observed to be low during the periodic oil level checks, oil must be added as indicated above.
- ▶ At each oil change the oil filter must also be changed.



IMPORTANT!

Do not ever mix different types of oil. Doing so will void any warranty. If oils are accidentally mixed, do not run the machine. Contact your local Ozen Distributor immediately. Genuine Ozen oils and parts **MUST** be used in order for the warranty to remain intact.

5.1.4.3 OIL FILTER AND SPIN-ON SEPARATOR REPLACEMENT



- 01 Separator Housings
- 02 Oil Filter Housing

▪ Oil Filter Replacement



- ▶ You can see the oil change intervals in the “Oil specification check and replacement” section.
- ▶ After draining the oil, remove the oil filter element by rotating the oil filter housing cap counterclockwise with the help of strap-type filter wrench.
- ▶ There is no need to drain the oil if you are changing the oil filter element.



- ▶ Clean any debris or foreign material from the oil filter housing and cap.
- ▶ Tighten the oil filter cap by rotating it clockwise by hand until snug.

MAINTENANCE

CHAPTER 5

▪ Separator Element Replacement

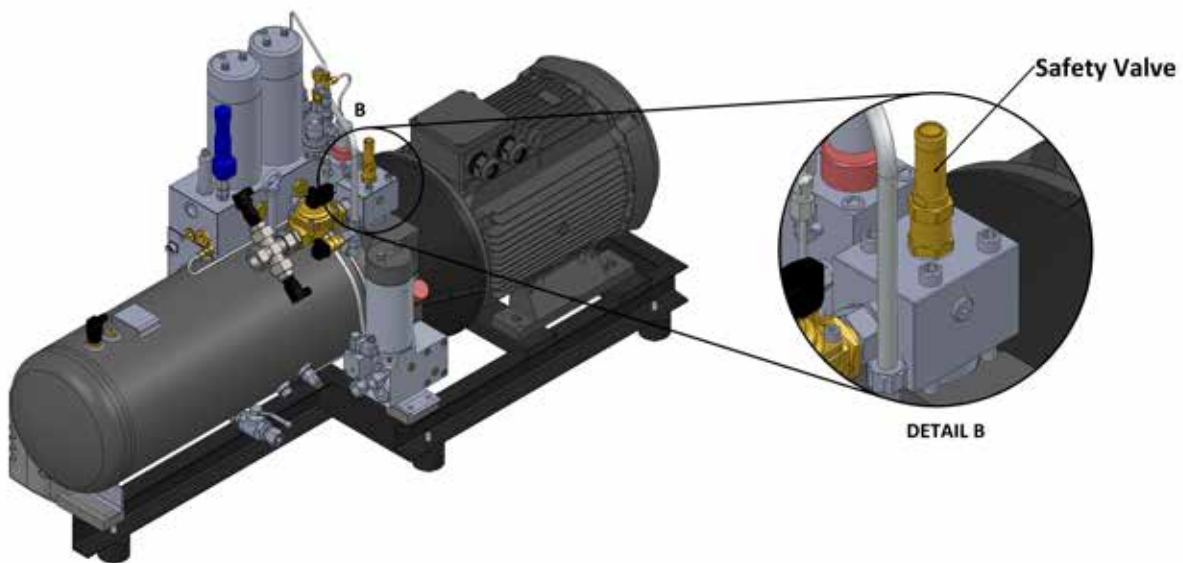


- ▶ Before changing the separator filter element, stop the compressor and wait until the air in the system is completely drained. Observe all necessary safety precautions and regulations.
- ▶ Remove the separator housing cap with the help of a strap-type wrench.



- ▶ Clean any debris or foreign material from the separator housing and cap.
- ▶ Manually tighten the separator housing cap clockwise until snug.
- ▶ Never attempt to clean the separator element. Always replace the separator element with a new one.

5.1.4.4 INSPECTION AND REPLACEMENT OF SAFETY VALVE

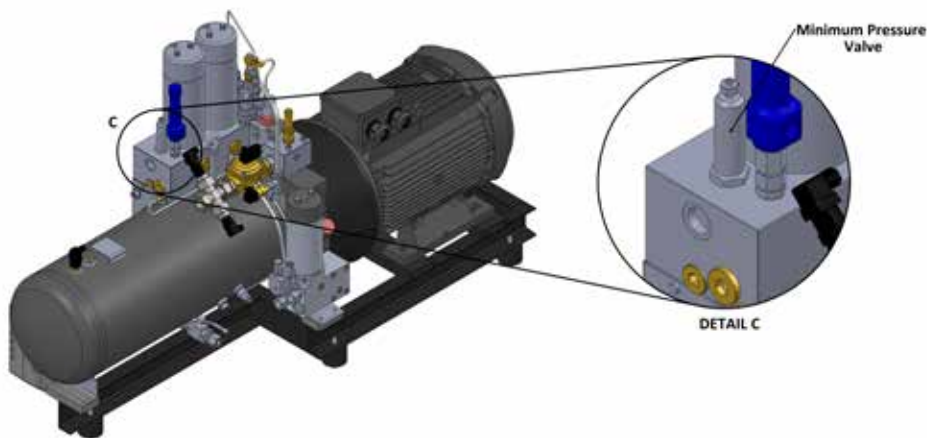


- ▶ The safety valve is located/mounted on the MK-80 separator tank of the compressor.
- ▶ The presence of air and oil leaks generally means that the safety valve is defective.
- ▶ The safety valve is not serviceable. If there is a malfunction, the valve must be replaced.
- ▶ Replace the defective safety valve with a new one rated at the same specifications.
- ▶ Faults that may be caused by the safety valve are outlined in "CHAPTER 6 / FAILURE AND SOLUTIONS"

MAINTENANCE

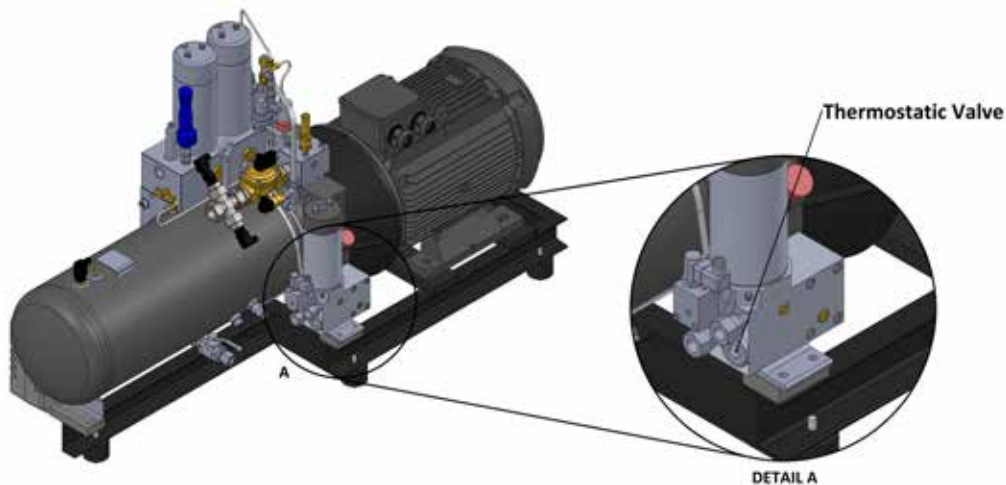
CHAPTER 5

5.1.4.5 REPLACEMENT OF MINIMUM PRESSURE VALVE



- ▶ The minimum pressure valve is mounted on the MK-80 separator combination block.
- ▶ The minimum pressure valve is set at 290 psi.
- ▶ The minimum pressure valve can not be serviced. It should be replaced if there is any malfunction.
- ▶ When replacing the minimum pressure valve, ensure that the machine is isolated and system pressure has been relieved.
- ▶ Replace the defective minimum pressure valve with a new one rated at the same pressure.
- ▶ Faults that may be caused by the minimum pressure valve are outlined in "CHAPTER 6 / FAILURES AND SOLUTIONS"

5.1.4.6 REPLACEMENT OF THERMOSTATIC VALVE



- ▶ The thermostat is mounted on the inside of the MK-80 oil filter block in the compressor.
- ▶ The thermostat is a closed circuit unit, which is set to 160 °F (71 °C).
- ▶ The thermostat can not be repaired so it should be replaced if there is any malfunction.
- ▶ Contact your local Ozen Distributor when any high temperature warnings appear on the Maestro 30.
- ▶ Faults that may be originating from the thermostat can be seen in the “CHAPTER 6 / FAILURES AND SOLUTIONS”.

5.1.4.7 INSPECTION AND CLEANING OF COOLING GROUP



- ▶ The cooler can become dirty and/or clogged over time.
- ▶ Clogged or contaminated coolers cannot properly fulfill their cooling function and the oil and air temperatures will increase.
- ▶ The cooler should be cleaned with compressed air once a week.
- ▶ The cooler will also be checked and serviced during every maintenance service. The cooler will be replaced if necessary.



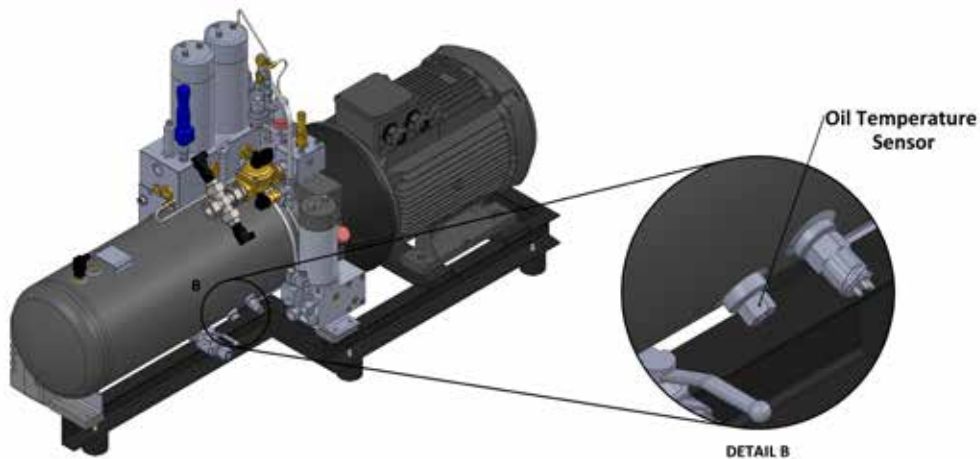
ATTENTION!

Do not hold the air gun close to the cooler when cleaning the cooler with compressed air. If held too close to the cooler, the fins will bend. This will reduce the efficiency of the cooler.

5.1.4.8 OIL TEMPERATURE SENSOR REPLACEMENT



- ▶ The oil heat sensor is in the upper section of the MK-80 oil discharge valve.



This temperature sensor loses its effectiveness over time and needs to be replaced.

When the oil temperature sensor is being replaced, the nut of the brass fitting is removed and the sensor is taken out and replaced.

The oil temperature sensor should be changed every 24,000 hours as shown in the compressor maintenance chart.

5.1.4.9 MAINTENANCE AND REPLACEMENT OF CABINET FILTERS AND HOSES

The cabinet filters serve an important role in the internal cooling of the compressor. The cabinet filters must be cleaned using compressed air at least once a week. The compressor will overheat if the cabinet filters are not maintained or if there is an air restriction. In addition to the cleaning of the cabinet filters, they should be inspected and replaced by an authorized Ozen distributor every 4000 hours per the maintenance schedule.

Hoses should be checked by the user every week by opening the side panels. Contact an authorized Ozen distributor if any leaks are found.

Hoses must be replaced at the 24,000 hour maintenance period.

Hose maintenance and replacement should be completed by an authorized Ozen distributor.

FAILURES AND SOLUTIONS

CHAPTER 6

| FAILURE | POSSIBLE FAILURE CAUSES | SOLUTION |
|-------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Compressor not starting | Power failure | Check the phase cables and tighten if loose. |
| | Tripping of main and control fuses | Contact your local Ozen Distributor |
| | A break in a cable or loose connections | Contact your local Ozen Distributor |
| | Tripping of thermal overload of motor or fan | Reset thermal overload of motor or fan. Investigate cause. |
| | Compressor stopped due to any malfunction | Contact your local Ozen Distributor |
| | Re-starting the compressor immediately after a short time | The evacuation of the internal pressure has not yet been completed. After a short time the compressor will be ready for use again. |

| | | |
|-----------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| It takes too long for the compressor to start | Y-D changeover is not properly set | Contact your local Ozen Distributor |
| | Low input voltage or fluctuating current | Check the electrical infrastructure at your facility and correct any faults. |
| | The ambient temperature is too low and the oil is too cold | Increase the ambient temperature |
| | High oil viscosity | Use the appropriate oil type in your compressor. Change the oil of the compressor if it is time to replace the oil. |
| | Defective air intake valve | Contact your local Ozen Distributor |
| | Defective motor | Contact your local Ozen Distributor |

| | | |
|------------------------------------------------------|---------------------------------------------------------|------------------------------------------|
| Compressor fails to reach the desired pressure value | Leakage in the air line | Check the air hoses and the connections. |
| | Defective air intake valve | Contact your local Ozen Distributor |
| | Clogged air filter | Clean or replace the air filter element |
| | Insufficient capacity of the compressor for your system | Contact your local Ozen Distributor |
| | Defective air-end | Contact your local Ozen Distributor |
| | Defective safety valve | Contact your local Ozen Distributor |
| | Improperly set motor thermal overload | Contact your local Ozen Distributor |
| | Improperly set pressure switch | Contact your local Ozen Distributor |

| | | |
|-----------------------------------------------|--------------------------------|---------------------------------------------------------|
| Compressor exceeds the desired pressure value | Improperly set pressure values | Pressure values must be corrected via the control panel |
| | Defective pressure sensor | Contact your local Ozen Distributor |

| | | |
|---------------------------------------------|------------------------------------------------|-------------------------------------|
| Compressor fails to generate compressed air | Defective air intake valve | Contact your local Ozen Distributor |
| | Y-D system changeover time is not properly set | Contact your local Ozen Distributor |
| | Defective minimum pressure valve | Contact your local Ozen Distributor |
| | Defective solenoid valve | Contact your local Ozen Distributor |

| | | |
|---------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------|
| Compressor stops due to tripping of the main motor thermal overload | Defective air-end | Contact your local Ozen Distributor |
| | Improper thermal overload setting | Check the motor thermal overload setting. Correct the setting, as necessary. |
| | High pressure setting value | Check the pressure on the control panel. Correct if it is high. |
| | Low input voltage | Check the voltage at the power supply input of the compressor. |
| | Problem with motor | Contact your local Ozen Distributor |
| | Too high operating ambient temperature | Maintain the ambient temperature of the compressor to between 32 °F (0 °C) and 115 °F (46 °C.) |

| | | |
|--------------------------------------|--------------------------------|--------------------------------------------------|
| Compressor is losing oil excessively | Leakage in oil connection line | Contact your local Ozen Distributor |
| | Faulty separator filter | The separator element is required to be replaced |

| | | |
|------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------|
| Compressor stops due to the tripping of the fan motor thermal overload | Improper thermal overload setting | Check the cooling fan thermal overload setting on the panel. Correct the setting as necessary. |
| | Problem with hot air outlet | Make sure that there are no obstructions in the hot air outlet - clean the cooler fins if necessary |
| | Cooling fan motor problem | Contact your local Ozen Distributor |
| | Too high operating ambient temperature | Maintain the ambient temperature of the compressor to between 32 °F (0 °C) and 115 °F (46 °C.) |

FAILURES AND SOLUTIONS

CHAPTER 6

| | | |
|--------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------|
| Contactor contacts are wearing too quickly | Y-D changeover time is too short | Contact your local Ozen Distributor |
| | Compressor is exposed to too frequent stop and restart operation. | Contact your local Ozen Distributor |
| | Low voltage at the input to the compressor | Check the electrical infrastructure of the facility. |
| | Use of improper parts | Contact your local Ozen Distributor |

| | | |
|--------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------|
| Temperature sensor or contact thermometer warning due to excessive temperature | System lacking oil | Check the oil level. Add oil if necessary |
| | Clogged oil filter | The oil filter needs to be changed |
| | Defective thermostat | Contact your local Ozen Distributor |
| | Clogged cooler | The cooler needs to be cleaned |
| | Incorrect compressor room layout | The compressor must be installed in accordance with the installation layout instructions. |

| | | |
|-------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------|
| Compressor stops due to overheating | Incorrect compressor room layout | The compressor must be installed in accordance with the installation instructions. |
| | Extremely hot operating environment | Maintain the ambient temperature of the compressor to between 32 °F (0 °C) and 115 °F (46 °C.) |
| | Improper temperature setting | Contact your local Ozen Distributor |
| | System lacking oil | Check the oil level. Add oil if necessary |
| | Clogged oil filter | The oil filter needs to be changed |
| | Clogged air filter | Clean or replace the air filter element |
| | Clogged cooler | The cooler needs to be cleaned |
| | Cabinet panels have been removed | The panels must be in place when the compressor is running |

| | | |
|------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------|
| Temperature increases when compressor is switched to no-load operation | There is blockage in the oil line or oil filter | Contact your local Ozen Distributor |
|------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------|

| | | |
|------------------------|-----------------------------------------|------------------------------------------------------------|
| Safety valve is opened | Defective safety valve | Contact your local Ozen Distributor |
| | Improper setting of the safety valve | Contact your local Ozen Distributor |
| | The operating pressure setting is wrong | Contact your local Ozen Distributor |
| | Compressor does not stop automatically | Refer to "Compressor exceeding the desired pressure value" |

| | | |
|-----------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------|
| Oil in the Com-pressed Air | Defective separator filter | The separator element is required to be replaced |
| | Clogged oil flow indicator | Contact your local Ozen Distributor |
| | High oil level | Check the oil level. Drain excess oil if necessary |
| Oil loses its properties quickly | Failure to use recommended oil | You can get an oil recommendation by contacting your local Ozen Distributor |
| | High ambient humidity | The ambient humidity must be reduced |
| | High ambient temperature | The ambient temperature must be reduced |
| | Gas, dust, etc., is contaminating the oil | The environment must be free of these substances |
| Compressor does not stop automatically at idling | The idle time setting is not proper | Contact your local Ozen Distributor |
| | Compressor reloads in a very short time (short cycling) | Contact your local Ozen Distributor |
| Compressor blows down all the time | Defective Solenoid valve | Contact your local Ozen Distributor |
| | Power failure in the supply line to the solenoid valve | Check out the line and repair the required parts |
| Internal pressure does not relieve when stopping the compressor | Defective air intake valve | Contact your local Ozen Distributor |
| | Defective minimum pressure valve | Contact your local Ozen Distributor |
| Phase Protection Warning | Incorrect connection of the phase cables | Two of the phase cables must exchange places |
| Compressor operates very noisily | Due to motor | Contact your local Ozen Distributor |
| | Due to coupling | Contact your local Ozen Distributor |
| | Due to air-end | Contact your local Ozen Distributor |
| | Due to connections | Contact your local Ozen Distributor |

Table-8

FAILURES AND SOLUTIONS

CHAPTER 6

| FAILURE | CAUSE(S) | REMEDIAL ACTION |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Booster does not start, CC21 - LED E9 "P-Supply" flashes, LED A6 "Start" is off | No or insufficient supply pressure or pressure switch B9 or wiring incorrect | Check supply pressure, check pressure switch and wiring |
| Booster does not start, CC21 - LED + "Power" flashes or is off | Supply voltage CC21 missing or insufficient (LED flashes) | Check 24VDC voltage supply |
| Booster does not start, CC21 - LED + "Power" and LED A6 "Start" lights are on, LED E11 "Operation" is off | No compressor control start signal available | Check compressor control and wiring |
| Booster does not start, CC21 - LED E12 "Idle" light is on, LED A6 "Start" is off | Idle signal from compressor control (set-up of CC21 is adjusted so that start on idle mode is disabled) | Reduce vessel pressure, check compressor control, adjust CC21 set-up |
| Booster does not start, CC21 - LED A4 "Fault" light is on, LED A6 "Start" is off | Failure at screw booster unit LEDs for sensors indicate cause(s) | Remedy the problem, press the reset key on CC21 (reset only possible once the cause has been settled) |
| LED A5 "Warning" light is on | Warning. LEDs for sensors indicate cause(s) | Remedy the problem. Otherwise the booster is automatically switched off after the warning time |
| Booster has automatically stopped, CC21 - LED A4 "Fault" light is on | Failure at screw booster unit. LEDs for sensors indicate cause(s) | Remedy the problem, press the reset key on CC21 (reset only possible once the cause has been eliminated) |
| Sensor - LED E1 "P-Inlet" light is on | Insufficient supply pressure (LED E9 P-supply light is on too) | Check supply pressure system or downstream filter |
| | Inlet solenoid valve defective (does not open) | Replace solenoid valve |
| | Idle solenoid valve defective (does not open) Idle nozzle clogged | Replace idle solenoid valve. Check idle nozzle |
| | Pressure switch B1 or wiring incorrect | Check pressure switch and wiring |
| Sensor - LED E2 "Oil level" light is on | Oil level is too low | Top up with oil |
| | Level sensor B2 or wiring incorrect | Check level sensor and wiring |
| Sensor - LED E3 "Oil filter" light is on | Oil filter clogged | Replace oil filter cartridge |
| | Maintenance switch B3 or wiring incorrect | Check maintenance switch and wiring |
| Sensor - LED E4 "Separator" light is on | Fine separator cartridges clogged | Replace fine separator cartridges |
| | Maintenance switch B4 or wiring incorrect | Check maintenance switch and wiring |

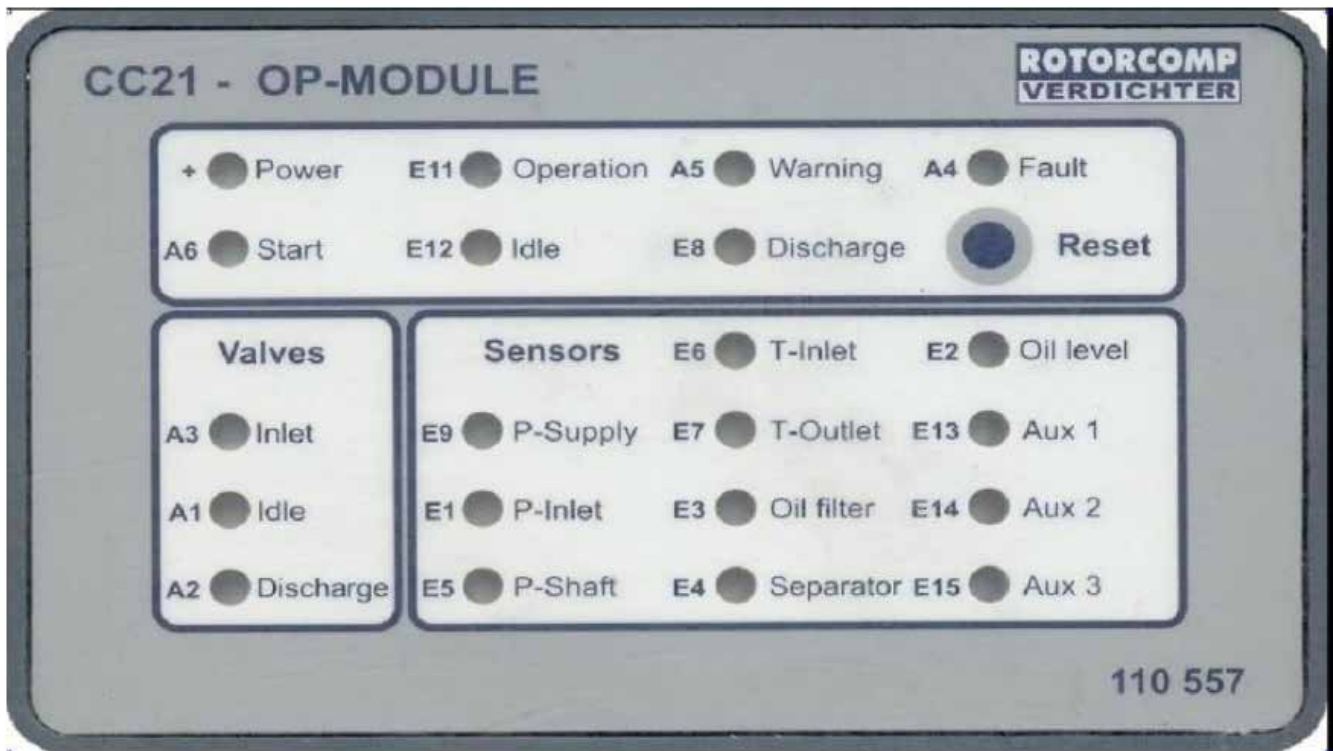
| FAILURE | CAUSE(S) | REMEDIAL ACTION |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Sensor - LED E5 "Shaft seal" light is on | Shaft seal loose or worn | Replace shaft seal |
| | Pressure switch B5 or wiring incor- rect | Measure shaft pressure (measuring point V) Check pressure switch and wiring |
| Sensor - LED E6 "T-Inlet" light is on | Excessive inlet temperature | Check air after-cooling of supply pressure unit |
| | Temperature sensor B6 or wiring incorrect | Check temperature sensor (replace against B7 or make control measurement at measuring point P) |
| Sensor - LED E7 "T-Outlet" light is on | Oil cooler dirty or fan failure | Clean oil cooler, check fan |
| | Thermostatic valve defective | Replace thermostatic valve |
| | Temperature sensor B7 or wiring incorrect | Check temperature sensor (replace against B6 or make control measurement at measuring point S) |
| Sensor - LED E8 "Discharge" flashes | Pressure switch B8 or wiring incorrect | Check pressure switch and wiring |
| Sensor - LED E13 "Aux1" flashes | Backup canister full or level sensor defective or incorrect wiring | Empty canister and find cause for oil loss (see Backup-System) |
| Sensor - LED E14 or E15 flashes | Inputs used by compressor manu- facturer | Contact your local Ozen Distributor |
| Outlet pressure continues to rise in idle mode (LED E12 light is on and LED A3 is off) | Inlet solenoid valve Y3 loose, does not close or defective wiring. Sole- noid valve not tight | Check solenoid valve and wiring |
| Oil leakage via the bleed pipe of shaft seal but LED E5 light is not on | Safety valve or vent valve loose | Check non-return-valve and vent valve and replace if necessary |
| Oil reservoir for shaft seal empty | Pressure reducer (no oil is refilled) or vent valve (no breathing) defective | Check pressure reducer and vent valve and replace if necessary |
| Canister of backup system full | Vent valve or safety valve of shaft seal system loose or insecure. Incorrect oil separation | Replace loose components. Replace separator cartridge |
| Output reduced | Supply pressure has dropped too much | Check supply pressure unit |
| | Inlet temperature has increased | Check air after-cooling of supply pressure unit |
| | Speed has dropped | Check belt tension |
| | Discharge solenoid valve defective (blows off) | Check solenoid valve and wiring |
| | Idle solenoid valve defective or loose | Check solenoid valve and wiring |

FAILURES AND SOLUTIONS

CHAPTER 6

| FAILURE | CAUSE(S) | REMEDIAL ACTION |
|--------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Outlet pressure is not reached | Consumption has increased or leakage in compressed air system | Check consumption and compressed air system See also "Reduced output capacity" |
| Inlet safety valve blows off after unit is stopped | Non-return valve defective | Replace non-return valve |
| Discharge takes too long (normal duration 20 - 25 min) | Pressure maintaining valve loose or leaking | Check pressure maintaining valve and replace if necessary |

Table-9




CC21 OP-MODULE FAILURE PANEL

TECHNICAL DATA

CHAPTER 7

7.1 COMPRESSOR NAMEPLATE

| | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------|--------------------|
| Ozen Compressed Air Technology and Equipment LLC. 4205 Golf Acres Drive, Charlotte, NC 28208, USA Office : (704) 660 0334 info@ozenairtech.com | |  | |
| MODEL | | SERIAL NUMBER | Manufacturing Year |
| ③ | | ④ | ⑤ |
| WORKING PRESSURE (PSI-bar) | | CAPACITY (Cfm-m ³ /min) | |
| ⑥ | | ⑦ | |
| MOTOR POWER (kW-hp) | | MOTOR SPEED (rpm) | MAIN SUPPLY |
| ⑧ | | ⑨ | ⑩ |
| DIMENSIONS (inch) | WEIGHT (lbs) | OUTLET CONNECTION | PACKAGE AMPS |
| ⑪ | ⑫ | ⑬ | ⑭ |

01 Manufacturing Company Information and Address

02 Manufacturing Company Logo

03 Compressor Model

04 Compressor Serial Number

05 Year of Manufacture of the Compressor

06 Compressor Output Pressure

07 Compressor Output Capacity

08 Power of Main Motor of the Compressor

09 Main Motor Speed

10 Main Voltage

11 Compressor Dimensions

12 Compressor Weight

13 Compressor Air Outlet Size

14 Package Amps

7.2 COMPRESSOR DATA

| OABC D SERIES | | | | | | | | | | | |
|----------------------------------|-------------------------------|-------|-----------------------------|--------|-----------------------------|--------|-----------------------------|--------|-----------------------------|--------|--------|
| MODEL | OABC D 18 18.5 kW 25 HP | | OABC D 22 22 kW 30 HP | | OABC D 30 30 kW 40 HP | | OABC D 37 37 kW 50 HP | | OABC D 45 45 kW 60 HP | | |
| MAX. OPERATION PRESSURE (INLET) | PSI | 102 | 145 | 102 | 145 | 102 | 145 | 102 | 145 | 102 | 145 |
| | BAR | 7 | 10 | 7 | 10 | 7 | 10 | 7 | 10 | 7 | 10 |
| MAX. OPERATION PRESSURE (OUTLET) | PSI | 508 | 580 | 508 | 580 | 508 | 580 | 508 | 580 | 508 | 580 |
| | BAR | 35 | 40 | 35 | 40 | 35 | 40 | 35 | 40 | 35 | 40 |
| CAPACITY (FAD) | Cfm | 97.46 | 133.48 | 117.24 | 158.92 | 230.96 | 243.67 | 260.62 | 335.14 | 342.48 | 378.93 |
| | m ³ /min | 2.76 | 3.78 | 3.32 | 4.50 | 6.54 | 6.90 | 7.38 | 9.49 | 9.70 | 10.73 |
| MOTOR SPEED | rpm | 2050 | | 2070 | | 2850 | | 3500 | | 4300 | |
| AIR INPUT TEMPERATURE | °C | 20 | | 20 | | 20 | | 20 | | 20 | |
| | °F | 68 | | 68 | | 68 | | 68 | | 68 | |
| SOUND LEVEL (db) | | 75 | | 75 | | 75 | | 75 | | 75 | |

Table-10

TECHNICAL DATA

CHAPTER 7

7.3 POWER CABLE DIMENSIONS


|  WIRE SIZE | | 60°C (140°F) | | 75°C (167°F) | | MAIN MOTOR POWER (FOR BOOSTER) |
|---------------------------------------------------------------------------------------------|-----------------|----------------|----------|----------------|----------|--------------------------------|
| AWG | mm ² | Copper | Aluminum | Copper | Aluminum | Copper |
| 12 | 3.3 | 20 | 15 | 20 | 15 | |
| 12 | 3.3 | 20 | 15 | 20 | 15 | |
| 10 | 5.3 | 30 | 25 | 30 | 25 | |
| 10 | 5.3 | 30 | 25 | 30 | 25 | |
| 8 | 8.4 | 40 | 30 | 50 | 40 | |
| 8 | 8.4 | 40 | 30 | 50 | 40 | 18.5 |
| 6 | 13.3 | 55 | 40 | 65 | 50 | 22 |
| 6 | 13.3 | 55 | 40 | 65 | 50 | 30 |
| 4 | 21.2 | 70 | 55 | 85 | 65 | 37 |
| 4 | 21.2 | 70 | 55 | 85 | 65 | 45 |
| 1 | 42.4 | 110 | 85 | 130 | 100 | 55 |
| 1/0 | 53.5 | - | - | 150 | 120 | |
| 1/0 | 53.5 | - | - | 150 | 120 | |
| 3/0 | 85.0 | - | - | 200 | 155 | |
| 4/0 | 107.2 | - | - | 230 | 180 | |

Table-11

Cable dimensions in the table are in accordance with UL standards. These measurements are valid for cables having a length of up to 50ft (15m.) For connections greater than 50ft, the cable selected must be one size higher.

NOTE: Cable and fuse sizes are a recommendation. Always size electrical components per local codes and regulations.

7.4 PRELIMINARY FUSE ON SITE

| PRELIMINARY FUSE ON SITE-PFS (Amps) | |
|-------------------------------------|-------|
| MODEL | 460 V |
| OABC D 18 | 50 |
| OABC D 22 | 63 |
| OABC D 30 | 80 |
| OABC D 37 | 80 |
| OABC D 45 | 100 |

Table-12

NOTE: Cable and fuse sizes are a recommendation. Always size electrical components per local codes and regulations.

TECHNICAL DATA

CHAPTER 7

7.5 FUSE SPECIFICATIONS AS PER COMPRESSORS


|  460 Volt Compressor Fuse Currents (Amps) | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------|-----|-----|---------|------|---------|---------|
| kW | F1 | F2 | F3 | F4 | F5 | F6 |
| 18.5 kW | 1 A | 1 A | 2-1/2 A | 8 A | 3-1/2 A | 3-1/2 A |
| 22 kW | 1 A | 1 A | 2-1/2 A | 8 A | 3-1/2 A | 3-1/2 A |
| 30 kW | 1 A | 1 A | 2-1/2 A | 10 A | 3-1/2 A | 3-1/2 A |
| 37 kW | 1 A | 1 A | 2-1/2 A | 10 A | 3-1/2 A | 3-1/2 A |
| 45 kW | 1 A | 1 A | 2-1/2 A | 10 A | 3-1/2 A | 3-1/2 A |

Table-13

Ozen Compressed Air Technology and Equipment, LLC.
4205 Golf Acres Drive Charlotte NC 28208
Office (704) 660-0334
E-mail info@ozenairtech.com

