

MACHINE: JUB0005 SCREW COMPRESSOR 30 KW



# JUB0005 SCREW COMPRESSOR 30 KW

## MANUAL



Before installing or starting the compressor for the first time, please read this manual carefully to gain the necessary knowledge about the compressor and understand the precautions to be taken during operation and maintenance.

Give this manual to the user with the machine.

This technical manual contains important safety information, so it should always be kept with the compressor.

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### 5.1 Overview

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## Safety Statements

Carefully read and understand the general precautions before proceeding with the other safety precautions.

### General

1. Handling, installation, operation, maintenance, and inspection of the equipment must be performed by appropriately trained personnel.
2. No liability is accepted for personal injury, failure, or damage to the equipment in the event of modifications made by the user.
3. Strictly comply with current national safety regulations and site security standards.
4. Check that there is a numbered rating plate on the air compressor. If you lose the nameplate, please contact customer support or sales. When making a repair request or ordering spare parts, please indicate the machine model (type) and serial number or take a picture of the signage plate.

### Safety rules (valid for all occupational safety requirements)

- 1 A safety code must be in place at the site where the air compressor is used and implemented must be ensured.
- 2 Before installing, maintaining, and overhauling your air compressor, you should fully understand the descriptions of the air compressor in the manual. The operation and handling of the air compressor is reserved for those who are familiar with the instruction manual.
- 3 Wear appropriate protective clothing and equipment when working. Especially for the installation, disassembly and assembly of the air compressor, it is necessary to wear the helmet and safety shoes. Wear safety goggles to avoid eye damage from compressed air.
- 4 Maintenance and repairs of air compressors should be carried out by experts. Inexperienced personnel should be closely supervised.
- 5 Use only original parts. Failure to do so may result in equipment failure or damage.
- 6 The air compressor must be properly grounded. Otherwise, some electrical problems (such as electrical noises) can cause damage to electrical equipment or electric shock.
- 7 When using forklift handling equipment, the forklift beam must be extended into the fork hole on the bottom plate of the equipment. The cushion should be placed between the hearing protector (frame) and the spade beam to avoid damaging the equipment

- 8 When using the crane, the sling should be passed through the fork hole of the bottom plate, and the cover cloth should be placed on the soundproof cover panel (frame) to prevent damage. Slowly lift the air compressor, slings, and the top of the frame at a 45° angle.

## Chapter I - General part

### 1.1 Overview

The device is a single-stage, oil-injected stationary screw compressor driven by a motor and equipped with a soundproof cover. The compressor is controlled by an advanced microcomputer controller and liquid crystal display, which can effectively reduce energy consumption and make it easier for the operator to operate and monitor the compressor.

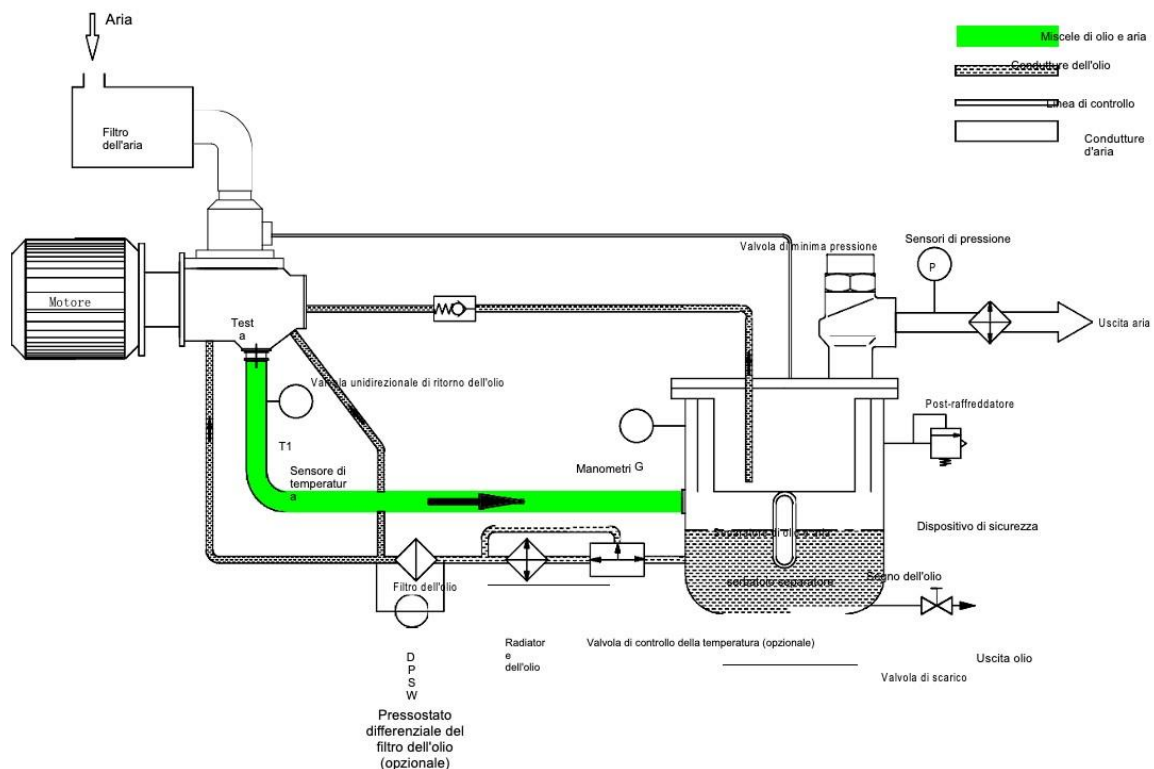
### 1.2 System Flow

The unit consists of compressor head, motor, oil and air separator, oil piping system, cooling system, air piping system and electrical control system.



## Unit Structure

### The system flow of the compressor



#### 1.2.1 Ventilation systems

The air drawn in by the air filter, through the intake valve, enters the compressor head to be compressed. The mixture of oil and compressed air enters the separation tank for preliminary separation, then into the oil and air separator. The compressed air, after separation, passes through the minimum pressure valve to the air cooler and is then discharged into the user's piping network.

The function of the air filter is to filter out impurities in the air and ensure that clean air enters the compressor head. The intake valve allows you to automatically adjust the air sucked in by the compressor according to consumption, in order to balance supply and demand and save energy. Closing the intake valve when starting the machine also

reduces the load, stops when the compressor stops, and prevents compressed air and lubricating oil from separating and escaping the inlet.

The minimum pressure valve ensures that the pressure in the separator tank is not less than 0.45 MPa, so that the lubricating oil can flow normally into the system. In addition, the minimum pressure valve is used to prevent the backflow of compressed air into the external pipe when the compressor is unloaded or stopped. The automatic relief valve is installed next to the intake valve. When the compressor is drained or stopped, the relief valve automatically opens and releases the pressure.

### 1.2.2 Lubrication system

The mixture of oil and compressed air is fed into the separator tank at a speed that allows it to rotate and collide with the inner wall so that mechanical separation takes place. Most of the lubricating oil is separated from the oil and air mixture and deposits at the bottom of the separator tank; The remaining small amount of lubricating oil passes through the separator element into the tank with the compressed air and flows in the direction of the compressor head along the oil line after separation. For the compressor model with an output of more than 75 hp, there is a temperature valve for controlling the lubricating oil. When the temperature of the lubricating oil is below 70°C, the temperature control valve automatically opens the bypass valve. Depending on the air pressure, the circulating oil will pass directly from the separator tank through the oil filter to the head. When the temperature rises to 70°C, the bypass circuit is gradually closed. At the same time, the circuit leading to the oil cooler is gradually opened and some of the lubricating oil is cooled by the radiator. When the temperature reaches 85 °C, the bypass valve is closed completely and all the lubricating oil is cooled by the oil cooler before entering the compressor head.

The function of the temperature control valve is to keep the temperature and viscosity of the lubricating oil constant; At the same time, it allows the system to reach the ideal working temperature as quickly as possible and maintain it to prevent water vapor condensation in the system. The function of the lubricating oil filter is to remove metal



particles and impurities present in the lubricating oil, reduce wear on bearings and rotors, and extend service life.

### 1.3.1 Cooling System (Air-Cooled Model)

The cooling system includes the lubricating oil cooler and aftercooler. The fan draws in cold air from outside the unit and blows it through the cooling system; The heat exchange with the compressed air and lubricating oil flowing through the cooler allows the cooling effect to be achieved. The maximum design temperature of the cooling system is 45°C. If the ambient temperature exceeds 45°C, the compressor discharge temperature will be too high and may affect the life of the compressor.

### 1.3.2 Water system (water-cooled)

The water piping system includes the oil cooler, aftercooler, and connection line. The cooling water enters the after-cooler and the oil cooler to be finally expelled from the machine. Both the after-cooler and the oil cooler are heat exchangers whose function is to cool the compressed air and with it the lubricating oil.

To ensure a good cooling effect and extend the service life of the cooler, it is recommended to use clean water. The specific requirements are as follows:

1. the cooling water should have a nearly neutral pH, that is, the concentration of hydrogen ions should be between 6.5~9.5.
2. organic matter and mechanical impurities in suspension must be less than 25 mg/L; the oil content must be less than 5 mg/L.
3. temporary hardness  $\leq 10^\circ$  (hardness  $1^\circ$  equivalent to one litre of water containing 10 mgCAO or 7.19 mg MGO). Water Inlet Temperature, Pressure, and Water Consumption
4. The cooling water temperature should be  $\leq 32^\circ\text{C}$ .
5. water pressure greater than or equal to 0.2 MPa, less than 0.5 MPa.
6. Water consumption: varies depending on the model.

## 1.4 Control Protection System

The compressor is controlled by a microcomputer controller that can adjust the operating status of the compressor based on the user's actual air consumption. By closing the intake valve when little air is needed or when not in use, the compressor operates with a light load and switches to the discharged state to save energy. When air consumption resumes, the microcomputer controller reopens the intake valve, allowing the compressor to switch to full load operation. At the same time, the microcomputer controller also monitors the compressor by automatically stopping it when it has abnormal conditions (such as engine overload, exhaust overheating, etc.). A safety valve is attached to the separator tank. When the pressure in the tank exceeds the set value, the safety valve opens automatically and quickly releases the pressure to ensure the safety of the unit. The machine is equipped with a perfect pressure relief function that generally prevents the safety valve from opening.

### 1.5 Electrical system (wiring diagram below)

The electrical system consists of main motor, blower motor, control panel assembly, solenoid valve, temperature sensor, pressure transmitter and microcomputer controller.

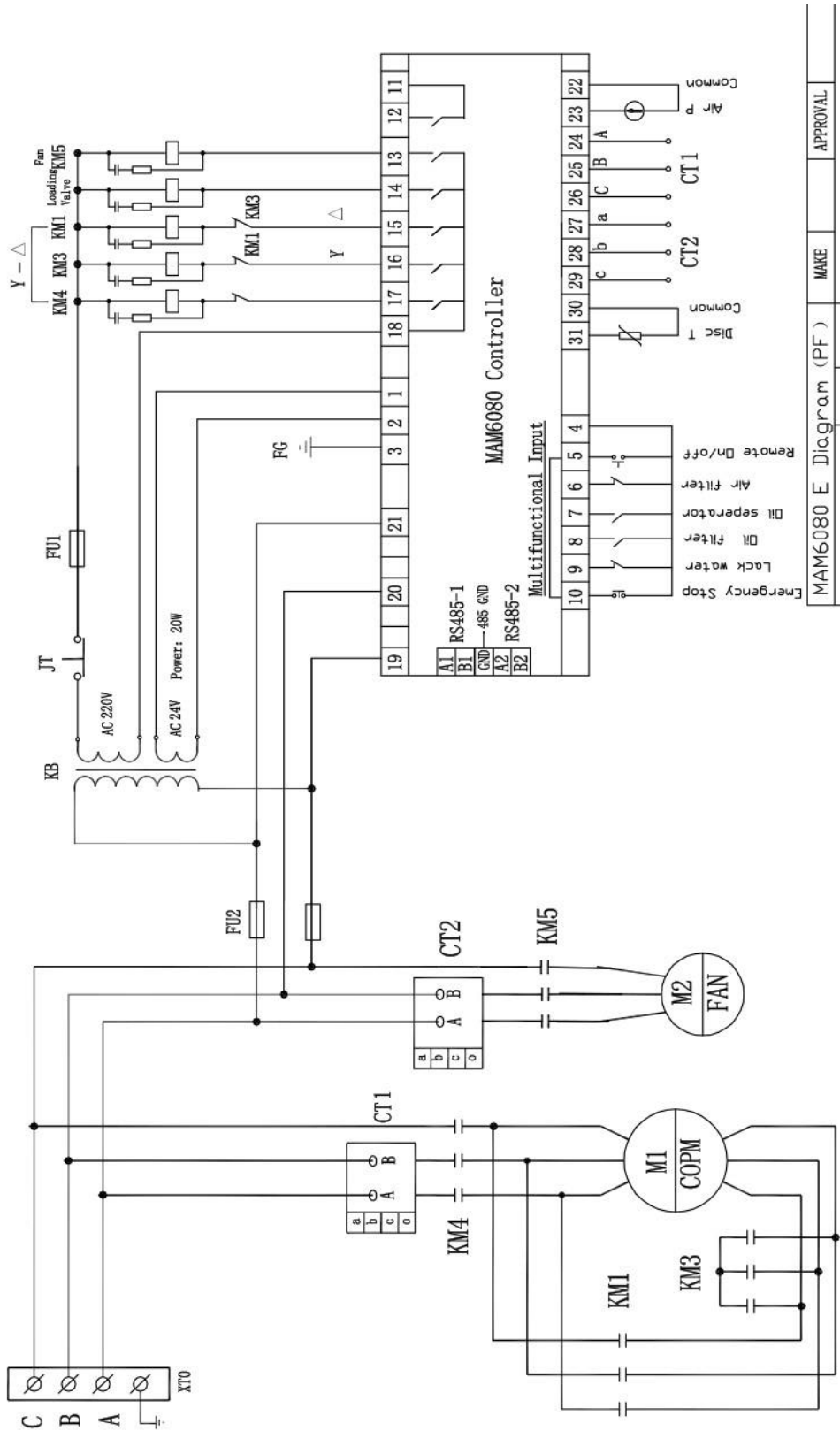
#### 1.5.1 Microcomputer Controller

The microcomputer controller and its operation panel are integrated controllers that enable operation control and protection, temperature display and protection, phase sequence protection, motor protection, pressure control, and operation documentation.

To ensure normal operation of the unit, the operator must know the function and meaning of each button, the display window and the lights on the controller and control panel, as well as be able to correctly judge the parameters and signals displayed.

Note: At the front end of the compressor supply line, the system must be equipped with the necessary short-circuit protections and other safety devices, including proper grounding.

Attention: The wiring of the electronic control cabinet must not be dismantled without authorization!

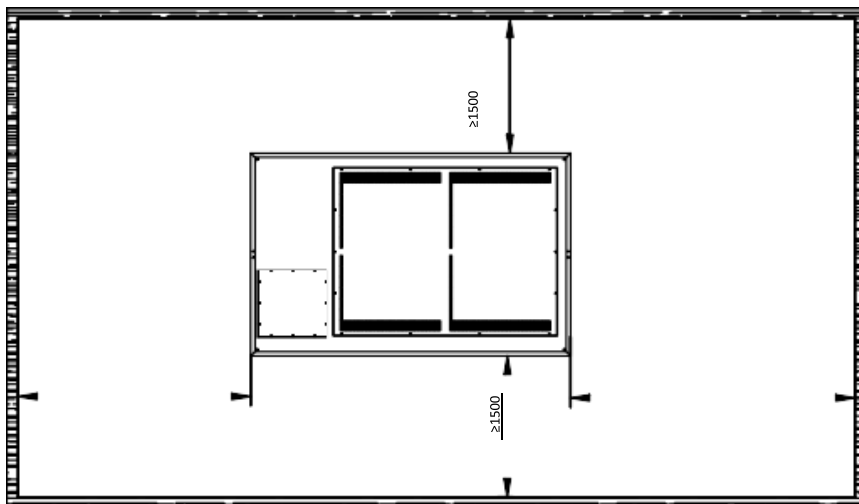
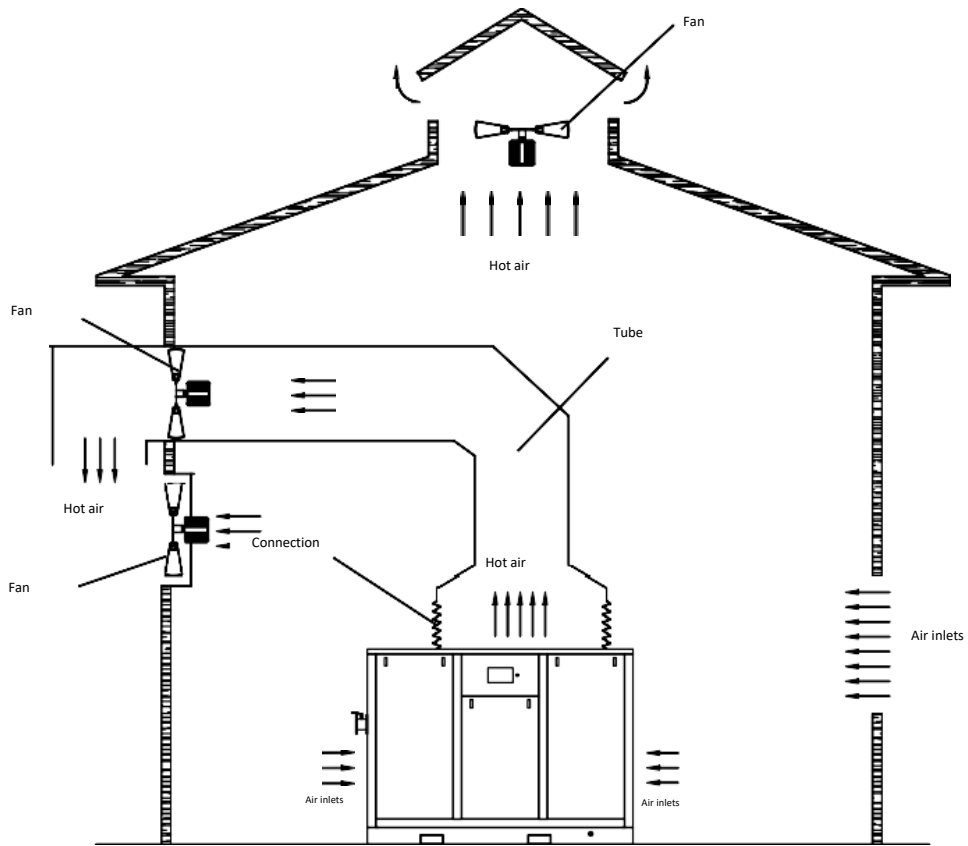


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## Chapter II - Installation

### 2.1 Compressor Installation Site

1. It is necessary to select the appropriate installation location for the compressor, for which a dedicated installation room is recommended. The installation site must meet the following requirements:
2. The compressor should be installed indoors, with good lighting and enough space for ease of use and maintenance. As illustrated below, the distance between the compressor and its surroundings and the ceiling should not be less than 1 meter. Good ventilation, adequate heat dissipation and an indoor ambient temperature of no more than 45°C must be ensured. It is recommended to use a hot air duct to dissipate heat and an exhaust fan that is larger than the compressor cooling fan.
- 3 Low relative humidity, low dust, no acids, alkalis and other corrosive minerals. If the air quality is below the requirements, the compressor suction port should be directed to a clean location or equipped with a pre-filtration system.
4. The compressor must be placed on a solid, level base to avoid vibrations caused by the slope of the ground. If the compressor is located on the upper deck, vibration isolation measures must be taken.



## 2.2 Electrical Safety Requirements

(Voltage 380V, e.g. 220V, 415V, etc., ensure difference  $\pm 5\%$ )

The three-phase voltage must be stable between 360~400V. It is suggested to use an independent power supply system to avoid excessive voltage drop or three-phase imbalance caused by using in parallel with other electrical equipment and possible overload of motor current.

In addition to the correct selection of the diameter of the power line, it is necessary that each three-phase cable meets the current safety requirements.

Check that the power supply is in accordance with the rated voltage of the compressor motor.

Depending on the power of the compressor, install the necessary short-circuit protections and other safety devices, such as the air switch in front of the compressor supply line.

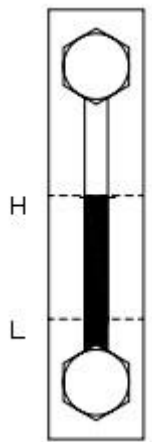
The compressor must be properly grounded to avoid hazards due to power leakage and damage to the compressed air line.

## Chapter III - Operation

The operator must read this manual carefully, scrupulously comply with all relevant safety rules, including those indicated in this manual, and be familiar with the characteristics and operating methods of the device.

### 3.1 First Boot

1. Connect the power cord and ground wire to check if the voltage is correct and if the three-phase voltage is balanced.
2. Check that the electrical wiring is safe, secure, and reliable.
3. Check that the oil level gauge on the tank is above the upper limit, as shown on the right.
4. Before the initial start or after a shutdown for an extended period of 36 months, 1 liter of lubricating oil should be injected into the compressor body through the air intake, and the air compressor should be rotated with the manual disc to prevent the combustion of oil leaks in the head.



5. At first use, the power indicator light will illuminate and the panel will show the current temperature and cumulative operating time.

Note: If the power phase does not comply with the requirements, the fault light will illuminate and the reverse phase will be displayed.

6. Open the inlet valve.
7. Orientation test

Although the machine is equipped with reverse phase protection devices, the orientation test is an important step when starting the new machine for the first time and should be repeated even after the engine has been overhauled. The test methods are as follows:

Press "ON" to start the rotation of the compressor and immediately press the "emergency stop button" to confirm that the direction of the compressor should be in line with the direction of the arrow on the head: in case of direction error, adjust the two-phase power line. Check that the fan motor is in the same orientation.

By starting the compressor again, the unit will automatically enter the compressor process.



"delta" start-up; Close the air inlet valve slowly, so that the exhaust pressure rises until the unit begins to discharge, checking whether the exhaust pressure matches the set value (if not, it must be adjusted). Observe at the same time if the display tool and the indicator light have any abnormalities. If there is any abnormal sound, vibration, or leakage, immediately press the "emergency stop button" to stop maintenance.

8. Idle time: By pressing the "OFF" stop key, the unit enters the shutdown program, which first covers the power of the solenoid valve, then the discharge of the compressor relief valve, the discharge of the closed intake valve, and finally the stopping of the engine after a few seconds.

Note: Do not use the "emergency stop" button for stopping under normal operating conditions.

## 3.2 Daily Operation

### 3.2.1 Startup

1. Open the screw cap and ball valve of the separator tank, drain the condensed water to the bottom of the tank after shutting off, and close immediately when the lubricating oil leaks out.

Note: Before opening the drain outlet of the separator tank, you must check that there is no pressure in the tank.

2. Rotate by hand to verify that the compressor head rotates unhindered.

3. Open the inlet valve.

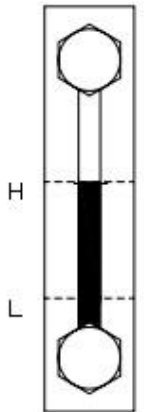
4. Connect the power supply and operate the compressed air dryer. 5. Press the "ON" button to start the compressor. Check that the latter does not have any abnormalities, in particular with regard to the switching time Y- $\Delta$ , the operating sound, etc.

5. Check the exhaust gas pressure, lubricating oil pressure, exhaust gas temperature and record the relevant data.

6. Check the oil level gauge after smooth operation.

If the oil level is below or near the minimum limit (as indicated on the right), stop topping up.

7. If any abnormalities are found, press the "OFF" button or the emergency stop button immediately before restarting.



### 3.2.2 Compressor operating status

#### 1. Start-up

Once all preparation operations are completed, press the start button, the Y link in the cabinet is withdrawn, and the motor starts with the Y link at low speed. Since the intake valve at this level is closed, only a small amount of air enters the compressor head through the non-return valve, the compressor starts with a light load, and the initial system pressure gradually settles in the separator tank.

## 2. Load

Start about 6~7 seconds after the engine delta function starts. After 2 seconds, the solenoid valve on the intake valve is energized, the compressed air in the separator tank enters the intake valve and causes it to open, a large amount of air enters the compressor and the latter starts operating at full load. If the (system) pressure in the separator tank reaches or exceeds 0.35 MPa, the minimum pressure valve opens and the unit begins to blow air outwards. This will happen until the system pressure is lower than the value set for the drain operation, which is also the value set by the microcomputer controller.

## 3. Discharge

If the air volume continues to be less than the discharge volume of the compressor, the discharge pressure of the unit will reach or exceed the value set for the discharge operation, the microcomputer controller will close the solenoid valve, and then the intake valve will close, and a large amount of air will be blocked. Meanwhile, the relief valve opens, the compressed air in the separator tank is released to 0.3-0.4 MPa, the compressor back pressure is reduced, and the lubricating oil remains circulating in the system.

When the discharge pressure drops to the return-to-load setting, the microcomputer controller activates the electrical system, the intake valve is reopened, the exhaust valve closes instead, and the unit enters the loading state.

If the drain control is not done correctly or is not set properly, the safety valve installed on the separator tank can subtract and release the system pressure if it is impossible to drain with the correct pressure, so as to avoid the dangers caused by excessive system pressure. Stop immediately to check that the intake valve, pressure transmitter, and microcomputer controller are set correctly.

## 4. Standby

If the discharge operation time is longer than expected (the machine is set to 15 minutes), the microcomputer controller will interpret it as idle and bring the compressor into standby state; The main motor and blower motor will stop working, so as to achieve further energy savings.

In the standby state, if the air is restored and the exhaust line pressure drops to the return load setting value, the microcomputer controller restarts the unit.

When the device is in standby, do not open doors or perform any kind of maintenance to avoid accidents.

### 3.2.3 Shutdown

#### 1. Normal downtime

If you need to stop using the air for a long time, press the stop button, and the compressor will enter the shutdown state. Upon shutdown, the intake valve is closed, the relief valve is opened to relieve pressure in the separator tank, and the unit stops at a lower system pressure after 15 seconds.

The valve must be closed after shutdown to prevent the unit from being affected by compressed air present in the external piping system. Finally, you must cut off the external power supply to the unit to avoid accidents.

#### 2. Failure to stop

In the event of an electrical fault or overtemperature in the compressor, the microcomputer controller stops immediately and displays a window with the fault message. At this point, the fault must be cleared as required, then press the "RE" key to reset and restart.

#### 3. Emergency shutdown

If the compressor has abnormal condition, immediately press the "emergency stop" button to stop the compressor immediately and prevent leakage. After shutdown and timely troubleshooting, press the "RE" key to restart.

### 3.2.4 Operational notes

1. Observe abnormal sounds and vibrations; If there are any abnormalities, stop immediately.
2. During operation, no hoses, bolts, and screw caps should be loosened, and all valves in the unit should not be opened or closed.
3. Observe the oil level gauge: When the oil level is too low, stop the device and top up the oil.

The operator must document the parameters observed during the daily check, noting in particular the exhaust gas pressure, system pressure, exhaust gas temperature, oil level, operating time, etc. 4. The infrared temperature detector can be used to detect temperature and record the supply voltage and current.

### 3.2.5 Long-term downtime

#### Preparation

If the compressor will be idle for a long time, the following preparatory steps should be carried out:

First of all, if there are any faults, you need to repair them in time for the next use.

The water in the oil cooler and secondary radiator must be completely drained. Prevent internal corrosion.

Close all openings with plastic sheets or wax paper to prevent moisture and dust from entering.

If the deactivation time is more than two months, the lubricating oil must be replaced before decommissioning, run for 30 minutes and completely drain the condensate in the separator tank the next day.

#### Restart

Remove the protective plastic sheet or wax paper.

The measurement of the ground insulation resistance of the motor must be greater than 1 M $\Omega$ .

Restart according to the instructions in Section 3.1 regarding the first boot.

## Chapter IV - Maintenance

### 4.1 Lubricating oil

Lubricating oil has a decisive effect on the performance and service life of the screw air compressor. The use of an inadequate lubricating oil can cause serious damage to the compressor. Therefore, it is recommended to use lubricating oil for our company's

screw compressor. The company's screw compressor lubricating oil is of excellent quality, especially suitable for the use of screw compressors; At the same time, it also has good anti-aging properties, does not mix easily with water or produce emulsions or foam, resists corrosion, and possesses other important properties.

#### 4.1.1 Oil Exchange Cycle

1. First oil change in the compressor at about 500 hours;
2. Change the oil every 6000-8000 hours if using our synthetic lubricating oil; about 2000 hours if using mineral oil
3. You need to replace it at least once a year;
4. If the analysis of the oil sample indicates that the lubricating oil needs to be replaced, proceed promptly;
5. Under harsh working environment conditions with high exhaust gas temperature, the oil change time must be reduced.

#### 4.1.2 Replacing the Oil and Oil Filters

1. Slowly close the compressor inlet valve, so that it can proceed with the draining operation for 3 minutes.
2. Wait for the compressor to stop and cut off the power.
3. After completely relieving the system pressure in the separator, slowly open the screw cap of the filler door.
4. Remove the lubricating oil filter with the lubricating oil wrench and pour the flowing lubricating oil into the container. If no more lubricating oil is leaking, clean the lubricating oil filter seat.
5. Replacing the lubricating oil filters (see section 4.2.3)
6. Remove the oil cap and open the ball valve on the pipe to empty the lubricating oil into the separator tank. Collect the lubricating oil released in the appropriate container and dispose of it properly in an environmentally friendly manner.
7. Close the drain ball valve and attach the drain plug. Add lubricating oil to the cylinder until it reaches the upper limit of the oil level and retighten the screw cap.
8. Leave the compressor running for 5 minutes and then stop it. After the system pressure is released and the oil level is stable, slowly open the screw cap of the filler port, continue adding lubricating oil to the separator tank until the upper limit of the oil level is reached again, and tighten the screw cap of the filler door.

## 4.2 Maintenance and replacement of other parts

### 4.2.1 Air Filter Maintenance

1. Once the set limit value has been reached, the air filter element and dust collection box must be removed and cleaned or replaced. The filter element should be replaced after 3-4 cleaning cycles.

2. The filter element dust removal method is to use clean compressed air with a pressure of no more than 0.5 from the inside to the outside; The air blowing port must be more than 20 mm from the inner surface of the filter element.

3. It is not allowed to knock the air filter element or clean it with water. If the filter is damaged, it must be replaced. Do not clean the filter in the presence of oil or contamination. It is recommended to replace it in time.

4. When the filter is cleaned or replaced, the controller must be reset until the contamination alarm is completely cleared.

5. The service life of the filter element is about 4000 hours.

When the air filter maintenance time exceeds the set maximum time, the control panel shows "air filter maintenance time at " to indicate that it is time to check or replace the filter element. If the compressor working environment is relatively unfavorable, the replacement interval should be shortened.



### 4.2.2 Oil Filter Maintenance

1. The first oil filter change takes place after 500 hours of compressor operation, then every 2000 hours. When the oil filter usage time exceeds the set maximum time, the control panel shows "oil filter use time at " to indicate that it is time to check or replace the oil filter. When changing the lubricating oil, the lubricating oil filters must also be replaced at the same time. If the use takes place under unfavorable environmental conditions, the replacement cycle should be shorter.

2. The replacement steps are as follows:

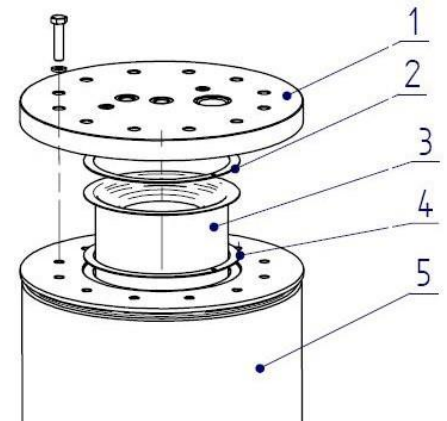
3. Stop and relieve the pressure, after cooling the compressor, and remove the lubricating oil filter with a wrench;

4. Clean the gasket of the new oil filter and apply a layer of new lubricating oil to the gasket,
5. Install the new filter on the oil filter seat until the sealing washer touches the oil filter seat and hand tighten (about half a turn).

#### 4.2.3 Maintenance of oil and air separators

In general, after about 4000 hours of compressor use it is necessary to replace the separator. When the service time of the separator exceeds the maximum service time set, the display shows the request to replace the oil separator, indicating that the service time of the oil separator has expired and that the separator needs to be checked or replaced at this time. In places with high temperatures or dust, the replacement time must be reduced. The oil separator element cannot be cleaned, only replaced. Replace the oil separator element as follows:

1. Pressure stop and release
2. Disassemble the hose connected to the top cover and remove the top cover;
3. Remove the filter and replace the new filter.
4. Note: There must be a metal pin on the gasket for the effectiveness of the grounding of the separator filter and to prevent the filter from catching fire due to electrostatic action. If the upper and lower seals of the filter element are damaged and the other seals are installed, two mounts must be added on the bearing, which can be ordered separately.



Note: After replacing the oil separator element, you must clear the error from the controller.

When replacing the oil separator, take care that no foreign objects fall into the separator tank!

#### 4.3 Cleaning the Cooler

If the compressor exhaust temperature is high, clean the dust on the cooler flap with compressed air. If cleaning with compressed air is not possible, a suitable cleaning



agent must be used. Do not use brushes or metal products to remove dust. Be sure to keep the surface of the cooler clean.

#### 4.4 Safety Device

The safety valve should be checked annually to see if the opening pressure is correct; otherwise, it must be adjusted before continuing to use it. The safety valve can be tested on a separate compressed air piping network.

NOTE: The safety valve has been set at the factory and does not need to be adjusted.

### 4.5 Compressor Motors Maintenance Instructions

#### 4.5.1 Terms of Use

Ambient temperature : $\leq 45^{\circ}\text{C}$

Humidity: <90% (non-condensing)

Altitude : $\leq 1000\text{m}$

Frequency: Refer to the motor nameplate

Voltage: Refer to the motor nameplate

Working Standard: S1

Insulation: F

#### 4.5.2 Engine Operation

1. The motor must be properly grounded. The ground wire of the compressor motor is typically conducted inside the electrical cabinet. After connection to the cabinet, it is only necessary to reliably connect the user's ground wire.
2. There are clear signs for the compressor on the engine supply line:
3. The method of connecting the compressor motor is clearly indicated on the nameplate.
4. If the voltage and frequency of the compressor motor maintain the value specified on the nameplate, the motor can run continuously at the rated power multiplied by the coefficient of utilization. If the frequency deviation of the power supply exceeds

the nameplate value by 1% or the voltage deviation exceeds 5%, the motor cannot guarantee the continuous delivery of this power.

5. As soon as the three-phase power imbalance is no more than 1%, the compressor motor can resume regular operation.
6. No intermittent or abnormal sounds or vibrations should be encountered either when the motor is running without load or when under load.

#### 4.5.3 Engine Maintenance and Repair

1. The operating environment should be dry at all times, the motor surface should be kept clean, and the inlet should not be obstructed by dust, fibers, etc. 2. When the controller indicates that the motor is overloaded and overheated, the source of the fault should be checked and eliminated before reoperating.
2. The bearing must be well lubricated during electrical operation. After approx. 2000 h of motor operation, grease should be topped up or replaced, as well as in case of overheating of the bearing or deterioration of the grease or after cleaning the bearing and cover slot. The amount of grease varies depending on the engine. For details, please contact your dealer or our service department.
3. Exhaustion of bearing life is signaled by increased vibration and motor noise, and the bearing will need to be replaced.
4. In the event of a malfunction of the engine, it is recommended to contact your dealer or our service department.

#### 4.5.4 Starting and Running the Engine

##### 1. Initial start-up

Initial start-up refers to the first electrification of an engine that has just been installed, overhauled or deactivated for more than a month. It is suggested to carry out the initial start with the engine and compressor head switched off, i.e. at no load.

##### 2. Initial Start-Up Recommendation Check the following

- That all temporary supports and covers have been removed;
- That the condition of the lubricating oil appears to be normal
- That the insulation resistance to earth is not less than  $3(A+1)$  mega ohms, One in kV;
- That the phase number, voltage and frequency of the power supply are in accordance with the nameplate;
- That the vents and pipes are open;

- That the engine does not emit any abnormal sound;
  - That the wiring is correct;
  - Other factors that affect the normal operation of the engine.
3. Start the Jog Air Compressor and observe whether the direction of the motor is consistent with the marked direction; If it does not match, stop and change the phase sequence. Restart after cooling to room temperature and check for engine abnormalities within 2 hours. Faults must be removed immediately and the engine must be stopped to determine the cause.
  4. Starting the load. Connect the coupling between the head and the motor and check with your hand or a tool for any abnormalities. Start the machine if everything appears normal, check the motor current and temperature of each part frequently within 4 hours, record the operating condition of the motor and machine, and stop it immediately if any abnormalities are found.
  5. Number of starts, the engine can be started continuously for 3 times when cold and only once when hot; The starting interval should not be less than 1 hour to prevent the engine from overheating and damaging the insulation.

#### 4.5.5 Engine Maintenance and Repair

- 1 The operating environment should be kept dry at all times, the engine surface should be kept clean, air vents and hoses should be kept open, free of dust, fibers, and other obstacles.
- 2 Prepare a feasible maintenance plan and regularly check the lubrication of the engine bearings. For lubrication instructions, see the additional motor nameplate.
- 3 In the event of a motor failure, it is recommended to contact your dealer or our service department: do not disassemble and assemble

## Chapter V - Fault Analysis and Troubleshooting

### 5.1 Overview

Compressor failure is due to a number of factors.

In this regard, it is important to systematically collect the operating data of the unit. Based on this data, the operator can pinpoint the change in the unit's performance and check for hidden causes of the failure. Before repairing or replacing components, the factors that cause the failure must be analyzed in detail to pinpoint the exact cause.

Do not disassemble the compressor to avoid unnecessary damage.

First, you need to look at the following items:

1. Whether the wire connection is loose or not;
2. If the pipeline is damaged;
3. If there are parts that burn out due to overheating or short circuit. The most obvious symptoms are discoloration or burning.

Phenomenon	Possible Causes of Failure	Troubleshooting Methods
1. Can't start the compressor	1. Blown fuse	1. Contact your electrician for repair or replacement
	2. The supply voltage is too low	2. Instruct the electrician to check and make the necessary adjustments
	3. Phase Failure or Failure	3. Repair or reconnect the wire
	4. Wiring too loose or insufficient contact	4. Repair or replace
	5. Engine Failure	5. Repair or replace
	6. Compressor head failure	6. If it is not possible to rotate it by hand, contact the manufacturer or distributor for replacement.
2. Over discharge temperature ( $\geq 105^{\circ}\text{C}$ )	1. Lubricating oil deficiency	1. Check the oil level gauge if the oil appears to be in good condition.
	2. Excessive ambient temperature	2. Improve ventilation and reduce ambient temperature
	3. Blocked oil cooler	3. Clean the oil cooler
	4. Blocked oil filter	4. Replace the oil filter
	5. Temperature Control Valve Failure	5. Check that the oil is cooled by the oil cooler; If not, maintain or replace the temperature control valve.
	6. Using poor quality compressor oil	6. Replace the lubricating oil
	7. Cooling Fan Failure	7. Overhaul or replacement of cooling fans and their motors
	8. Damaged temperature sensor	8. Check or replace temperature sensors
3. Low discharge temperature ( $75^{\circ}\text{C}$ )	1. Low ambient temperature	1. Reduce the cooling area adequately

	2. Temperature Control Valve Failure	2. Overhaul or Replacement of Temperature Control Valves
	3. Inaccurate temperature sensor	3. Check and replace the temperature sensor
4. Supply pressure lower than rated discharge pressure	1. The user's air consumption is higher than the air supply.	1. Reduce air consumption 1. Check for leaks on the air line.
	2. Blocked air filter	2. Clean or replace the filter elements
	3. The intake valve is not fully open	3. Check the intake valve
	4. Pressure transmitter failure	4. Overhaul or replacement of pressure transmitters
	5. Data setting too low in the controller	5. Reset if settings are incorrect
	6. Failure of the underpressure valve	6. Inspection/repair of minimum pressure valves
	7. Oil and air separator blocked	7. Check and replace oil and air separators
5. The supply pressure is higher than the discharge pressure Set value	1. Pressure transmitter failure or high setting value	1. Overhaul, replace, or reset pressure transmitters
	2. Failure of exhaust parts (e.g.: solenoid valve, vent valve, etc.)	2. Check that the loading parts are working properly
	3. Air leakage	3. Check and eliminate leaks
6. Excessive system pressure (tank pressure)	1. Failure of exhaust parts (e.g.: solenoid valve, vent valve, etc.) in the intake valve	1. Check that the exhaust parts are working properly.
	2. Pressure transmitter failure or high setting	2. Check the pressure transmitter or adjust the setpoint

	3. Air leakage	3. Check that there are no leaks in the air ducts
	4. Oil and air separator blocked	4. Replace oil and air separators
	5. Failure of the underpressure valve	5. Inspection/repair of minimum pressure valves
7. Compressed air contains oil, the working life of the oil is shortened.	1. Too much oil in the separator tank	1. Check the oil level gauge and drain off any excess oil.
	2. Blocked hose or non-return valve	2. Clean the piping or check valve or replace if necessary.
	3. Filter element, oil and air separator or damaged sealing gasket	3. Check the oil and air separator and replace if damaged.
	4. Line pipe in damaged oil separator	4. Hose Replacement
	5. Oil leak	5. Check the oil piping system and eliminate leak points.
	6. Poor oil, excessive foam	6. Oil Change, New Oil Needed
8. Oil comes out of the air filter when the compressor stops	1. Check valve failure	1.a. Intake Valve Overhaul
		1.b. Resetting the Controller Discharge Time
	2. The unloading time is too short or the unloading takes place when the compressor is stopped.	2. Intake Valve Overhaul
	3. Leakage of the minimum pressure valve	3. Repair the minimum pressure valve, replace if necessary
	4. It Has Not Been Completely Released	4. Check the vent valve

9. Switching loading and unloading is too frequent.	1. Leaks in pipelines	1. Check the location of the leak and remove it
	2. Pressure settings are too low	2. Zeroing the pressure difference
	3. Unstable air consumption	3. Increase the capacity of the air storage tank and, if necessary, install pressure relief valves downstream of the tank.



## Schedule Screw Air Compressor Maintenance

**Air Compressor Maintenance Schedule**

Check Item	Per Day	Per Week	500H	Per 3000H	Per 8000H	Per 16000H
Current/Temperature /Pressure	Blue					
Cleaning machine and filter	Blue					
Oil separator tank and air tank drain		Blue				
Cleaning machine and filter		Blue				
Cooler cleaning		Blue				
Coupling			Blue		Yellow	
Unit valve				Blue		
Temperature/Pressure Sensor			Blue			
Electrical terminal / fitting connector				Blue		
Motor grease/Bearing					Blue	Yellow
Line filter		Blue			Yellow	
Air filter		Blue	Purple	Yellow		
Oil separator				Yellow		
Oil filter			Purple	Yellow		
lubricated oil			Purple	Yellow		

Blue	Purple	Yellow
Inspection processing	First replacement	Must be replaced

## DISPOSAL AND DEMOLITION



DISMANTLING OR DEMOLITION MUST BE CARRIED OUT BY THE CUSTOMER, IN FULL COMPLIANCE WITH THE REGULATIONS IN FORCE ON THE SUBJECT. CONFERRING THE ENTIRE MACHINE OR PARTS OF WHICH IT IS COMPOSED TO COMPANIES APPOINTED FOR SUCH SERVICES.

As the owner of an electrical or electronic appliance, the law (in accordance with the EU Directive 2012/19/EU on waste electrical and electronic equipment and the national laws of the EU Member States that have implemented this Directive) prohibits you from disposing of this product or its electrical/electronic accessories as municipal solid household waste and instead requires you to dispose of it at the appropriate collection centres.

Abandoning the product in the environment could cause serious damage to the environment and human health.



The symbol in the figure represents the municipal waste bin and it is strictly forbidden to store the appliance in these containers.

Failure to comply with the provisions of Directive 2012/19/EU and the implementing decrees of the various EU Member States is administratively sanctionable.

- In Italy, WEEE equipment must be delivered to Collection Centres (also called islands or ecological platforms), or to the retailer from whom you buy new equipment.
- In European Union countries: The EU Directive on WEEE equipment has been implemented differently by each country, so if you wish to dispose of this equipment we suggest that you contact your local authorities.

## SCRAPPING THE MACHINE

If you decide not to use the machine anymore, it is recommended to remove the batteries and dispose of them in an environmentally friendly manner in accordance with the provisions of the European standard 2013/56/EU or to deposit them in an authorized collection center.

To dispose of the machine, act in accordance with the legislation in force at the place of use:

- the machine must be disconnected from the mains, emptied of liquids and cleaned;
- the machine must then be broken down into groups of homogeneous materials (plastics according to the indicated by the symbol of recyclability, metals, rubber, packaging).

In the case of components containing different materials, contact the competent authorities; Each homogeneous group must be disposed of in accordance with the Recycling Act.

It is also recommended to render harmless those parts of the machine that are likely to be dangerous, especially for children.