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FOREWARD

This manual enables the operator to understand operating principles of the compressor and its basic project criteria, as well as installation and maintenance procedures.

It is imperative that the user reads these instructions carefully before undertaking any work. These instructions were updated at the time of printing. In line with NAILI's policy of continuous product development these instructions can be modified without prior notice.

The instruction contained in the manual will ensure safe intervention, provided they are followed correctly.

The user must employ trained personnel for the operation, maintenance and for any repair work on the compressor. Some work may need special tools. Please contact the distributor or NAILI's Service Department.

If you need help from a distributor or from NAILI Service Center please mention model, code and serial number of the machine which can be found on the compressor data plate. This will provide a helpful reference to the service center operators.

WARNIG!



Incorrect installation, use, maintenance and/or parts replaced incorrectly can cause damage to the compressor and sometimes injuries to persons.

All interventions should be exclusively performed by qualified personnel.

1. GENERAL

1.1 GENERAL INFORMATION

1.1.1 Foreword

This compressor family is the latest range developed by NAILI, a leading company in the design and manufacture of rotary vane compressors. With technical strength in the production of compressors and the advanced vane technology have enabled NAILI to manufacture reliable and economic compressors.

1.1.2 Taking care of machine

This manual has been drawn up to help the user during maintenance and normal operations so as to ensure a safe and correct use of the machine.

To ensure long life and good performances it is essential that the scheduled maintenance operations are performed according to the frequency indicated in Section 7 - paragraph 7.1. If the compressor has to be used in dusty or severe environments it is better to increase the maintenance frequency.

Attention has to be paid to the air filter, the lubricating oil and the air-oil separating element, which shall be replaced more frequently.

Repairs and adjustments shall be performed by trained personnel, who shall use original spare parts to be bought from the Distributor or directly from NAILI.



WARNING!!!

Carefully read Paragraph 1. 2“ Safety precautions”. These must be strictly followed.

1.2 SAFETY PRECAUTIONS

1.2.1 General

- The installation, start-up and operation of the compressor must take place in accordance with work safety regulations in force.
- The owner of the compressor is responsible for its maintenance, which is essential for safe operation. All worn, faulty or damaged safety related parts must be replaced immediately.
- Installation, operation and maintenance must be carried out by authorized, qualified and adequately trained personnel.
- In case of difference between the instructions in this manual and the current work safety regulations, the most restrictive shall be applied

1.2.2 Transport and handling

- Take care when handling, lifting and transporting the machine, to avoid damages and injuries to things or persons.

For this purpose:

- Check the weight of the machine and use a suitable lift truck. The suggested lifting reference points are indicated by means of symbols.

- The machine centre of gravity is placed near the coupling flange between the motor and the compressor. Before lifting the unit, check that the lifting points are correct and that there is no sign of tilting.

- When lifting the compressor, make sure not damage the supporting structure or the soundproofing body.

- During transport thoroughly anchor the machine to the means of transport, locking it sideways and lengthwise.

It is suggested to protect the machine with adequate packaging, also ensuring preservation against atmospheric agents.

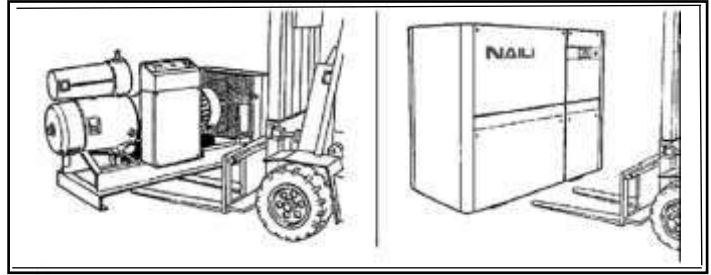


Fig. 1

1.2.3 Installation

Always keep in mind local rules and regulations and also the following:

- The compressor performances shall result enhanced if installed in an adequate, well-ventilated area away from heat sources.

Should you intend to install intake and cooling pipes, refer to all data and recommendations supplied in Section 4 and possibly contact specialized engineers during design.

- If the installation is outdoors (not recommended in very cold climates), the machine will need to be placed under a shelter, to protect it against atmospheric agents.

Make sure that foreign materials do not clog the radiator, as this could increase the operational temperature.

- The intake air shall be clean, free from flammable vapor, which might cause fires or explosions.

- As the machine is air-cooled, to avoid its overheating, perfect ventilation is required to prevent the reticulation of the hot air expelled.

- Safety devices must not be interfered with for any reason.

- If several compressors are installed on the same line, fit a gate valve to each compressor.

- Electrical connections must conform to the standards. The machine shall be earthed and protected by fuses against short-circuits.

A delayed magneto thermic switch upstream the compressor must be fitted.



WARNING !!!

Our machine is not suitable for use in potentially explosive surroundings.

1.2.4 Operating instruction

1. Only use the compressor for the applications it has been designed for (air compression for industrial applications).

2. Make sure that the compressor is filled with oil before start up.

3. The compressor must not be operated in areas where smoke, toxic and/or flammable vapors could be aspirated.

4. The compressor must not be operated at a higher pressure than stated on the identification plate by the manufacturer.

5. Even if purified and filtered, compressed air must not be used as breathing air.

6. Where flexible pipes are used for the distribution of compressed air, make sure that pipes have the corresponding dimensions, are suitable to the working pressure and not worn or damaged. We remind that flexible rubber pipes must be replaced periodically.

7. Never remove the oil filler plug when the machine is operating or there is still pressure inside the compressor: the hot oil would leak.

8. The silencing canopy, where fitted, must be kept closed during operation.

9. Please remember that the compressor noise is higher in small and reverberating premises, even if sound pressure level is acceptable.

The machine does not need the continuous presence of an operator. In accordance with the local regulations in force and if necessary place warning signs next to the machine and supply operators with individual protections for safety against noise.

1.2.5 Maintenance

Only authorized and trained personnel must operate the compressor.

Furthermore please consider the following:

- Before undertaking any work disconnects electricity by means of the mains isolating switch.
- Maintenance operations must never be performed with the compressor running. The machine is in fact fitted with an automatic start system which could start at any time.
- Before undertaking any work, make sure through the gauge that there is no pressure inside.
- Only use the appropriate tools for any operation.
- Do not use flammable solvents to clean the compressor or parts.
- Do not perform any operation that will produce high temperatures next to the machine, particularly not next to the lubrication and electrical systems.
- Do not modify nor weld pressure vessels.
- Do not leave tools, rags, loose parts etc. on the motor or compressor.
- The lubricating oil, when used, may damage the human skin: protect your hands with gloves or with specific skin protective products.
- Do not wear clothes contaminated with lubricating oil.
- Do not contaminate the floor with lubricated oil.
- To prevent pollution, store the used lubricating oil in suitable tanks and in a safe place. For its disposal, please refer to existing regulations and to the laws in force.
- In case of topping up, use the same oil type already present in the machine. Mixing compromises the life of the oil.
- After performing maintenance, make sure that all controls, stop/alarm devices operate correctly. Check that operating temperature and pressure settings are in accordance with the specifications.
- Perform only the maintenance and check operations described in the manual and only use original spare parts. Failure to carry out these checks or use of non-original spare parts may seriously affect operation of the machine and cancel the manufacturer's warranty.

1.3 RESPONSIBILITY

NAILI company cannot be held responsible for injuries to persons, property and animals caused by the:

- Non observance of the above precautions;
- Improper use of compressed air or of the compressor;
- Non observance of common safety rules and national work regulations;
- Lack of care when handling and transporting the compressor;
- Incorrect installation of the machine;
- Faults in the electric line or electricity supplied;
- Lack of routine maintenance;
- Unauthorized modifications or interventions;
- Use of non original spare parts or not suitable for the model;
- Problems caused by outage or faulty operation of the compressor.
- Non observance (even partial) of the instructions



WARNING !!!

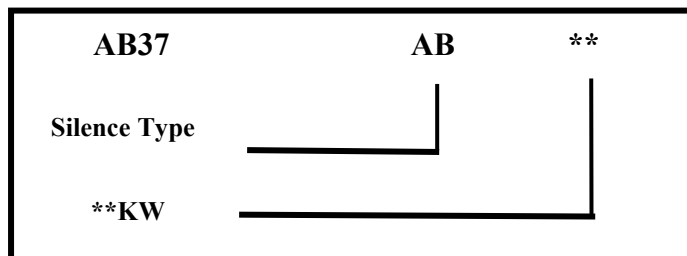
Use the compressed air produced by compressors only for manufacturing purposes.

For any other use, please contact the distributor, the service center or the manufacturer directly.

1.4 MACHINE IDENTIFICATION

Machine identification can be easily recognized by the initials
The first or digit of the code identifies the series; the last digits of the code indicate the installed power, in KW.

Example:

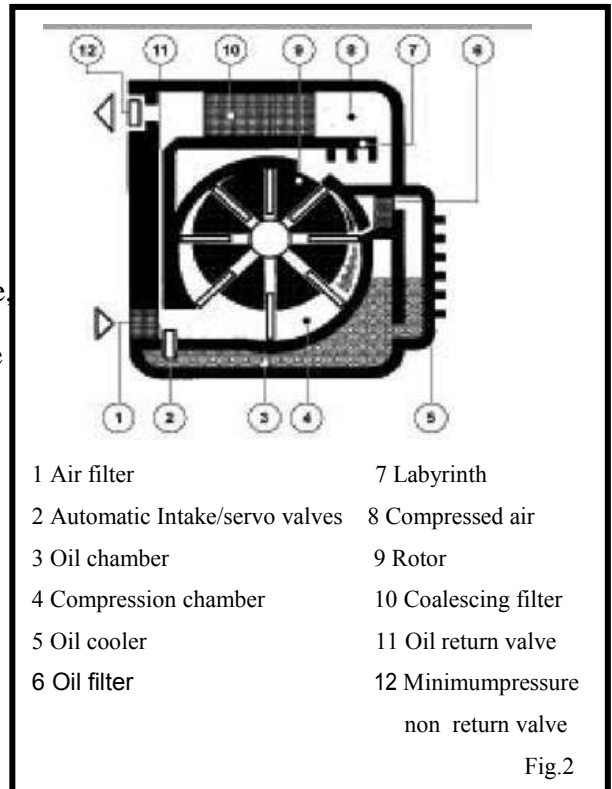


2. OPERATION PRINCIPLES

2.1 OPERATION PRINCIPLES

2.2.1 Principles of compression (Fig.2)

Air is drawn through a filtering system and enters in to the “Rotor-Stator Group”. This “Group” is composed of a cylinder (stator) in which a rotor (mounted eccentrically and tangential with the stator) rotates. The rotor has longitudinal slots in which vanes slide. Vanes are pushed against the stator by centrifugal force generated by rotation. Air is compressed through the contraction in volume of the chamber, consisting of the stator, vanes and rotor, during rotation.



2.1.2 Oil Injection

Sealing, cooling and lubrication are ensured by oil injection.

Oil is injected by pressure differential between the oil chamber and the inside of compression chambers. Therefore no oil pump is needed.

Before injection, the oil is filtered.

The oil circuit also drives the capacity regulation system: servovalve-intake valve.

Oil also protects metallic parts against corrosion and minimises dirt deposits, as it incorporates all dirty particles which are not held by the intake filter.

2.1.3 Oil-air separation

The compressed air/oil mixture is discharged from the rotor-stator unit passing through different separation steps, mechanical and by coalescence. During these different separation phases most of the oil is separated from the air up to a content of oil in the air lower than 3 p.p.m. (parts per million). The air is then cooled in the final coolant and a specific discharger expels the remaining timed condensate.

2.1.4 Minimum pressure/non-return valve

The compressed air leaves the compressor through a minimum pressure valve. This valve has a double function: to guarantee inside the air-oil separator a minimum pressure such as to ensure a correct operation of the machine during its life and to prevent the compressed air, already contained in the system, to return into the machine.

2.1.5 Oil cooling

Heat produced by air compression is transferred to the oil, which is cooled by passing through a radiator, which is struck by an air flow generated by a fan.

2.1.6 Intake valve

The intake valve, which is controlled by a special servo valve via a hydraulic circuit that uses the same oil as the one used for lubrication, is capable of adapting the amount of air taken in by the compressor to the demand.

3.APPLICATION



Warning!!!

The compressor is designed to compress AIR ONLY.

The compression of other gases IS FORBIDDEN.

3.1 AIR AND OIL TEMPERATURES

The compressor can operate with no particular measures at room temperatures from 0 to 40 provided that suitable oil is used.

For higher or lower temperatures, please contact the manufacturer.

Oil temperature depends on room temperature and is limited by a thermostatic valve. The maximum accepted temperature is 100 , in compliance with the latest safety standards for compressors (EN 1012-1).

In normal conditions a machine operating at a room temperature of 20 has an operating oil temperature of 80-85 .

The temperature of the delivered compressed air exceeds room temperature by approx. 5-10 downstream of the air radiator.

3.2 HUMIDITY

As far as humidity is concerned, the machine can operate at a relative humidity ranging from 0 to 90% (provided that room temperature is within the above-mentioned limits).

In case relative humidity exceeds 90%, please contact the manufacturer.

3.3 ROTATIONAL SPEED

The designed speed of these machines is about 1440~1460 r.p.m.

3.4 NOISE

Even at reduced levels, noise can disturb and cause injuries to the nervous system in the long run. Injuries to the hearing may be caused by exposures of more than 8 hours a day to sound pressure levels exceeding 90 dB(A). For more details, refer to the national standards in force.

To isolate the compressor noise from the working area, it is suggested to install the machine in a separate room. The sound pressure level depends on the quantity of the compressors installed, on the dimensions of the room and the type of wall-coating.

This level can be reduced by covering walls with soundproof material and by applying acoustic screens.

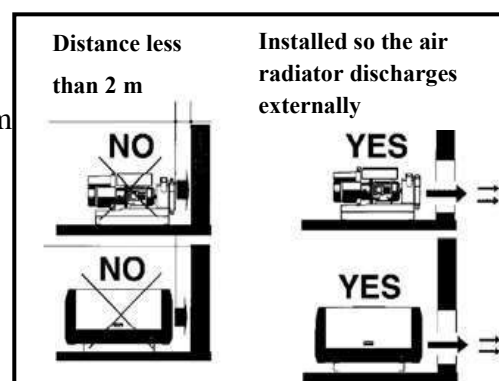
The sound pressure levels of the compressor are stated in Section 13 TECHNICAL DATA. These values have been achieved by means of the PN8NTC2.2 standard, which defines the test methods for compressors in free field conditions, that is without reverberations due to walls or obstacles.

The same noise source can produce a higher sound pressure level in small reflecting environments (the increase may even be of 10 dB(A)). The sound level can also be affected by other adjacent noise sources, by piping and valves of the compressed air system, etc. The compressor does not need continuous monitoring, but only constant inspection. After identifying the noise levels in the room where the compressor is installed, the user shall inform the operator about the potential danger of noise, mark the dangerous areas and possibly supply the operator with individual protection equipment, the Regulations in force and with the results achieved after noise inspection.

4. INSTALLATION AND CONNECTION TO THE AIR SYSTEM

4.1 COMPRESSOR INSTALLATION

The Section 13 Technical Data indicates the overall dimensions and weight of the compressor, together with the cooling data. Install the machine in a covered, well-ventilated area, away from sources of heat and free-standing on a solid, level floor; no special foundation work is required. Make sure to leave a sufficient and well-ventilated space around the compressor. The heat output of an air-cooled compressor, driven by an electric motor, amounts to about 85% of its power input. A Series machines should be installed with the radiator side at least 2 metres from obstacles and walls. It would be better to install the machine with the radiator side located in front of an opening in the wall, so as to connect it to the outside with a small ducting, which can easily be removed. In case the machine is fitted with the soundproof kit, the deflector panel on the radiator side, shall be removed. To ensure an easy access for check and maintenance operations, leave at least 1 meter distance on all other sides.



4.2 ELECTRICAL CONNECTIONS

The electrical installation shall be carried out by qualified personnel and in compliance with the standards in force.



Warning!!!

To ensure safe maintenance operations to all parts of the compressor, Control Panel included, install an automatic mains circuit breaker and a delayed circuit breaker as near to the machine as possible.

Select the circuit breaker by taking into account the startup characteristics of the electric motor. The dimension of power supply cables between the circuit breaker and the Control Panel shall be in accordance with the values listed in the table in Section 13 Technical Data. All auxiliary components of the machine are already connected to the Control Panel and are fed by a transformer. For more details, refer to the detailed Electric Diagram supplied with the machine or to the general Diagram enclosed to this Manual.



Warning!!!

When installing the compressor, make sure that it is earthed.

4.3 CONNECTION TO THE AIR DISTRIBUTION SYSTEM

4.3.1 Distribution of compressed air

The connection of the machine to the air system shall be performed by qualified personnel and in compliance with the standards in force. Air is distributed to supply compressed air to the various tools from the machine with the minimum pressure loss and minimizing the waste of energy. To avoid losses and waste, regularly check all piping of the distribution system and fittings. Filters, regulators and other fittings shall be maintained accordingly. The piping section connecting the rest of the system shall be flexible. Its diameter cannot be smaller than the outlet pipe. An isolating valve shall also be necessary to isolate the machine during maintenance operations. Fit a pipe with an air gun to the distribution system, near the compressor. It shall be needed to clean the radiator, the intake filter and other parts of the machine. The air taken by the compressor contains a certain quantity of water (stated as relative humidity), which varies according to the room conditions. After being compressed, the air is cooled in a radiator, which is mounted on all NAILI compressors. Compressed air cooling forces most of the water to condensate. The condensate is then separated and drained by means of an automatic device.

!!!Please remember that condensate is to be collected and disposed of in compliance with the regulations in force.!!!

4.3.2 Dimension of compressed air distribution piping

We would like to stress that wastes are mainly due to pipes with inadequate diameter and to losses due to faulty installations or worn materials.

The diameter of a pipe has to be selected with great care so as to reduce to a minimum the pressure drop between the compressor or the air container and the tool, taking into account operational pressure and capacity of the machine. Pressure drops are proportional to the piping length and are enhanced in those points where direction changes (elbows, curves) and in valves. With a pipe of the same diameter as the compressor outlet, the length of the pipe should not exceed 50 meters. To check your system refer to the following table 1, which indicates the flow resistance for 100 meters of straight pipes, according to the most popular diameters, capacities and operational pressures. A correct distribution network must contain the pressure fall from the compressor to the use within few tenths of bars.

Table 1

	(m ³ /min)	(bar)				
		6	7	8	9	10
1"	1	0.087	0.076	0.068	0.061	0.056
	2	0.315	0.275	0.245	0.220	0.200
	3	0.666	0.583	0.518	0.467	0.424
	4	1.134	0.993	0.883	0.795	0.722
2"	4	0.038	0.033	0.030	0.027	0.024
	8	0.138	0.120	0.107	0.096	0.088
	16	0.496	0.434	0.386	0.347	0.316
	24	1.050	0.919	0.817	0.735	0.669
3"	8	0.019	0.017	0.015	0.013	0.011
	16	0.069	0.060	0.054	0.048	0.044
	32	0.248	0.217	0.193	0.174	0.158
	64	0.894	0.783	0.696	0.626	0.570
4"	16	0.018	0.015	0.014	0.012	0.011
	32	0.064	0.056	0.050	0.045	0.041
	64	0.230	0.201	0.179	0.161	0.146
	128	0.829	0.725	0.645	0.580	0.528

4.4 HEAT RECOVERY

As described in Section 2 "Principles of Operation" the air flow produced by a fan cools the oil and the compressed air, and consequently heats up.

It is possible to recover heat for 85% of the installed power in A models and approx. 100% in silenced compressors.

The recovered hot air can be used to heat the various rooms.

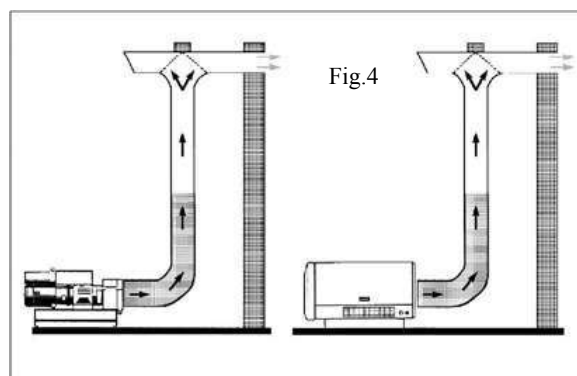
The ducting shall have the suitable dimensions and, if needed, it shall be configured so as to enable the hot air to be expelled in summer (see Fig4).

The ducting to recover/exhaust hot air shall be designed by a specialized engineer. It shall keep the flow resistance within 20 Pa. In case the ducting exceeds this value, fit an auxiliary air exhaust to prevent machine Over temperature.

For example, a ducting having a diameter equal or larger than the diameter of the machine outlet (radiator for A models and outlet grid for the models fitted with soundproof canopy), consisting of 10 meters straight and two 90 well-joint curves, ensures the maximum acceptable flow resistance. In any case remember that an increase by 10 Pa corresponds to an increase by 2-3 for operational temperature. In case of silenced models, remove the filtering panel located on the outlet grid which expels the hot air.

As far as heat recovery is concerned, we remind you that an average of 1 KW of installed power enables you to heat a volume of approx. 30 cubic meters (1KW = 860 kcal/h).

In Section Technical Data, you can find all values to put the above instructions into practice.



5.CONTROL, MONITORING AND AND PROTECTION DEVICES

5.1 SAFETY VALVE

A SAFETY VALVE protects the compressor if the air pressure in the chamber exceeds the set calibration limit. The safety valve is calibrated to 15 bar for all 8bar, 10bar and 13bar compressor versions.

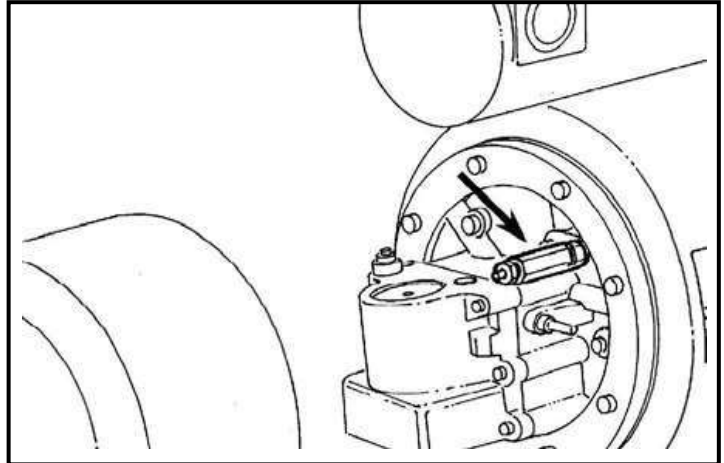


Fig5

“L” means 8bar;
“H” means 10bar;
“HH” means 13bar;

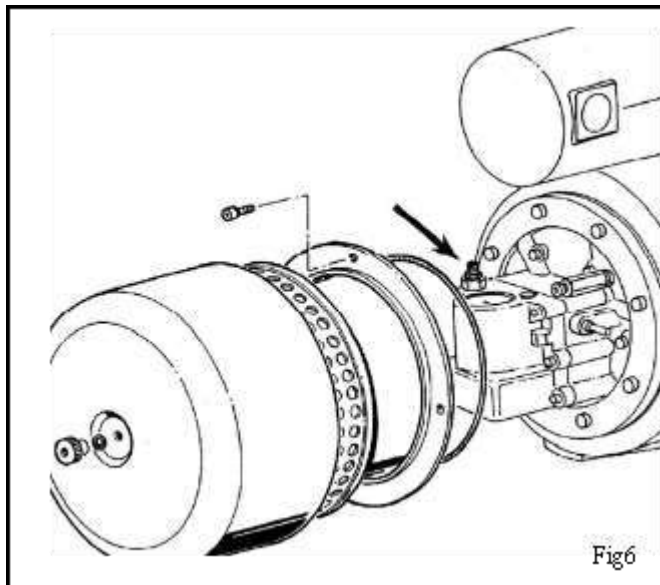


Fig6

5.2 SERVOVALVE

Besides the operating pressure control performed by control panel, the compressors in the all ranges in NAILI products beside AZE/AZF Series also include modulation and off load setting by means of the SERVOVALVE which limits maximum operating pressure during CONTINUOUS mode operation by closing the intake valve when internal pressure increases(see section 6). Maximum operating pressure is factory set and needs NO further adjustment. If a change is required, however, it must never exceed the values indicated.

6. COMPRESSOR OPERATION

FOREWORD

The users should nominate a qualified, responsible person for the operation and maintenance of the compressors.

The staff must be trained to carry out specific operations, and inform them all the precautions to avoid accidents and injuries.

On/off button and emergency braking procedures must be known by everyone and they shall be reviewed periodically by the operators.

The operation manual must always be available, if lost or damaged, please contact the manufacturer.

6.1 CHECKS BEFORE START UP

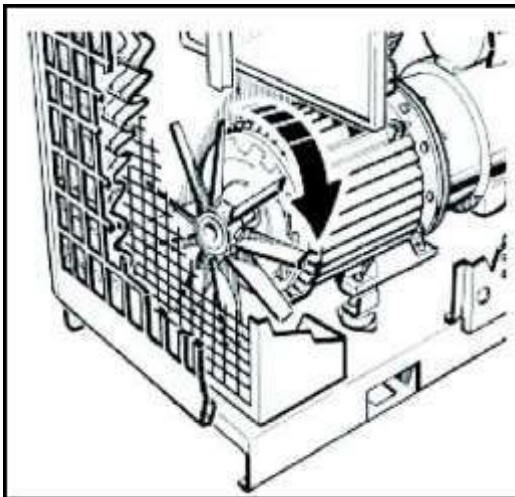


Fig7

Before starting the compressor, make sure of the following:

- The supply voltage matches with the motor voltage and current output, the electrical wires are sized properly;
- The machine is earthed and protected against short circuits;
- The mains circuit breaker is placed as near as possible to the compressor;
- The oil level is appropriate. With the compressor not operating and without pressure inside the chamber, the oil level must remain within MAX-MIN indications. If necessary, top up with the same type of oil;
- The compressor is connected to the compressed air system.

After performing the above-mentioned checks, switch the compressor on.

Always check the direction of rotation, as the compressor could be seriously damaged if direction is opposite to the one shown by the arrow.

To check rotation start the compressor for a few seconds (maximum 2). Then press the Start-Run button, and immediately press the red Emergency button. The cooling fan has to rotate counterclockwise, looking at it from the motor-compressor coupling side.

If the direction of rotation is wrong, disconnect electricity by means of the circuit breaker and reverse two of the three phases on the board. Proceed as described in Section 5 to restore the machine functions.

Then repeat checks as described before.



WARNING !!!

Rotation in the wrong direction can cause serious damages to the compressor.

6.2 OPERATING MODE

To meet the users' requirements, NAILI compressors are designed to operate in two modes: continuous and automatic.

Following is the related description:



Select the operational mode before starting the compressor.

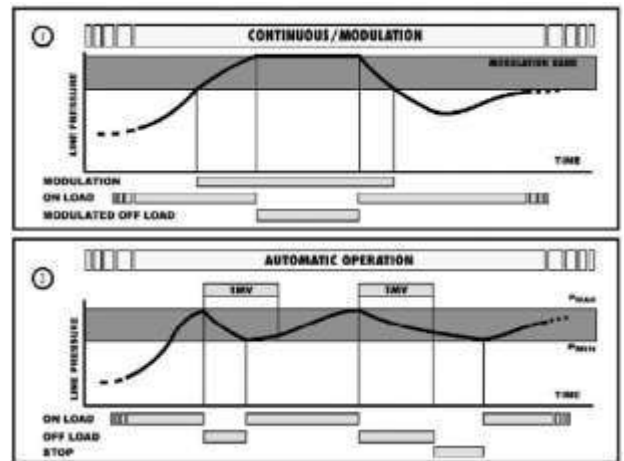
Do not switch from one operational mode to the other during the machine operation, as the compressor would immediately stop and could cause injury.

6.2.1 Continuous ("C"ont)

In this mode the compressor runs continuously and stops only if the operator presses the STOP button; the minimum and maximum pressures within which the compressor operates are fixed by the menu values of panel (see Section 12) set during the testing phase.

During operation if the line pressure reaches the maximum value (P_{max}) the air delivery is stopped immediately, the internal pressure is exhausted to less than 1.5 bar, while compressor turns at no load. The electrical input is reduced to minimum.

As soon as the air demand lowers the pressure value to the minimum valve (P_{min}) the compressor starts supplying air.



6.2.2 Automatic ("A"uto)

Fig8

By this mode a further feature is added to the previous: the compressor automatically stops in case of low or no air demand; it starts again when the line pressure falls to the minimum (P_{min}).

There can be two main operating modes, based on the line pressure during off load operation:

- The line pressure reaches the P_{min} value before the off load operating time (TMV) set in the menu ; this will cause the return to load.
- The off load running time TMV expires before that pressure falls to P_{min} . This causes compressor stopping that will be restarted at the next (possible) pressure lowering to the P_{min} value.

Install a receiver or fit an adequate compressed air distribution system when you operate in Automatic mode so as to avoid frequent stops and starts.

6.2.3 Stop

When you want to stop the compressor, you only need to press STOP. The air supply is immediately stopped, the compressor shall keep on running for a few seconds to discharge internal pressure.



Warning!!!

Restart the compressor after the internal pressure release , may refer pressure gauge on the separator .

6.3 PRESSURE SETTINGS

6.3.1 Servovalve

The maximum air delivery pressure is set by the manufacturer during the final test of the compressor. Should an adjustment be needed (however modification can never exceed the values listed), proceed as follows.



WARNING !!!

The operation should be performed by qualified personnel.



Never set the valve at higher values than NAILI settings, because if the works at higher pressure it requires more power and this could cause overheating and shutdown.

By using the function [CUSTOMER PARAMETER], raise Pmax [MAX PRESSURE] to a higher value than the wished setting value of the valve. Start the compressor and slowly close the air delivery until tripping of the servo valve, or until reaching of the internal maximum pressure P servo.

If there is a receiver, close the valve downstream of the receiver. Operate manually on the compressor as shown in figure 9: remove the filter element by unscrewing the lock knob (1) and washer (2), remove the cover (3), pull out the filter element (4), unscrew the relative screws to remove the cover (5) and pull out the O-Ring (6). The Servovalve can now be accessed. Loosen the lock nut (7) and tighten (to increase pressure) or loosen (to decrease pressure) the pressure gauge located on the separator body. Open and close the delivery gate valve slowly in order to stabilize and check calibration. Lastly, secure the screw (8) by tightening the lock nut (7), put back the O-Ring (6) taking care that it is not warped (replace if necessary), the cover (5) and then the filter element (4). Put back the cover (3), the washer (2) and tighten the lock knob (1). Now the previous value of the parameter [MAX PRESSURE] in the menu [CUSTOMER PARAMETER] can be restored.

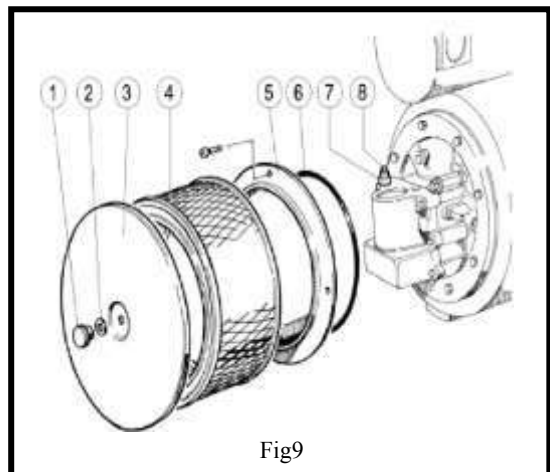


Fig9

6.3.2 Pressure setting

The user could adjust the outlet pressure by setting up electric panel parameter.

Note:

The compressor operation depends on the set values. We recommend being modified settings only in case of real need and with the utmost care.

7. MAINTENANCE

7.1 FOREWORD

The person in charge with the good operation of the compressor must periodically check that all operation and maintenance instructions are followed by the operator.



Warning !!!

Fill in the maintenance form provided with the machine.



Warning!!!

Keep the room and the compressor clean.

Dirt and dust can clog the various filters: intake filter, air/oil separator filter, oil filter, oil return valves filter.

The filtering elements of the separating assembly should be checked carefully to control the pressure drop between the Gauge and PLC.



Warning!!!

Do not use flammable liquids or products, which do not conform to the current standards, for cleaning.



Warning!!!

In case you are not sure that the compressor or related components operate properly contact with NAILI customer Service. Do not use open flames for inspections and checks.

7.2 PERIODICAL TESTS



WARNING!!!

After the first 50 hours of operation; and every 6 months :
. Tighten nuts and screws fixing the electrical wires in the Control Electrical Panel and the motor terminal board.
Within the first 500 hours of operation:
. Clean the oil return valve and the oil filter
. Change the oil

Weekly (or every 50 hour)

- . Check the oil level
- . Check and clean the condensate drain valve
- . Clean the oil radiator and the compressed air final cooler.

Monthly (or every 200 hours)

- . Clean the intake filter.
- . Clean the pre-filters of the intake filter panels.

Quarterly (or every 500 hours)

- Clean the oil return valve

Every Six Months (or every 2000 hours)

- . Replace the intake filter
- . Change the oil
- . Tighten nuts and screws fixing the electrical wires in the Electrical Control Panel and the motor terminal board

Every 12 Months (4000 hours)

- . Replace the oil return valve
- . Change the oil filter
- . Change the coalescing filter

Replace the oil filter at every oil change.

NAILI lubricate oil must be used for vane compressors



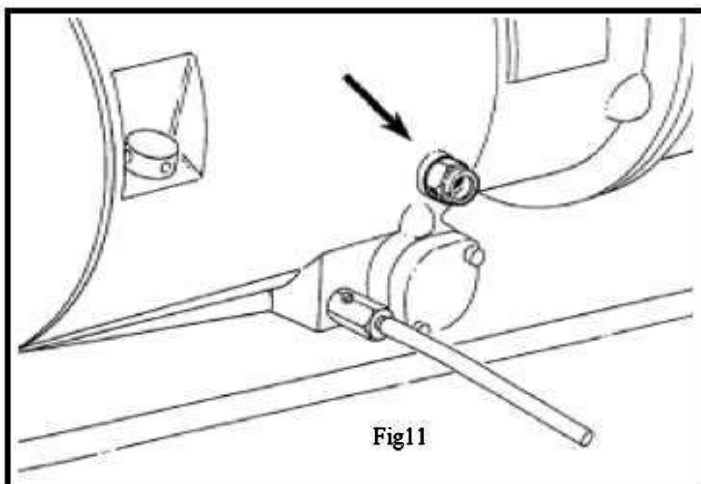
Warning !!!

Maintenance operations have to be carried out at reduced intervals in case of dusty and/or hot working environments.

7.2.1 To check the oil level

The compressor must be stopped and without pressure inside. The oil level must exceed the oil level indicator.

While the compressor is operating, the oil level should be about half-way of the indicator.



7.2.2 To check the drain valve

Interval checking the running state of drain valve and cleaning it while blocking.

7.2.3 Cleaning and/or replacing the air intake filter (See Fig.12)

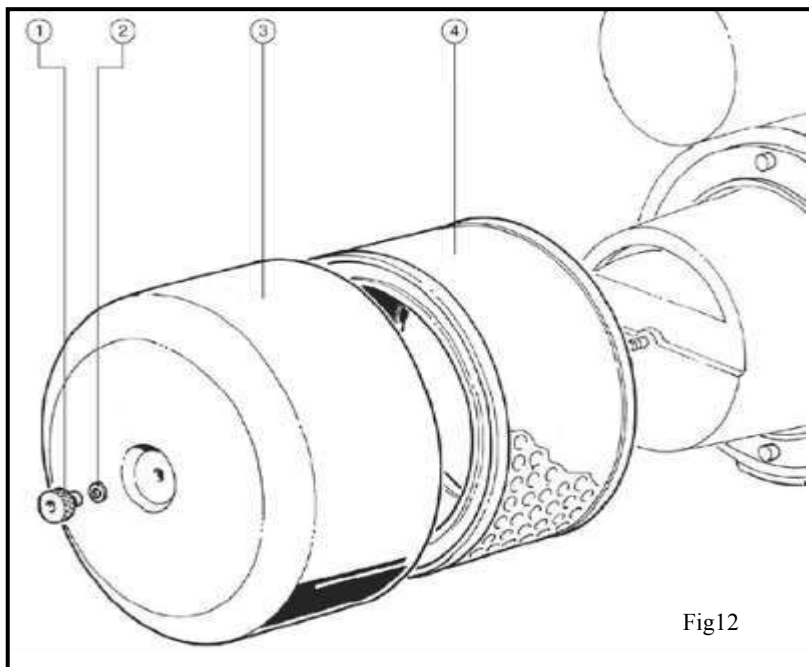


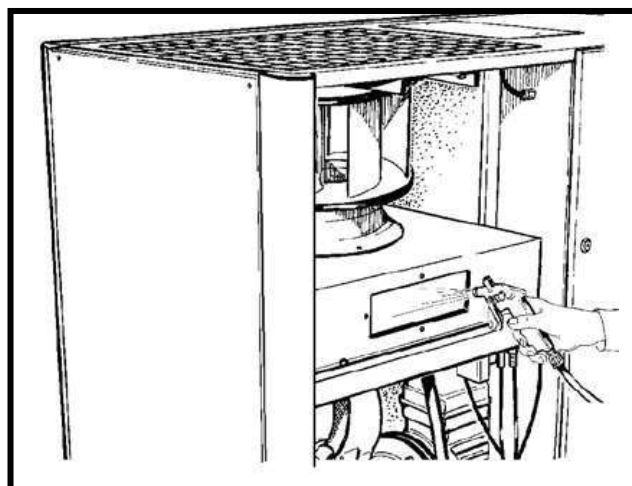
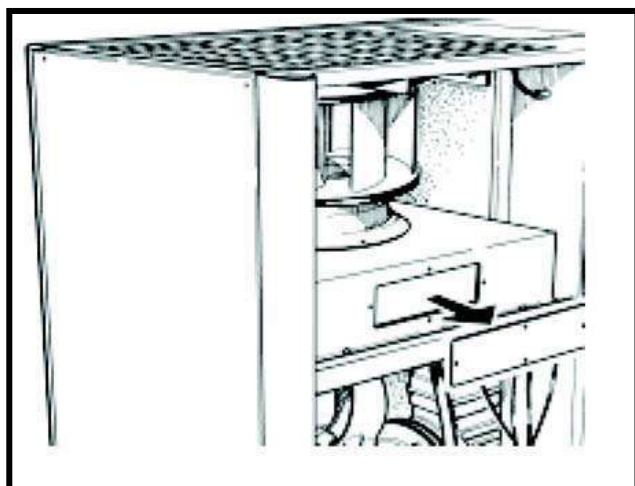
Fig12

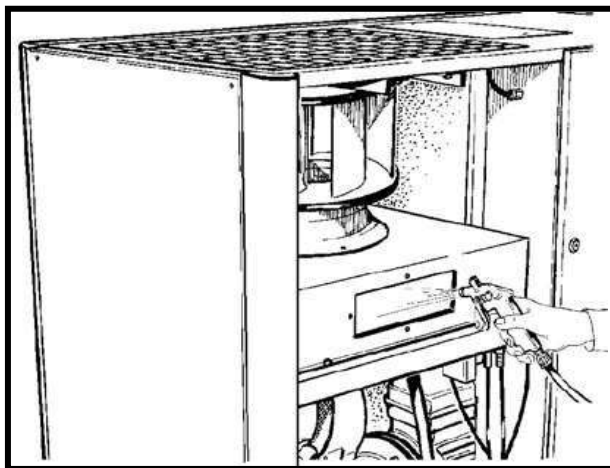
Unscrew the lock knob (1) and remove the gasket (2); remove the cover (3) and pull out the filter element (4); clean the element with compressed air by aiming the jet inside the element. Reassemble in reverse order. Check the gasket (2) and replace if ruined.

7.2.4 Cleaning the oil/air radiator

Clean the radiator fins by using compressed air addressed in the opposite direction to the normal cooling air direction.

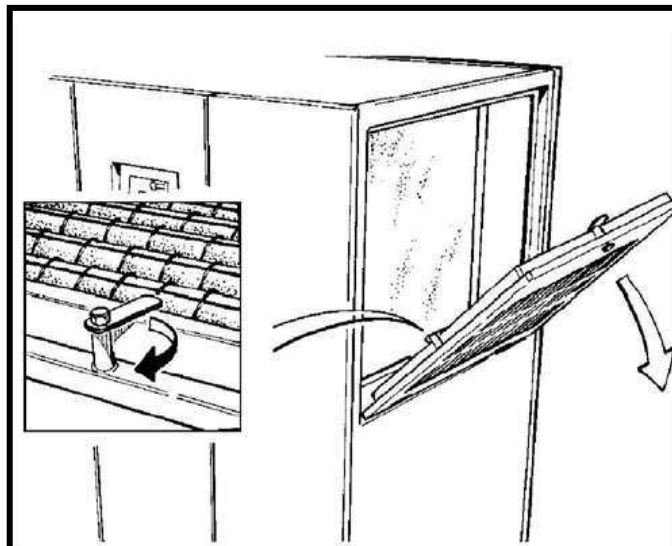
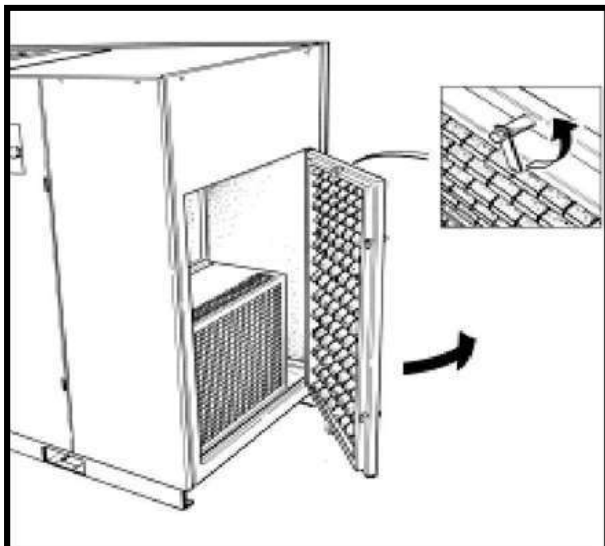
Centrifugal Fan type



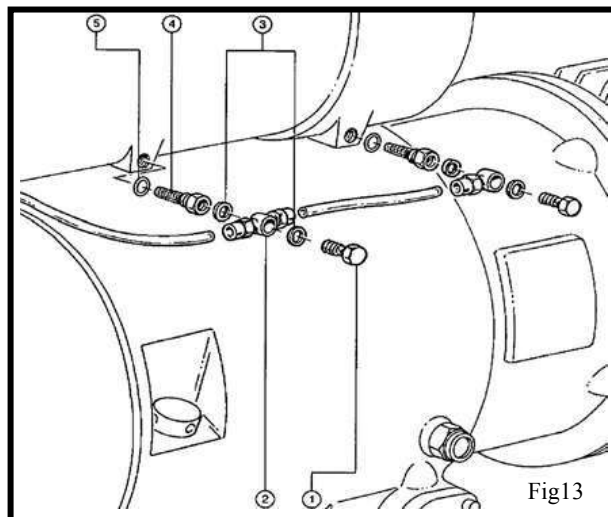


Axial Fan type

On one side of Air compressor box there is the pre-filter. It is composed of metal framework and filtering net, which can block the dust particles. When you clean it, you should open the lid, take the filter net off and then blow out with compressed air. Please be attention, the synthetic material of the filter can be cleaned, but do not clean with solvent.

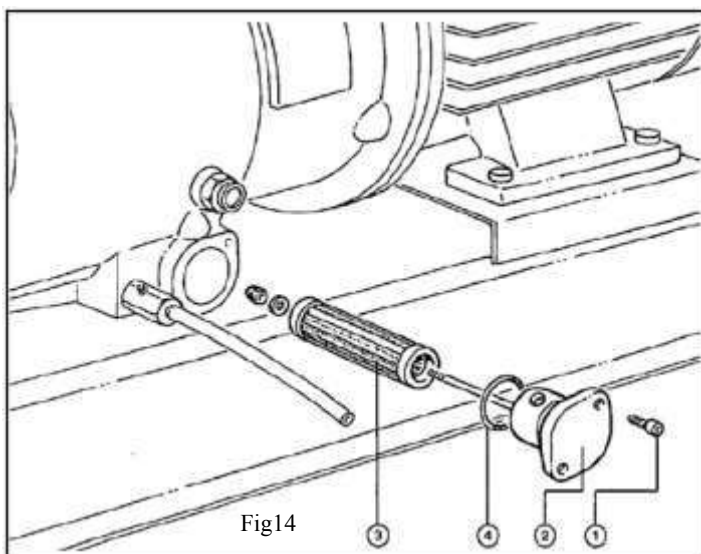


7.2.5 Cleaning and/or replacing the oil return valve (See Fig. 13)



Unscrew the screws (1) locking the unions (2) of the oil return flexible pipes; take care not to lose the seal washers (3); unscrew and take out the oil return valves (4); wash the valves with detergent and blow with compressed air; replace the sintered filter if it is fouled. Always remember to replace the O rings (5) and act in reverse order to reassemble.

7.2.6 Replacing of the oil filter



Replace the oil filter at every period oil is changed.

Drain the oil, remove screws (1) of the filter cover and take out the cover (2) after rotating it by 90 degrees.

Extract filter (3) from the cover.

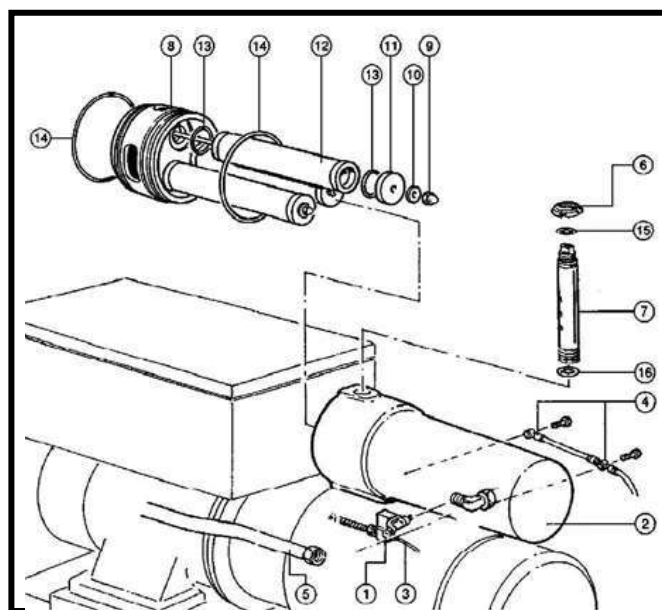
Clean also the housing before reassembling the new filter.

Reassemble in reverse order, checking conditions of the O ring (4) positioned on the cover and replace if damaged.

7.2.7 Replacing of the air/oil separator element

Follow the fig 15, remove the off load solenoid valve connector (1), fitted behind the separator assembly (2), and detach the related pipe(3). Then detach the pressure switch(4)(5) and temperature switch(6). Follow the description in paragraph 7.2.5, and detach the oil return valve pipes (3). Detach the small pipe on the revolving union (4) connected to the cover separator. Dismantle the air delivery pipe (5). Loosen the ring nut (6) of the holed screw (7) which fixes the separator to the oil chamber. Take note of the position of the reference mark of the screw (7), because it shall be re-assembled in the same position. Remove the cover (8) to which the separating element is fixed, by fitting adequate tools into the circular slot of the cover. Unscrew the lock nuts (9), remove the seal washers (10), the covers (11) and the filtering element (12) with related gaskets (13). Replace the element (12). Replace the piece of drip-pipe. Replace the gaskets (10-13-14-15-16). Re-assemble the various components, taking particular care in positioning the gaskets (13) in the corresponding seats. To keep them in position during re-assembling, it could be useful to grease them slightly.

Important: the cover of the separator has to be replaced as shown by the arrow in figure15. The holed screw (7) has to be positioned with the reference mark oriented in the correct direction.



7.3 OIL CHANGE

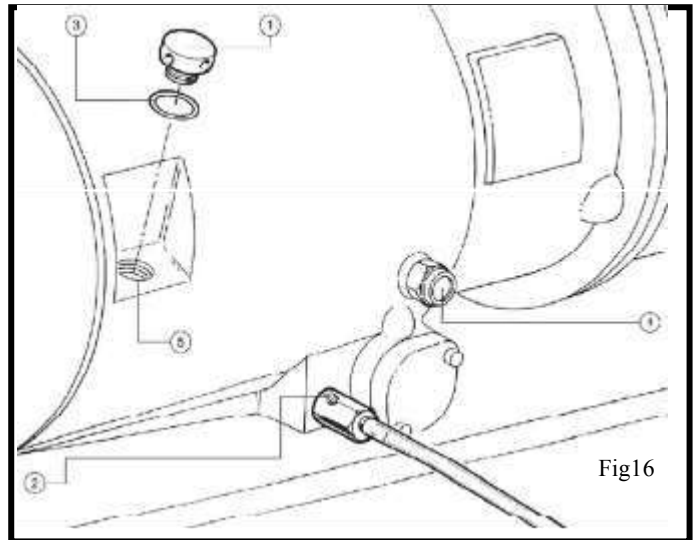
7.3.1 Foreword

As already mentioned, the oil performs fundamental tasks for the operation of the compressor. Therefore it is vital to check its Quantity and conditions at the indicated periods. When filling with new oil we suggest to replace the oil filter and separator Filtering elements.

7.3.2 Oil change

The compressor is supplied filled with Rotoroil oil for the running-in period. We remind you that exhausted oil is dangerous for the operation of the compressor. For this reason it is necessary to change oil according to the oil change schedule. The oil change is performed with the compressor at a stands till and hot oil. Wait until the compressor has fully depressurized to drain the oil, and make sure that there is no more pressure inside by means of the pressure gauge located on the separator or tank.

Slowly unscrew the oil filler plug (1) (figure 17), making sure that no foam escapes from the hole. In that case, wait a few minutes till the oil demulsifies. Open the drain (2) and drain the oil into a suitable vessel. Close the drain. Fill the oil chamber with new oil up to the rim of the filler hole. Replace the gasket (3) and tighten the plug. Start the compressor and operate it for a few minutes. Then stop it, check the oil level by means of the indicator (4) and top up if necessary.



7.3.3 Oil disposal

Waste oil can cause contamination and fires.



Warning!!!

Oil must be collected and disposed of with the utmost care and in compliance with the prevailing laws and regulations in force in your country.

8.TROUBLESHOOTING

8.1 GENERAL

As already said in Section 5, the Control and Monitoring Panel is tasked to control the good operation of the compressor. It is possible that, due to incorrect use of the machine, improper maintenance or unexpected working conditions etc., faults are detected. Following is a table which could be useful to the operator, indicating the possible causes and remedies.

8.2 PROBLEM - CAUSE CORRECTIVE ACTIONS

Below is a table showing the possible problems, causes and action to be taken.

PROBLEM	CAUSE	CORRECTIVE ACTIONS
A. Startup		
Control system operates, enables starting but star/delta switching does not occur correctly.	The electrical supply is not sufficient and the too high voltage drop due to the start-up causes contactors to release.	Check correct size of the electrical input.
Control system operates, allows the start-up by lighting of the green LED but compressor does not start.	Pressure inside the compressor is higher than the maximum allowed value during start-up: either a wrong return from the air system or the pressure transducer reads a wrong value.	Check the internal pressure on the gauge placed on separator assembly and compare it with the panel value. Check operation of the pressure control system: transducer, connector and change over solenoid valves. Check if the hour programming has been activated.
B. Pressure		
The line pressure does not reach the desired value	The servo valve is not set correctly.	Check setting. See section 6 of the manual.
	The minimum pressure valve does not operate correctly.	Check operation.
	Air demand exceeding the maximum compressor capacity	Contact NAILI Sales Organization to study an increase in your compressed
	Condensate drain solenoid valve blocked in the open position.	Eliminate the blocking cause, clean the filter and check its operation.
The internal pressure exceeds the set value	The servo valve is not set correctly and/or the maximum pressure value in the panel is not correct.	Check the servo valve and correct Setting of the operating parameters. See sections 5 and 6 of the manual
	The servo valve filter is blocked because of impurities or greasy deposits in the oil.	Replace the filter and check the cause of the blocking.

PROBLEM	CAUSE	CORRECTIVE ACTIONS
C. Oil		
Excessive oil consumption, the level lowers too quickly; presence of oil in the system. Possible message (LOW OIL LEVEL)	The valve filter is blocked.	Replace the filter and check the causes of blocking. See section 7 of the manual.
	The separator filtering element is damaged.	Check their state and replace. See section 7 of the manual.
D. Temperature		
The compressor stops due Compressor over temperature. Possible message: (COMPRESSOR OVERTEMPERATURE)	The radiator or the cooling air filter is dirty; the room temperature is too high for compressor operation.	Check the cause and eliminate the problem. See section 7 of the manual.
The compressor stops due to motor over temperature Possible message: (MOTOR OVERTEMPERATURE)	The working pressure is too high.	Check setting and bring it to the correct value.
	Lack of cooling of the main motor; the inlet air is too hot or not sufficient.	Check the environment conditions and the filtering panel.

The common problems and Solutions

Failure	Causes	Solutions
High temperature of the Air exhaust	Poor heat dissipation , less oil , temperature control valve core damaged 、 oil filter blocked	Checking the ventilation 、 lubricating oil, Changing Temp Valve Core
Temperature sensor failure	Break line 、 PT100 damaged	Check the wires and PT100
Pressure is too high	The actual pressure high 、 the sensor is not accurate 、 pipeline valve is not opened	Checking the machine pressure and pressure sensors
Pressure sensor failure	Sensor circuit broke up 、 the sensor damaged 、 The sensor wires connected reversely	Checking the wiring and pressure transmitter
Default phase	The default phase in power source/the contactor damaged	Checking power source 、 contactor
Not unload (pressure is too high)	Intake valve cannot be dosed	Checking unload (Discharge) valve 、 solenoid valve components 、 cleaning intake valve
unbalance	The power source unbalance 、 the contactor (Touch points) damaged 、 internal motor rings deformed.	Checking power source 、 contactor 、 the motor
No air delivery	Checking the intake valve open or not	Replace unload (Discharge) valve components 、 solenoid valve 、 cleaning intake valve
Abnormal sound	Coupling gasket damaged 、 fan blade cut rub	Checking whether related parts were deformed
Phase sequence fault	Phase sequence reversed 、 Breaking phase 、 low voltage	Checking the wires connection

Please consult us if any compressor purchased and installed in **Tropical territories**, there have more notices to be offered!

9.ELECTRIC MOTOR

9.1 LUBRICATION

The motor plate also indicates the type of assembled bearings. We recommend using lithium-based grease.

Greasing must be carried out with the motor running.

In any case the lubrication periods must never exceed the calendar year.

9.2 COOLING

The fan cover must be checked regularly to make sure there is no accumulated dirt which reduces the passage of cooling air to the motor.

The air of the motor fan comes out from the opposite end (drive side).

9.3 UNUSUAL NOISES

Vibrations or unusual noises are usually due to wear of the bearings.

In this case we suggest to replace the bearings to prevent serious damage to the motor or the compressor.

9.4 ELECTRICAL CHECKS

If the compressor has been stored for long periods or in particularly humid environments, check the winding insulation by applying direct current at 500 V d.c. for 60 seconds. Insulation must be at least 10 M Ω in hot conditions or 100 M Ω in cold conditions.



Warning!!!

Before starting the compressor, make sure that the nuts ,locking the wire terminals are well tightened.

10.STORAGE

10.1 STORAGE

The compressor is protected against corrosion and deterioration during transport and for a short storage period (3 months).

For longer periods, please contact the manufacturer.

In case of a wet climate, electrical and mechanic components must be kept in a heated ambient or enclosed within a tarpaulin cover with heaters or electric lamps.

11.SYMBOLS

11.1GENERAL

Many accidents are often caused by the non observance of elementary safety regulations or by the lack of knowledge about the manufacturer's instructions. In order to prevent possible danger situations, a few of these events have been represented on appropriate danger signs. Following are the most common signs found on our machines.

11.2 DANGER SIGNS

These are triangular signs framed in black on a yellow background. The symbol is black



Warning !
The machine is controlled by Remote Control or by an automatic system and can restart without notice.



Warning !
Vessel under pressure.



Warning !
Risk of high temperature surface (>70 °C)



Warning !
Air discharge.



Warning !
Risk of electrical shocks.

11.3 PROHIBITION SIGNS

These are circular signs, framed in red, on a white background. The symbol is black.



Do not work on the machine.



Do not have pressure in vessels.



Do not connect power supply.

11.4 MANDATORY SIGNS

These are circular signs, framed in red, on a blue background. The symbol is white



Read the instruction manual before performing any work.



Use individual protection means against noise.

11.5 ADVISE SIGNS

These signs may have different shape. They give useful information



Direction of rotation.



Lifting point.



It is possible to carry out works.

11.6 COMBINATION OF SIGNS

The combination of signs means the following:

Warning!

Read the instruction manual before performing any work.



The combination of signs means the following:

Warning!

Do not perform any maintenance operation on the compressor before having disconnected power supply and discharged all air pressure.



12.SPECIFICATION

A SERIES: OPEN TYPE FOR OUTSIDE DESIGN

Model		Unit	A4	A5.5	A7.5	A11
Intake pressure		bar	1.0	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90	0-90
Performance Parameter						
Free Air Delivery	8bar	m ³ /min	0.68	0.90	1.39	1.96
	10bar	m ³ /min	0.53	0.77	1.15	1.71
	13bar	m ³ /min	0.48	0.56	0.95	1.33
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10	5-10
Oil carry over		PPM	≤3	≤3	≤3	≤3
Noise Level		dB(A)	71	71	75	75
Drive method			Direct	Direct	Direct	Direct
Rotational speed		(r.p.m)	1435	1440	1440	1460
Oil System capacity		L	2.5	2.5	3.5	3.5
Air outlet size		RP	½	½	¾	¾
Dimensions	Length	mm	1051	1051	1202	1202
	Width	mm	416	435	513	538
	Height	mm	706	721	827	850
Weight		kg	115	125	210	250
Electrical characteristics						
Electric starting			Star-delta	Star-delta	Star-delta	Star-delta
Electric motor power		KW	4	5.5	7.5	11
Insulation class			F	F	F	F
Enclosure class			IP55	IP55	IP55	IP55
Service factor			1.15	1.15	1.15	1.15
Power supply		V/ph/Hz	380~415/3/50	380~415/3/5	380~415/3/50	380~415/3/50
Supply wire min section		mm ²	4	4	6	10

A SERIES: OPEN TYPE FOR OUTSIDE DESIGN

Model		Unit	A15	A18.5	A22
Reference conditions					
Intake pressure		bar	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90
Performance Parameter					
Free Air Delivery	8bar	m³/min	2.71	3.29	3.76
	10bar	m³/min	2.21	2.65	3.21
	13bar	m³/min	1.85	2.25	2.56
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10
Oil carry over		PPM	≤3	≤3	≤3
Noise Level		dB(A)	79	79	79
Drive method			Direct	Direct	Direct
Rotational speed		(r.p.m)	1460	1470	1470
Oil System capacity		L	10	10	10
Air outlet size		RP	1	1	1
Dimensions	Length	mm	1472	1515	1583
	Width	mm	620	620	620
	Height	mm	956	959	959
Weight		kg	370	390	405
Electrical characteristics					
Electric starting			Star-delta	Star-delta	Star-delta
Electric motor power		KW	15	18.5	22
Insulation class			F	F	F
Enclosure class			IP55	IP55	IP55
Service factor			1.15	1.15	1.15
Power supply		V/PH/Hz	380~415/3/50	380~415/3/50	380~415/3/50
Supply wire min section		mm²	16	16	25

A SERIES: OPEN TYPE FOR OUTSIDE DESIGN

Model		Unit	A30	A37	A45	A55
Reference conditions						
Intake pressure		bar	1.0	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90	0-90
Performance Parameter						
Free Air Delivery	8bar	m³/min	5.60	6.80	8.25	10.50
	10bar	m³/min	4.65	5.66	7.00	8.90
	13bar	m³/min	3.66	4.70	5.83	7.00
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10	5-10
Oil carry over		PPM	≤3	≤3	≤3	≤3
Noise Level		dB(A)	79	79	81	81
Drive method			Direct	Direct	Direct	Direct
Rotational speed		(r.p.m)	1470	1475	1475	1480
Oil System capacity		L	19	19	19	19
Air outlet size		RP	1½	1½	1½	2
Dimensions	Length	mm	1808	1900	1907	2032
	Width	mm	830	830	830	907
	Height	mm	1176	1176	1176	1176
Weight		kg	640	740	810	840
Electrical characteristics						
Electric starting			Star-delta	Star-delta	Star-delta	Star-delta
Electric motor power		KW	30	37	45	55
Insulation class			F	F	F	F
Enclosure class			IP55	IP55	IP55	IP55
Service factor			1.15	1.15	1.15	1.15
Power supply		V/ph/Hz	380~415/3/50	380~415/3/50	380~415/3/50	380~415/3/50
Supply wire min section		mm²	35	50	50	50

AB SERIES: SILENCE TYPE

Model		Unit	AB4	AB5.5	AB7.5	AB11
Reference conditions						
Intake pressure		bar	1.0	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90	0-90
Performance Parameter						
Free Air Delivery	8bar	m ³ /min	0.68	0.90	1.39	1.96
	10bar	m ³ /min	0.53	0.77	1.15	1.71
	13bar	m ³ /min	0.48	0.56	0.95	1.33
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10	5-10
Oil carry over		PPM	≤3	≤3	≤3	≤3
Noise Level		dB(A)	67	67	69	69
Drive method			Direct	Direct	Direct	Direct
Rotational speed		(r.p.m)	1435	1440	1440	1460
Oil System capacity		L	2.5	2.5	2.5	2.5
Air outlet size		RP	½	½	¾	¾
Dimensions	Length	mm	1005	1005	1251	1251
	Width	mm	515	515	610	610
	Height	mm	800	800	1042	1042
Weight		kg	170	200	295	330
Electrical characteristics						
Electric starting			Star-delta	Star-delta	Star-delta	Star-delta
Electric motor power		KW	4	5.5	7.5	11
Insulation class			F	F	F	F
Enclosure class			IP55	IP55	IP55	IP55
Service factor			1.15	1.15	1.15	1.15
Power supply		V/ph/Hz	380~415/3/50	380~415/3/50	380~415/3/50	380~415/3/50
Supply wire min section		mm ²	4	4	6	40

AB SERIES: SILENCE TYPE

Model		Unit	AB15	AB18.5	AB22
Reference conditions					
Intake pressure		bar	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90
Performance Parameter					
Free Air Delivery	8bar	m ³ /min	2.71	3.29	3.76
	10bar	m ³ /min	2.21	2.65	3.21
	13bar	m ³ /min	1.85	2.25	2.56
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10
Oil carry over		PPM	≤3	≤3	≤3
Noise Level		dB(A)	72	72	72
Drive method			Direct	Direct	Direct
Rotational speed		(r.p.m)	1460	1470	1470
Oil System capacity		L	10	10	10
Air outlet size		RP	1	1	1
Dimensions	Length	mm	1510	1510	1510
	Width	mm	800	800	800
	Height	mm	1200	1200	1200
Weight		kg	500	540	600
Electrical characteristics					
Electric starting			Star-delta	Star-delta	Star-delta
Electric motor power		KW	15	18.5	22
Insulation class			F	F	F
Enclosure class			IP55	IP55	IP55
Service factor			1.15	1.15	1.15
Power supply		V/PH/Hz	380~415/3/50	380~415/3/50	380~415/3/50
Supply wire min section		mm ²	16	16	25

AB SERIES: SILENCE TYPE

Model		Unit	AB30	AB37	AB45	AB55
Reference conditions						
Intake pressure		bar	1.0	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90	0-90
Performance Parameter						
Free Air Delivery	8bar	m ³ /min	5.60	6.80	8.25	10.50
	10bar	m ³ /min	4.65	5.66	7.00	8.90
	13bar	m ³ /min	3.66	4.70	5.83	7.00
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10	5-10
Oil carry over		PPM	≤3	≤3	≤3	≤3
Noise Level		dB(A)	68	68	68	68
Drive method			Direct	Direct	Direct	Direct
Rotational speed		(r.p.m)	1470	1475	1475	1480
Oil System capacity		L	19	19	19	19
Air outlet size		RP	2	2	2	2
Dimensions	Length	mm	1830	1830	1830	1830
	Width	mm	960	960	960	960
	Height	mm	1670	1670	1670	1670
Weight		kg	810	900	975	1020
Electrical characteristics						
Electric starting			Star-delta	Star-delta	Star-delta	Star-delta
Electric motor power		KW	30	37	45	55
Insulation class			F	F	F	F
Enclosure class			IP55	IP55	IP55	IP55
Service factor			1.2	1.2	1.2	1.2
Power supply		V/ph/Hz	380~415/3/50	380~415/3/5	380~415/3/5	380~415/3/5
Supply wire min section		mm ²	35	50	50	50

ASM SERIES: A series+ Air receiver;

Model		Unit	ASM4	ASM5.5	ASM7.5	ASM11
Reference conditions						
Intake pressure		bar	1.0	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90	0-90
Performance Parameter						
Free Air Delivery	8bar	m³/min	0.68	0.90	1.39	1.96
	10bar	m³/min	0.53	0.77	1.15	1.71
	13bar	m³/min	0.48	0.56	0.95	1.33
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10	5-10
Oil carry over		PPM	≤1.5	≤1.5	≤1.5	≤1.5
Noise Level		dB(A)	71	71	75	75
Drive method			Direct	Direct	Direct	Direct
Rotational speed		(r.p.m)	1435	1440	1440	1460
Oil System capacity		L	2.5	2.5	3.5	3.5
Air outlet size		RP	½	½	½	½
Dimensions	Length	mm	1155	1155	1500	1500
	Width	mm	495	495	550	550
	Height	mm	1050	1050	1150	1150
Weight		kg	220	230	270	315
Electrical characteristics						
Electric starting			Star-delta	Star-delta	Star-delta	Star-delta
Electric motor power		KW	4	5.5	7.5	11
Insulation class			F	F	F	F
Enclosure class			IP55	IP55	IP55	IP55
Service factor			1.15	1.15	1.15	1.15
Power supply		V/ph/Hz	380~415/3/5	380~415/3/5	380~415/3/5	380~415/3/50
Supply wire min section		mm²	4	4	6	10

ASM SERIES: A series+ Air receiver;

Model		Unit	ASM15	ASM18.5	ASM22
Reference conditions					
Intake pressure		bar	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90
Performance Parameter					
Free Air Delivery	8bar	m³/min	2.71	3.29	3.76
	10bar	m³/min	2.21	2.65	3.21
	13bar	m³/min	1.85	2.25	2.56
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10
Oil carry over		PPM	≤1.5	≤1.5	≤1.5
Noise Level		dB(A)	79	79	79
Drive method			Direct	Direct	Direct
Rotational speed		(r.p.m)	1460	1470	1470
Oil System capacity		L	10	10	10
Air outlet size		RP	1	1	1
Dimensions	Length	mm	1450	1500	1520
	Width	mm	600	600	600
	Height	mm	1400	1420	1450
Weight		kg	300	420	440
Electrical characteristics					
Electric starting			Star-delta	Star-delta	Star-delta
Electric motor power		KW	15	18.5	22
Insulation class			F	F	F
Enclosure class			IP55	IP55	IP55
Service factor			1.15	1.15	1.15
Power supply		V/PH/Hz	380~415/3/50	380~415/3/50	380~415/3/50
Supply wire min section		mm²	16	16	25

MD SERIES: Double Airend in cabinet

Model		Unit	MD75	MD90	MD110
Reference conditions					
Intake pressure		bar	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90
Performance Parameter					
Free Air Delivery	8bar	m³/min	13.60	16.56	20.00
	10bar	m³/min	11.32	14.00	17.80
	13bar	m³/min	9.60	11.76	14.40
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10
Oil carry over		PPM	≤1.5	≤1.5	≤1.5
Drive method			Direct	Direct	Direct
Rotational speed		(r.p.m)	1475	1475	1480
Oil System capacity		L	19*2	19*2	19*2
Air outlet size			DN65	DN65	DN65
Dimensions	Length	mm	1800	1800	1800
	Width	mm	1560	1560	1560
	Height	mm	1700	1700	1700
Weight		kg	1500	1700	1900
Electrical characteristics					
Electric starting			Star-delta	Star-delta	Star-delta
Electric motor power		KW	37*2	45*2	55*2
Insulation class			F	F	F
Enclosure class			IP55	IP55	IP55
Service factor			1.2	1.2	1.2
Power supply		V/PH/Hz	380/3/50	380/3/50	380/3/50
Supply wire min section		mm²	120	120	120

VENUS SERIES: AB Series + High performance Inverter

Model		Unit	Venus7	Venus11	Venus15	Venus18
Reference conditions						
Intake pressure		bar	1.0	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90	0-90
Performance Parameter						
Free Air Delivery	8bar	m³/min	0.828-1.38	1.24-1.96	1.72-2.71	2.08-3.29
	10bar	m³/min	0.678-1.15	1.08-1.71	1.40-2.21	1.68-2.65
	13bar	m³/min	0.60-0.95	0.84-1.33	1.17-1.85	1.42-2.25
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10	5-10
Oil carry over		PPM	≤1.5	≤1.5	≤1.5	≤1.5
Noise Level		dB(A)	69	69	72	72
Drive method			Direct	Direct	Direct	Direct
Rotational speed		(r.p.m)	1440	1460	1460	1470
Oil System capacity		L	3.5	3.5	10	10
Air outlet size		RP	¾	¾	1	1
Dimensions	Length	mm	1251	1251	1510	1510
	Width	mm	610	610	800	800
	Height	mm	1042	1042	1200	1200
Weight		kg	295	330	500	540
Electrical characteristics						
Electric starting			Star-delta	Star-delta	Star-delta	Star-delta
Electric motor power		KW	7.5	11	15	18.5
Insulation class			F	F	F	F
Enclosure class			IP55	IP55	IP55	IP55
Service factor			1.15	1.15	1.15	1.15
Power supply		V/ph/Hz	380~415/3/5	380~415/3/50	380~415/3/50	380~415/3/50
Supply wire min section		mm²	6	10	16	16

VENUS SERIES: AB Series + High performance Inverter

Model		Unit	Venus22	Venus30	Venus37	Venus45
Reference conditions						
Intake pressure		bar	1.0	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90	0-90
Performance Parameter						
Free Air Delivery	8bar	m ³ /min	2.38-3.76	3.54-5.60	4.30-6.80	5.22-8.25
	10bar	m ³ /min	2.03-3.21	2.94-4.65	3.58-5.66	4.43-7.00
	13bar	m ³ /min	1.62-2.56	2.32-3.66	2.97-4.70	3.69-5.83
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10	5-10
Oil carry over		PPM	≤1.5	≤1.5	≤1.5	≤1.5
Noise Level		dB(A)	72	68	68	68
Drive method			Direct	Direct	Direct	Direct
Rotational speed		(r.p.m)	1470	1470	1475	1475
Oil System capacity		L	10	19	19	19
Air outlet size		RP	1	2	2	2
Dimensions	Length	mm	1510	1830	1830	1830
	Width	mm	800	960	960	960
	Height	mm	1200	1670	1670	1670
Weight		kg	600	810	900	975
Electrical characteristics						
Electric starting			Star-delta	Star-delta	Star-delta	Star-delta
Electric motor power		KW	22	30	37	45
Insulation class			F	F	F	F
Enclosure class			IP55	IP55	IP55	IP55
Service factor			1.15	1.15	1.15	1.15
Power supply		V/ph/Hz	380~415/3/50	380~415/3/50	380~415/3/50	380~415/3/50
Supply wire min section		mm ²	25	35	50	50

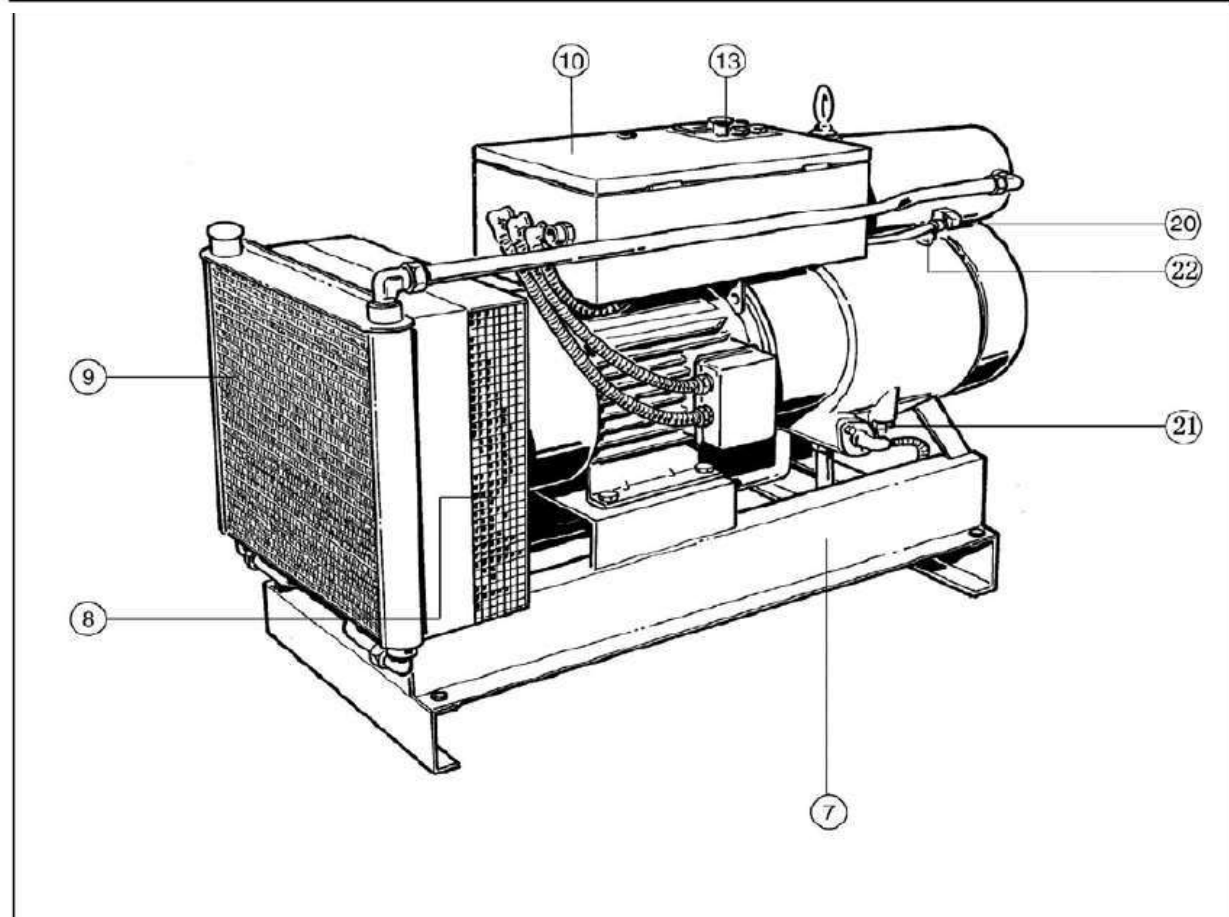
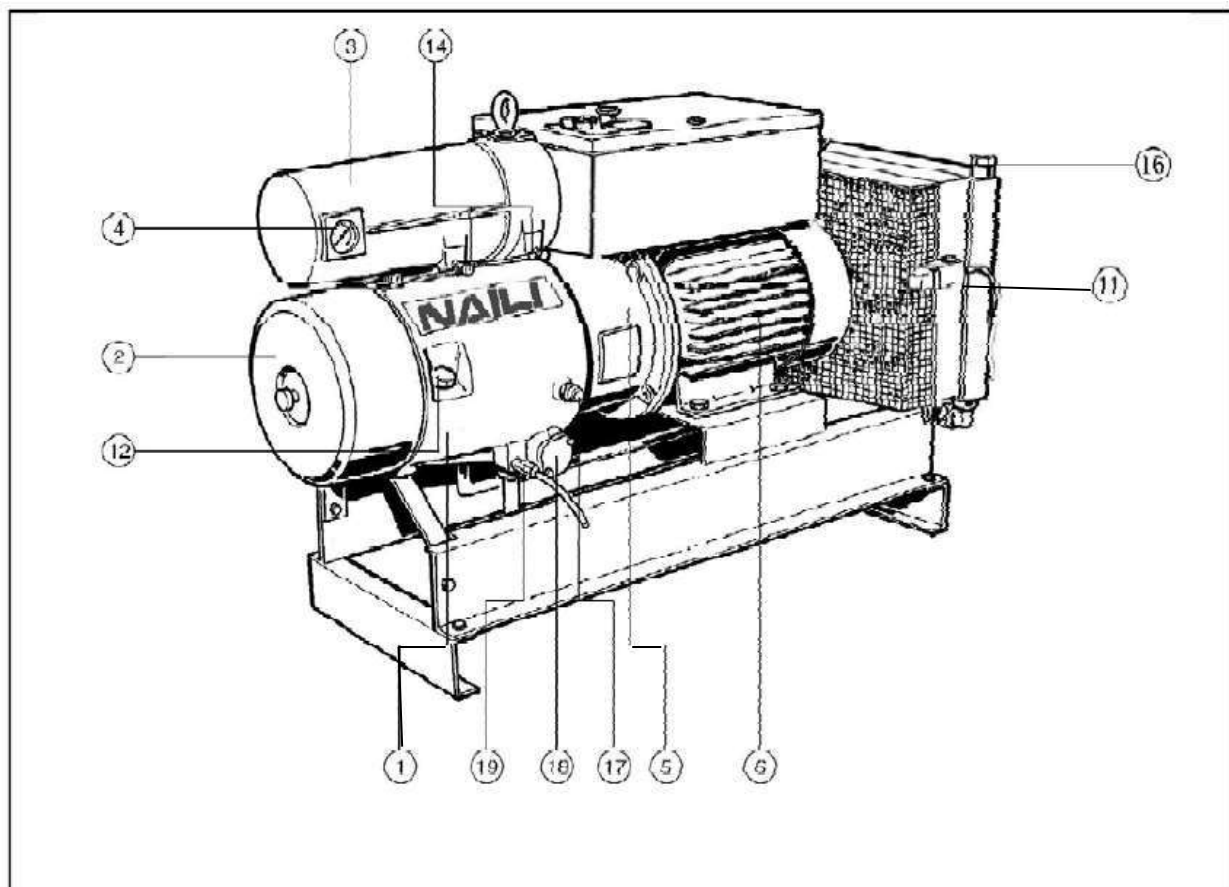
VENUS SERIES: AB Series + High performance Inverter

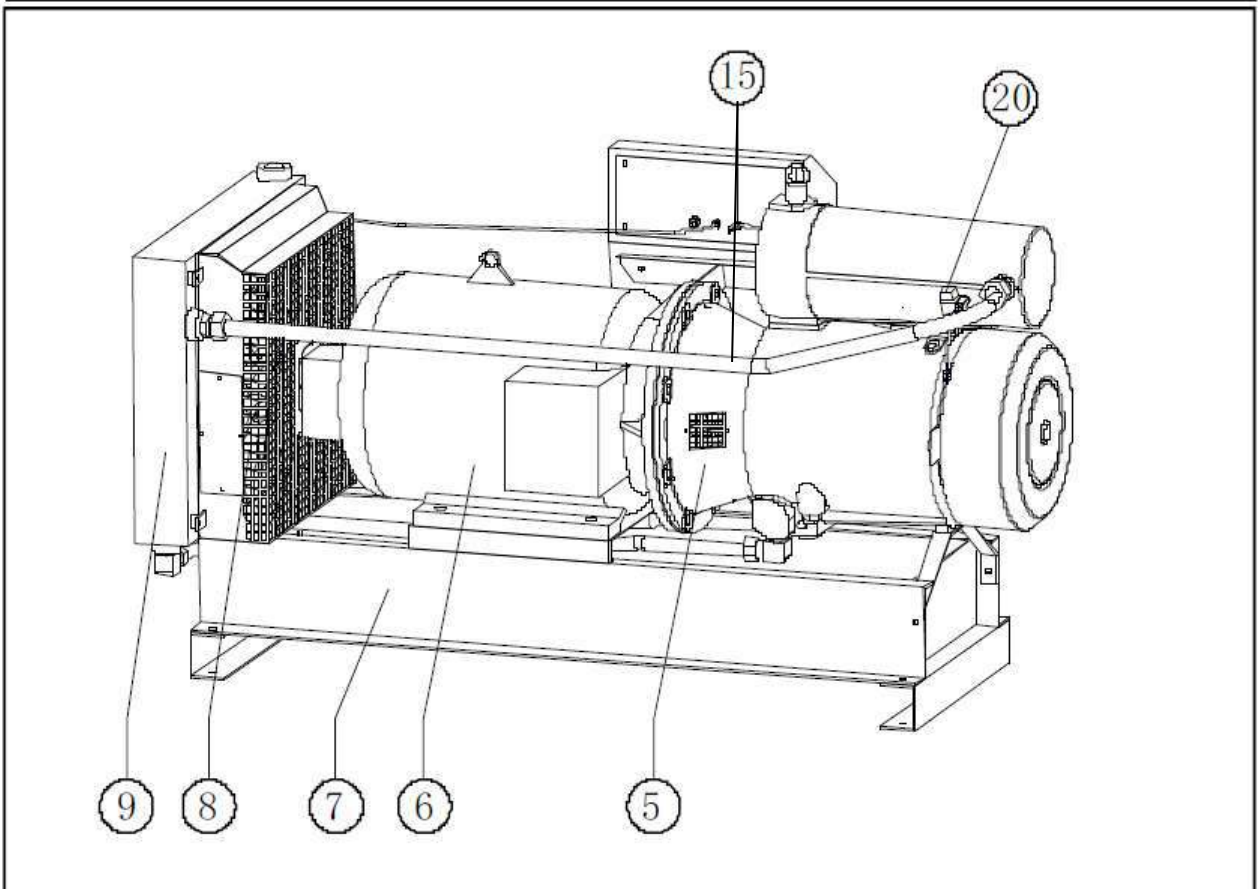
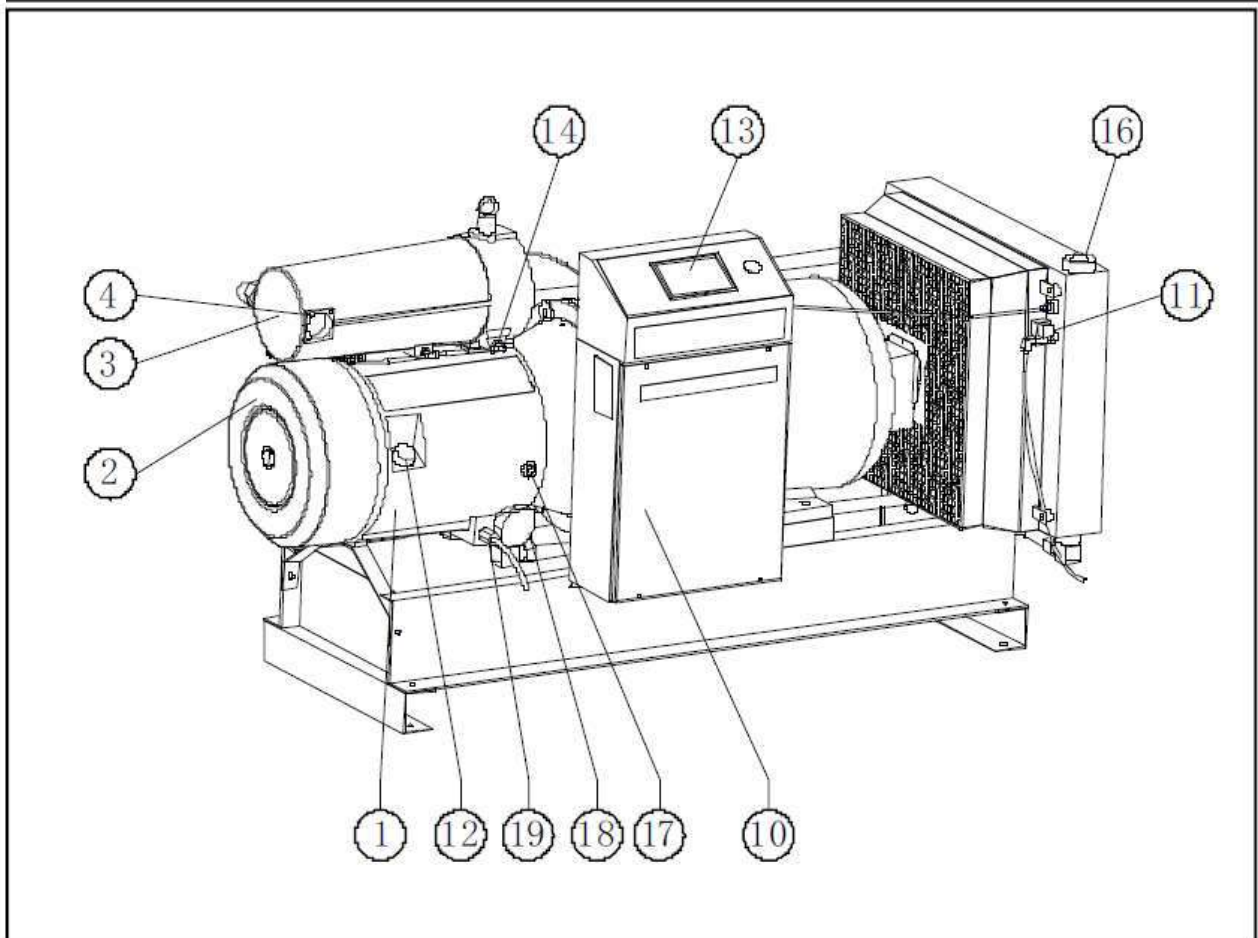
Model		Unit	Venus55	Venus75	Venus90	Venus110
Reference conditions						
Intake pressure		bar	1.0	1.0	1.0	1.0
Ambient temperature		°C	0-45	0-45	0-45	0-45
Relative humidity		%	0-90	0-90	0-90	0-90
Performance Parameter						
Free Air Delivery	8bar	m³/min	6.65-10.50	10.88-13.60	10.44-16.5	13.29-21.0
	10bar	m³/min	5.63-8.90	9.6-11.32	8.86-14.0	11.27-17.8
	13bar	m³/min	4.43-7.00	8.0-9.6	7.38-11.66	8.86-14.0
Outlet temp(higher than ambient temp)		°C	5-10	5-10	5-10	5-10
Oil carry over		PPM	≤1.5	≤1.5	≤1.5	≤1.5
Noise Level		dB(A)	68	72	72	72
Drive method			Direct	Direct	Direct	Direct
Rotational speed		(r.p.m)	1480	1475	1475	1480
Oil System capacity		L	19	19*2	19*2	19*2
Air outlet size		RP	2	DN65	DN65	DN65
Dimensions	Length	mm	1830	1800	1800	1800
	Width	mm	960	1560	1560	1560
	Height	mm	1670	1700	1700	1700
Weight		kg	1020	1530	1900	1950
Electrical characteristics						
Electric starting			Star-delta	Star-delta	Star-delta	Star-delta
Electric motor power		KW	55	37*2	45*2	55*2
Insulation class			F	F	F	F
Enclosure class			IP55	IP55	IP55	IP55
Service factor			1.15	1.15	1.15	1.15
Power supply		V/ph/Hz	380~415/3/50	380~415/3/50	380~415/3/5	380~415/3/50
Supply wire min section		mm²	50	120	120	120

12.MACHINE VIEWS

13.1 MAIN PARTS(A series)

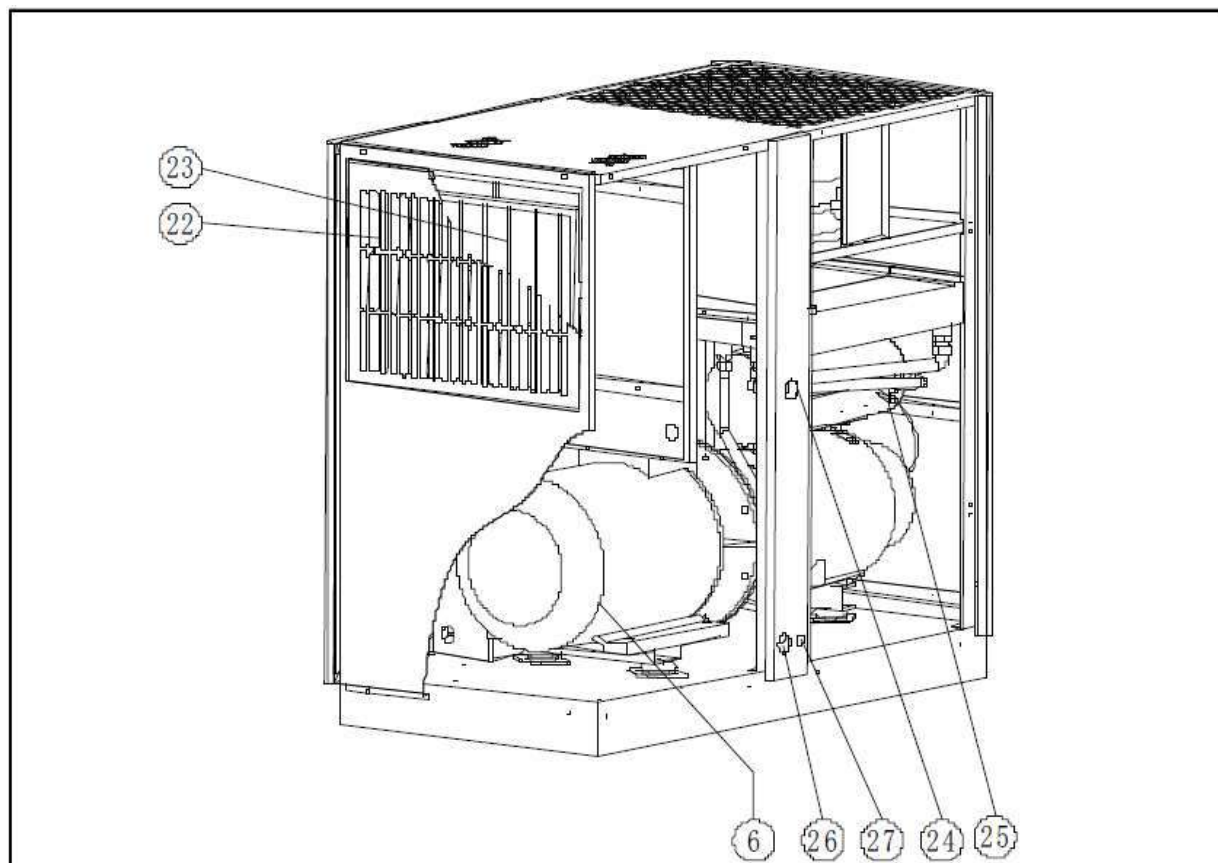
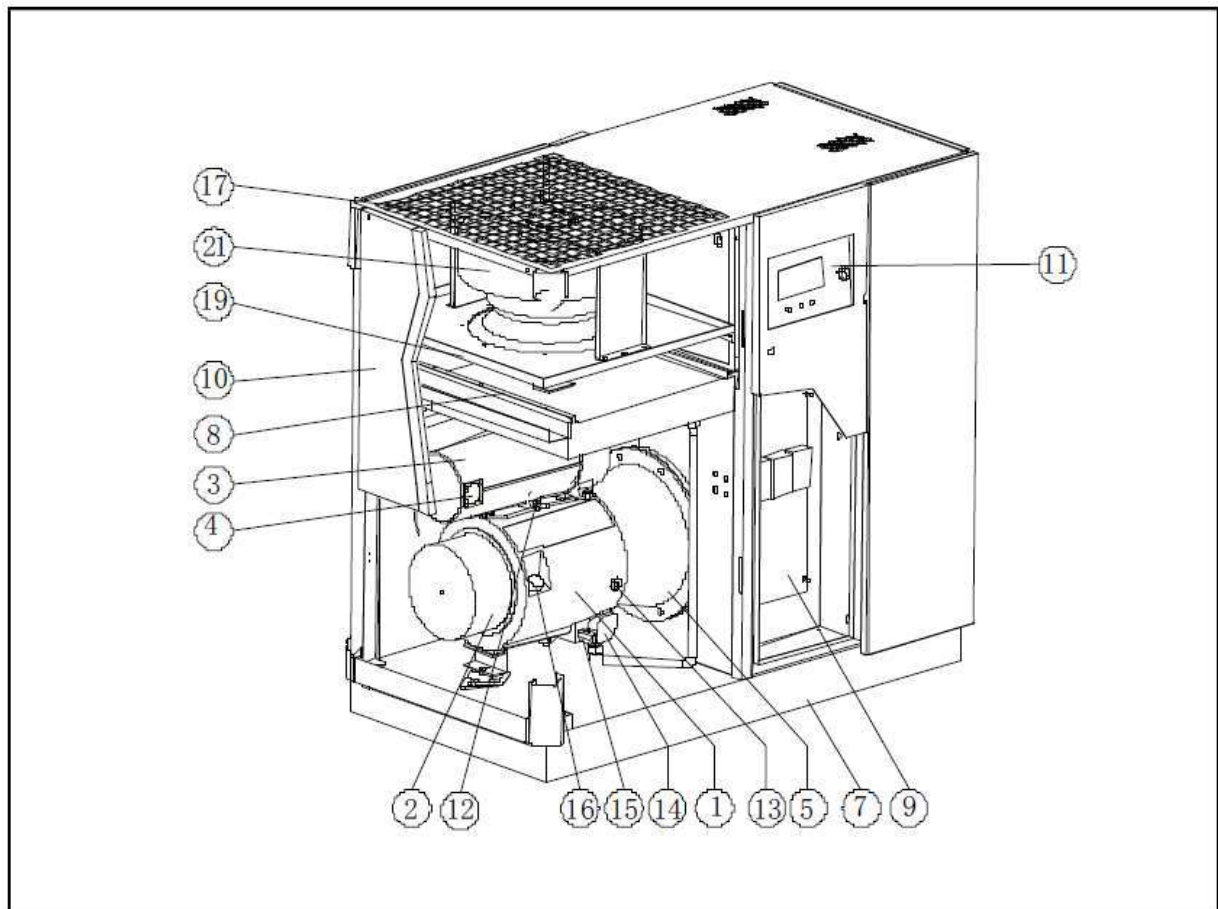
- 1.Oil chamber
2. Intake filter
3. Air/oil separator
4. Gauge
5. Coupling assy
6. Electric motor
7. Base
8. Radiator window
9. Air-oil radiator
10. Starter box
11. Unload Solenoid valve
12. Oil injection bolt
13. Control panel
14. Oil return valves
15. Air outlet pipe
16. Air outlet port
17. Oil level indicator
18. Oil filter cover
19. Oil Drain valve





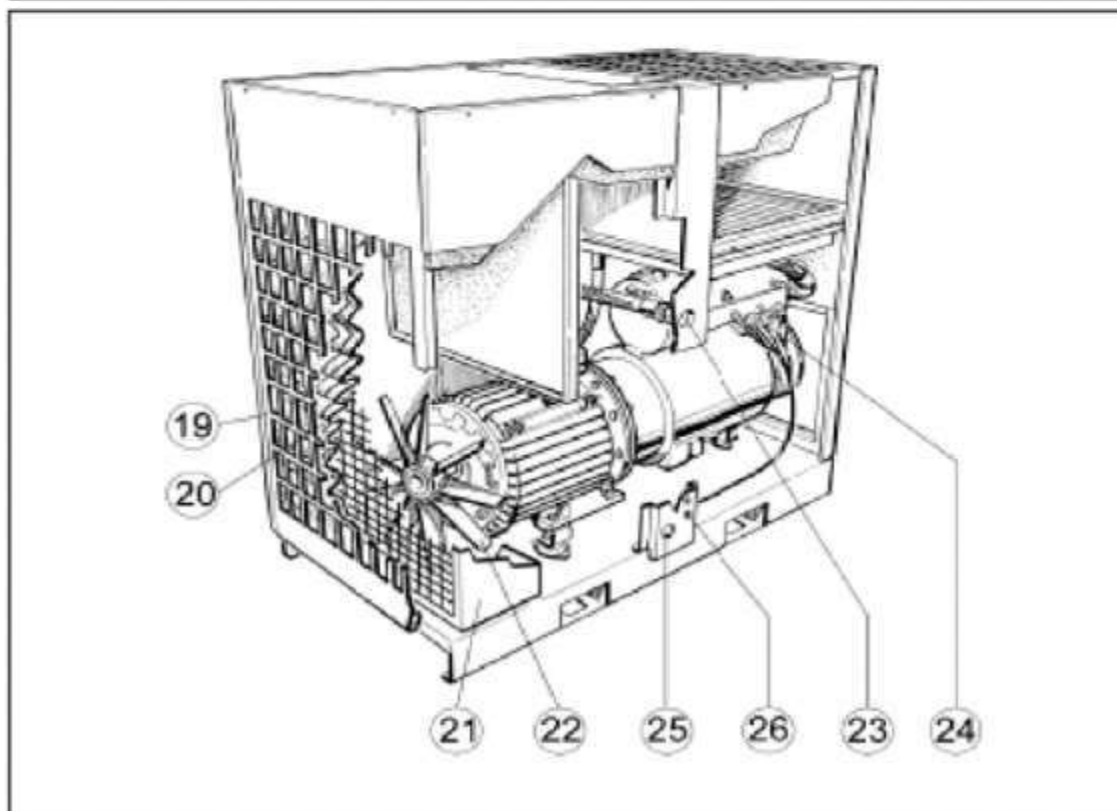
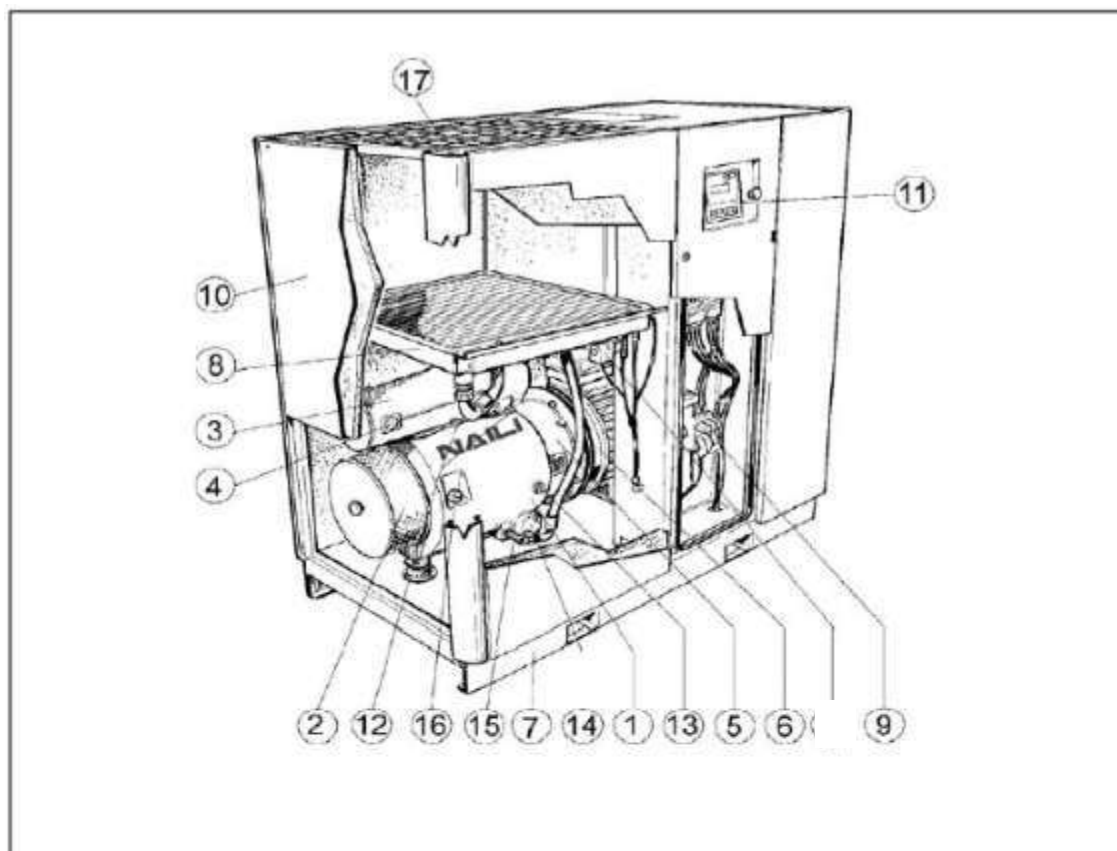
13.2 MAIN PARTS(AB series Centrifugal fan)

1. Oil chamber
2. Intake filter
3. Air/oil separator
4. Pressure Gauge
5. Coupling assy
6. Electric motor
7. Base
8. Air-oil radiator
9. Starter box
10. Acoustic enclosure
11. Control panel
12. Oil return valves
13. Oil level indicator
14. Oil filter cover
15. Oil drain valve
16. Oil injection bolt
17. Air outlet port
19. Carriage for fan
21. Centrifugal fan
22. Air inlet window
23. Pre filter window
24. Air outlet connection
25. Off load solenoid valve
26. Electric cable hole
27. Condensate drain connection (Preserved)



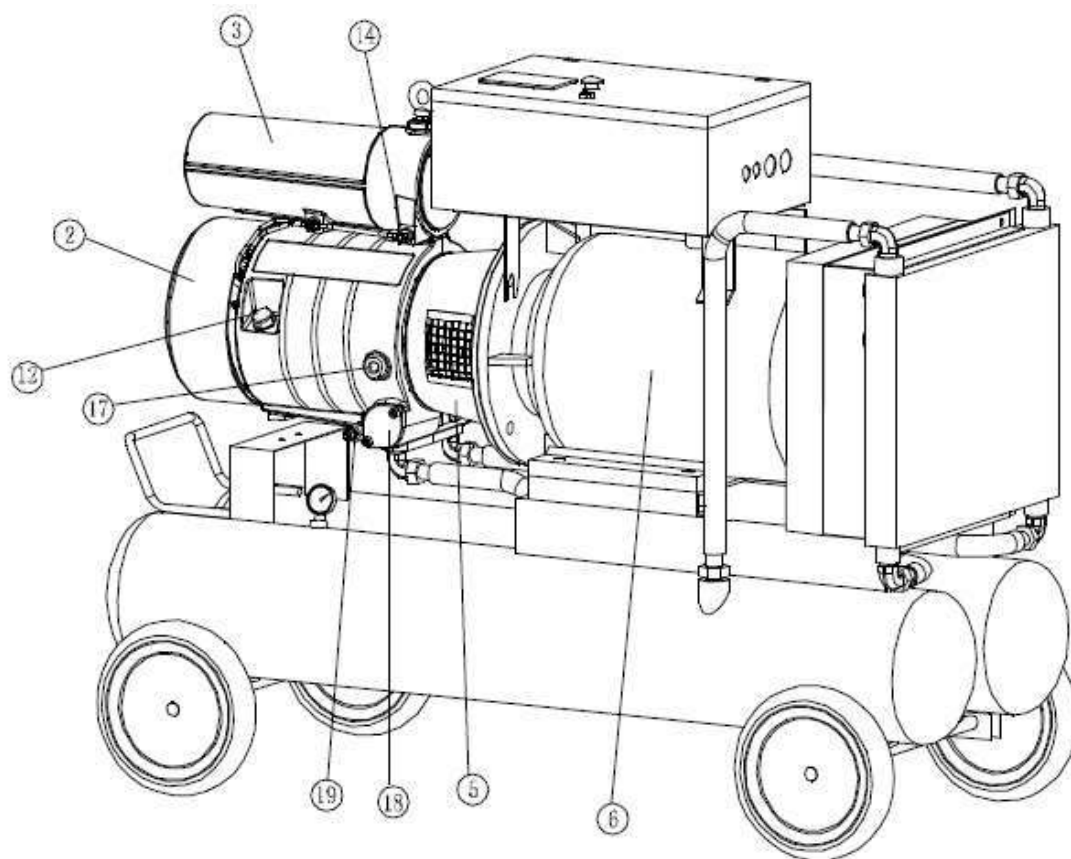
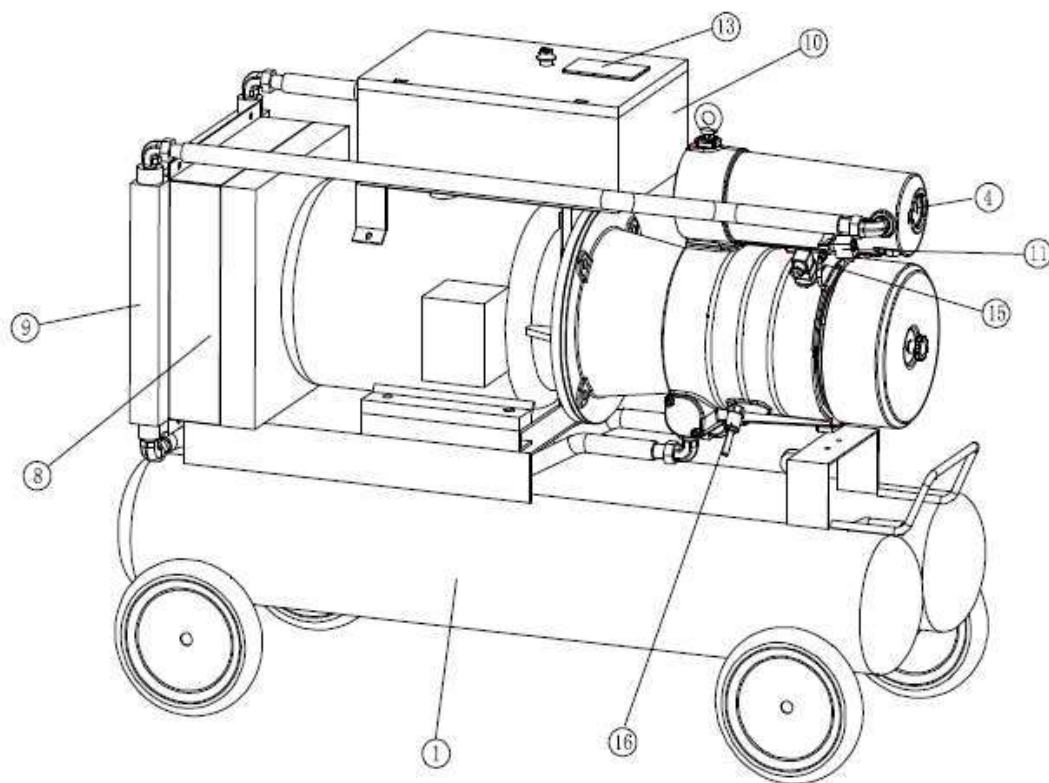
13.3 MAIN PARTS(AB series Axial fan)

1. Oil chamber
2. Intake filter
3. Air/oil separator
4. Pressure Gauge
5. Coupling assy
6. Electric motor
7. Base
8. Air-oil radiator
9. Electrical box
10. Acoustic enclosure
11. Control panel
12. Oil return valves
13. Oil level indicator
14. Oil filter cover
15. Oil drain valve
16. Oil injection bolt
17. Air outlet port
19. Air inlet window
20. Pre filter window
21. Radiator window
22. Axial fan
23. Compressed air outlet pipe
24. Off load solenoid valve
25. Electric cable hole
26. Condensate drain connection (preserved)



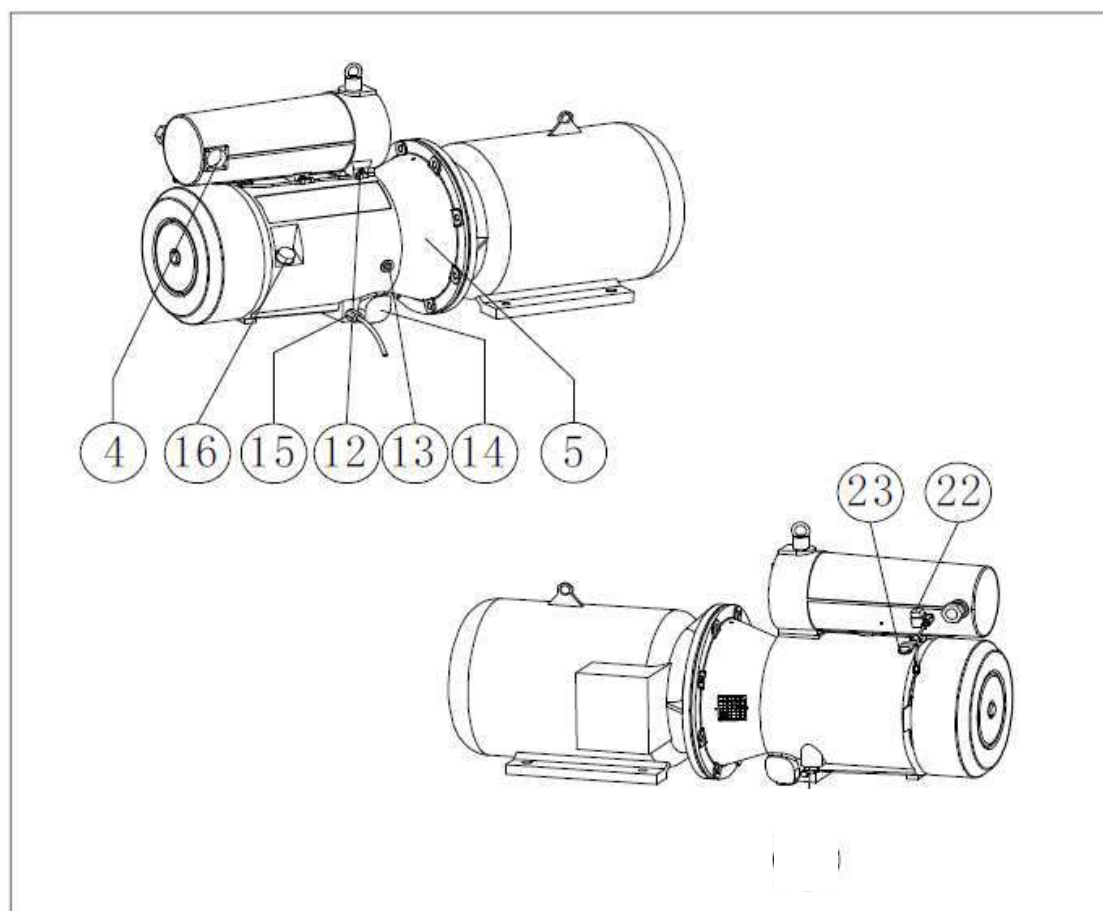
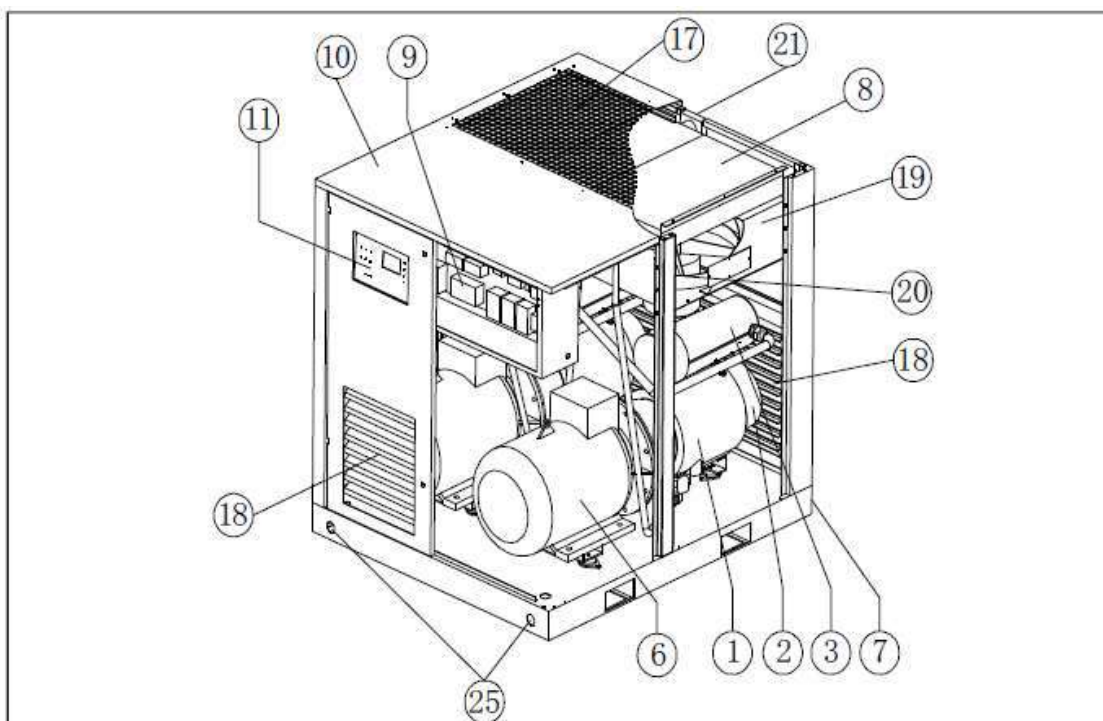
13.4 MAIN PARTS(ASM series)

1. Air Tank
2. Intake filter
3. Air/oil separator
4. Pressure Gauge
5. Coupling assy
6. Electric motor
7. Base
8. Radiator window
9. Air-oil radiator
10. Electrical box
11. Solenoid valve
12. Oil injection bolt
13. Control panel
14. Oil return valves
15. Temperature switch
17. Oil level indicator
18. Oil filter cover
19. Oil drain plug



13.5 MAIN PARTS(Double series)

1. Oil chamber
2. Intake filter
3. Air/oil separator
4. Pressure Gauge
5. Coupling assy
6. Electric motor
7. Base
8. Air-oil radiator
9. Electrical box
10. Acoustic enclosure
11. Control panel
12. Oil return valves
13. Oil level indicator
14. Oil filter cover
15. Oil drain cock
16. Oil injection bolt
17. Air outlet port
18. Air inlet window
19. Air inlet window
20. Fan
21. Air outlet connection
22. Unload solenoid valve
23. Temperature switch
25. Electric cable hole



13.2 Parts of Centrifugal Fan

1. Oil Chamber
2. Air Filter
3. Separation Tank
4. Pressure gauge
5. Coupling Assy
6. Electric Motor
7. Basis
8. Radiator
9. Start plate
10. Plate
11. Control Panel
12. Oil Return Valve
13. Oil level Indicator
14. Filter Cover
15. Oil Drain Valve
16. Oil Injection bolt
17. Air outlet port
18. Air inlet window
19. Fan Gasket
21. Centrifugal Fan
22. Unload Solenoid Valve
23. Pressure sensor
25. Condensate drain connection (preserved)