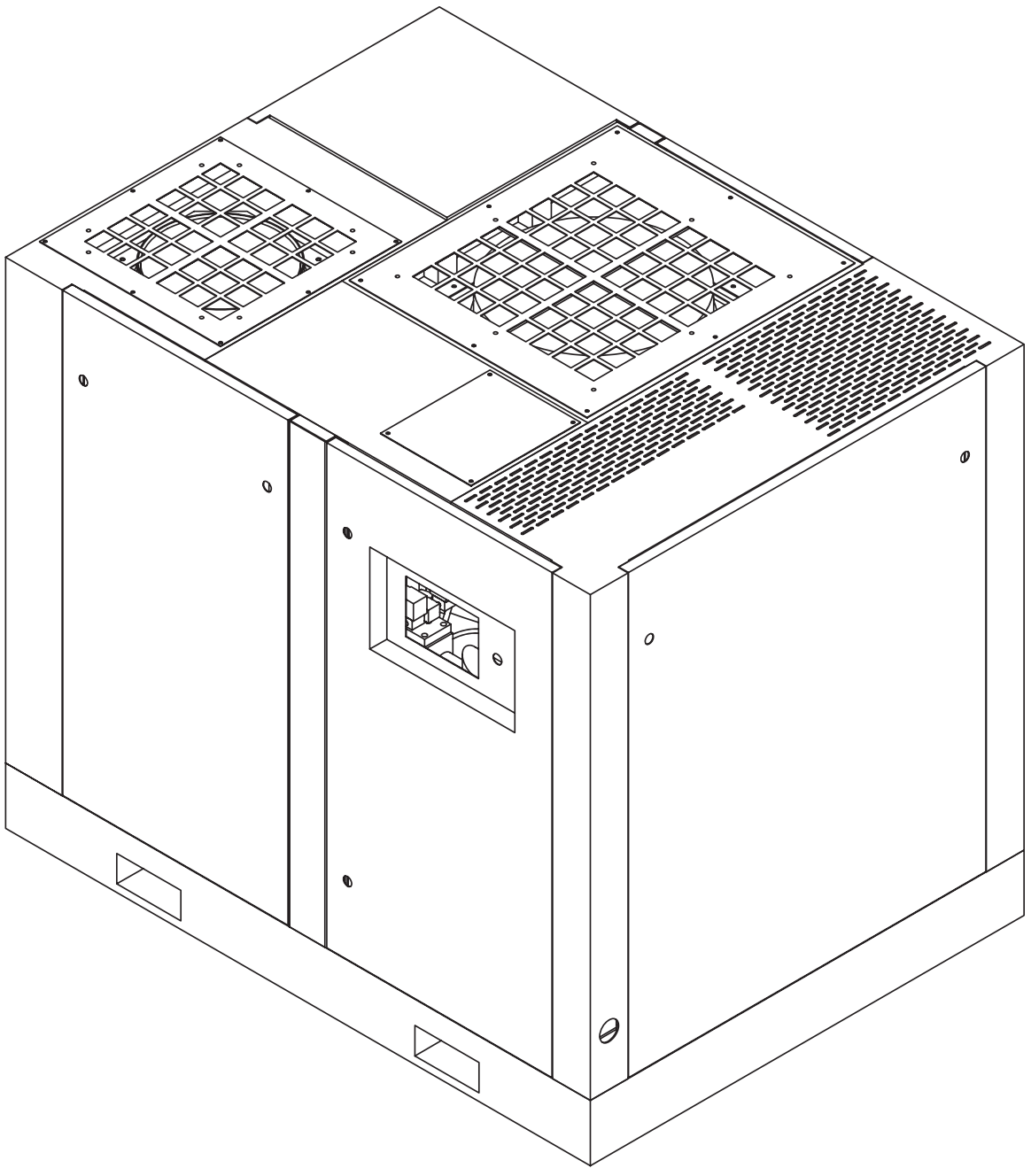
HIGH PRESSURE SCREW AIR COMPRESSOR

Operation and Maintenance Manual

Suit for CMN15G-250G



Ever-Power Group Co. Ltd

Table of Contents

Foreword

This **Operating Manual** illustrates the safety caution, the structure and function of each system and component, the operation and maintenance of CMNG series high pressure screw air compressor which made in zhejiang Jieneng Compressor Equipment Co., LTD.

Operators should read the manual carefully.Just can operate and maintain the compressor after fully understand the structure and function of each system and component and the safety caution. The introductions which not in this manual, for example, operate and maintain the compressor not according to this manual,or split or refit the compressor by himself, not using the Zhejiang Jieneng Compressor Equipment Co., LTD original components and so on. You will lose the right to claim if you do these.

This manual does not provide the spare parts diagram. Please consult our company if you need to order the spare parts. Meanwhile, please notice that our company is researching and improving our products. After a period of time, it will have some difference between the actual products and the manual description. So please kindly confirm with our company before you order the spare parts.

Due to the development of the products and technology,there have some changes in the technical parameters, please forgive that we do not inform you. Please make the object as the standard.

Before using the compressor, please read the manual carefully.Ensure to install and operate the compressor according with this manual.

This operating manual also introduces the general maintenance of the motor and electrical system. Please connect with us if you have question before using or repairing the compressor.

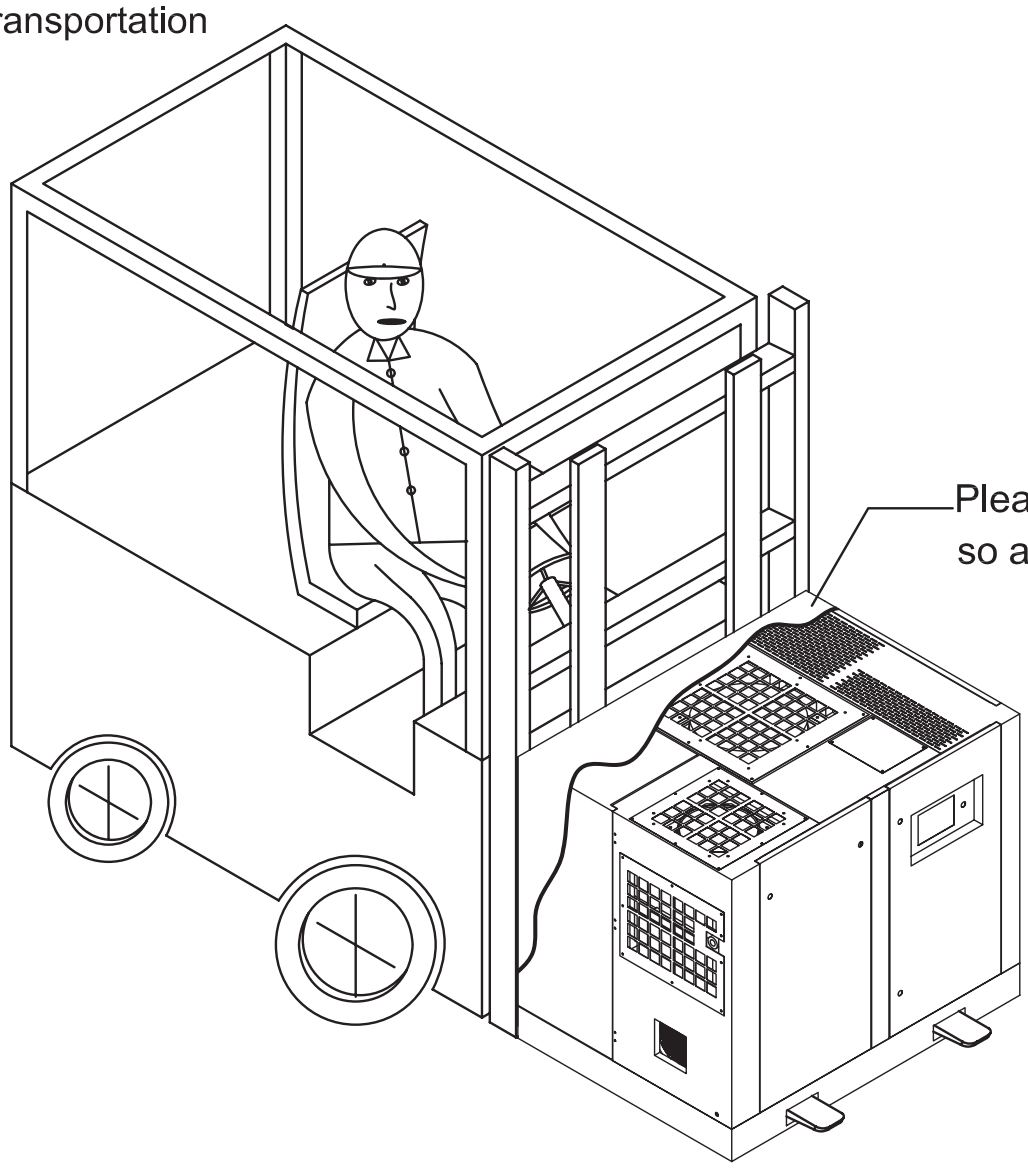
---2014.03

Charter 1 The Installation of Compressor

1.The Installation of Compressor

1.1 Transport of Installation Site

Forklift truck transportation

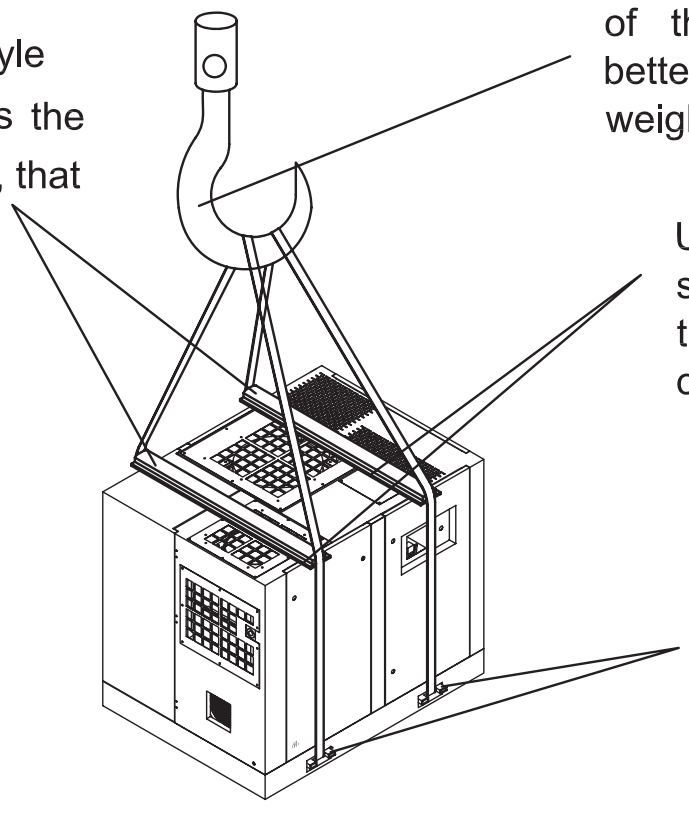


Please use the soft gasket, so as not to scratch the cabinet.

Crane Lifting

Ensure there is sufficient strength of the sling before lifting, it's better to check the compressor weight first.

Using the wood pad or same style standard batten which bigger as the width of the cabinet to fasten it, that can prevent the sling sliding or damage the cabinet.

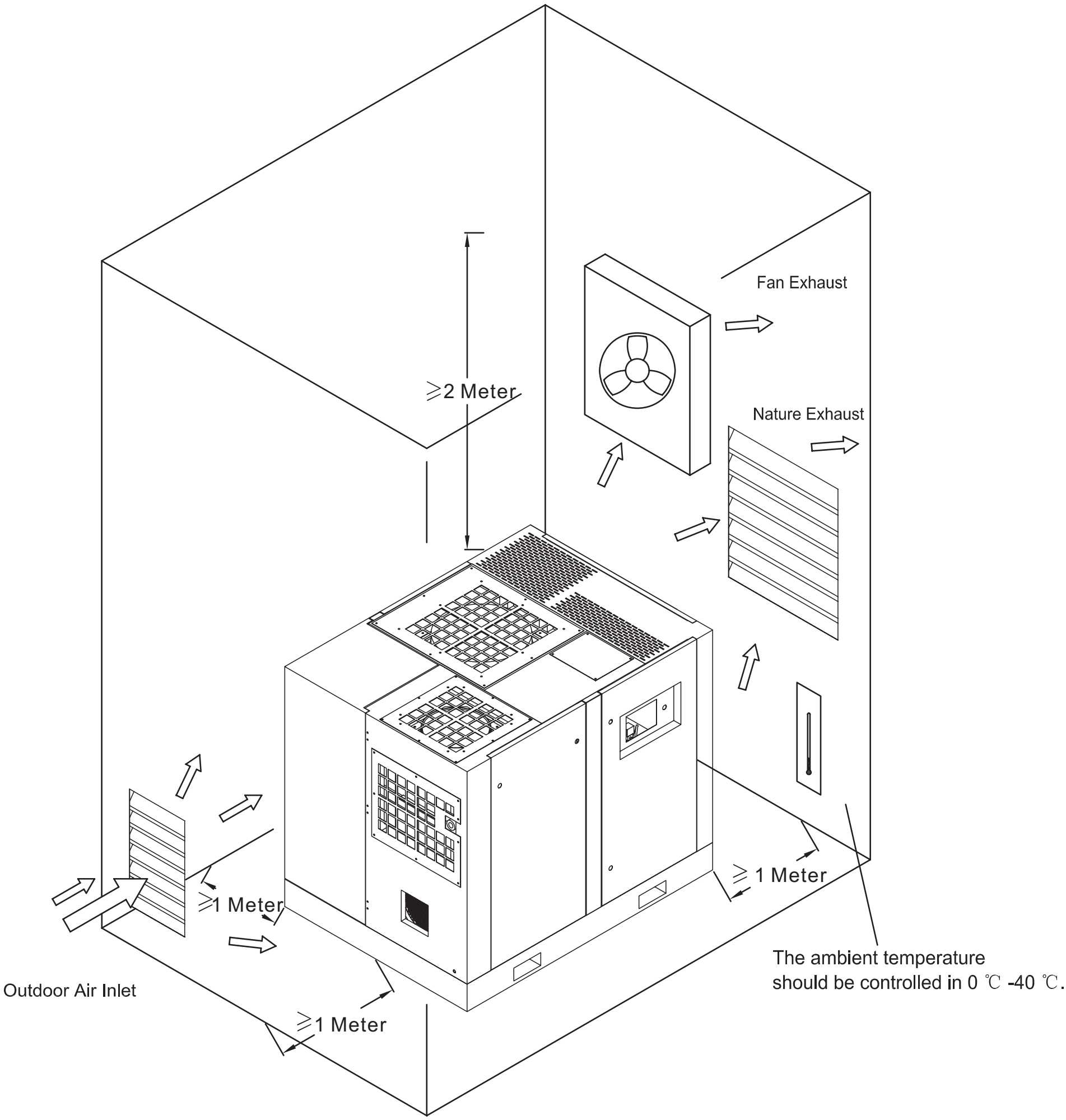


Using the soft gasket(sponge or soft cloth) to separate the cabinet, that can prevent to damage the cabinet.

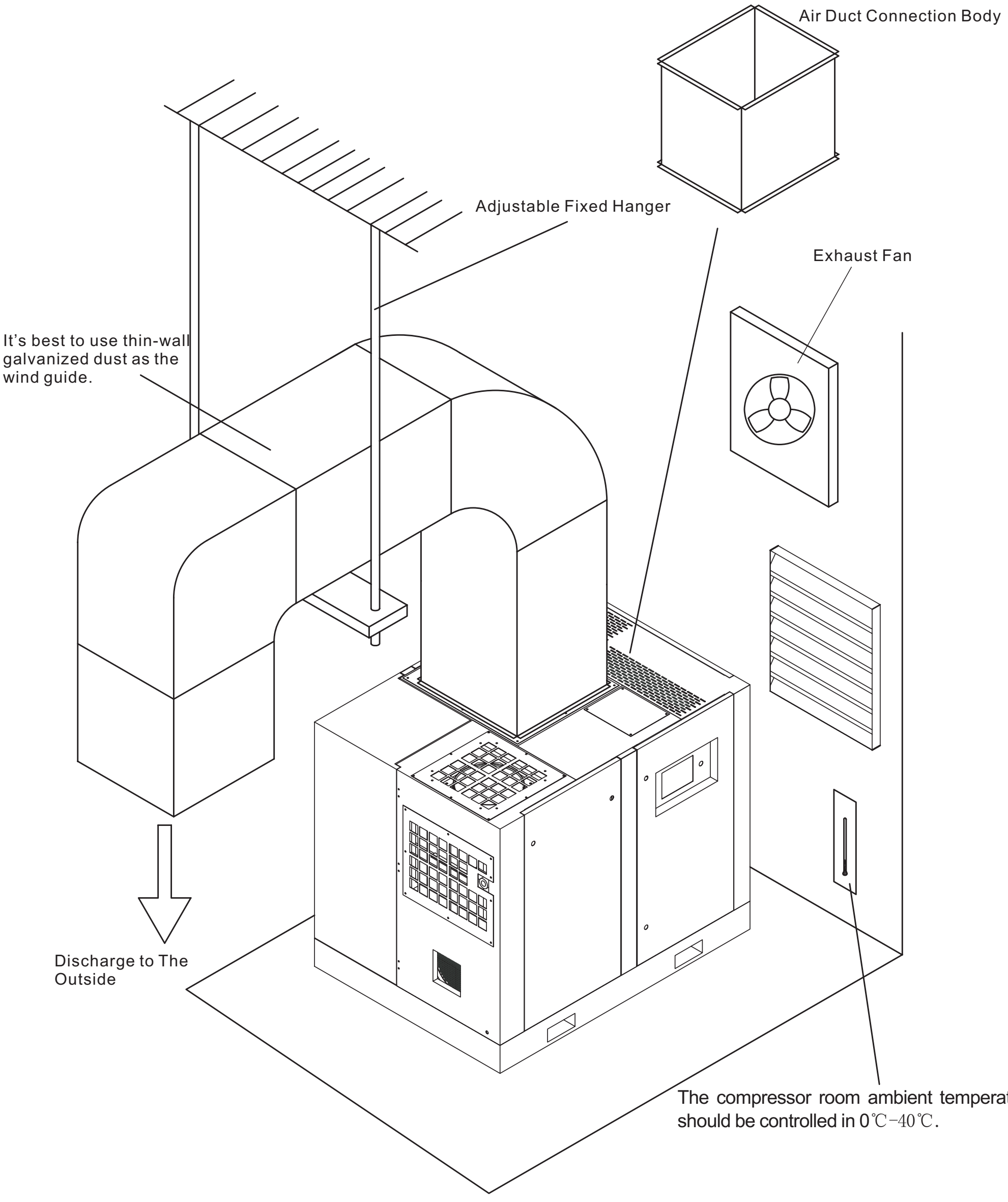
Using the wood pad or same style standard batten which bigger as the width of the cabinet to fasten it, that can prevent the sling sliding or damage the cabinet.

1.2 Installation Site Requirements

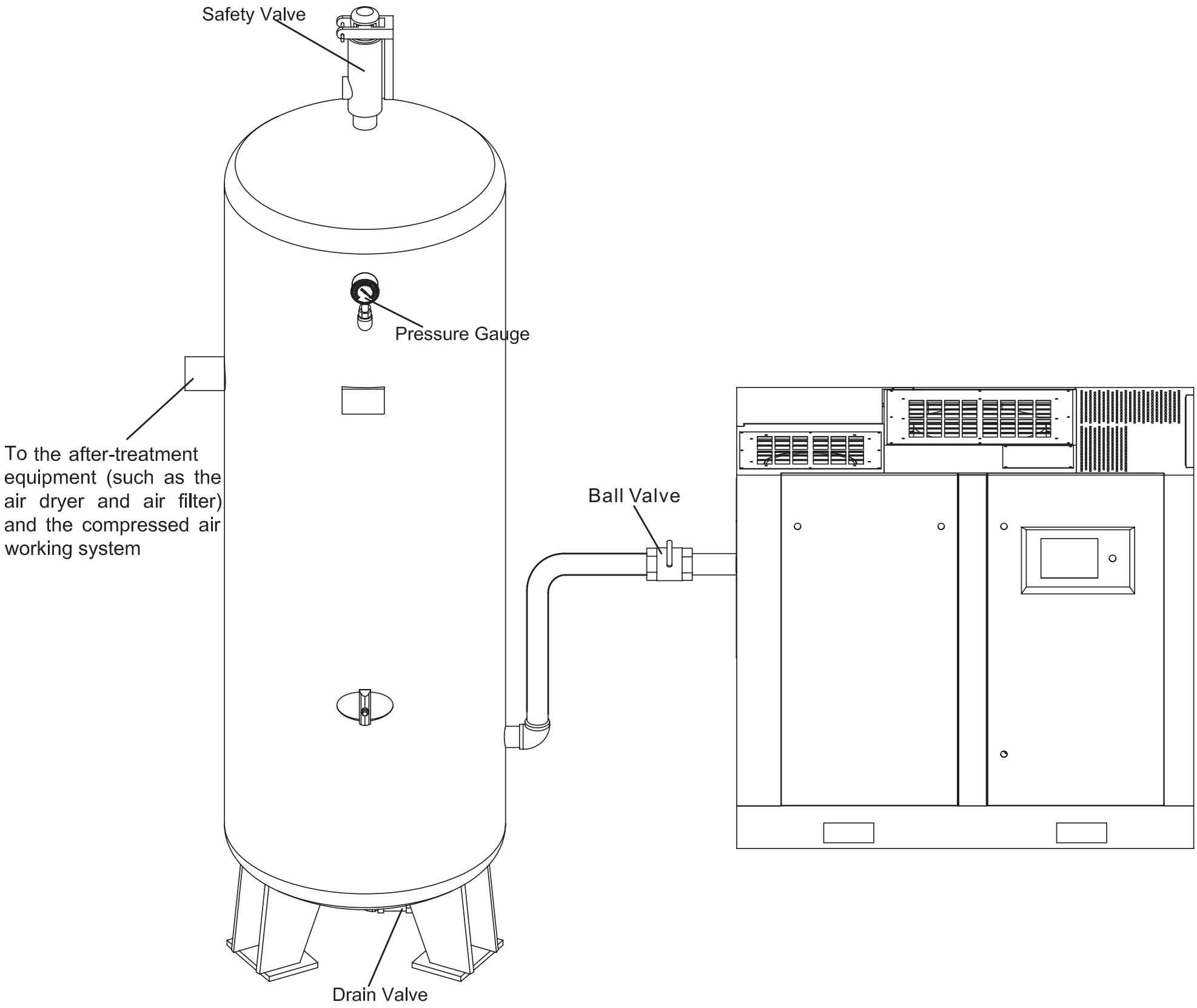
The working medium of the screw air compressor is the air. So there is a minimum requirement in the working environment space. And ensure that there is enough space so as to exchange the externa air withoutside. Meanwhile need no dust and fumes. Those are the basis operating environment conditions. Please see the details as below figure.



1.3 Pipeline Installation



Pipeline System of The Screw Compressor



Note: the volume of the receiver tank should be not less than the 1/3 of the capacity of the compressor.

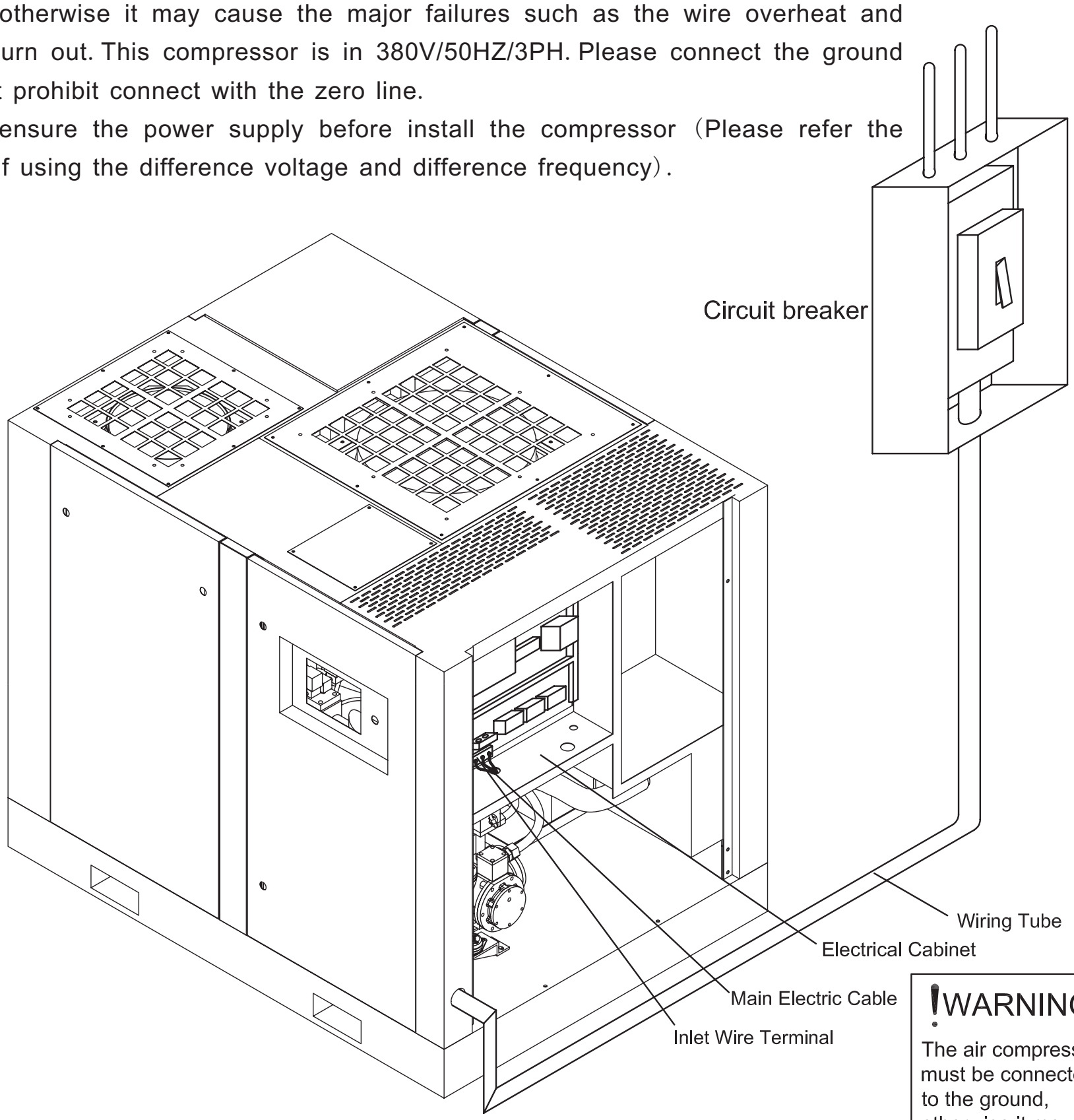
Eg: for 3. 0 m^3/min compressor, the volume of the receiver tank should be not less than 1 m^3/min.

for 6. 0 m^3/min compressor, the volume of the receiver tank should be not less than 2 m^3/min.

1.4 Power Supply

The power supply of the compressor should be complied with the requirements as below, otherwise it may cause the major failures such as the wire overheat and circuit burn out. This compressor is in 380V/50HZ/3PH. Please connect the ground wire, but prohibit connect with the zero line.

Please ensure the power supply before install the compressor（Please refer the remark if using the difference voltage and difference frequency）.



!WARNING:

The air compressor must be connected to the ground, otherwise it may cause a fire risk.

model / item	15G	22G	37G	45G	55G	75G	90G	110G	132G	160G	200G	250G
Rated breakage Current（A）	80	100	150	175	200	250	300	300	400	500	630	800
Cross Sectlon of Main Wire in Chinese Standard（mm2）	≥10	≥16	≥25		≥35	≥50	≥70	≥95	≥120	≥160	≥200	≥240
Length of the Wire（m）	The length of the wire should be according to the specification of the diagram. And it is decided by users. But it can't be too long.											

Note:

1.We not recommend using aluminum wire. Please contact with us if you ensure to use the aluminum wire.

2.If you do not use the 380V power supply, please connect with us.

Charter 2 The System Working Principle, Working Process And Operating Instructions And Troubleshooting

2.1 The Working Principle of The Screw Air Compressor System

2.1.1 Start

The main motor of the screw compressor adopts the star-delta switching unloading starting mode. When the motor is in stopping state, the intake valve is closed, the solenoid valve of the vent valve will be opened, motor starts in the star mode when the compressor unload, meanwhile, the solenoid valve of the oil cut-off valve is powered on, the oil cut-off valve will be opened. After 6-20 seconds the main motor switches into the delta mode. At this time the first stage air-end sucks the air through the small inlet air hole which on the intake valve and compresses the air to the first stage oil tank. The solenoid valve of the vent valve will be closed. After that it will have 0.2-0.3 Mpa system preliminary pressure in the first stage oil tank and it will have 1.0-1.5 Mpa system preliminary pressure in the second stage oil tank. So that the lubrication oil which in the oil tank goes through the cooling, and supplied to the first stage air-end and second air-end after passing the oil cut-off valve and oil filter.

2.1.2 Loading

About 5-10 seconds after the main motor switches into the delta running, the controller controls the loading solenoid valve and vent valve to be powered on. The loading solenoid valve is opened, the solenoid valve of the vent valve is closed, and the intake valve is opened. The air-end begins to run in the loading mode. When the pressure inside the second oil tank exceeds 2.0 Mpa, the minimum pressure valve will be opened. And the compressor will offer compressed air to the outside.

2.1.3 Unloading - Loading

About 5-10 seconds after the main motor switches into the delta running, the controller controls the loading solenoid valve and the vent valve to be powered off, the intake valve is closed. The solenoid valve of the vent valve is opened, the minimum pressure valve will be closed when the outside air pressure bigger than the pressure inside the oil tank. The compressor continues running and sucks air through the small holes which on the intake valve, and then compressed the air into the oil tank. The solenoid valve of the vent valve will be opened and discharge the compressed air. So that keep the pressure inside the first stage oil tank in 0.4 Mpa and the pressure inside the second stage oil tank in 1.5Mpa. And maintain the normal running of the system. At the time, the main motor is unloading running, the current is in 15% loading. When the outside pressure is decreased to the loading pressure, the controller controls the loading solenoid valve to be powered on and the vent valve to be closed. The intake valve is opened, the compressor is in loading running and offer the compressed air to the outside. And repeat the process like this.

2.1.4 Air/Oil Separator

When the compressor is running, the oil in the first stage and second stage oil tank will be driven by the system pressure, and go through the cooler, oil filter and the oil cut-off valve, and then inject to the air-end. The air-end discharge the oil-air mixture, when pass the oil tank, because of the action of the gas centrifugal force, impact, etc, there is more than 98% oil will be separated and precipitated in the oil tank. The residual oil will be further separated by air/oil separator and then precipitated to the bottom of the air/oil separator. At last it will back to the air-end through the oil return pipe.

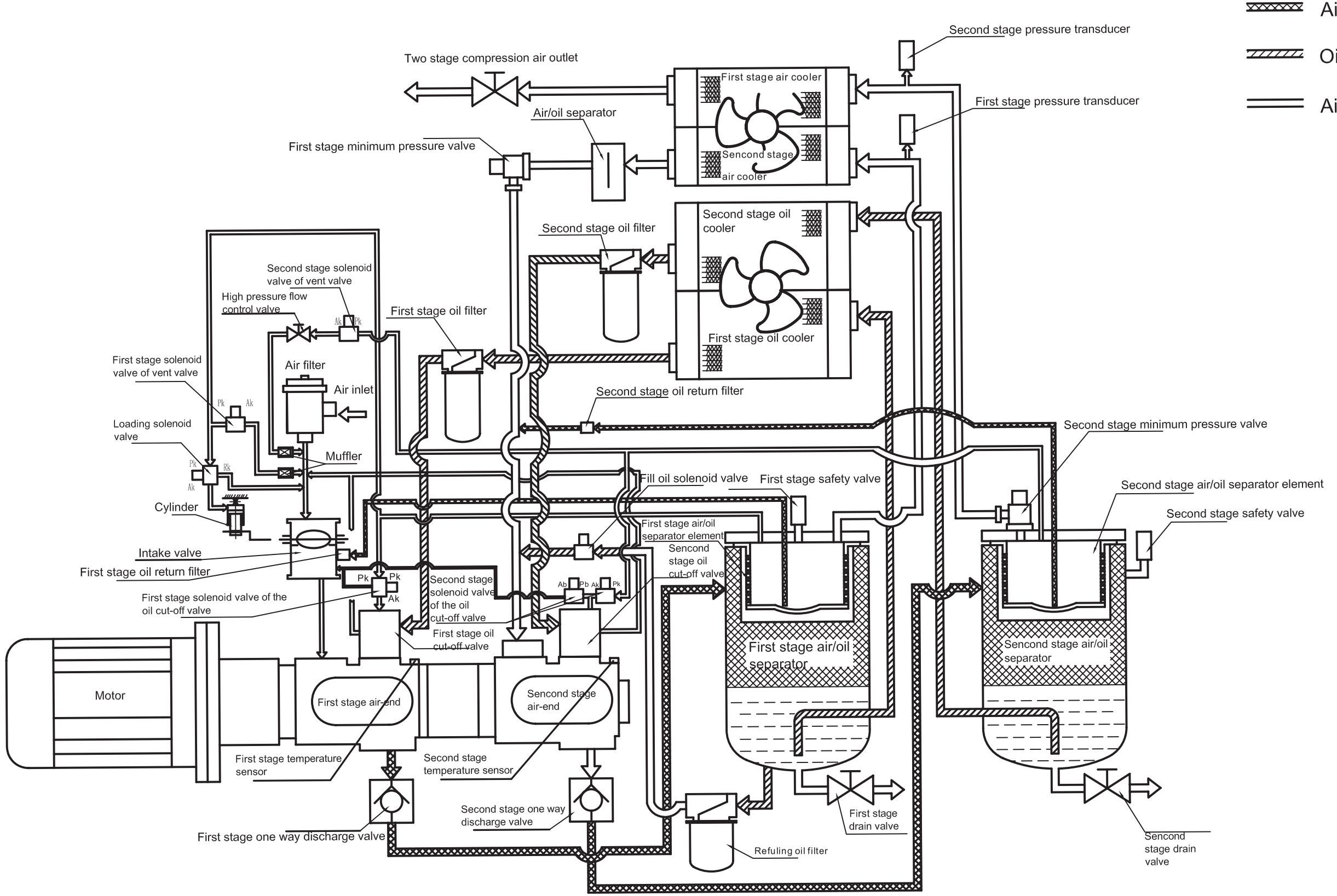
2.1.5 The Running Temperature And Cooling of The Air-end

The operating temperature of the oil-injection screw compressor should be maintained at 80℃-110℃. This can ensure the oil can be separated effectively and the oil won't be creaming and go bad as the water in the compressed air. When the controller check the discharge temperature of the air-end reaches to 90℃, the cooling fan will be powered on, the oil will be cooled and then inject into the air-end, to low down the discharge temperature. When the discharge temperature is lower than 80℃, the cooling fan will be powered off. And repeat the process like this.

2.1.6 Stop Running

When the compressor stops running, it will in unloading about 15-35 seconds first. The main AC contactor will be powered off and the oil cut-off valve will be closed.

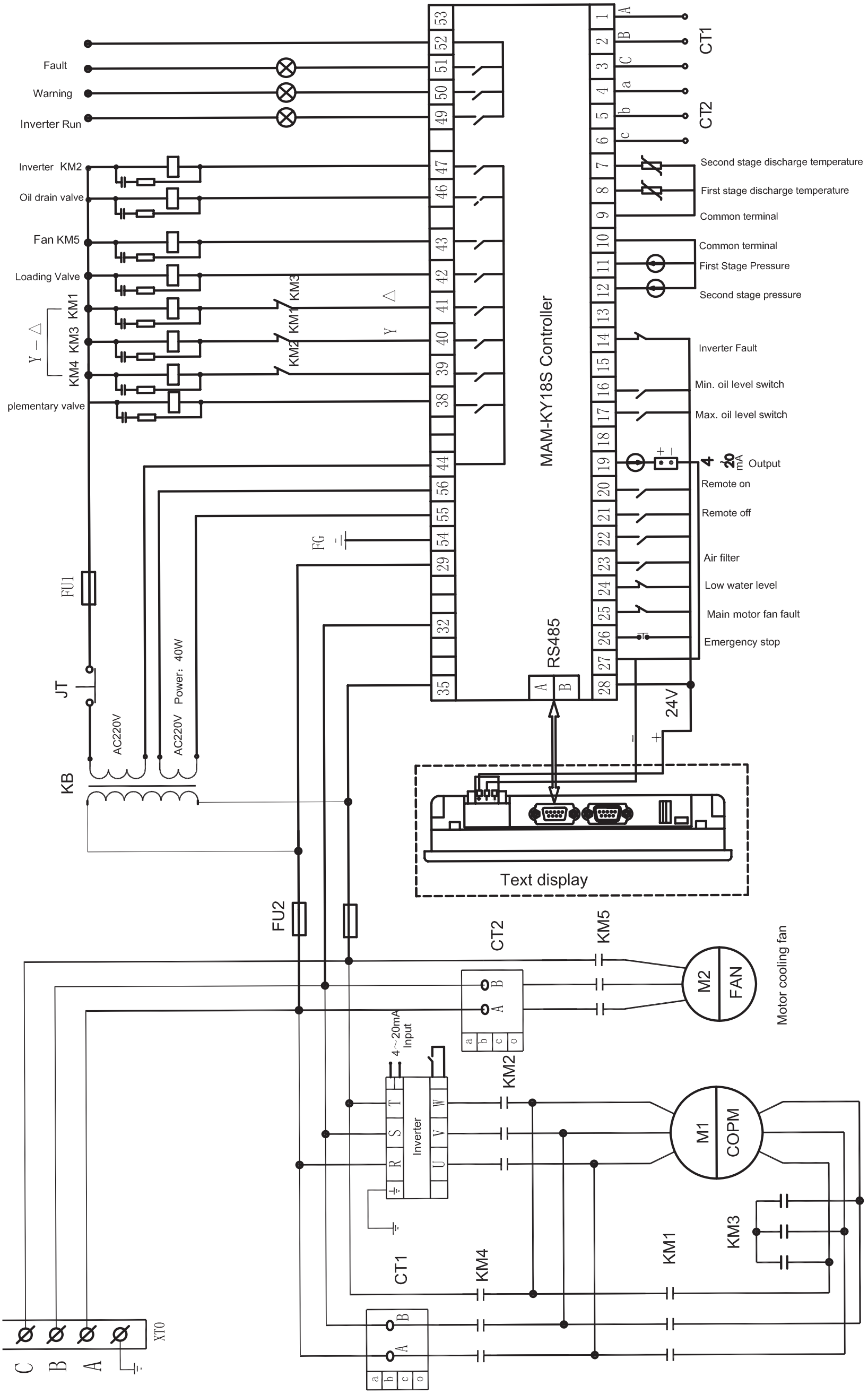
2.2 The Flow Chart of The System



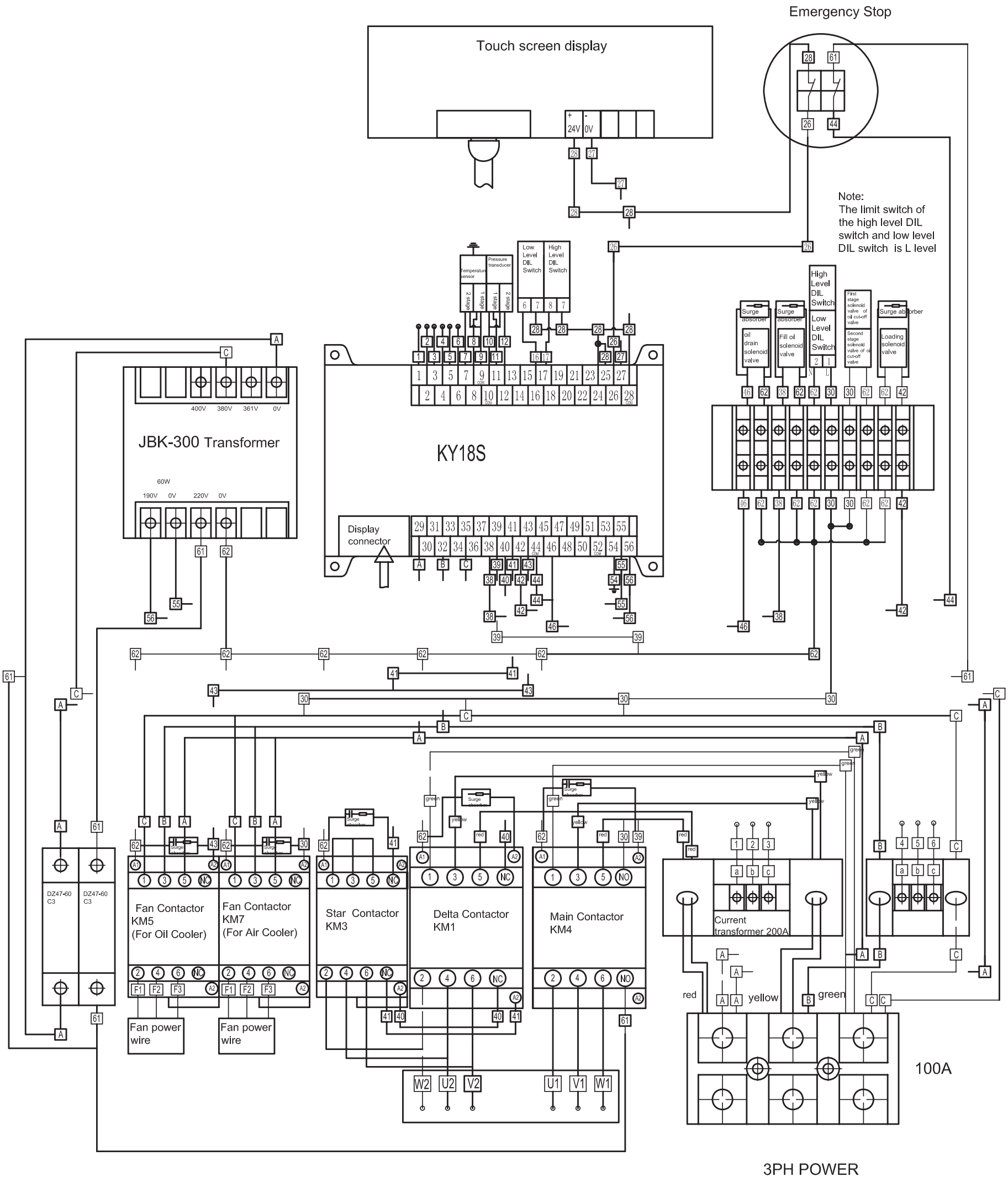
The Flow Chart of The Air Cooled 2 Stage Compressor

CMN 15G-250G

2.3 Electric Control Principle Diagram of Fixed Speed Compressor

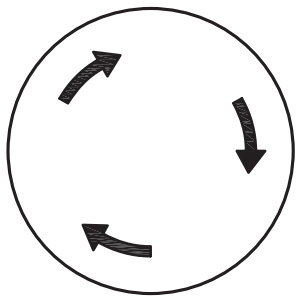


2. 4 The Wiring Diagram In The Electrical Box



3PH POWER

2. 5 Instruction For The Controller Panel



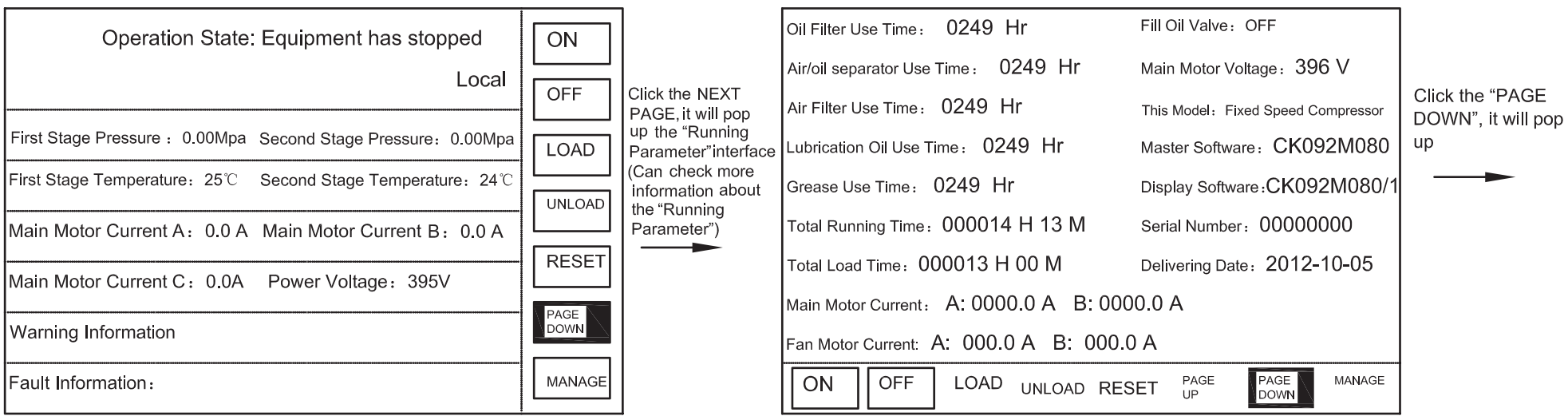
Emergency Stop

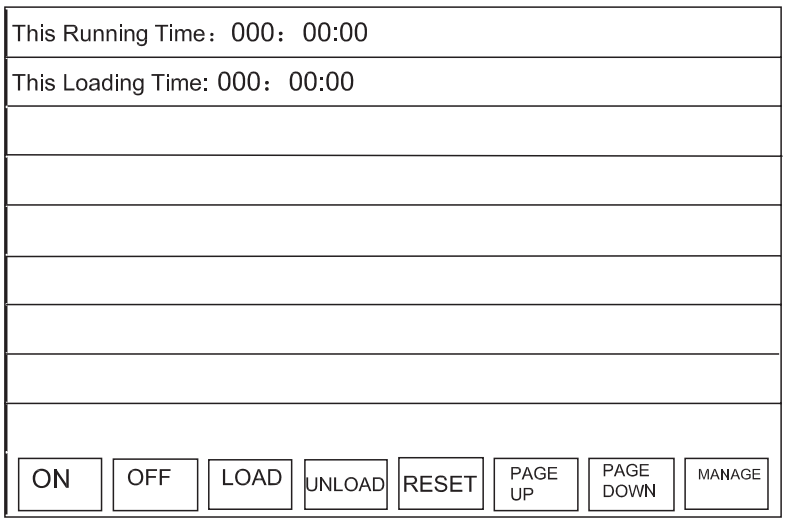
Name	Instruction
Text LCD touch screen	Full color touch screen, easy for operation and use.
“ON”	The motor will be run if press this button.
"OFF"	The motor will be stopped if press this button.
“LOAD”	When the compressor still in the unloading state, if user press this button, it can enter the loading state directly.
“UNLOAD”	When the compressor still in the loading state, if user press this button, it can enter the unloading state directly.
“RESET”	When in the menu operation, if press this button, it can be back to the previous menu. When the compressor is stop in fault, it can reset data if press this button.
“PAGE DOWN”	When check or modify the data, it can go to next page if press this button.
“MANAGE”	It can enter the manage interface if press this button, to set parameters.
“Emergency”	When the compressor is running, just can press this button when there are any abnormal noise, abnormal vibration and air leakage, oil leakage phenomenon.

2. 6 Instruction For The Compressor Controller

2. 6. 1 Display and operation when in running state

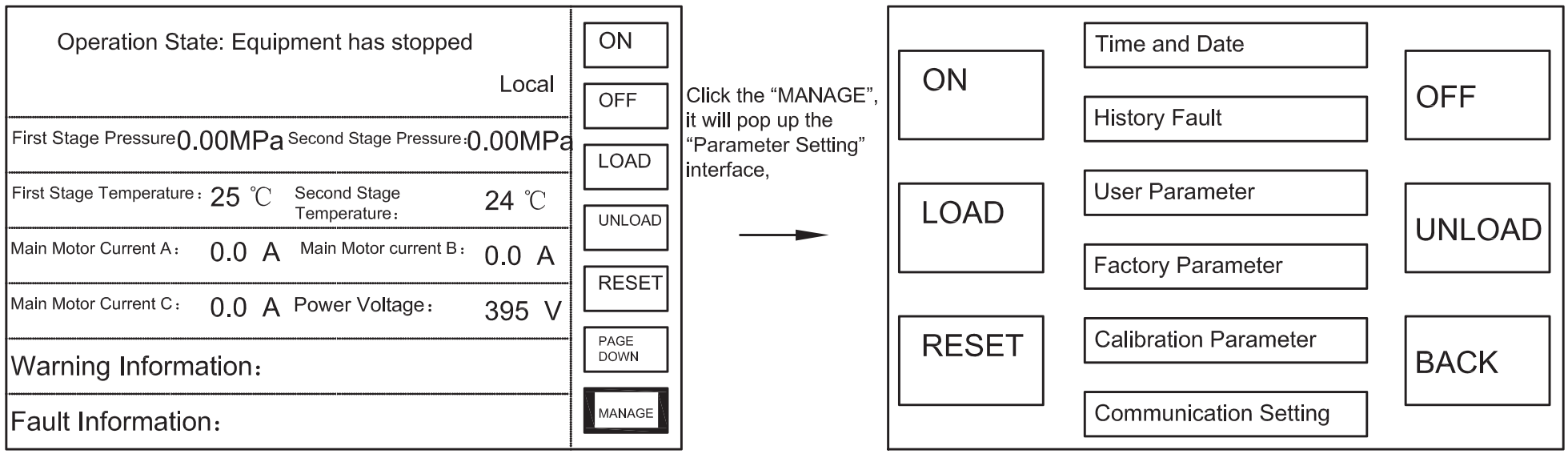
When the compressor is powered on for a while（about 30 seconds after starting the touch screen）. It will enter into the “RUNNING STATE” interface. The display screen will be showed as below,





2.6.2 Check and Modify The Manage Parament

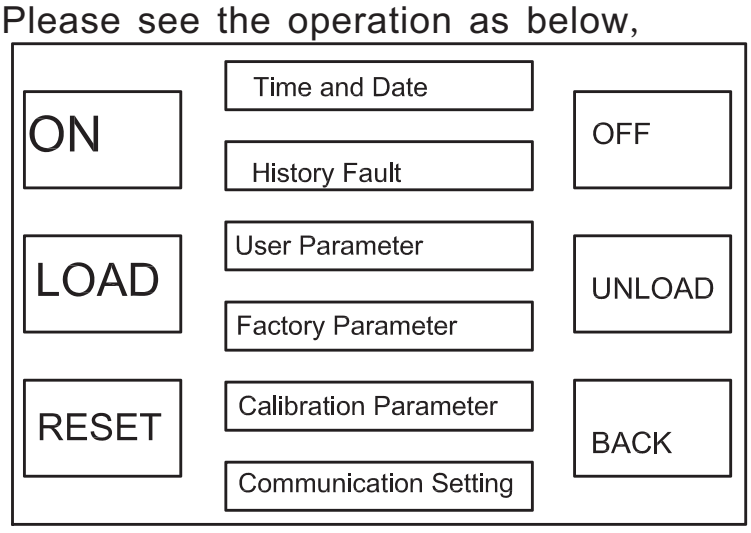
In the “Operation State” interface, click “Manage” button and enter into difference parameter setting interface, please see the operation as below,



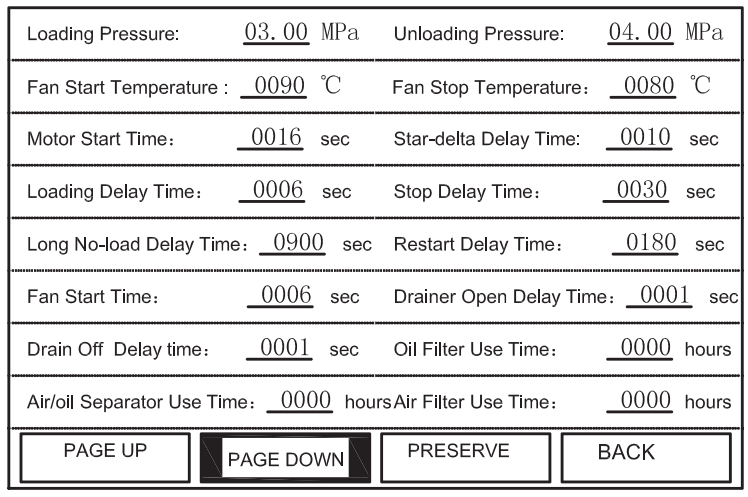
1).The parameter setting as above diagram, click the “Time and Date” and enter into its parameter setting, you can set the time and data of the touch screen. This can be used to record the fault time.

2).The parameter setting as above diagram, click the “History Fault” and enter into the record interface about the history fault. You can check the fault information by date.

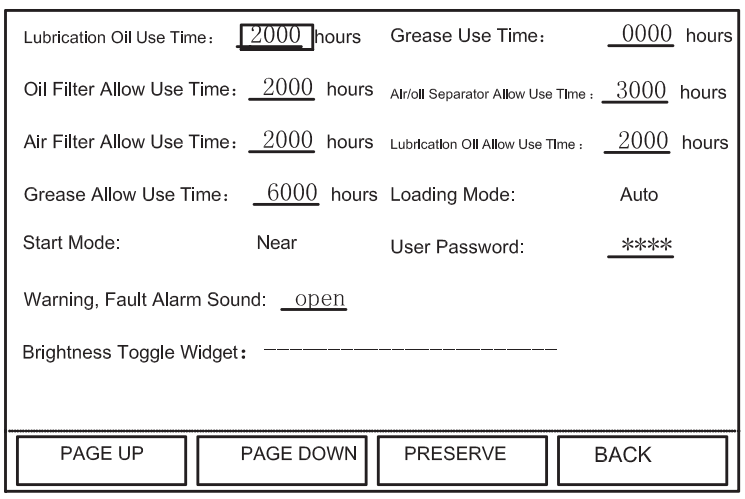
3).The parameter setting as above diagram, click the “User Parameter” to enter the user parameter setting interface. If need to modify the user parameter, you need to input the password first.
Please see the operation as below,



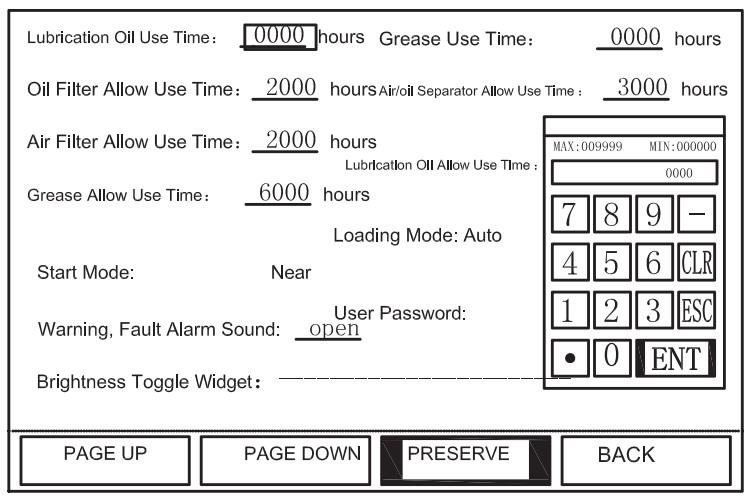
Click the “User Parameter”, it will pop up the “User Parameter” interface,



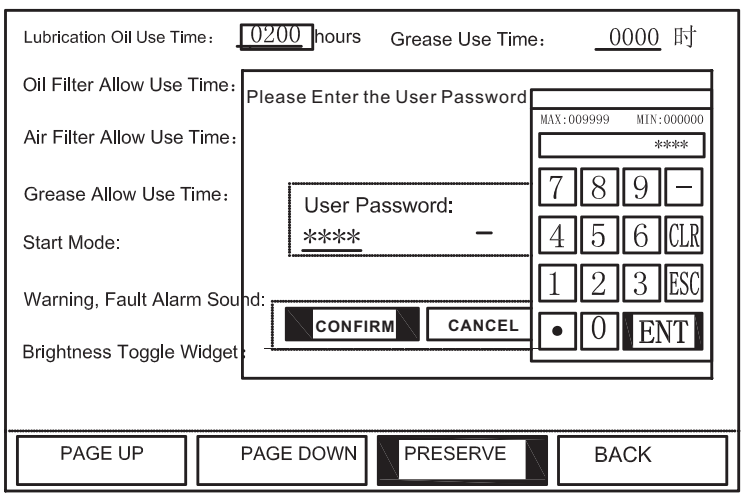
Click the “Page Down”, it will pop up the “User Parameter” interface,



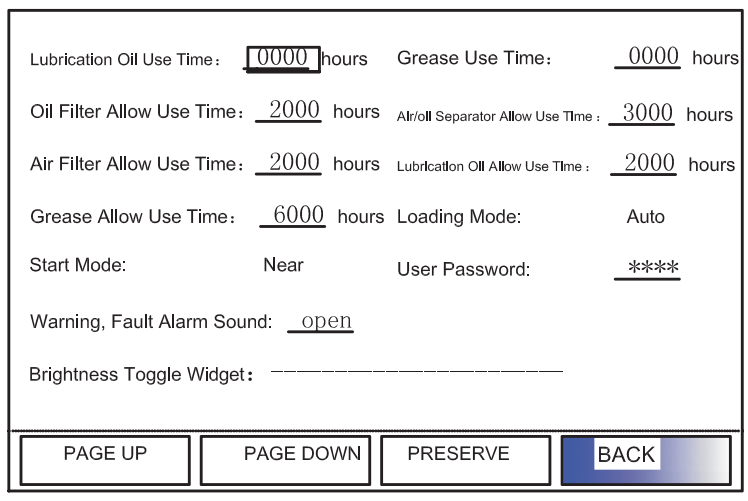
If need to modify the value, can click the value directly, and then pop up the “Value Keyboard”, input the value, press “ENT” to complete the modify.



If need to modify the value, can click the value directly, and then pop up the “Value Keyboard”, input the value, press “ENT” to complete the modify.



Input the password and press the “ENT” button to complete the input. Press the “CONFIRM” button and complete the password verify. And then back to the current interface to save the parameter.



Click the “BACK” button and exit the “User Parameter” interface.

4） The parameter setting was shown as the above figure, click the “Factory Parameter” and enter into the “Factory Password” verify interface. After input the correct password, Can check and modify the“Factory Parameter”,the operation of modify parameter and password is same as the user parameter.

5）The parameter setting was shown as the above figure, press the “Modify Data” button and enter the verify interface “Calibration Parameter Password”, after input the correct password, it can check and modify the data. The operation method is same as the User parameters. （Note: The controller had been calibrated with the precision instrument before compressor is delivered from the factory. Normally no need to calibrate the controller again. If you modify the data, it may affect the normal operation of the compressor）.

2.6.3 The Parameter List and Function

Type	Parameters	Setting the initial value	Function
User parameters	Loading pressure	*.**Mpa	Loading pressure value
	unloading pressure	*.**Mpa	unloading pressure value
	Fan start temperature	85℃	Control fan to star
	Fan stop temperature	75℃	Control the fan to stop
	Motor start temperature	18.5-22kw 16S	When the controller protects the motor, it requires this time can avoid the impulse currents while the motor starting. This time value must be greater than the star-delta delay time +loading delay time.
		30-37kw 18S	
		55kw 20S	
		75kw 20S	
		⩾90kww 20S	
	Star-delta delay time	18.5-22kw 10S	The delay time when starting the star-delta reduces the pressure.
		30-37kw 12S	
		55-75kw 14S	
		⩾90kww 20S	
	Load delay time	0006S	The delay times after starting the star-delta reduce the pressure.
	Stop delay time	18.5-22kw 90S	When stop the compressor, just can be stopping when the no-loading time exceeds this delay time.
		30-37kw S	
		55kw S	
		75kw S	
		⩾90kww S	
	No-loading overlong time delay time	0900sec	The compressor will be stop automatically when the no-loading time exceed this time.
	Restart delay time	＜37kw 180S	Just can re-start the compressor after this delay time when stop or no-load the compressor for a long time.
		⩾37kw 180S	
	Fan start time	0006S	When the controller protects the motor, it requires this time can avoid the impulse currents while the motor starting.
	Drain open delay time	0001S	This time means the continuous water drainage time when control by the automatic drain.
	Drain close delay time	0001S	This time means the interval time of water drainage when control by the automatic drain.
	Oil filter use time	0000H	The using time of the oil filter. Need to reset it in 0000H after replace the new oil filter.
	Air/oil separator use time	0000H	The using time of the air/oil separator. Need to reset it in 0000H after replace the new air/oil separator.
	Air filter use time	0000H	The using time of the air filter. Need to reset it in 0000H after replace the new air filter.
	Lubrication oil use time	0000H	The using time of the lubrication oil. Need to reset it in 0000H after replace the lubrication.

Type	Parameters	Setting the initial value	Function
User parameters	Grease use time	0000H	The using time of the grease. Need to reset it in 0000H after replace the grease.
	Oil filter allow use time	2000H	The maximum using time of the oil filter. The controller will alarm when the cumulative using time reaches this setting value. It won't alarm when it was set in 0000H.
	Air/oil separator allow use time	3000H	The maximum using time of the air/ oil separator. The controller will alarm when the cumulative using time reaches this setting value. It won't alarm when it was set in 0000H.
	Air filter allow use time	2000H	The maximum using time of the air filter. The controller will alarm when the cumulative using time reaches this setting value. It won't alarm when it was set in 0000H.
	Lubrication oil allow use time	2000H	The maximum using time of the lubrication oil. The controller will alarm when the cumulative using time reaches this setting value. It won't alarm when it was set in 0000H.
	Grease allow use time	2000H	The maximum using time of the grease. The controller will alarm when the cumulative using time reaches this setting value. It won't alarm when it was set in 0000H.
	loading mode	Auto/Manual	When this was set in AUTO, the compressor can be loading or unloading automatically. When this was set in Manual, need to press the buttons if need to load or unload the compressor.
	On-off mode	Local/Remote	When this was set in Local, can not on/off the compressor by the remote switch. When this was set in Remote, both Local switch and Remote switch can on/off the compressor.
	password	****	The user can set their password.
	Alarm sound of the warning and fault	ON/OFF	When this was set in ON, The touch screen will alarm with "beep" sound once it check that there is any fault.
	Adjustment of screen brightness		

Type	Parameters	Setting the initial value	Function
Factory parameters	Motor rated current	Allowable maximum overload value of the motor /1.2	After the start delay, the motor will shutdown as the overload when the motor current is greater than 1.2 times of this setting value.
	Fan rated current	allowable maximum overload value of the fan /1.2	After the start delay, the fan will shutdown as the overload when the fan current is greater than 1.2 times of this setting value.
	Second stage alarm temperature	105℃	It will alarm when the discharge temperature reaches this setting value.
	Second stage stop temperature	110℃	It will alarm and shutdown when the discharge temperature reaches this setting value.
	Second stage stop pressure	actually pressure+0.15Mpa	It will alarm and shutdown when the discharge temperature reaches this setting value.
	Maximum unloading pressure	According with the pressure of different model	Limit the user to set the maximum unloading allowable pressure. User need to set the unloading pressure to be smaller than or equal to this setting value.
	Current unbalance	0020	When (the max. phase current/min. phase current) ⩾ (1+setting value/10), the compressor will be shutdown as the unbalance protection. When this setting value ⩾ 15, it will loss the unbalance protection function.
	Lack phase protection time	0002S	When the setting value ⩾20 seconds, it will loss the lack phase protection function. It will work when the unbalance protection is active.
	shutdown as warning for too long	0000H	The compressor will be shutdown when (air filter, oil filter, separator ect.) operation time is greater than the maximum using time +this setting valve.
	Fault history reset	0000	The fault history will be cleared when input 8888.
	Maximum use time	0000H	If the cumulative using time exceeds this setting value, it will alarm “using error” and shutdown when the compressor is in stop state.
	First stage Stop Pressure	01.00Mpa	The compressor will be shutdown when the first stage offering pressure is greater than this value.
	Loading oil filling time	200S	The oil filling time when loading, the maximum value can be set in 999.
	Loading oil drain time	60S	The oil drain time when loading, the maximum value can be set in 999.
	Unloading oil filling time	180S	The oil filling time when unloading,the maximum value can be set in 999.
	Unloading oil drain time	60S	The oil drain time when unloading, the maximum value can be set in 999.
	Current average time	0004	The current value in the running parameter need to be set according this value. This value bigger, the current in the running parameter will be changed more slowly.

Type	Parameters	Setting the initial value	Function
Factory parameters	Power frequency	50HZ	This value can be chosen 50HZ or 60HZ. If you set the frequency in wrong setting, the detected current will be deviation.
	Serial No.	00000000	Serial number of the compressor
	Loading time	00000000H00M	This can modify the cumulative loading time of the compressor.
	Total running time return	000000Y00M	This can modify the cumulative running time of the compressor (need to input the password if modify it).
	Delivering date	0000-00-00	Record the date of the compressor was delivered from the factory.
	Low temperature protection value	-05℃	When the controller detects the discharge temperature is lower than this value, it will display “ Low temperature”, and not allow to start the compressor. After running the compressor 2 minutes, if the controller detects the discharge temperature is lower than this value, it will alarm and shutdown. And alarm the “Low temperature”.
	Pressure units	Mpa/Bar/PSI	Mpa/Bar/PSI can be chose.
	Temperature units	℃/℉	℃/℉ can be chose.
	Voltage is too low	0340V	Here can set the minimum voltage. When the voltage is lower than this value, the compressor will alarm and shutdown. When this value was set in 0000, it won’t alarm when the voltage is too low.
	Voltage is too high	0440V	Here can set the maximum voltage. When the voltage is greater than this value, the compressor will alarm and shutdown. When this value was set in 0000, it won’t alarm when the voltage is too higher.
	Phase sequence selection	Allow/Forbid	Allow/Forbid can be chose. (need to input the advanced password if modify it).
	Driven mode Selection	Fixed speed/VSD	Fixed speed/VSD can be chose.
	Factory password	****	Need to input the advanced password if need to modify this value.
	Factory advanced password	****	Need to input the super password if need to modify this value.
	First stage warning temperature	100℃	It will alarm when the discharge temperature is greater than this value.
	First stage stop temperature	105℃	It will alarm and shutdown when the discharge temperature is greater than this value.
	First stage warming pressure	0.9Mpa	It will alarm and shutdown when the discharge pressure is greater than this value.
	Second stage warming pressure	＞ this model pressure +0.1Mpa	It will alarm when the discharge pressure is greater than this value.
	Wire/ phase current selection	Wire current/Phase current	Wire current/phase current can be chosen. If you set in the wrong setting, the detected current will be deviation.

2. 7 Troubleshooting

Notice:Must forbid running the compressor before troubleshooting. And totally release the system pressure to 0.

2. 7. 1 The compressor will alarm but not stop when the controller detects the information as below, the touch screen will display the alarm name and the fault name, and it will be buzzing alarm. The display will return to normal if all the faults were disappear.

Item	Alarm Name	Fault Name	Reason	Solve Method
1	Air filter life end		The using life of the air filter exceeds the allow maximum using life	Replace the air filter, Reset the using life of the air filter to 0.
2	Air/Oil separator Life end		The using life of the air/oil separator exceeds the allow maximum using life	Replace the air/oil separator, Reset the using life of the air/oil separator to 0.
3	Oil filter life end		The using life of the oil filter exceeds the allow maximum using life	Replace the air/Oil separator, Reset the using life of the air/oil separator to 0.
4	Lubrication oil life end		The using life of the lubrication oil exceeds the allow maximum using life	Replace the lubrication oil , Reset the using life of the lubrication oil to 0.
5	Grease life end		The using life of the grease exceeds the allow maximum using life	Replace the grease, Reset the using life of the grease to 0.
6	First stage temperature warning	First stage temperature high	High Ambient temperature	Improve the room ventilation, increase the inlet and exhaust vents.
			Cooler blocked	Check whether the cooler is blocking or not? Clean the cooler.
	Second stage temperature warning	Second stage temperature high	Fault in the oil cut-off valve	Check the oil cut-off valve. Repair or replace it.
			Oil filter blocked	Replace the oil filter
			Fault in the fan	Check the fan. Repair or replace it
7	First stage pressure warning	First stage temperature high	Pressure sensor in fault	Pressure sensor calibration value.
	Second stage pressure warning	Second stage temperature high	The intake valve closing error.	Check the intake valve, cylinder and other components, repair or replace them.

2. 7. 2 The compressor will be shutdown when the controller detects the information as below, the touch screen will display the alarm name and the fault name, and it will be buzzing alarm. The display will return to normal if all the faults were disappear. Controller still buzzing alarm, please presses the “RESET’’ button to stop the buzzing alarm. The controller wills buzzing alarm about 10 minutes, exceeds 10 minutes it will stop to alarm. The fault record will record the current of fan when the fault in “Fan overload”, “Fan current overload”,“Fan unbalance”. If other faults, the fault record will record the motor current.

Item	Fault Name	Fault Reason	Solve Method
1	Reset emergency stop	Cannot reset after presses the emergency stop button.	Spin the button according to the arrow direction to reset it
2	voltage is too low	The main power supply voltage is too low or lack of phase.	Adjust the main power supply voltage or check three-phase voltage.
3	voltage is too high	The main power supply voltage is too high	Adjust the main power supply voltage
4	Second stage pressure is too high	Pressure sensor is in fault/setting value of the pressure sensor had changed.	Check the pressure sensors, replace or modify the setting value of it.
		Controller is damage.	Check the controller. Reset the discharge pressure value.
		The intake valve can not closed completely The cylinder can not reset completely	Check the intake valve, cylinder and other parts, repair or replace them.
5	Motor short circuit	Main motor was in fault	Check and repair the motor
6	Fan overload	Fan was in fault	Repair or replace the fan
		The connecting of contactor is not good.	Change the contactor. Tightening the connecting.
7	Main motor overload	Air-end was in fault.	Check the air-end turning situation, repair or replace it.
		The connecting of contactor is not good.	Change the contactor. Tightening the connecting.
		Blocking in the separator element. The difference pressure is increasing.	Replace the separator element
		Main motor was in fault.	Repair or replace the motor
8	Fan high temperature	Fan overheating or the temperature sensor of fan was in fault.	Check, repair or replace the fan
9	Main motor high temperature	Main motor overheating or the temperature sensor of main motor was in fault.	Check, repair or replace the motor
10	Lack phase	Lack phase in the power supply or motor	Check the wire connecting, and the terminal of the AC contactor
11	Phase sequence error	Wrong phase sequence in the wire inlet ABC	Exchange any two phase of the inlet wire.
12	Pressure sensor failure	Pressure sensor was in fault.	Replace the pressure sensor, check the wiring connecting, and terminal connecting
13	First stage high temperature	Ambient temperature is too high	Improve the room ventilation, increase the inlet and exhaust vents.
		Cooler blocked	Check whether the cooler is blocking or not? Clean the cooler.
		Oil cut-off valve was in fault	Check the oil cut-off valve. Repair or replace it.
	Second stage high temperature	Oil filter blocked	Replace the oil filter
		Fan or electrical parts were in fault	Check the fan and electric circuit Repair or replace it
		Temperature sensor was in fault	Check the wire connecting Repair or replace the fan
		The signal wire of the temperature sensor and the shielding wire were in current short.	Replace the temperature sensor
14	No-load for too long	Unloading time is too long	Adjust the no-load delay time

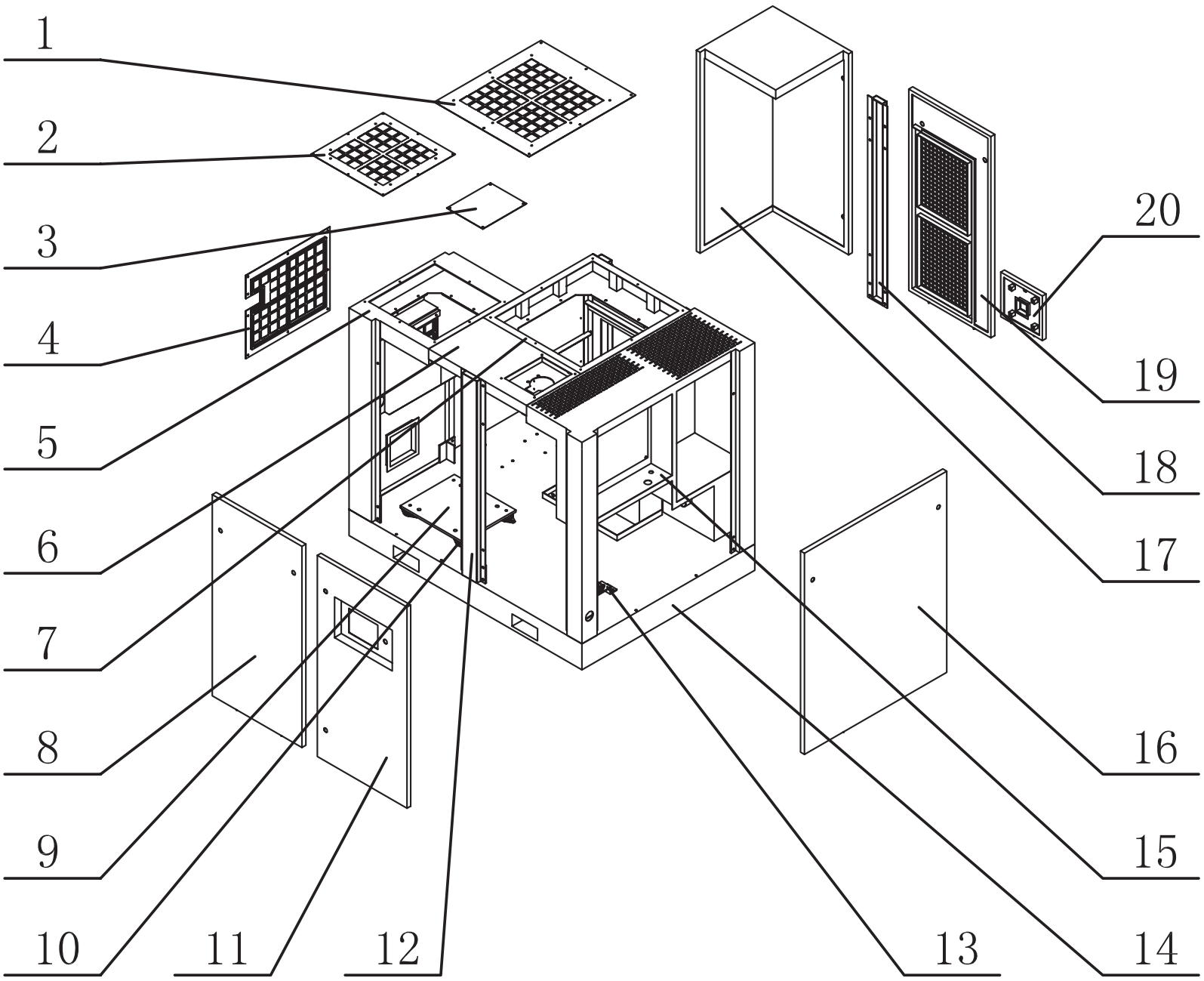
2. 7. 3 The Fault and Solve Methods When The Compressor Controller Do Not Alarm

NO.	Fault Name	Reason	Methods
1	Touch screen black or does not start	The switch of the control circuit was tripped	Check the reason, reset the switch.
		The voltage is too high or too low	Check the power circuit, adjust the voltage
		No power input or lack of phase	Connect the power supply or check the power circuit.
		The controller is in fault	Check the controller, repair or replace it.
		The transformer is damage	Replace the transformer
2	Operating current is too high,Compressor was shutdown	The air switch is in fault,	Replace the air switch.
		The supply voltage is abnormal.	Check the power circuit, adjust the voltage
3	The PLC display the compressor is in loading, but actually it is not loading.	The loading solenoid valve is in fault.	Check the loading solenoid valve, repair or replace it.
		The controller is in fault.	Check the controller.
		There is leakage in the pipeline between the loading solenoid valve and the cylinder.	Check the pipeline and the connecting. Repair or replace the pipeline when it is leakage.
		The intake valve is in fault.	Check the intake valve, repair or replace it.
		Block in the air filter element.	Replace the air filter element.
4	Compressor overload, the safety valve was opened	The pressure sensor is in fault or its setting value is greater than the adjust value of the safety valve.	Check the pressure sensor, adjust the setting valve or repair or replace it.
		The inlet connector of the pressure sensor is leakage.	Check whether the pressure sensor is leakage or not, repair or replace it.
		The loading solenoid valve is in fault.	Check the loading solenoid valve, repair or replace it.
		The intake valve and the cylinder is in fault.	Check the butterfly valve and cylinder. Repair or replace them.
5	Oil consumption is too much, the condensate from the oil tank is in emulsified state.	Too much lubrication oil in the oil tank.	Stop the compressor and release the system pressure, reduce the lubrication oil in the oil tank.
		The throttle hole in the connector of oil return pipeline is blocking.	Clean the throttle hole.
		Too much foam. Using the wrong lubrication oil.	Change to use the correct lubrication oil.
		The air/oil separator is not work.	Replace the air/oil separator
6	Oil injection when compressor stop	The air discharge one way valve is leakage or damage.	Check, repair or replace the one way valve. Replace the air filter element.
		The oil cut-off valve is leakage or damage. Block in the solenoid valve of the oil cut-off valve.	Check, repair or replace the oil cut-off valve and the solenoid valve of the oil cut-off valve. Replace the air filter element.
		The min. pressure valve is in fault.	Check, repair or replace the Min. pressure valve.

NO.	Fault Name	Reason	Methods
7	The free air delivery and the discharge pressure can not reach the rate value.	The air consumption exceeds the free air delivery	Check whether there is any place is leakage in the pipeline or not. Otherwise should add air compressor.
		Block in the air filter.	Clean or replace the air filter.
		The intake valve is in fault.	Check the loading solenoid valve, intake valve and the control pipeline.
		The vent valve is in fault.	Dismantle the pipeline between the air filter and vent valve. If there is leakage when the compressor is loading, need to repair or replace the vent valve.
		The intake valve can not open completely.	Dismantle the intake valve or cylinder, check, repair or replace them.
		The safety valve is leakage.	Check, repair or replace the safety valve.
		The compressor is in fault.	Connect with the supplier to repair the compressor.
8	When the compressor is unloading,the discharge pressure is still rising and the safety valve opened.	The loading solenoid valve is in fault.	Check, repair or replace the loading solenoid valve.
		The intake valve is in fault.	Check, repair or replace the intake vale and cylinder.
9	The safety valve was open Immediately when loading	The ball valve still does not open.	Open the ball valve.
		The safety valve is in fault.	Check, repair or replace the safety valve.
		The min. pressure valve is in fault.	Check, repair or replace the min. pressure valve.
10	Switch between the loading and unloading is frequently.	The connecting pipeline is too small.	Change to use the suitable size pipeline.
		The differential pressure is too small between the loading pressure and unloading pressure.	Reset the differential pressure.(Normally it is in 0.2 MPa.)
		The receiver tank is too small.	Change to use the suitable size receiver tank.(Normal we will install the receiver tank according 1:3 capacity).

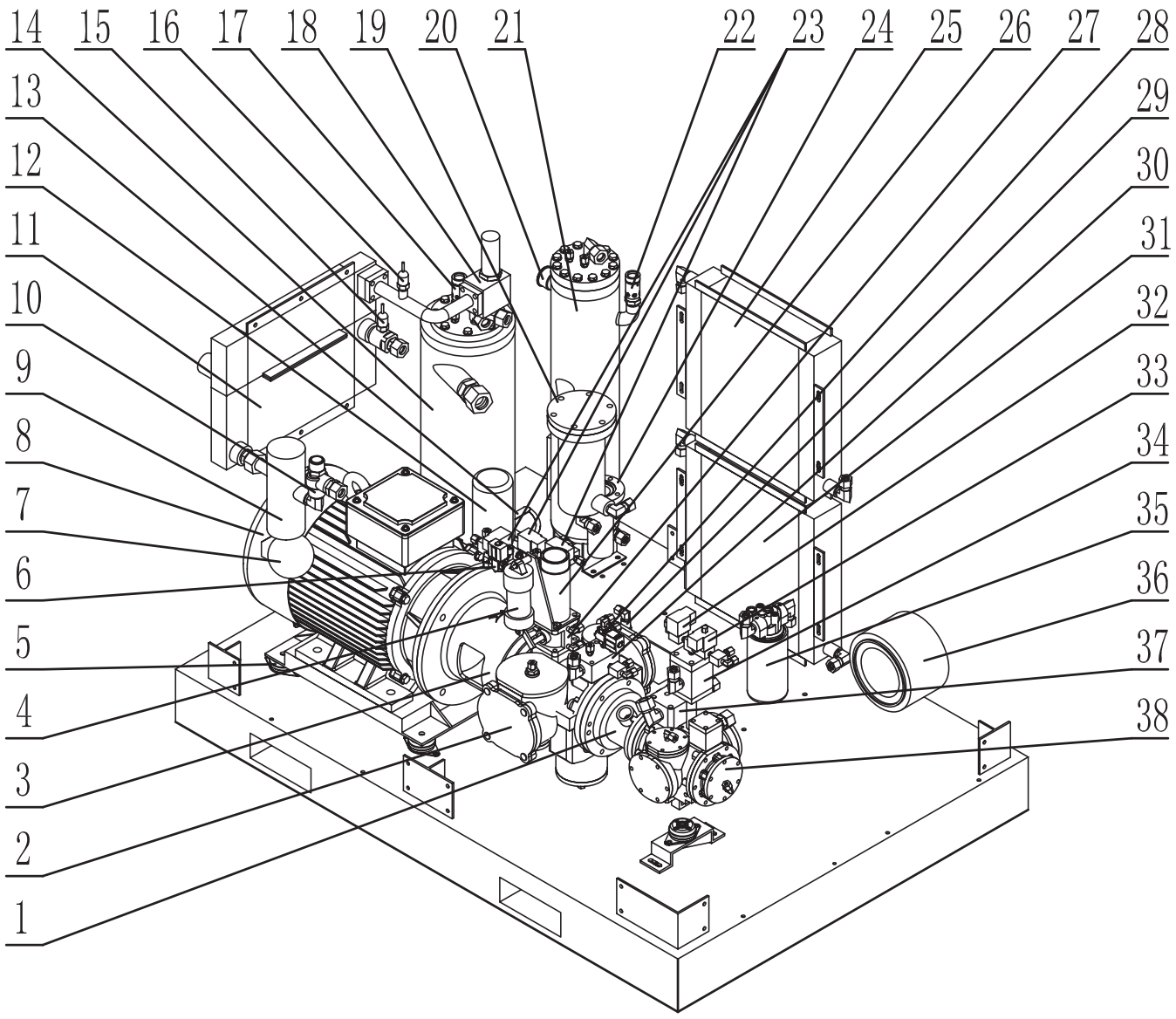
Charter 3 Compressor Structure

3.1 Structural Diagram of The Case



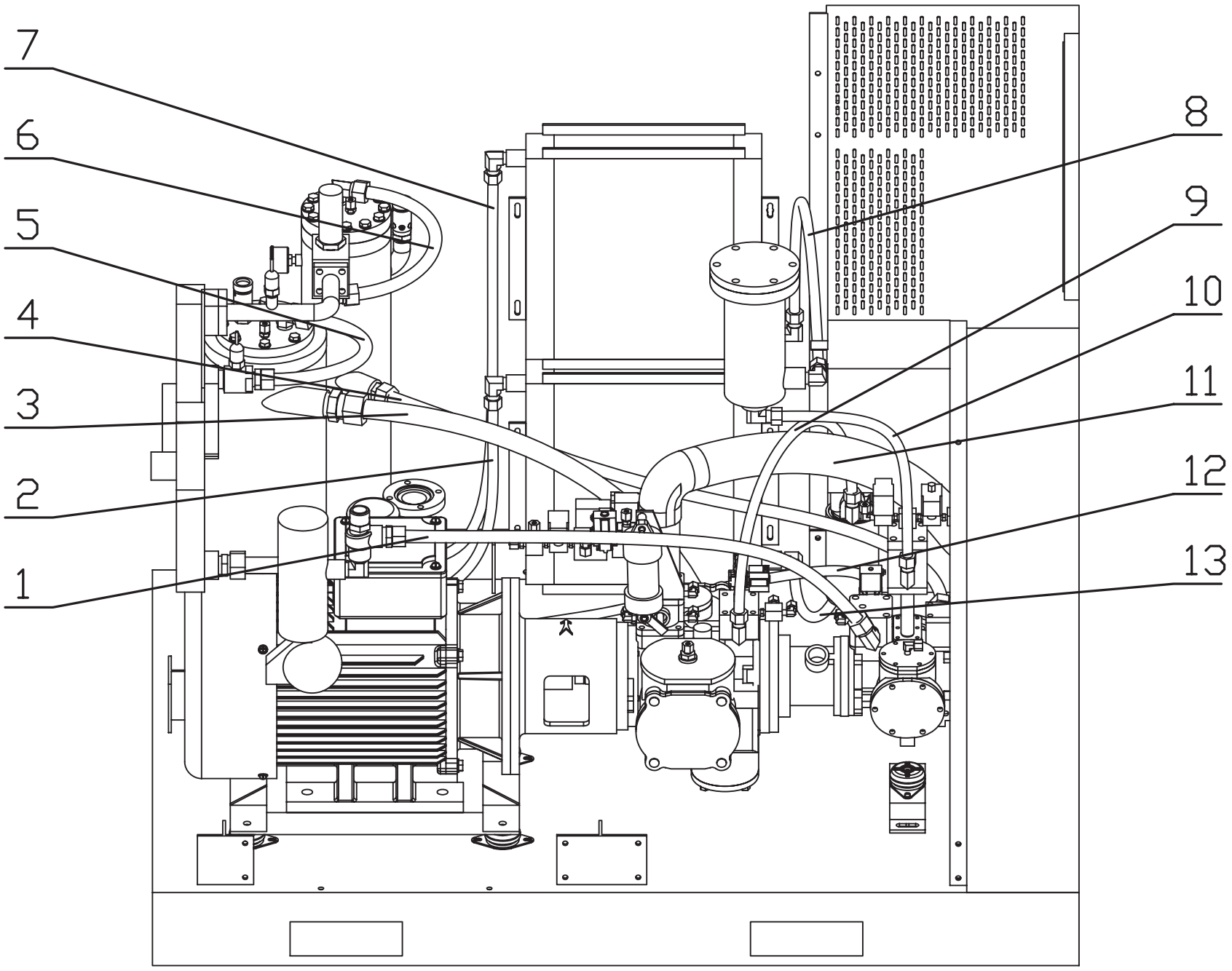
Item	Quantity	Designation	Item	Quantity	Designation
1	1	Oil cooler lid	12	1	Front center pillar
2	1	Air cooler upper lid	13	1	Air-end damper seat
3	1	Front top frame lid	14	1	Base
4	1	Air cooler frame side lid	15	1	Electric box frame
5	1	Air cooler frame	16	1	Side door
6	1	Front top frame	17	1	Inverter box
7	1	Oil cooler fan cover	18	1	Revolving door
8	1	Front door	19	1	Back center pillar
9	1	Motor base	20	1	Back door
10	5	Damper	21	1	Air filter inlet door
11	1	Front door			

3.2 Structural Diagram Inside The Compressor



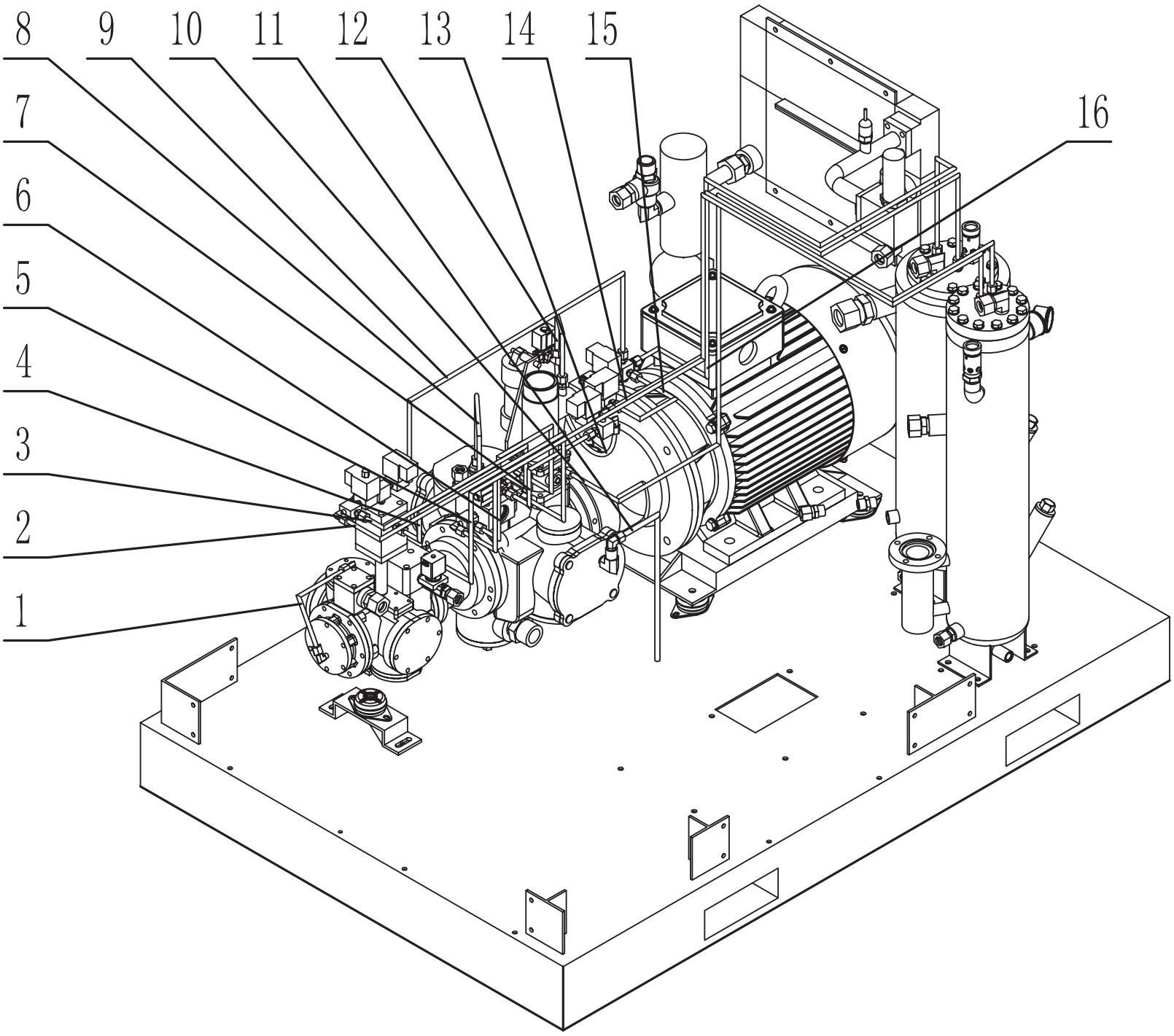
Item	Designation	Item	Designation	Item	Designation
1	Connecting tube of second stage air-end	14	First stage oil tank	27	First stage intake butterfly valve
2	First stage air-end	15	First stage pressure sensor	28	First stage solenoid valve of oil cut-off valve(Normal Open)
3	Connecting tube of first stage air-end	16	Second stage pressure sensor	29	First stage one way vent valve
4	Loading cylinder	17	First stage safety valve	30	First stage oil cut-off valve
5	Damper	18	Second stage Min. pressure valve	31	First stage oil cooler
6	Loading solenoid valve	19	Second stage oil filter	32	Second stage solenoid valve of oil cut-off valve(Normal Open)
7	Auto drain valve	20	Pressure gauge	33	Second stage solenoid valve of oil cut-off valve(Normal Closed)
8	Motor	21	Second stage oil tank	34	Second stage oil cut-off valve
9	Air/water separator	22	Second stage safety valve	35	First stage oil filter
10	First stage min. pressure valve	23	Solenoid valve of vent valve (Normal Open)	36	Air filter element
11	Air cooler	24	Switch for oil level	37	Second stage air-end base
12	Complement oil filter	25	Second stage oil cooler	38	Second stage air-end
13	Ball valve	26	First stage inlet air tube	39	Temperature transducer

3.3 Diagram of The Main Pipeline In The Compressor



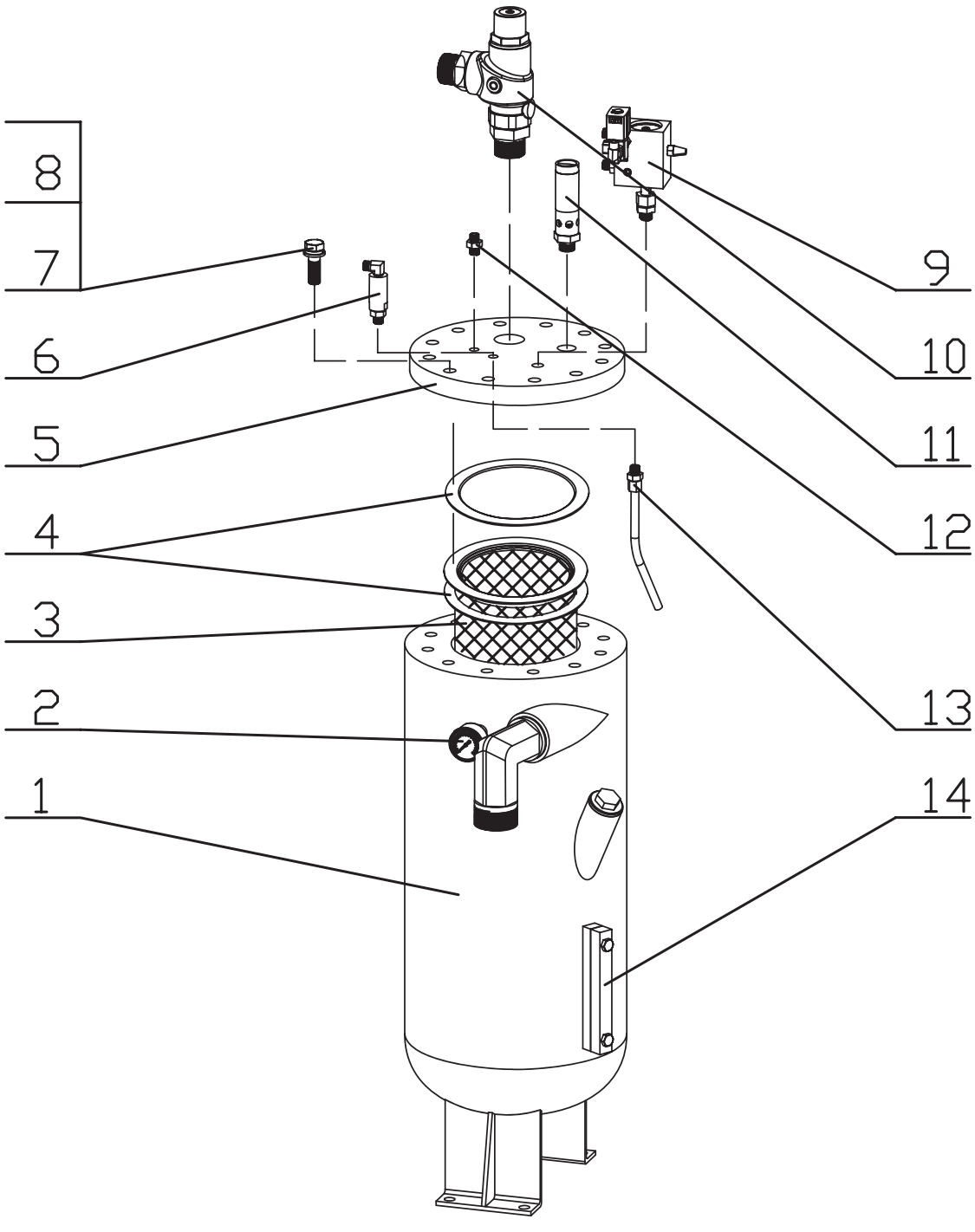
Item	Quantity	Designation	Item	Quantity	Designation
1	1	Air inlet tube of second stage air-end	8	1	Oil discharge tube of second stage oil cooler
2	1	Oil inlet tube of the first stage oil cooler	9	1	Oil inlet tube of first stage air-end
3	1	Discharge tube of first stage air-end	10	1	Oil inlet tube of second stage air-end
4	1	Discharge tube of second stage air-end	11	1	Air inlet soft tube of first stage air-end
5	1	Air inlet tube of first stage air cooler	12	1	Oil filling tube of second stage air-end
6	1	Air inlet tube of second stage air cooler	13	1	Oil outlet tube of first stage oil cooler
7	1	Oil inlet tube of the second stage oil cooler			

3.4 Diagram of The Control Pipeline In The Compressor



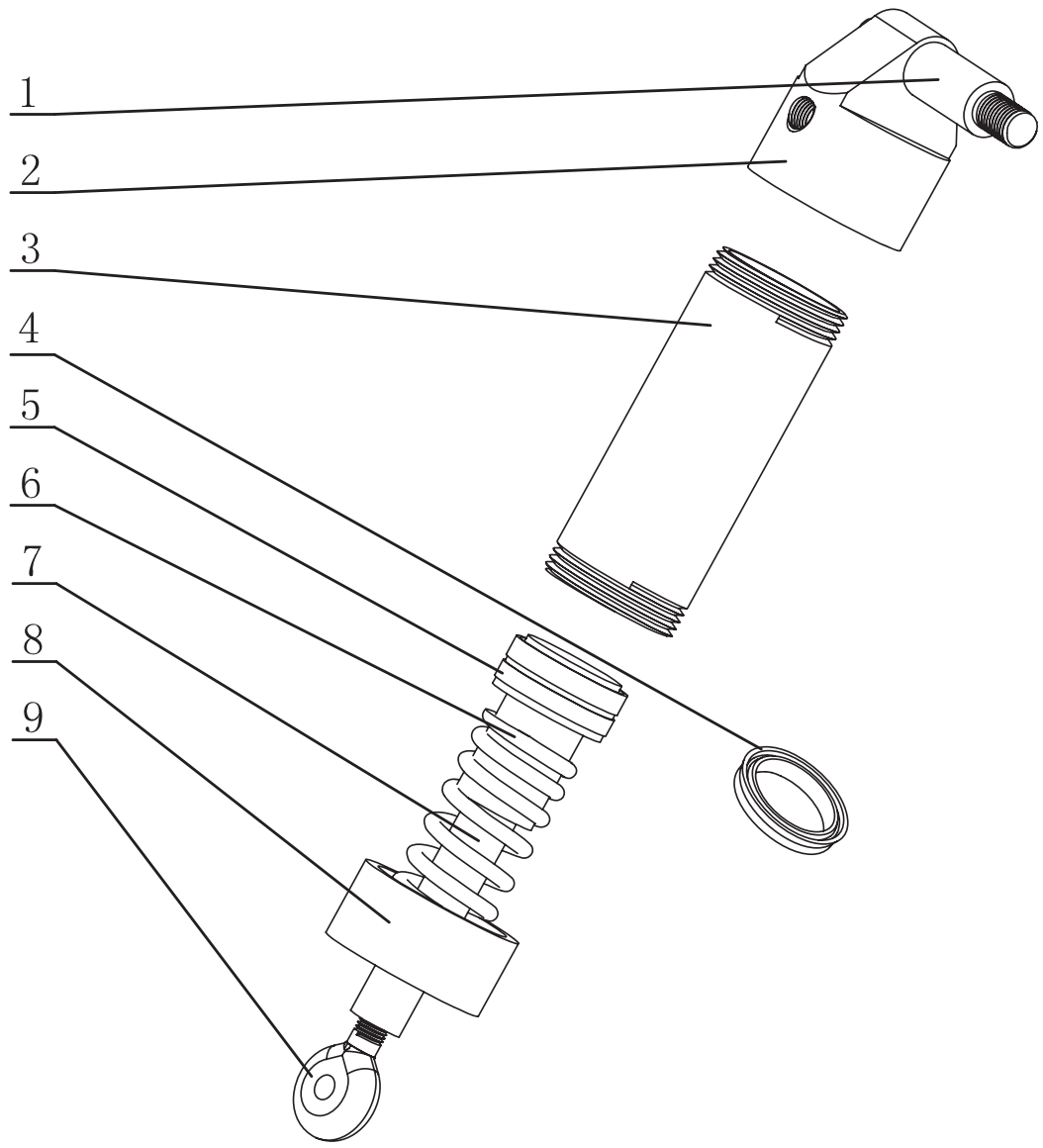
Item	Quantity	Designation	Item	Quantity	Designation
1	1	Lubrication tube of the second stage Star wheel bearing	9	1	Control tube of second stage oil cut-off valve
2	1	Main control vent tube of first stage second stage oil cut-off valve.	10	1	Oil return tube of the first stage air/oil separator
3	1	Control vent tube of first stage oil cut-off valve	11	1	Vent tube of the first stage air-end
4	1	Pressure vent tube of the second stage oil cut-off valve discharges pressure	12	1	Vent tube of loading solenoid valve
5	1	Oil return tube of the second stage air/oil separator	13	1	Vent tube of unloading solenoid valve
6	1	Main pressure vent tube of the first stage & second stage oil cut-off valve	14	1	Main system vent tube of the first stage oil tank
7	1	Control tube of first stage oil cut-off valve	15	1	Sub system vent tube of second stage oil tank
8	1	Lubrication tube of the first stage star wheel bearing	16	1	Main system vent tube of the second stage oil tank

3.5 Diagram of The Parts Connection In The Oil Tank



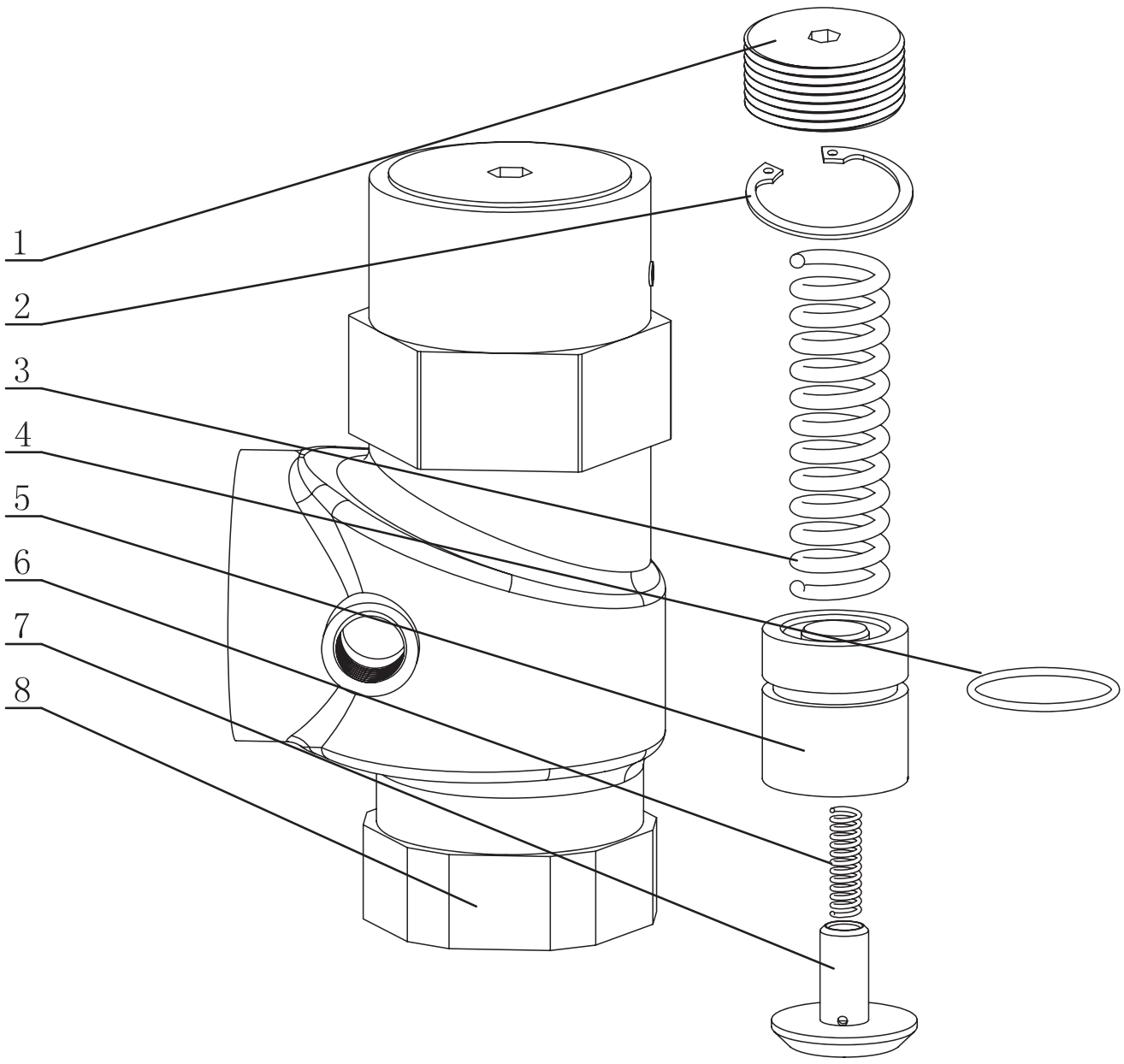
Item	Quantity	Designation	Item	Quantity	Designation
1	1	Oil tank	8	1	Bolt
2	1	Pressure gauge	9	1	Assembly of vent valve
3	1	Air/oil separator	10	1	Min. pressure valve
4	1	Paper pad of the separator	11	1	Safety valve
5	1	End cover of the separator	12	1	Control tube connector of oil cut-off valve
6	1	Oil return filter connector	13	1	Oil return tube of separator
7	1	Gasket ring	14	1	Oil level indicator

3.6 Structural Diagram Inside The Cylinder Assembly



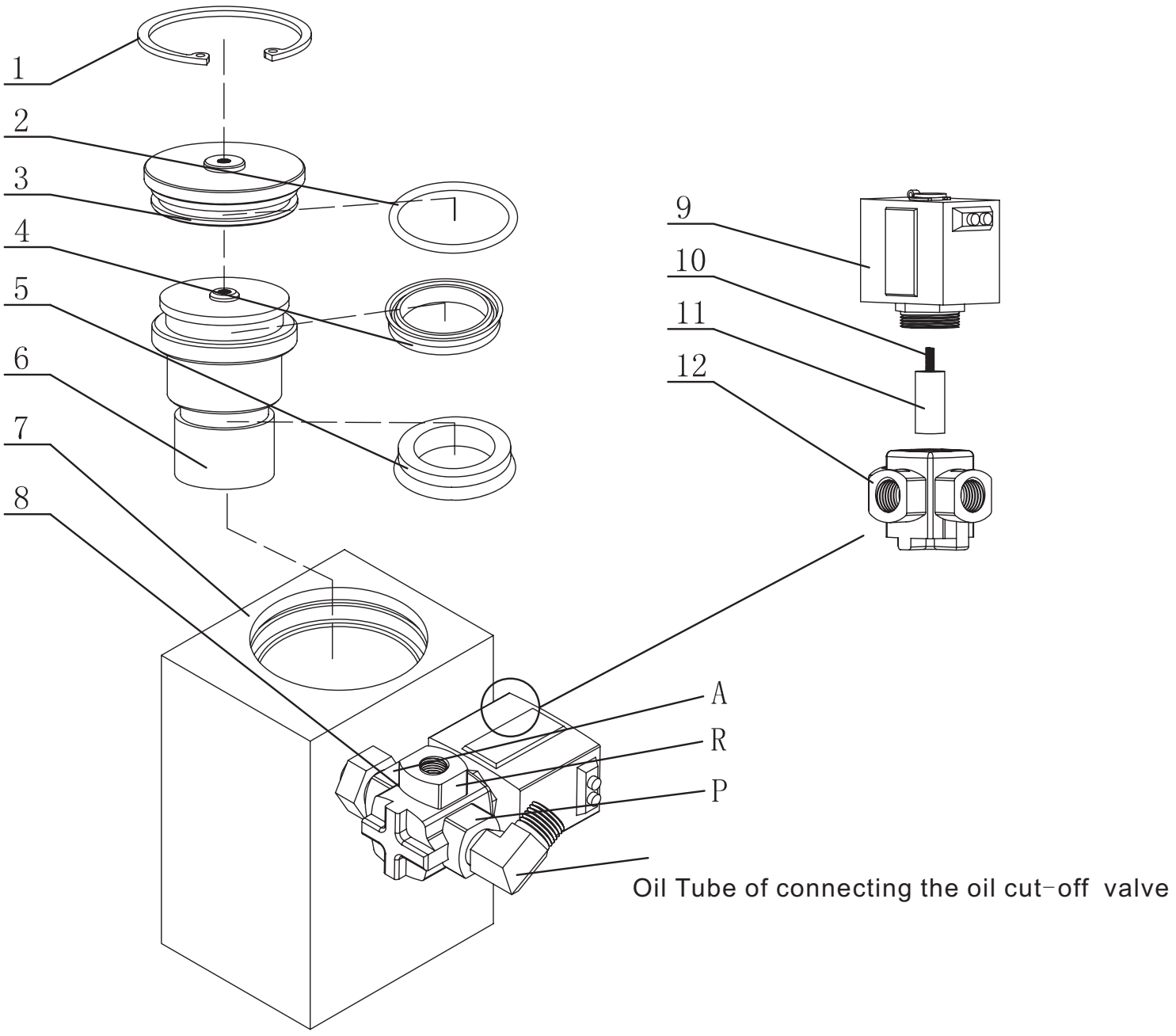
Item	Quantity	Designation
1	1	Fixed rod of cylinder
2	1	Back cylinder cover
3	1	Cylinder barrel
4	1	Y seal ring
5	1	Support ring
6	1	Spring
7	1	Piston of the air cylinder
8	1	Front cylinder cover
9	1	bearing

3.7 Structural Diagram Inside The Min Pressure Valve



Item	Quantity	Designation
1	1	Cover of the min. pressure valve
2	1	Snap ring
3	1	Spring
4	1	O ring
5	1	Core seat of the min. pressure valve
6	1	Reset spring
7	1	Core of the min. pressure valve
8	1	Valve body of the min. pressure valve

3.8 Structural Diagram Inside The Oil Cut-off Valve Assembly



Item	Quantity	Designation	Item	Quantity	Designation
1	1	Snap ring	7	1	Oil cut-off valve body
2	1	O ring	8	1	Normal open solenoid valve of the oil-cut valve
3	1	Cover of the oil cut-off valve	9	1	Solenoid valve coil
4	1	Y seal ring	10	1	Spring of the solenoid valve core
5	1	Y seal ring	11	1	Solenoid valve core
6	1	Piston of the oil cut-off valve	12	1	Solenoid valve seat

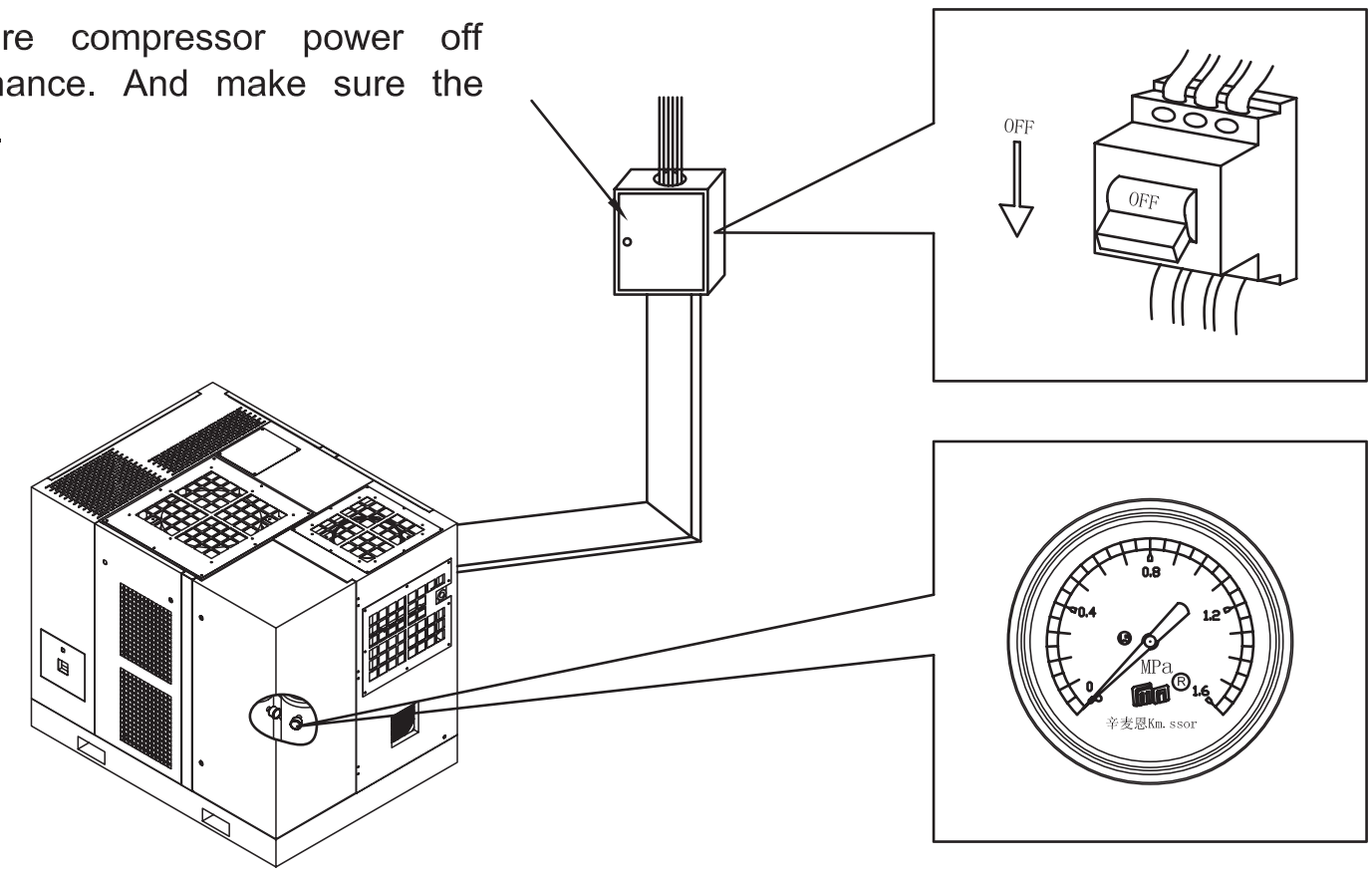
Charter 4 Maintenance

4. 1 The Maintenance Items and Period

Maintenance period	Operating hours	Maintenance Content
Everyday	8	Check the oil level before or during starting the compressor.
		Check the discharge temperature
		Check the condensate water which discharged from the oil tank when the compressor loading, if the condensate water with too much oil, should have a further checking.
		Check the loading pressure and unloading pressure
		Discharge the cooling water of cooler and the condensate water of the oil tank. Especially pay an attention in this if you in the cold area.
Every week	500	Check the oil consumption, should check or repair if there is any leakage.
		Clean the compressor
Every 3 months		Check and clean the cooler
		Check and clean the air filter
Every year		Replace the oil filter and air filter when the compressor running 500 hours in first time.
	1000	Check the temperature sensor, pressure transducer, electric system, safety valve
		Replace the air filter
	2000	Replace the oil filter (need to use the original and same size oil filter).
	3000	Replace the compressor lubrication oil and check the air/oil separator
	1000-3000	Fill the motor grease(Use the correct motor grease, see the detail in the “Motor grease”)

4. 2 Operation Before Maintenance

Caution: Ensure compressor power off before maintenance. And make sure the pressure is in 0.



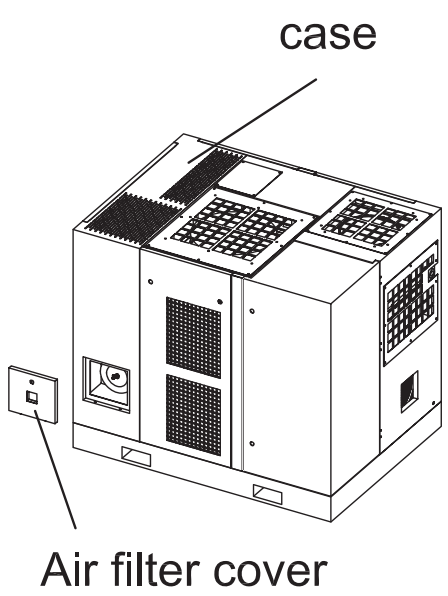
4. 3Maintenance I: Clean and Replace of the Air Filter

Clean and replace the air filter

Should replace the air filter every 1000 hours. If the working environment is too much dust, it's better to replace the air filter every 500 hours. That can ensure the compressor service life and the energy saving efficiency.

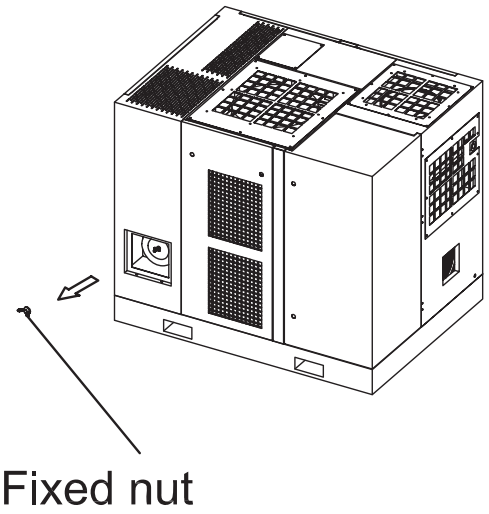
1

Open and dismantle the air filter cover



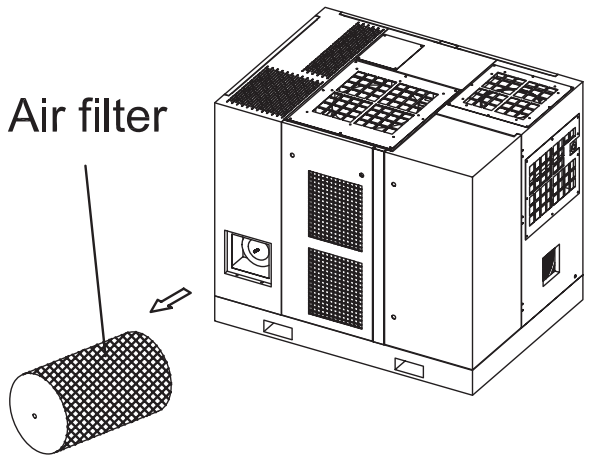
2

Unscrew the fixed nut which on the air filter



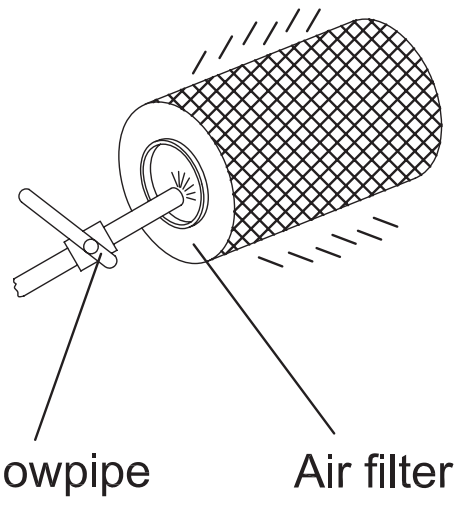
3

Rotate the air filter element and dismantle it.



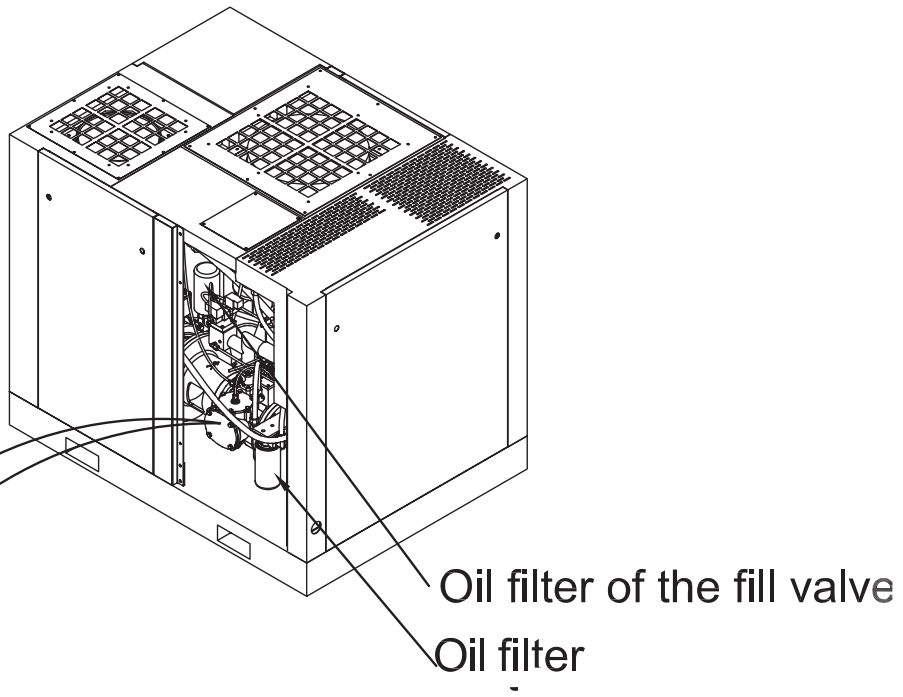
4

Blow the air filter from inside to outside.If the air filter is blocking or caking, please replace it.

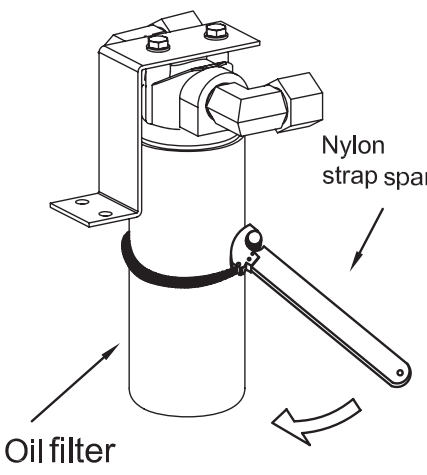


4.4 Maintenance II: Replace of Oil Filter

The oil filter should be replaced every 2000 hours. If the working environment is too much dust, it's better to replace the oil filter every 1000 hours.
The refueling filter is working intermittently. We can extent its using time. It's better to replace it when replace the lubrication oil.

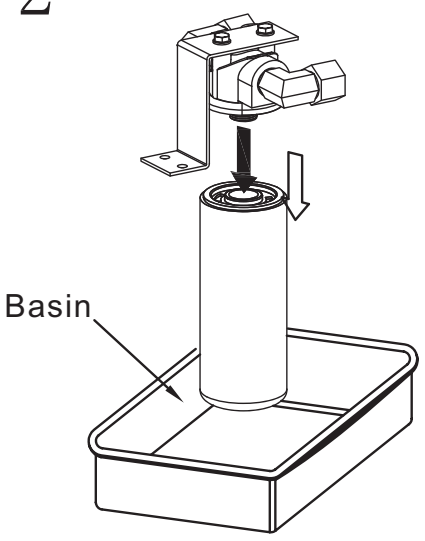


1



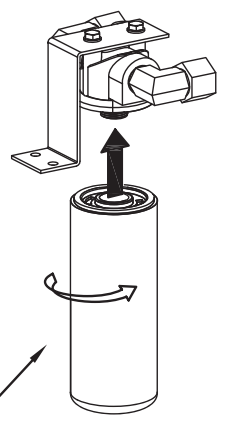
Use the nylon strap spanner to unscrew the oil filter

2



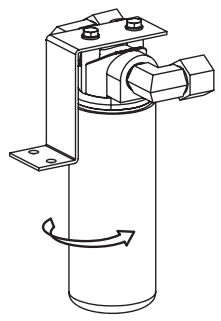
Use the oil basin to prevent the oil spill. Remove the oil filter after put the oil basin under the oil filter.

3



Install a new oil filter

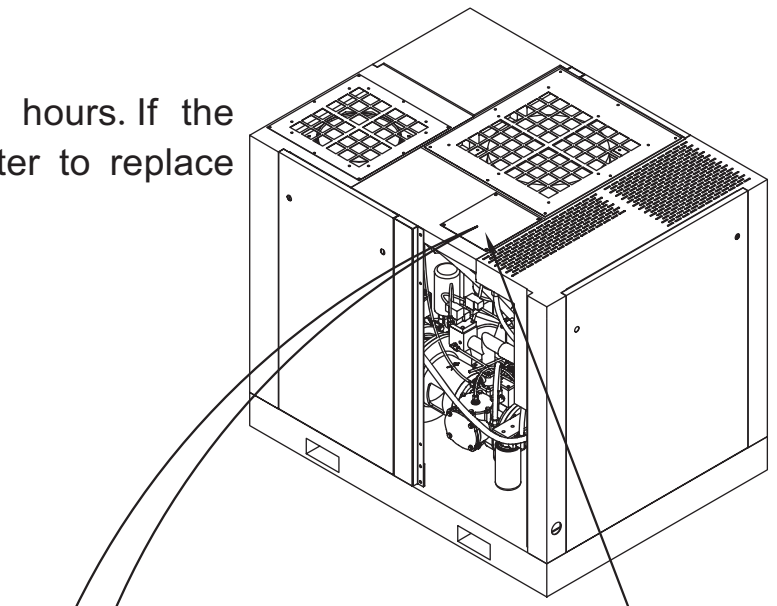
4



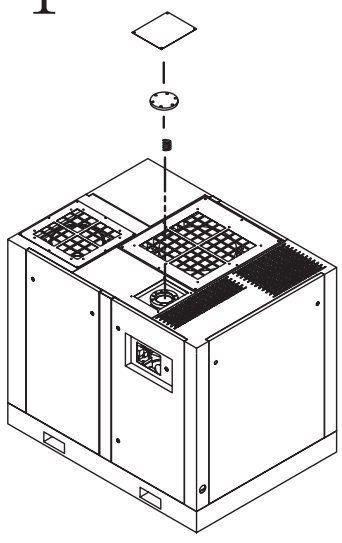
Caution:Don't use the spanner but can install the oil filter by manually.After screw up, please screw 1/5 circle in the same direction.

Replace of the second stage built-in oil filter

The oil filter should be replaced every 2000 hours. If the working environment is too much dust, it's better to replace the oil filter every 1000 hours.

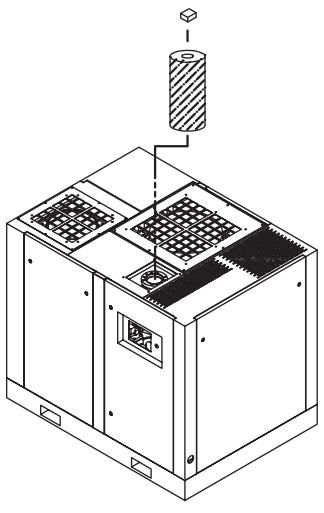


1



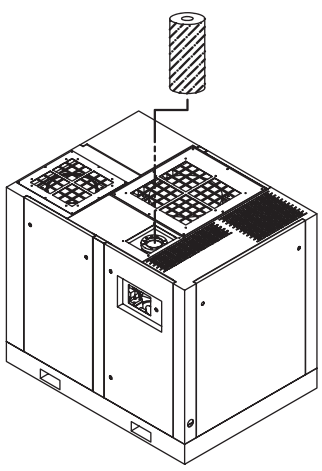
Use the spanner to dismantle the covers and take out the spring.

2



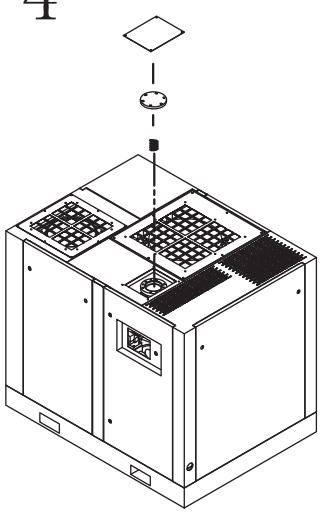
Use the magnet to suck out the built-in oil filter, and then take out the oil filter.

3



Install a new built-in oil filter.

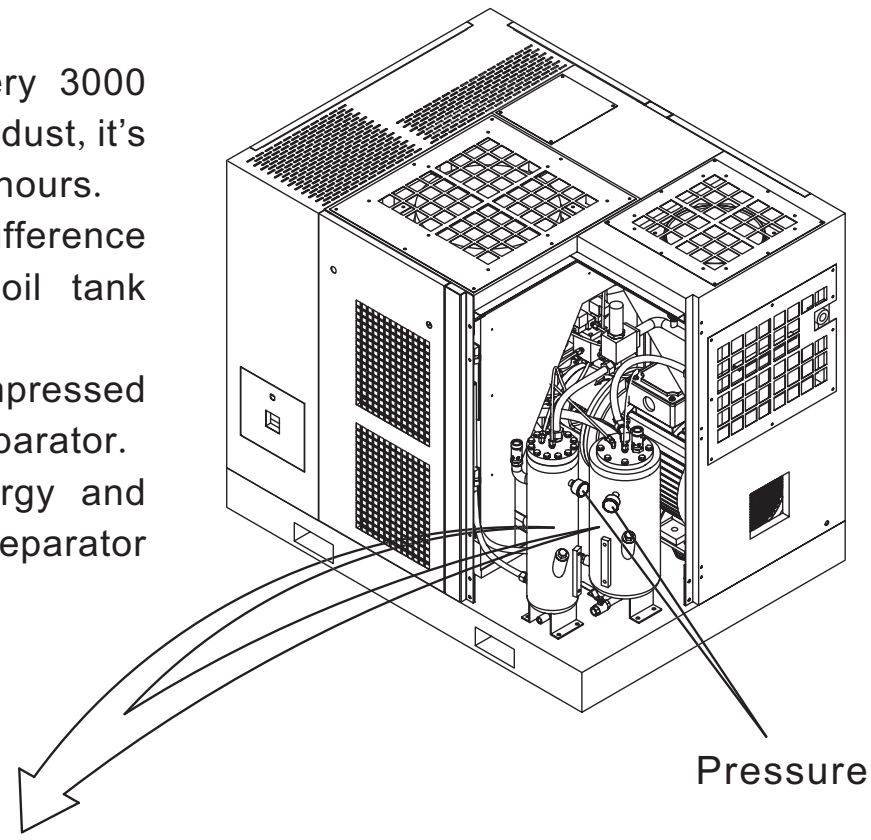
4



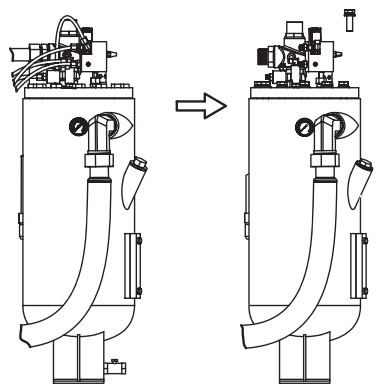
Install the spring and the cover, and then tighten the screws. Finally install the front cover and tighten the screws.

4. 5 Maintenance III: Replace of Air/oil Separator

Should replace the air/oil separator element every 3000 hours. If the working environment is too much dust, it's better to replace the air/oil separator every 2000 hours.
The separator should be changed when the difference pressure between the pressure gauge of the oil tank reading and discharge pressure exceeds 0. 1Mpa.
When the oil consumption is too much or the compressed air with too much oil, should change the air/oil separator.
It can reduce the difference pressure, save energy and reduce the operation cost if replace the air/oil separator regularly.

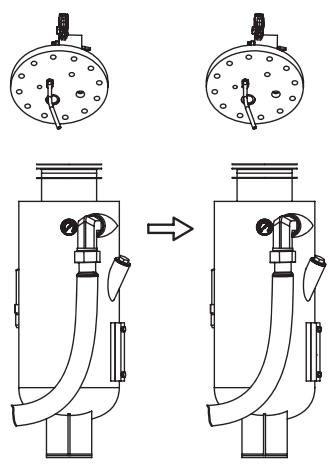


1



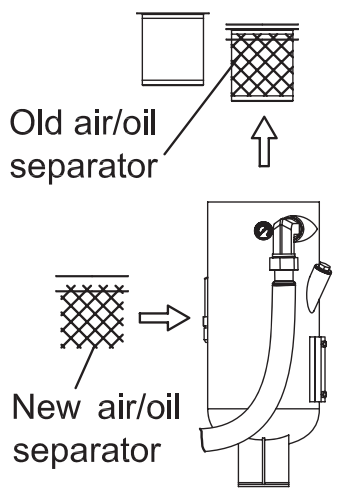
Use the spanner to remover the tubes and 12 pieces bolts which on the cover.

2



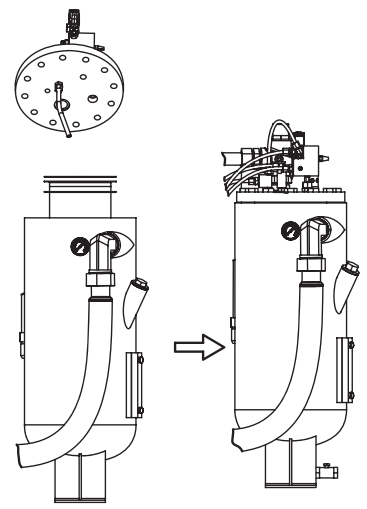
When dismantle the oil tank cover, need to take out the grounding wire which under the cover first. The grounding wire is very important, it will cause the compressor on fire or explosion if the grounding wire is connected not good or break.

3



Take out the old air/oil separator and paper pad and put the new air/oil separator and paper pad.
Ensure to make the alignment of separator and paper pad.

4

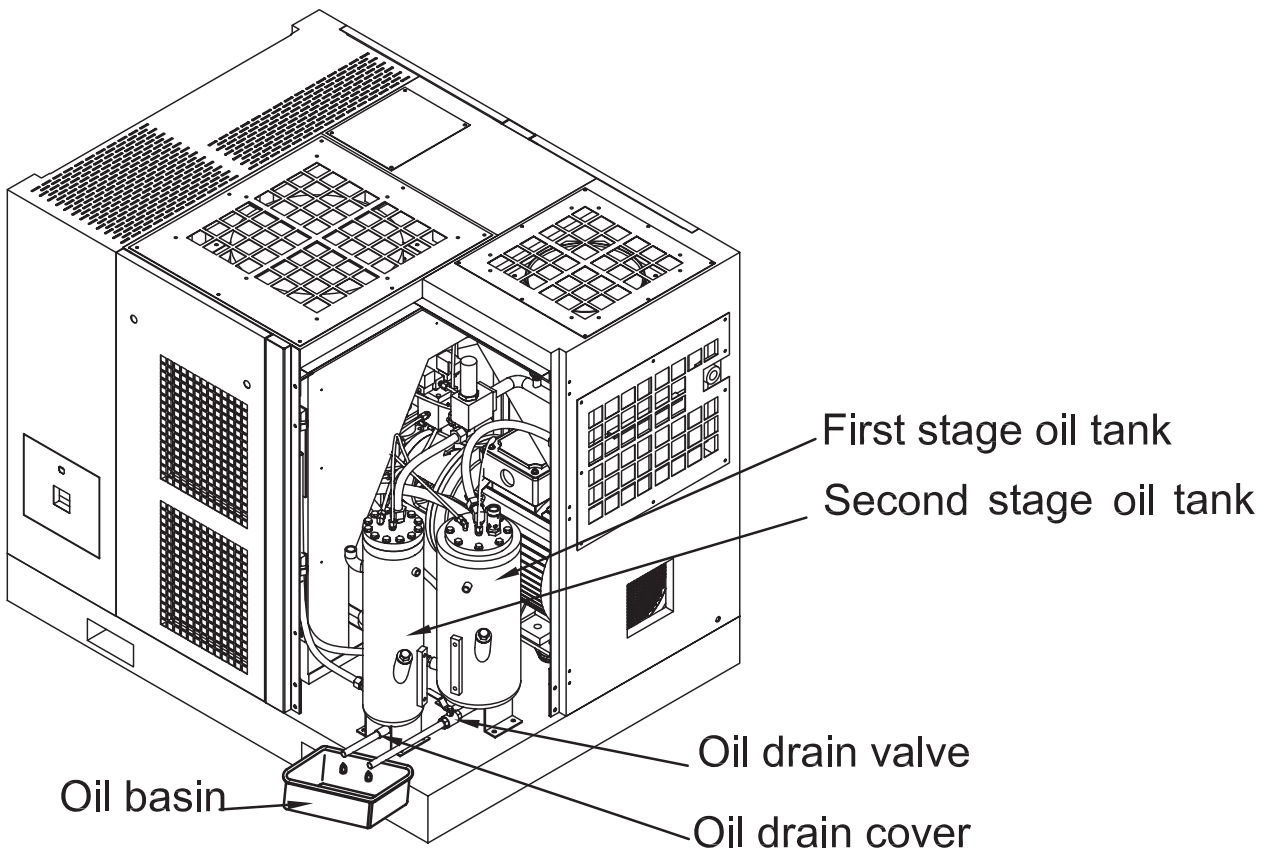


Install the cover and tighten the grounding wire.
Use the spanner to screw up the 12 pieces bolts and the nuts of tubes.

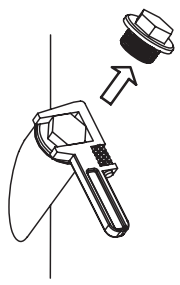
4. 6 Maintenance IV: Replace of the Lubrication Oil

Should replace the lubrication oil every 3000 hours. If the working environment is too much dust,it's better to replace the lubrication oil every 2000 hours.

It can avoid the lubrication oil carbon or coking, to avoid the air-end in fault. Prolong the compressor service life.

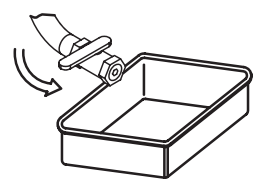


Step1



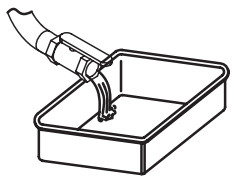
Unscrew oil drain cover

Step2



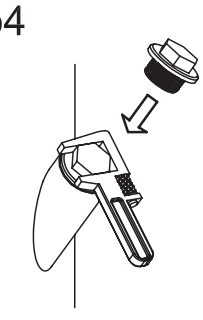
Open the oil drain valve

Step3



Discharge the waste oil, Don't close the oil drain valve.

Step4

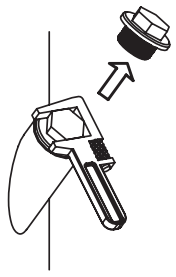


Tighten the oil drain cover.

Step5

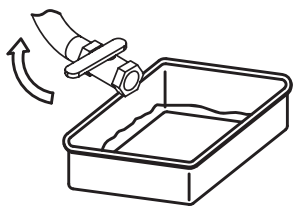
Close the air switch. Inching the compressor 1-2 second and then stop the compressor.
Repeat this several times until there is no waste oil from the oil drain.

Step6



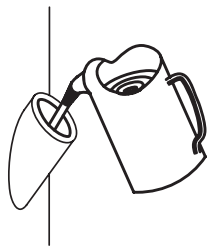
Unscrew the oil filler cover

Step7



Close the oil drain valve after discharge the waste oil. And use the thread seal tape and tighten the cover.

Step8

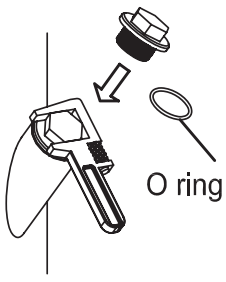


Add the dedicated lubrication oil in the oil tank.

Step 9

Add the oil till the oil level is upper 30-40mm the maximum oil level.

Step 10



Check the O ring and ensure it is no damage. And then tighten the oil filler cover.

Caution: Need to fill oil if the oil level is lower than the minimum oil level when the compressor is running.
Need to power off and the oil tank pressure is 0 before filling oil. And then take out the fill oil cover and add oil as the diagram8, 9, 10.
Pay attention to the temperature when restart. If the temperature was rising rapidly, need to press the “Emergency Stop” button and check the oil pipeline.

4. 7 Maintenance II: Replace of the Motor Grease

Motor Grease

Make sure there is good lubrication in the motor bearing when operating the compressor.

It is necessary to add the grease regularly, please see and carry out as the below description table,

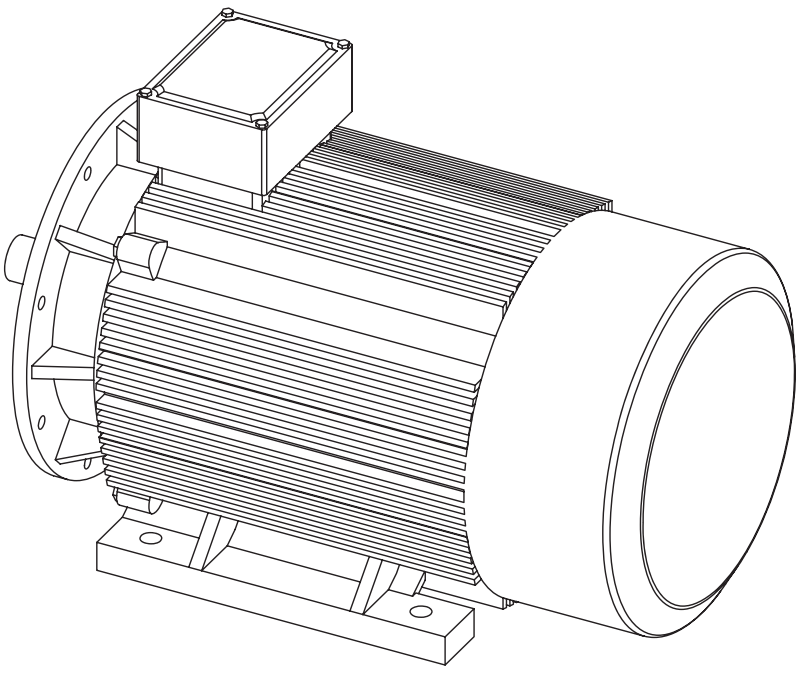
Need to add the grease promptly if the bearing overheats when the compressor is running.

Need to replace the grease when adding the grease 2-3 times or the grease was gone bad.

The user needs to use our company fitted grease. It will shorten the service life of the motor or block the motor if mix difference brand and difference model grease in the motor.

Please see the details in the Motor Maintenance Instruction.

Note: Excessive grease may damage the bearing and motor.
Ensure do not take the dirt into the motor when add the grease.



Grease Reference Valve Table of the Motor (Excessive grease may damage the motor)

Motor Model	Motor Power (kw)	Bearing Model	Filling Cycle (h)	Grease Capacity (front&back bearing)(g)
H160-2	15-18.5	6309	3000	20
H180-2	22	6311	3000	25
H200-2	30-37	6312	3000	25
H225-2	45	6312	3000	25
H250-2	55-75	6314	3000	30
H280-2	90	6314	3000	30
H280-2	110-132	6315	2000	35
H315-2	160-250	6319	1000	50

CMNG Series High Pressure Screw Compressor Product Warranty

1.From the data of purchase our compressor, you can have our warranty（whole set compressor is 1 year, the air-end is 3 years.） if you can comply with the following using condition .

①The compressor should be installed in the area which with well ventilated, few dust and no harmful corrosive gas, and its temperature is lower than 45℃.

② The power supply voltage and capacity of the compressor must conform to the standard demand. And the supply voltage should be 5% of the rate voltage.

③ The compressor should be maintained regularly by the professionals recognized by our company.

④Should use our CMN original air filter, air/oil separator and lubrication oil. Can not use the substitute of other brands.

2.Under the warranty period, you can send the compressor to our designated repair service center to repair or connect our after sales service staffs to repair it for free.

3.During the warranty period, the following cases will be in the paid service.

①Can not offer the warranty card or the warranty card is with incomplete record, modification, without the chop of the dealers and so on.

②Do not install, operate and maintain the compressor according with this instruction.

③The fault or damage is caused by the wrong modify in data setting of the user parameter and factory parameter.

④The fault and damage in the air filter, oil filter and the air/oil separator.

⑤ The fault and damage is caused by the fire, earthquake, war and so on, not caused by the compressor.

4.Expire the warranty period, you still can send the compressor to our designated repair service center to repair or connect our after sales service staffs to repair it, but you should pay thereplacement parts fee.

Welcome you can give us some suggestion in the design of our products, the operation and the service and so on. Please connect with us in the hot line 400-119-7888 if you have any question.
We will seriously study your suggestion and reply all your question.

Copyright Notice

This manual copyright belongs to Zhejiang JieNeng Compressor Equipment Co. , LTD. Without our written permission, any parts of the manual contents can not be reprinted, shoot, propagated and recomposed or stored in a recoverable system.

Due to the development of the products and technology, there have some changes in the technical parameters, please forgive that we do not inform you. Please make the object as the standard.

Before operating the compressor, please read this manual carefully, ensure to follow the instruction to install and operate the compressor.