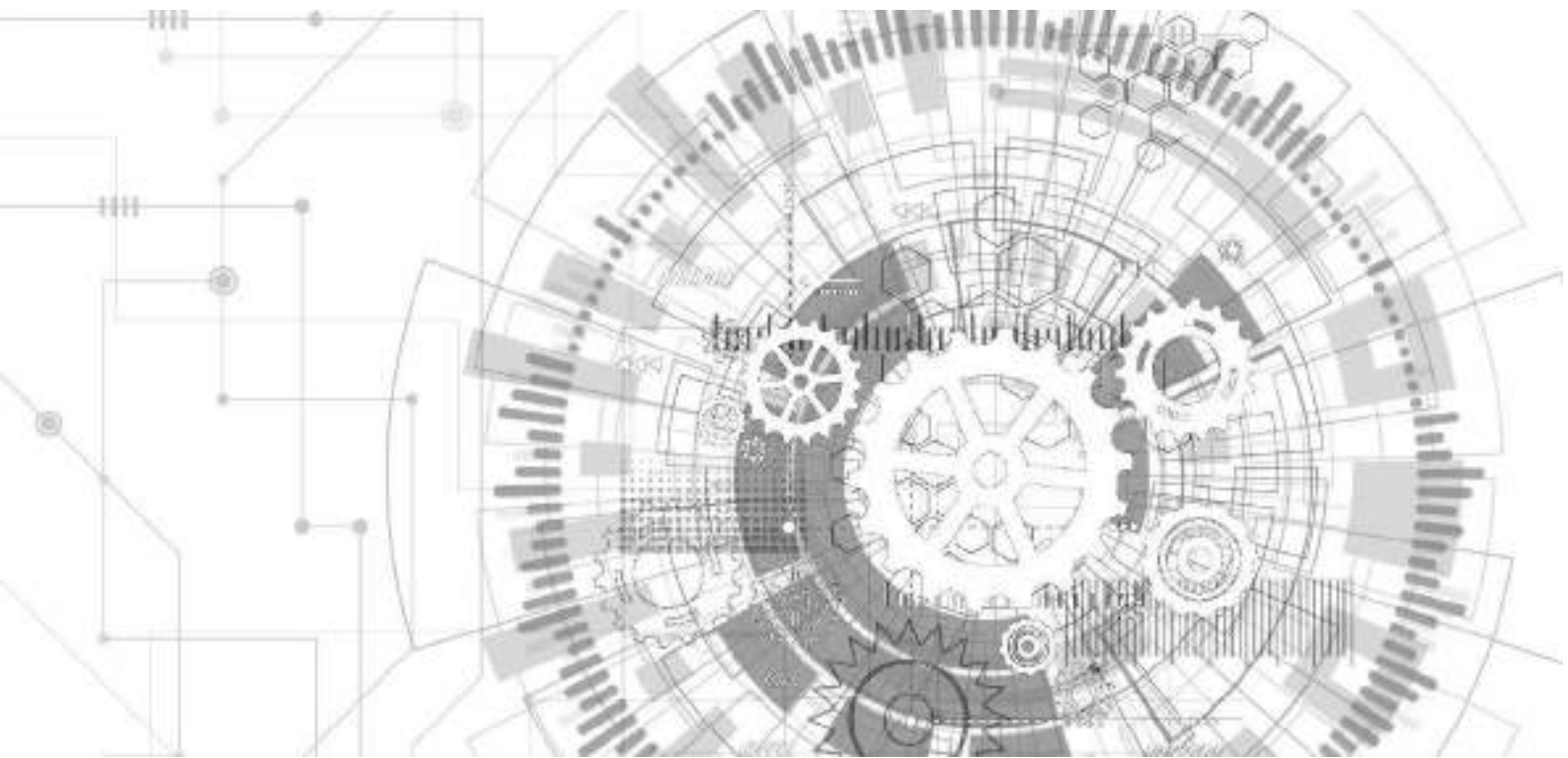


# Screw compressor



Please read this manual before starting the machine

# 1. Compressor product description

## 1. Description of screw compressor

Compared with other types of compressors, screw compressor has higher reliability, fewer parts and no wearing parts, so it operates reliably and has a long life. Compared with reciprocating air compressor, the noise is less, the pressure transmission is more stable, the operation efficiency is high, and the use scene is rich

## 2.Scope of use

This series of machines and units are manufactured according to mature technology and accepted safety rules. However, there may still be a threat to the life and limb of users or third parties, or damage to machinery and other material property, if the following conditions occur

- The scope of use is incorrect
- Operated by unqualified personnel
- Unreasonably modify or alter the machine
- Not following safety rules

Therefore, anyone authorized to operate, maintain or repair the machine must read and follow the safety procedures. If necessary, a signature can be requested to confirm this.

In addition, it is necessary to observe:

- Relevant accident prevention rules
- Recognized safety regulations
- National laws and regulations

This series of machines and units must be used under perfect technical conditions, and must be used in accordance with the scope of use and guidelines stipulated in the operation manual. Users must have safety awareness and be fully aware of the risks in operation of the machine. If any functional failure occurs, especially if it affects safety, it must be repaired (or repaired) in time!

Within the scope of use, operation and maintenance should be carried out in accordance with the instructions in the user manual!

## 3. Maintenance

The unit must be carefully maintained so that the screw compressor or compressor unit can meet various requirements. Therefore, it is necessary to insist on careful maintenance of the machine according to the stipulated maintenance period, especially in the case of bad working environment.

## 4. service

In case of failure or need spare parts, please contact our compressor supplier. If there is any damage to the equipment, please contact with our company in time, and our company's maintenance personnel will provide quick and good maintenance service.

## 5. Guarantee

Be sure to understand the machine and its instructions before operating the machine.

If the use of the unit is not in accordance with the applicable scope, or the purpose of use is beyond the scope mentioned in this instruction, we will not be responsible for the safety of the operation.

We will not accept any warranty claim if:

- 1) error
- 2) Improper maintenance
- 3) Wrong with accessories
- 4) Do not use our company's original accessories
- 5) Modify or alter the equipment

The company does not extend the general terms of guarantee and indemnity as a result of the above statement. Any unauthorized modification of the compressor or compressor station, or installation of parts not approved by the manufacturer, the manufacturer will not accept claims or warranties.

## 6. Technical changes

During technical development, we reserve the right to modify parts without prior notice.

If you have any questions, please contact us

## 7. Replace the accessories

Common spare part names	Technical Specifications	Details
Air filter	3-5um accuracy	
Oil filter	(20bar pressure) glass fiber oil filter	HM962 (20bar)
Oil	Special for laser cutting air compressor, specially customized, thickening and increasing oil content, The oil content at the exhaust end of the air compressor is less than ppm	HM130170-200 (folding and winding)
Filter element	C, T, A, X, F five-stage filtration	
Air compressor special oil	Synthetic Oil No. 68	Anti-emulsification, anti-rust high pressure machine

Laser special air compressor with ordinary air compressor has a lot of different places, we met a lot of customers in the process of after-sales service maintenance with water after oil, is mainly customer improper use accessories, appear problem, after all line laser to clean up, hold up production, hope your company use authentic accessories, maintenance machine on time, so that he will create more value for your company, Save unnecessary trouble.

## 2. Air compressor structure parts introduction



## **3. Installation guide**

### **1. Onsite installation environment requirements**

- 1) Ensure good ventilation on site.
- 2) Ensure that the air around the equipment is clean and no acid, alkali and other corrosive gases enter the equipment.
- 3) Check that all protective devices and safety accessories are in good condition. Whether the lubricating oil surface meets the standard.
- 4) After the equipment is installed, enough space should be reserved around the equipment to ensure daily overhaul and maintenance.
- 5) In order to save unnecessary pipeline loss, the equipment should be installed in a suitable environment around the gas equipment.

### **2. Installation Guide - Prepare materials for air compressor**

- 1) Power cable: the 15KW power cable adopts the NATIONAL standard 3\*6+1\*4 (unit square mm) power cable, and the 22KW power cable adopts the National standard 3\*10+1\*4 (unit square mm) power cable. The incoming power switch is a 63A three-pole switch (power cable prepared by the customer).
- 2) Laser cutting machine air source output in the air compressor last filter outlet, wire mouth is 6 minutes or 1 inch, standard 10/12 air source quick plug outlet and fast plug between the ball valve control air source.
- 3) For sewage discharge at the lower end of the precision filter, a 6-minute or 8-minute fast insertion port is reserved, and the lower end is connected to each other as an outlet. The outlet is fixed at the device to avoid sewage splashing during exhaust.

### **3. Boot commissioning - boot test**

1. Connect the power line, neutral line and ground line to measure whether the main voltage is correct (380V) and the three-phase voltage is balanced. According to the power and voltage of the machine, the appropriate power supply is provided and the voltage fluctuation of the power supply is not more than 5%, and the three-phase imbalance is less than 3% (if the electrical voltage imbalance needs to be equipped with a regulator, so as to facilitate the operation of the air compressor).

Note: when the power phase sequence is inconsistent, the control panel of the machine will prompt a warning, and the machine shall not be started. To disconnect the power supply, change the sequence of any two items of the three-phase power cable.

2. Before starting the machine, open the back panel of the machine, and manually turn the host to see whether it is smooth or not. If there is no problem, start the test and observe whether the oil level in the oil sub barrel is within the marked line.

3. After the machine runs normally, observe the operation of the equipment through the display screen, and check whether there is alarm information. In case of abnormal sound, vibration and leakage, stop the machine immediately and repair it.

### **4. Maintenance check - startup sequence**

- 1) Turn on the freeze dryer first, then the air compressor.
- 2) Turn on the freeze dryer first, then the air compressor.

## **5. Daily check before startup**

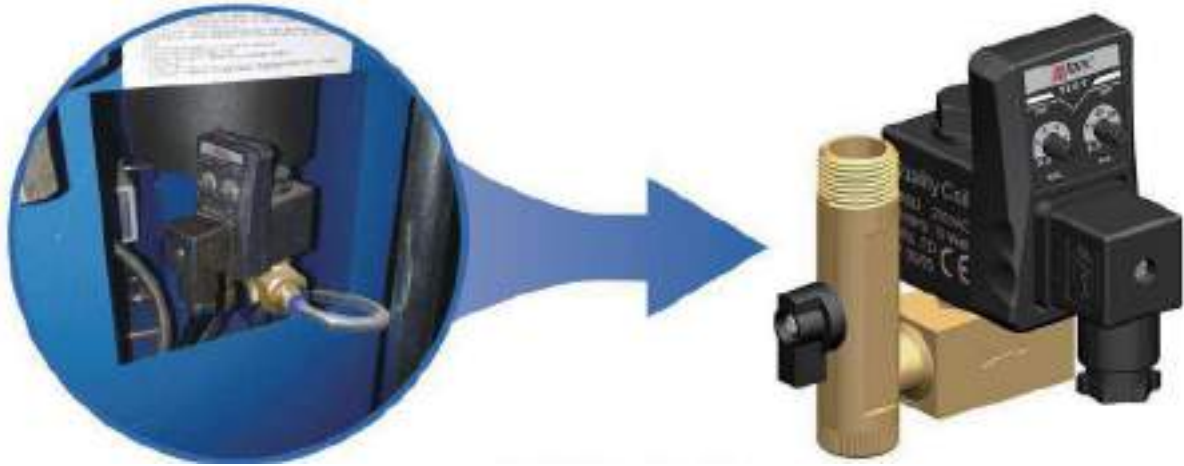
- 1、 In case of power failure, open the door panels around the machine, check whether there is a lot of dust inside the machine, whether the dust filter is too dusty (it is recommended to check and purge once a week), clean the dust inside the machine with an air gun, and then close the door.
- 2、 Check whether the power supply and power cable are loose or whether the skin is damaged. Then power on the device.
- 3、 Before starting the machine, check whether all the chassis door panels are closed properly and whether the peripheral connected devices are in the state of ready use.
- 4、 Check whether there is alarm information on the LCD screen. If there is alarm information, it can be powered on after processing according to the information feedback.
- 5、 According to the working environment of the machine, clean and replace the three filters (oil filter, air filter, oil and gas separator) and air compressor oil regularly.

## **4.Maintenance inspection - Daily maintenance (daily or before each operation: perform boot inspection items)**

- 1、 After 500 hours of operation, clean the radiator, remove the air filter element and the front filter, and clean it from inside out with low-pressure compressed air.
- 2、 Open the drain valve of the equipment air storage tank every day to prevent and control internal moisture.
- 3、 Periodically manually check whether the air compressor, cold dryer, and precision filter drain valve work properly, and periodically discharge the precision filter (once a day is recommended).
- 4、 When the new machine runs for about 500 hours, the oil should be replaced for the first time. Under the condition of machine shutdown and no internal pressure, the oil barrel outlet should be opened to discharge the oil. Fill the upper refueling port with new oil (special for screw air compressor), and fill the oil level in the marked line.
- 5、 Replace the oil filter for the first time when the new machine runs for about 500 hours. Remove the oil filter and replace the new oil filter when the machine is shut down and there is no internal pressure.
- 6、 After the first maintenance of the new machine is completed, it needs to be maintained again for about 2000 hours. There is a preset maintenance time inside the machine, and the display will give a warning after the expiration. The maintenance content that needs to be done after the warning reminder is (an air filter, an oil filter, an oil separator and a barrel of lubricating oil).

## 5. General electronic drain valve operation

- 1、 Drainage valve two buttons, MEC control drainage time 0.5-10 seconds (1-2 seconds is recommended), MIN control each drainage interval 0.5-45 minutes (2-5 minutes is recommended)
- 2、 The time can be adjusted according to the actual working condition



Universal Electronic Drain Valve



Adjust the length and interval of exhaust according to the humidity of the air.  
 When the air is humid, the exhaust time becomes longer and the exhaust interval becomes shorter.  
 Air drying can slightly extend the interval.

Humid air	Air dry	
Minimum interval	Interval 1	right
Duration 2-4	Duration 2-3	Left

## 6.Maintenance check maintenance schedule

Check parts	Check the content	inspection cycle					Remark
		Every day	Weekly	Per month /500h	Half a year	One year /2000h	
Special oil for screw machine	Check oil level	◆					Liquid level should be within performance
	Replenish			◆			
	Replace			◆		◆	The new machine is replaced every 500 hours, and every 2000 hours thereafter
	Clear or replace					◆	
Oil filter	Inspection and cleaning			◆		◆	Situation normal cycle can be extended
Air filter	Clear or replace		◆	◆	◆	◆	
Intake valve	Inspection and cleaning				◆	◆	Replace the core every 2000 hours
Filter	Drain	◆				◆	
Gas tank	Drain valve	◆					
Air compressor oil outlet	Drain		◆	◆			Check whether there is water in the oil separator, and discharge it if there is
Oil and gas cooler	Clean up		◆	◆			Clean the oil on the surface of the cooler

## 7.Maintenance treatment

### 1.Alarm processing

When the controller detects and maintains the time, it only alarms and does not stop the machine. The display screen shows the corresponding fault name, the fault light flashes and the buzzer buzzes. The machine will stop automatically if the maintenance is not carried out within 200 hours after the warning

2.After adjusting the parameters after maintenance, long press the reset button to reset the fault, return to the main interface, and display normal.

	<b>Warning fault name</b>	<b>Treatment methods</b>	<b>Cause of issue</b>
1	Air filter expired	Replace the air filter and reset the air filter usage time to zero	The usage time exceeds the set allowable usage time
2	Expired use of oil and gas separator	Replace the separator and set the service time of the oil-air separator to zero	The usage time exceeds the set allowable usage time
3	Oil filter expired	Replace the oil filter and set the oil filter usage time to zero	The usage time exceeds the set allowable usage time
4	Expired use of lubricating oil	Change the lubricating oil and set the lubricating oil usage time to zero	The usage time exceeds the set allowable usage time
5	High exhaust temperature (warning)	Clean cooler, check cooling fan	The cooler is dirty and blocked, the oil is lacking, the cooling fan is damaged

### 3.Accessories and tools required for air compressor maintenance

- Accessories need, special lubricating oil for high pressure air compressor, oil filter, air filter, oil.
- Tools required: oil filter wrench, No. 10 hex socket wrench, No. 19 wrench, No. 41 wrench (available with pipe pliers), adjustable wrench, waste oil drum, gloves.

### 4 Maintenance sequence

1. First shut down and close the switch. If it is normally used before shutting down, wait for a while and wait for the oil temperature to decrease before operating.
2. Empty the air, check that the pressure gauge is zero, and then start the operation.
3. Open the door plank, finding oil and gas separation cylinder, oil discharge mouth, at the bottom of the barrel of oil and gas separation inside the oil discharge port ball valves equipped with a plug wire, inner hexagon spanner pull down with 10 after discharge the waste oil, close the valve when oil cannot education, open the switch, to point the way to run a machine (running four to eight seconds press stop stop), close the switch, When the pressure gauge on the oil and gas separation barrel returns to zero, open the valve again to release the remaining waste oil, and pour the new oil at the end of maintenance.
4. Remove the oil filter, watch the arrow on the surface of the oil filter, confirm the disassembly direction for disassembly (the oil filter has positive wire and reverse wire), if there is no oil filter wrench can be used, the oil filter

will overflow part of the oil when disassembly, you can pad it with a rag, pour a part of the new oil inside the oil filter when the new oil filter is installed, and then tighten the installation.

5. Replace the air filter. The position of the air filter can be seen from the internal diagram of the machine below.

6. Replace oil, tear down three pipe of the oil and gas separation barrel on your rod (removed to ensure the gasholder without pressure), disconnect the line after the removal of yellow flange on the roof above the screw, the screw loose flange, vertical pull out after out oil use blade oil glue scrape in the above things, scrape off the flange head internal rust, ensure the installation of oil surface is smooth, Put the new oil into the position of the installation of the top cover, installation in a diagonal way to tighten the screw, connected to the pipeline.

7. Close the valve of the drain port, open the refueling port above the oil port for refueling, observe the oil level gauge, stop refueling when the oil reaches the position of the red line above, and tighten the refueling port (pay attention to the sealing pad on the screw of the refueling port).

8. Run the machine, start it in electric mode (to ensure the normal circulation of oil there is oil inside the head), observe the position of the oil level line, when the oil level is lower than the lower red line, stop the machine, wait for pressure emptying to ensure that the pressure returns to zero, remove the refueling port, add the oil level to the upper red line again, install the refueling port, and run normally.

9. When the maintenance is completed, clean the air dustproof cotton on the door panel, which can be blown with compressed air.

10. After running for half an hour to an hour, check once to ensure no error.

11. If you encounter problems that cannot be solved in time, please contact after-sales staff in time!!

## 8.Troubleshooting and inspection

### Outage alarm

When the controller detects the following faults, it alarms and shuts down. The screen displays the corresponding fault name, the fault light is steady on, the buzzer beeps and automatically generates "fault record".

After the fault is rectified, hold down the reset button to reset the fault and switch to the main interface.

No.	Downtime fault name	Treatment methods	Cause of issue
1	High exhaust pressure	Refer to the air compressor manual	Pressure detected above maximum pressure
2	High exhaust temperature	Refer to the air compressor manual	Temperature detected above maximum temperature
3	Host overload	Refer to the air compressor manual to check and remove and restart the observation	Motor current exceeds rated current for a certain period of time
4	Fan overload	Refer to the air compressor manual to check and remove and restart the observation	Motor current exceeds rated current for a certain period of time
5	Host unbalanced	Check three-phase voltage, power switch and contactor	AB phase current detection value difference is too large
6	Phase sequence error	Swap any two items of the incoming power line	The three-phase wiring sequence of the incoming power line ABC is wrong
7	Lack of phase	Check three-phase voltage, power switch and contactor	Phase-to-phase current is zero
8	Temperature sensor failure	Replace sensor; check sensor wiring	Temperature sensor shorted, open or loose wiring
9	Big temperature jump	Replace sensor; check sensor wiring	Whether the signal wire of the temperature sensor is short-circuited with the shielding layer or
10	Pressure sensor failure	Is the pressure sensor shorted or open?	Replace the sensor
11	Running time expired	Consult the manufacturer	Phase sequence problem
12	Voltage too high or too low	Check mains voltage or consult factory	Power supply voltage is too high or too low

## 9.Troubleshooting

When the fault occurs, the machine should be stopped in time, and the initial inspection should be carried out. If the problem cannot be solved, the relevant after-sales personnel should be contacted in time, and the initial inspection should be combined with the after-sales personnel to solve the problem in time.

<b>Fault phenomenon</b>	<b>Reason</b>	<b>Measure</b>
Engine head shaft seal oil leakage	Shaft seal quality problem or improper installation	Replace shaft seal
Can not start	Power failure; voltage too low; unsuitable cross-section and length of power supply wires; blown fuse; power phase misalignment; pressure sensor failure; motor failure; compressor failure	Check the power supply; check the power supply voltage and motor power; replace the appropriate wire to check the circuit; replace the fuse after confirmation; change the power phase; replace the pressure sensor; overhaul or replace the host
Excessive exhaust humidity causes the machine to stop	Large amount of lubricating oil leakage; high ambient temperature; dirty cooler; lubricating oil failure; (winter) oil circuit blockage; temperature sensor failure	Add lubricating oil; strengthen the ventilation of the machine room; clean the cooler; replace the lubricating oil; check the oil circuit and repair and replace the temperature sensor
Excessive exhaust oil	Too much oil; the oil return pipe is not installed properly; the oil has not been replaced after the expiration date; the filter has not been replaced after the expiration date	Drain excess oil; troubleshoot reinstallation; replace oil; replace filter element
Excessive water in exhaust	Lack of fluorine in the dryer; failure of the dryer; blockage of the electric row	Fluorine flushing; comprehensive inspection, replacement, repair; replacement or repair
The exhaust pressure does not reach the rated pressure	Excessive air consumption; failure of suction valve; failure of pressure sensor; leakage of pipeline; clogged air filter	Check service parts
Premature deterioration of lubricating oil	Use of unsuitable lubricants; ambient temperature too high; lubricant water containing water; insufficient draining of old lubricants	Replace special lubricating oil; improve the environment; strengthen ventilation; timely drainage, cleaning and replacement
Abnormal sound and vibration	Worn or damaged motor bearings; worn or damaged compressor bearings; slipped or damaged belts; loose fasteners; two pulleys not on the same plane	Overhaul or replace; overhaul or replace to adjust the tightness; re-advance to adjust
Motor temperature is too high causing shutdown	The abnormal voltage of the motor is too low; the compressor rotation fails, the lubricating oil is not used as required; the wire joint is moving; the exhaust pressure is too high	Overhaul or replacement check and adjust voltage; overhaul or replace special lubricating oil; re-advance and adjust to preset pressure
Safety valve jet	High exhaust pressure; safety valve failure; pressure sensor failure	Adjust to preset pressure; overhaul or replace safety valve; overhaul or replace pressure sensor

## **1. The all-in-one cold drying machine does not start**

- ① Check whether the cold and dry machine is correctly connected to the power supply.
- ② Check whether the zero line is missing.
- ③ Check whether the switch fails.
- ④ Check whether the high and low pressure protector is jump protection.
- ⑤ Check whether the pressure of evaporation pressure gauge is normal.
- ⑥ Check whether the compressor vibration, such as heat vibration check whether there is a problem with the starting capacitor.

## **2, fault phenomenon: unit exhaust temperature is high (more than 100 °C)**

1. the coolant level of the unit is too low (it should be visible from the oil speculum, but not more than half);
2. Oil cooler dirty; Oil filter core blocked; Temperature control valve failure (bad components);
3. Fan motor fault: trigger the ac contactor of the fan to check whether the fan is rotating
4. Temperature sensor fault: when the machine is running, observe whether the display temperature has a large digital jump
5. The exhaust pipe is not smooth or the exhaust resistance (back pressure) is large, and the heat dissipation air outlet has shelter
6. Ambient temperature exceeds the specified range (38°C or 46°C);
7. In case of high temperature caused by cable replacement of frequency converter, check whether the motor is running in a positive direction as prompted by the host

### **The solution**

1. Replace coolant and oil filter
2. Purge the radiator and the internal door panel filter with high-pressure air
3. In case the fan reaches 95 degrees or the monitor shows that the fan does not start on time, contact the after-sales personnel in time

## **3, fault phenomenon: the unit fuel consumption or compressed air oil content is large**

1. Too much cooling dose, the correct position should be observed during unit loading, at this time the oil level should not be higher than half;
2. return tubing blockage;
3. the installation of the return pipe (distance from the bottom of the oil separation core) does not meet the requirements;
4. the exhaust pressure of the unit is too low during operation; Oil separation core rupture;
5. The internal partition of the separation cylinder is damaged; The unit has oil leakage phenomenon;
6. The coolant is emulsified or used over time.
7. The oil core used does not conform to the equipment pressure density is not enough

### **The solution**

1. Open the oil discharge valve, check whether the discharged oil contains water or is emulsified, such as large water content should be replaced in time.
2. Replace the oil core and filter element
3. Dredge the return pipe

#### **4, fault phenomenon: low pressure unit**

- 1.The intake valve is faulty, resulting in the failure of normal air intake
- 2.Air filter dirty, resulting in air intake is not smooth
3. Pipe valve problems, leakage or valve is not closed to lead to abnormal pressure
4. There are suction drying machines, or other scheduled units
- 5.The type selection problem of air compressor
6. The head problem, screw clearance increase, or bearing damage

#### **The solution**

- 1.When running, take down the air filter to check whether the air inlet is open, such as normal open check whether there is air leakage behind
2. When air pumping is slow, try to take down the air filter element to see if it is normal to suppress
3. If the air inlet does not open, check the voltage of the solenoid valve and check the insurance
- 4.Adjust the pressure relief screw of the inlet valve to see whether the inlet valve does not open because of cylinder suffocation

# 10. Air compressor installation process

## Installation flow chart of air compressor



## Installation flow chart of air compressor suction dryer



## Installation flow chart of integrated air compressor + drying machine + air storage tank



- Class C filter: primary dust removal
- Class T filter: precision dust removal
- A filter: activated carbon
- Class X filter: activated carbon
- Class F filter: Super dust removal

	
Ball valve	Filter



## 2. Air compressor pipeline link flow chart

