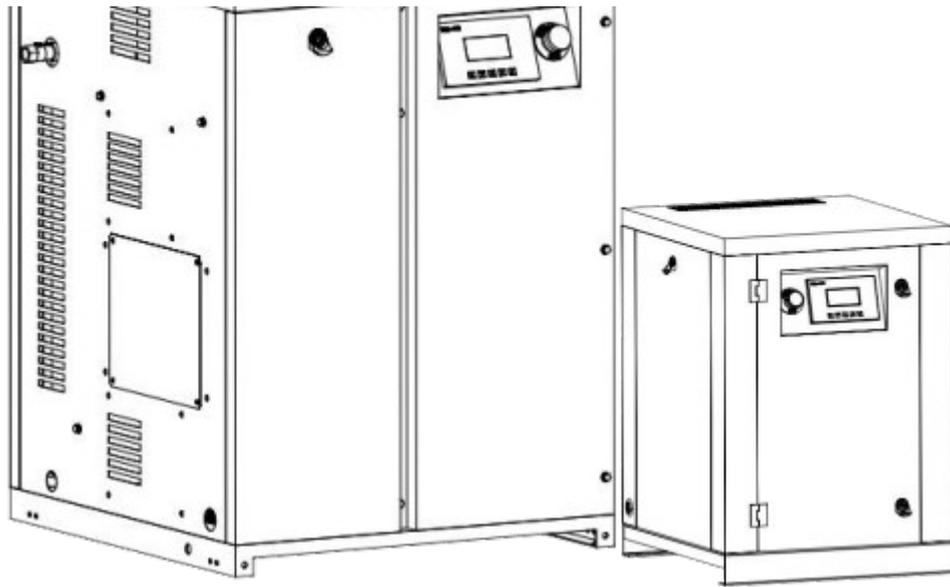**OIL FREE SCROLL AIR COMPRESSOR**

INSTRUCTION MANUAL

Please read the manual carefully before using, and operate the machine correctly accord to the manual.

Follow the manual

The product covered by this manual is oil free scroll air compressor （ "air compressor") which describes in basic structure, installation regulation, operating methods, faults removing method, maintenance and repairing requirements. Please read the manual carefully before using to ensure the safe and reliable run of the machine and extend its service life.

It's a device for producing compressed air. Only for general industry use. Attention that hand the compressed air is associated with danger, and please operate on the basis of specialized knowledge. The company shall not be responsible for the adverse results, mechanical failure, personal injury and accidents caused by the use of no specialized knowledge.

Indoor use only.

Please be sure to use within the scope of use covered in this manual. In addition, please do proper maintenance to prevent problems before occurring.

Do not do operations other than those covered in this manual, and do not use parts other than the company's pure parts for replacement and modification.

Any ambiguity or doubt on this manual, please contact us.

Due to the product improvement, iteration and other reasons, the contents of this manual may be changed without prior notice.

SAFETY PRECAUTIONS

⚠ **WARNING**

It may cause death or serious injury if ignore this warning and perform incorrect operation.

⚠ **CAUTIONS**

It may cause accident or personal injury if ignore this caution and perform incorrect operation.Customers are requested to set up safety measures in accordance with various laws, regulations and operating standards for the safe operation and maintenance of the machine.The company is not responsible for the consequences caused by customers' disregard of safety measures.

INSTALLATION

⚠CAUTIONS
◎Relationship between the max allowable ambient temperature of air compressor and altitude

altitude	1000m	1000m-1500m	1500m-3000m	>3000m
Temperature	50℃	40℃	35℃	30℃

◎The motors use on this air compressor are three phase asynchronous motor (or Permanent Magnet motor), be must follow the drawing and motor parameter requests before installing.

◎Reserve over 200mm space around the air compressor to ensure the air intake

and outlet are smooth.

◎Equip well hot air outlet and intake channels to control the ambient temperature of air compressor.

◎This product must be grounded.

RUN

⚠ **CAUTION**

◎Ensure that all the connectors are properly fastened and the pipelines are

unimpeded without distortion, and make sure that all the safety devices can work

normally and the instrument data no error before the first operation.

◎The pressure adjustment range of air compressor is between 0.6Mpa to 0.8Mpa.

◎The air compressor may damage if it rotates in reverse over 30 secs caused by motor phase sequence error .

◎Do not touch the machine to prevent scald due to the high temperature on the

surface when the machine runs over 10 min.

◎Forbid to run the machine beyond the rated voltage and frequency .

◎Check the machine immediately when find the following matters. Open the machine only after removing the faults.

1) Do not start the air compressor when the instrument shows the pressure is lower than 0.6MPa during operation.

2) It will cause failure when the pumping pressure of air compressor is greater than

0.8MPa but without stopping, please stop immediately to check electrical components and controller.

3) Abnormal noise occurs if there are air leakage, electricity leakage or abnormal motor temperature rise.

INSPECTION AND MAINTENANCE

⚠ WARNING

◎Check the pressure is normal and the pipelines is leaked , and drain the water at least once a day.

◎Cut off the main power supply, and wait until all the gas in the air receiver tank and pipelines of air compressor is exhausted before checking and maintaining   to prevent the electric shock and injury.

◎Do not use combustible liquid such as gasoline or kerosene to clean the filter and the internal of equipment. Do not use fire to clean the pipeline

pollution.

◎Please inform service center for repairing and exchange.

◎Do not disassemble and refit the safety devices and parts inside of insulated leather without permission.

◎Please use original authentic parts if need to exchange .

◎Forbid to use the product if there is air leakage.

◎Clean the dust and test run for 1 min ifthe machine stop more than 1 month,

confirm no fault before continuing to work.

◎For long time storage, the following conditions must be met:

1）Place is less moisture, no direct sunshine, rain, water splash .

2) Forbid to put in the place with much dust environment;

3) Storage ambient temperature is between -40℃ to 50℃ .

Contents

1. **Product Introduction**

1.1 Product Description

Integrated design oil free scroll air compressor（"air compressor"for short)is a equipment

combined with multiple scroll air pumps, permanent magnet(PM) motors/three phase

asynchronous motor, air coolers, exhaust fan, control panel and metal plate. The machine use oil

free scroll air compressor to supply high-quality clean air, high-efficiency permanent magnet

synchronous motor(PMSM)/three phase asynchronous motor driving, touch panel operating,

automatic monitoring, automatic adjustment and safety protection.

Structure is compact, easy to operate and maintain, easy to move, quiet and energy saving. The

machine can connect an air receiver tank, one to four stage air filter, frozen dryer, adsorption dryer

or other post-processing equipment .
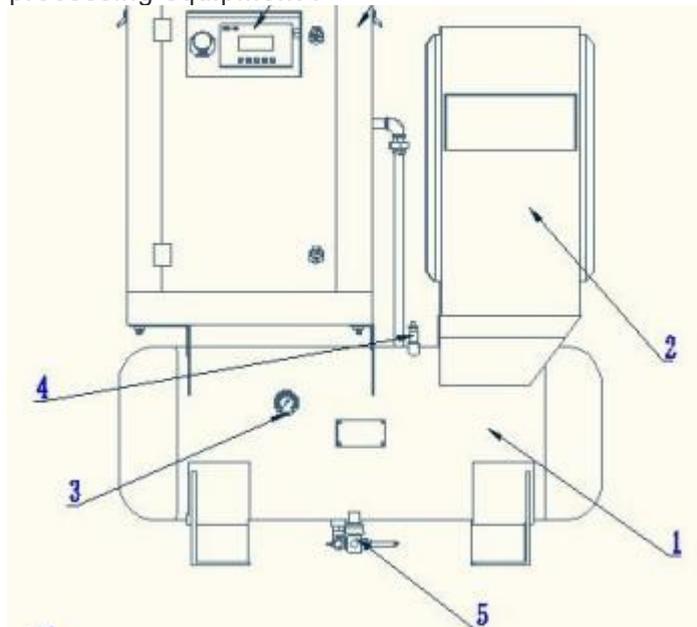
View 1:Product structure flow diagram

1.Air receiver tank 2.Frozen dryer 3.Air compressor   4.Safety valve   5.Electronic drain-off valve

6.Control panel
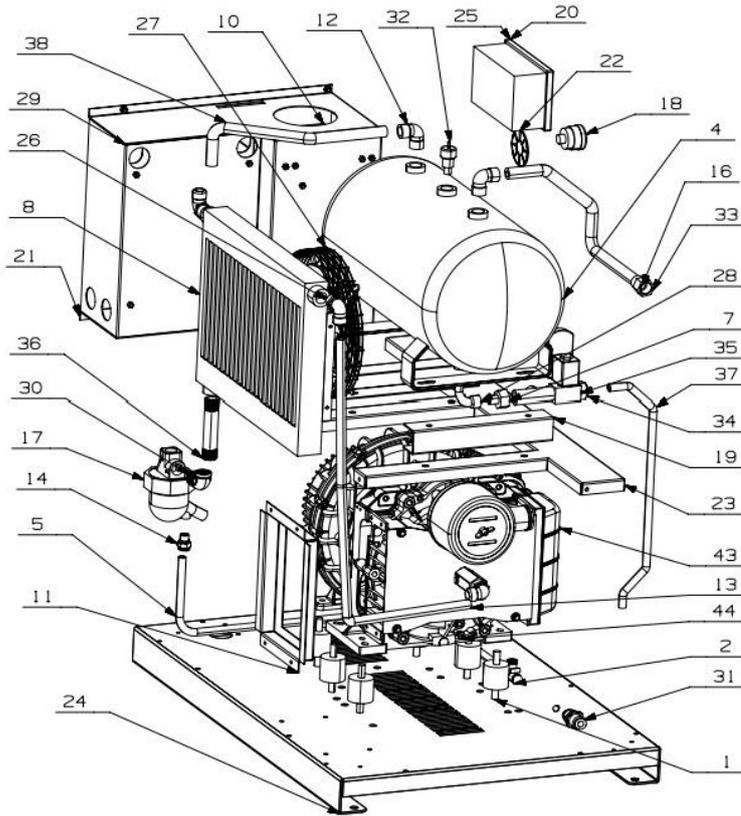
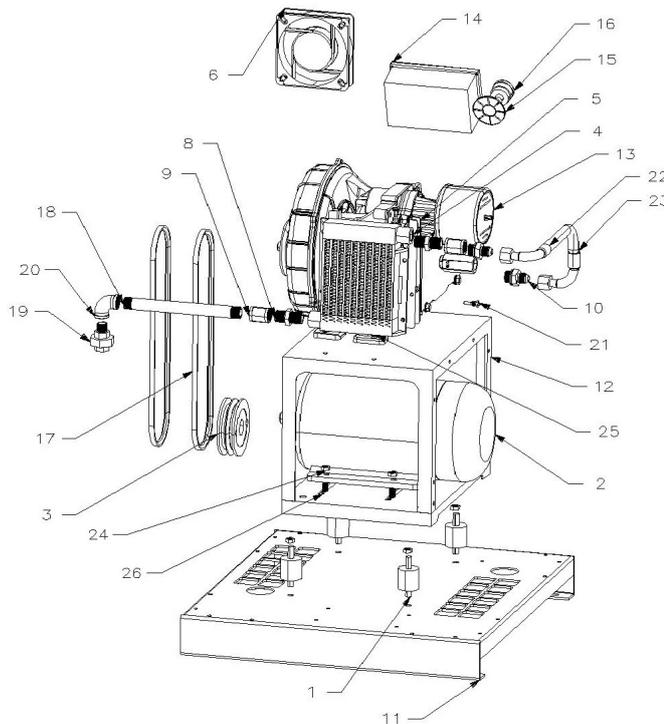| 44	温度传感器	1
43	G052P机头	1
42	交流接触器	1
41	熔断器底座	2
40	变压器 JBK3-63	1
39	GL04-6 堵头	1
38	气管5	1
37	气管1	1
36	1-2加长外丝L100	1
35	电子排水阀380v	1
34	4分外丝快速接头	1
33	1-2直通内外丝	1
32	0-1.6MP压力传感器	1
31	隔板快插PM-10	1
30	1-2内外丝弯头	1
29	电箱板	1
28	1-4寸内外丝弯头45	1
27	YWF200-2ESW轴流风机	1
26	JIC 3-4转G1-2外丝弯头	3
25	F220L-箱体钣金	1
24	L05Z-P37-8 底板	1
23	L05Z-P37-8 隔板	1
22	急停标贴	1
21	L05Z-P37-8 电箱盒	1
20	F220L-控制面板MAM860	1
19	储气罐垫脚	2
18	急停按钮	1
17	自动排水器	1
16	气管6	1
15	GL02-D2单向阀组件	1
14	2分外丝快速接头P16	1
13	气管3	1
12	4-4分外丝弯头	2
11	O5导风盘	1
10	变频器 5.5KW 220V	1
9	铰链	2
8	散热器	1
7	1-4转M22	1
6	接线端	1
5	气管2	1
4	24L储气罐 - 3号	1
3	接地线板	1
2	10mm三通快插接头	1
1	M10减震器	6
序号	零部件名称	数量

1.2 Scroll air compressor internal structure view

View 2: Permanent magnet air compressor structure view

26	螺栓M10-25	4
25	螺栓M8-25	4
24	M10螺母	8
23	软管	1
22	英制1-2通气软管接头	2
21	温度传感器	1
20	G1-2内丝弯头	1
19	G1-2活接	1
18	G1-2加长外丝管	1
17	三角皮带L937	2
16	急停按钮	1
15	急停标贴	1
14	F220L-控制面板MAM860_	1
13	G03T机头	1
12	小精灵03机架	1
11	小精灵底板	1
10	排气管直通接头外丝G1-2转英制	2
9	G1-2内丝直通	2
8	G1-2外丝直通	2
7	熔断器RT18-32X	1
6	风扇	1
5	空冷器支架	2
4	GL03-6散热器	1
3	皮带轮 SPZ-104-28	1
2	电机2.2KW	1
1	M10减震垫	4
序号	零件名称	数量

View 3: Three phase asynchronous motor air compressor structure view

2. Installation requirements

2.1 Identify the product

2.1.1 Identify the product is consistent with the model you ordered according to the label.

2.1.2 Please check there is any damage during transportation.

2.1.3 Please check the following accessories are in the packing case:

Product inspection report, product instruction manual, warranty card, etc.

2.2 Installation Requirements

2.2.1 Install the machine in a bright, spacious and well-ventilated room.

2.2.2 Keep the ambient temperature between 0 to 40℃ during the machine working.

2.2.3 To prevent the temperature rise and convenience to maintain, make sure there is a ≧60 cm space around the machine for maintaining. This product suck the air from left side of box, and exhaust from back side. Please ventilate indoors.

2.2.4 Don't move the machine after installing to keep the necessary maintaining space on the left and right side(especially right side) of air compressor.

2.2.5 Don't modify the machine without permission and contact sales agent for help if failed to install air intake and outlet, ventilator and discharge pipe.

2.2.6 Place this product on a hard and flat ground. Adjust by putting rubber mat if there is a gap between machine and the ground.

2.2.7 Reverse enough space(≥ 60cm)between machines , to reduce the suction effects to other machine when install multiple machines side by side.
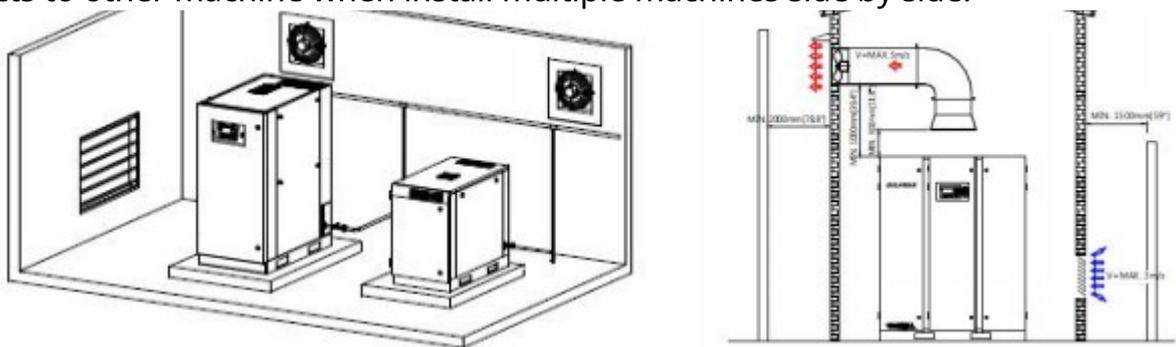
View 4: Space installation diagram

2.3   Pipeline requirements

2.3.1   When the scroll air compressor connect with the air receiver tank /frozen dryer and other terminal gas point piping through pipeline, use pressure and heat resisting rubber or metal pipe, and the internal diameter of pipeline is not less than ø25mm, the bending radius is greater than 150mm, the pressure resistance is more than 1.0Mpa

(1.0MPa machine the pressure resistance should be more than 1.2Mpa) , the heat resistance temperature is more than 100℃ .

2.3.2   It must connects an air receiver tank(volume≥300L) if use a large amount of air in a short time or with lots of run-stop. Follow the attached instructions of air tank when connect.

2.4   Wiring requirements

2.4.1   Electrical engineering must be performed according to electrical equipment standards and wiring regulations.

2.4.2   Wiring capacity requirements (Table 1: Wiring requirements table)

Power	Voltage	Wire Diameter	Rated Current
2.2kW	AC380V	1.6mm(2.0mm²)	16A
3.7kW	AC380V	1.8mm(2.5mm²)	25A
5.5kW	AC380V	2.25mm(4.0mm²)	32A

Table 1: Wiring requirements table

2.4.3   The operation panel of this product supports remote control (switch /485 communication port), which control the air compressor run and stop by using external input and output signal terminals when remote controlling .
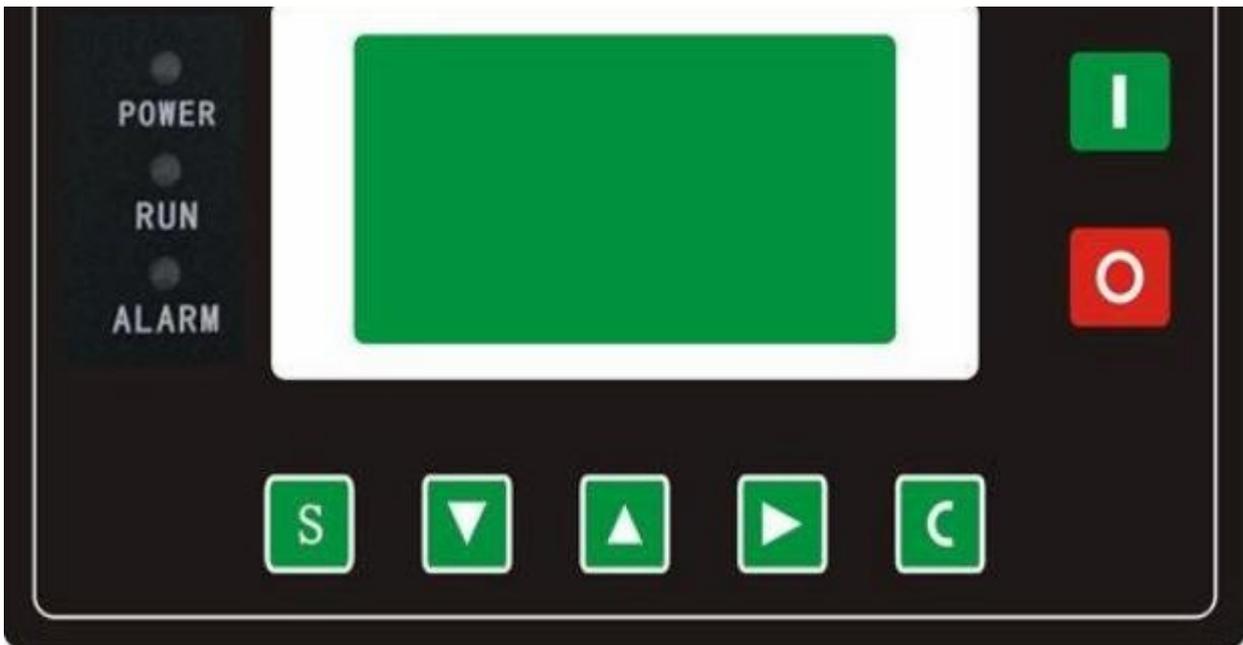
3.   Basic operation

3.1   Start the machine

3.1.1   Open the switch valve of air outlet completely.

3.1.2   Turn on the power on-off to "ON".

3.1.3   Press the start button on the control panel.

3.1.4   Scroll air compressor enters to automatic operation state after starting.

3.2 Shutdown the machine

3.2.1 Press the stop button on the control panel.

3.2.2 Open the switch valve of air outlet completely.

3.2.3 Drain the condensate water before the air tank's pressure down to 0.00MPa.

3.2.4 Confirm all the condensate water valves are closed when the pressure is 0.00Mpa.

3.2.5 Close the switch valve of air outlet.

3.3 MAM860 Control panel operation instructions

A microcomputer controller "MAM860" is equipped on the integrated oil free scroll air compressor which can realize the automatic operation of air compressor intelligently, include control the pressure and temperature automatically, real-time display of various faults information of air compressor, protected stopping, network group control and other functions. LCD screen can display 4 lines of characters, and operators can set the parameters, check the operation status of machine though

man-machine dialog interface.

3.3.1　Button instruction

I Start button：

1.) When compressor is at stop status, press this button to start thecompressor.

2.) When compressor is set as master（No.1）in block mode ,press this button to start the compressor and activate block mode function at the same time.

回 Stop Button:

1.) When the compressor is at running status, press this button to stop the compressor;

2.) When compressor is set as master (No.1) in block mode ,press this button to stop compressor and block mode function as well;

3.) When compressor is at stop status, long press this button to display software edition.

S Set Button /Loading / unloading Button:

1.) When the compressor is at running status ,press this button to load, unload ;

2.) When the compressor is at setting mode, press this button after modification to confirm and save the modified data.

▼ Move down button / Decreasing button:

1.) When viewing the menu, press this button to move downward the cursor.

2.) When modifying data, press this button to decrease the data at current position.

▲ Move up button/Increasing button:

1.) when viewing the menu, press this button to move upward the cursor ;

2.) When modifying data, press this button to increase the data at current position .

▶ Shift button /Enter button:

1.) When modifying data, press this button to move to the next data bit;

2.) When select menu, press this button to switch to sub-menu. If no   sub-menu available, the controller will shift to data setting mode.

C Return button / Reset button:

1.) When modifying data, press this button to exist data setting mode;

2.)When viewing the menu, press this button to return to previous menu;

3.) When the controller is at failure stop status, long press this button to reset.

3.3.2   Indicator Instructions

Power: Indicator is on when controller is powered on.
Run: Indicator is on when motor is running.
Alarm: Indicator is on when controller is alarming;
　　　　Indicator is on when compressor is failure stop ;
　　　　Indicator is off after error is cleared and reset.

3.3.3   Status Display and Operations

The display screen will show as below after powered on：

```
WELCOME USING

SCROLL   COMPRESSOR
```

After 5 seconds, the menu will switch as below:

```
                    0.0Hz
T :   80℃
                    0RPM
P:    0.53Mpa

NORMAL STOP
                    3.7kW
381.2V
```

Press " ▼ " to enter into Selection Menu:

```
CUSTOMER PARA.

FACTORY PARA.
```

3.3.4   Operating Parameter and Menu

Press " ▼ " to move the cursor to "RUN PARAMETER", then   press " ▶ " to switch

to secondary menu:

```
PARA

TOTAL RUNTIME

THIS RUN TIME

MAINTENANCE PARA.
```

```
HISTORY FAULT PRO.

DATE SERIAL.

THIS FAULT

ABOUT EQUIPMENT
```

Move the cursor to the corresponding menu item, press " ▶ " to check the specific parameter. Such as viewing item TOTAL RUN TIME, move the cursor to item TOTAL RUN TIME, press " ▶ " to switch to item TOTAL RUN TIME

```
TOTAL RUN TIME :

1688  H  08  M  10  S
LOADING TIME :

1688  H  08  M  10  S
```

Press " C " to return to the previous menu or the main menu. If no operation at the current menu for 120 seconds , controller will automatically return to the main menu and turn off the backlight simultaneously.

3.3.5 Customer Parameter View and Modification

In first menu, press" ▲ " and " ▼ " to move the cursor to item CUSTOMER PARA., press " ▶ " to switch to the following menu:

```
[                    ]

SET TIME

OPERATION MODE

BLOCKING MODE
```

```
MAINTENANCE PARA. RESET
CLR LIFE TIME
USER CODE :  ****

LANGUAGE SEL :CN
```

Move the cursor to item SET P,T, VF , then press " ▶ " to switch to the following menu:

UNLOAD P：00.80MPa

VF P ：00.70MPa

FAN START ：0025℃

FAN STOP：0035℃
RAT POWER： 002.2KW
RAT SPEED： 3000RPM
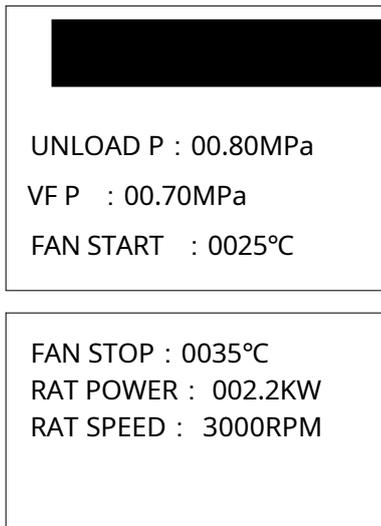
Move the cursor to item LOAD P, then press " ▶ " to switch to the following menu which requires a user password input.

ENTER CODE
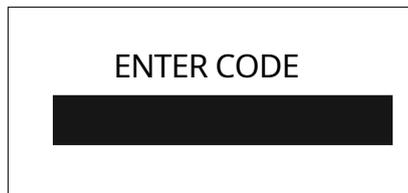
In this menu, the first data bit of password started blinking ，press " ▲ " or " ▼ " to modify the the first bit of password，Press " ▶ ", move the cursor to the next data bit, modify the second data of password. In accordance with the above , modify the third and fourth data of password in sequence. Press" S " to confirm the input data and the menu will switch to the following menu after verification:

UNLOAD P：00.80MPa

VF P：00.70MPa

FAN START T：0025℃
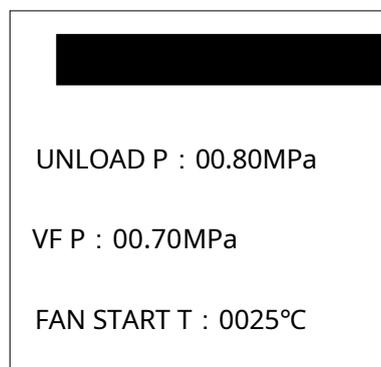
In the menu above, press " " , the first data of LOAD P starts to blink, user can press " " or " " to modify the present data in accordance with the above method. Press " " to move to next data bit and modify the target data in sequence. When finished, press " " to confirm and save the data. The controller prompt sends out a short voice to tip the completion of parameter set.

3.3.6 Customer Parameter Sheet and Function

First menu	Secondary menu	Para. SEL.	Preset Data	Function
User para.	P., VF	LOAD P.	0.60MPa	1.In AUTO LOADING status , compressor will load if pressure is below this set data 2.In STANDBY mode, compressor will start if the pressure is below this set data
		UNLOAD P.	0.80MPa	1.Compressor will unload automatically if air pressure is above this set data; 2.This data should be set above LOAD P ,also should be set below ULD LIM P.
		VF P.	0.70MPa	Set AIR P for VF compressor to keep running stable, when pressure is fluctuated around this data, controller will adjust operation frequency of inverter to control the pressure close to this data
		FAN START	35℃	Fan will start if AIR T is above this set data.
		FAN	25℃	Fan will stop ifAIR T is below this set data

	STOP		
	RAT POWER	005.0kw	Set RATED POWER in order to calculate actual power
	RAT SPEED	0750RPM	Set RATED SPEED at 50HZ in order to calculate the actual speed in variable frequency.
SET TIME	FAN DELAY	0002S	Set the fan start time, record time when fan is activated, controller will not start overload protection during this time to avoid impulse starting current stopping the fan.
	LOAD DELAY	0001S	Unloading in this set time after the compressor is running
	EMPTY DELAY	0001S	When unloading continuously, compressor will automatically stop and enter to standby status if over this set Time
	STOP DELAY	0001S	For NORMAL STOP operation, compressor will stop after it continuously unloading over this set Time
	START DELAY	0001S	Machine can be restarted only over this set time at any case(after NORMAL STOP,STANDBY or FAILURE STOP)

	VSD UP SPEED	0010	Restrict PID calculationsin case the frequency increasing too fast which cause motor speeding up too fast
	VSD DN SPEED	0010	Restrict PID calculationsin case the frequency decreasing too fast which cause motor slowing down too fast.
OPERATION MODE	ON/OFF MODE	LOCAL/REMOTE	1.When set as LOCAL ,only the button on the controller can turn on and turn off the machine. 2.When set as REMOTE mode, both the button on the controller and the remote control button can turn on and off the machine;
	LOAD MODE	AUTO/MANU	1. When set as the MANU : only when the pressure is above UNLOAD P, compressor will unload automatically .For any other case, the Load/Unload function can only be executed by pressing load/unload key. 2. When set as AUTO ,the loading/ unloading function can be executed by the fluctuation of AIR P automatically
	COM MODE	COMP./BAN/ BLOCK	1.When set as BAN, the communication function is invalid.

			2.When set as COMP, compressor can communicate with computer or DCS as slave according to MODBUS-RTU. 3.When set as BLOCK, compressor can work in net
	COM ADD	001	communication address from No. 001-016 can be set
	BLOCK STA	MASTER/SLAVE	1.When service as master in BLOCK. Master controls slave; 2.When service as slave in BLOCK, slave is controlled by master
	BLK MODE	VF - PF/VF - VF	VF - PF:VF compressor and PF compressor work in block mode VF - VF:VF compressor and VF compressor work in block mode
BLOCK MODE	BLK NUM	0000	Number of air compressors in block net
	TURN TIME	9999 hours	When master pressure is between BLOCK LOAD P and BLOCK UNLOAD P, master determine slave work alternatively over this set time .
	BLK MAX	00.75MPa	When master pressure is between BLOCK LOAD P and BLOCK UNLOAD P, master

			determine slave work alternatively over this set time .
	BLK MIN	00.65MPa	In BLOCK, one compressor will start or load when pressure is below this set data
	BLOCK DELAY	0000 秒	In BLOCK mode, when master sends two commands continuously, second command signal delays for this set data
CLR LIFE TIME	OIL RESET	0000 H	Record oil filter total run time. If changing new oil filter, the parameter should be reset by manual operation.
	O/A RESET	0000 H	Record O/A separator total run time. If changing new O/A separator, the parameter should be reset by manual Operation
	AIR RESET	0000 H	Record air filter total run time. If changing new air filter, the parameter should be reset by manual operation
	LUBE RESET	0000 H	Record lubricating oil total run time. If changing new lubricating oil, the parameter should be reset by manual operation
	GREASE RST	0000 H	Record grease total run time. If changing new grease, the parameter should be reset by manual operation

	BELT RESET	0000 H	Record belt total run time. If changing new belt, the parameter should be reset by manual operation
MAX LIFE TIME RESET	OIL FILTER	0000 H	1.Alarm prompts when oil filter total run time is over the parameter set. 2.Set this data to "0000" to invalidate the oil filter alarm function
	O-A SEPAR	0000 H	1.Alarm prompts when O/A separator total run time is over the set data. 2.Set this data to "0000" to invalidate the O/A separator alarm function
	AIR FILTER	0000 H	1.Alarm prompts when air filter total run time is over the parameter set. 2.Set this data to "0000" to invalidate the alarm function of air filter
	LUBE	0000 H	1.Alarm prompts when lubricate total run time is over the parameter set. 2.Set this data to "0000" to invalidate The alarm of lube.
	GREASE	0000 H	1.Alarm prompts when grease total run time is over the parameter set. 2.Set this data to "0000" to invalidate the alarm of grease.
		0000 H	1.Alarm prompts when belt total run time is

	BELT		over the parameter set. 2.Set this data to "0000"to invalidate the alarm of belt.
	USER CODE	****	It is allowed to modify the USER CODE after authorization
	LANGUAGE SEL	CN/EN	EN	Chinese display when set to CN English display when set to EN

table 2: user parameter table

3.3.7 Factory Parameter

The view and modification of factory parameter requires a factory password, The modification step is same as customer parameter modification. Main function is as below: (table 3)

Primary menu	Secondary menu	PARA. SEL.	Initial data	Function
FACTORY PARA.	BASIC PARA.	FAN CUR	Maximum fan overload Data/1.2	When the current of fan is more than 1.2 times and less than 4 times of the set data , the unit will shut down according to overload feature.
		ALARM T.	105C	Alarm prompt when actual AIR T is over the parameter set
		STOP T.	110C	Alarm and stop when actual AIR T is over the parameter set
		RUN	000000 H	Modify the TOTAL RUN TIME

TIME		
LOAD TIME	000000 H	Modify the LOAD TIME
MAX U.L.	0.80MPa	The UNLOAD P in CUSTOMER PARA must be set no higher than this set data.
STOP P.	1.00MPa	Alarm and stop when actual AIR P is above this set data
FAULT RESET	0000	Input the password and press "set " button to clear all the history failures record.
SERIAL	0000	The range of every data bit is 16 data: 0-9,A,B,C,D,E,F
DATE	0000	Production date
FREQ. SEL	60HZ/50HZ	Select compressor power frequency to test fan current .Use super password to revise this data
PHASE PRO	ON/OFF	ON:select phase sequence protection function OFF:Invalid phase sequence protection function. Use super password to revise this data
MAX TIME	0000H	1.Alarm and stop when the compressor is in a stop status and the TOTAL RUN TIME is over this MAX TIME set.

		2.Set the data to '0000', to invalid the function.
MAX ALARM	0010H	When controller detect oil filter, O/A separator. lubricating oil ,grease and belt running over the max time and alarm over the data set ,compressor will reports MAX ALARM and stop
SPARE	0001	Standby
LOW T PRO	-048C	1.In stop mode, air compressor is not allowed to start when air temperature is lower than this set data; 2.Two minutes after turn on, when the air temperature is below this data, compressor will stop and indicate LOW T
CODE2	****	Use this code to change all CUSTOMER PARA and part of FACTORY PARA (except TOTAL RUN TIME,TOTAL LOADING TIME,TIME LIMIT , MAX ALARM , FREQ SEL,PHASE PRO, CODE2,TIME CODE)
TIME CODE	****	Use this code to change all CUSTOMER CODE, TOTAL RUN TIME ,LOADING TIME ,TIME LIMIT,MAX ALARM ,FREQ SEL,PHASE PRO
COM	ON/OFF	1.When set as ON,DCS can set data through

		SET PARA		MODBUS protocol； 2.When set as OFF,DCS cannot set data through MODBUS protocol; 3.DCS can set data only when compressor is at stop status .
	VF PARA	INT SCAL	00.20 MPa	(PID TARGET PRESS set value - INTEGRAL SCALE)< detected AIR P < (PID TARGET PRESS set value + INTEGRAL SCALE) INTEGRAL GAIN works
		INT SCAL	0020	When detected AIR P< （ PID TARGET PRESS set value-INTEGRAL SCALE） or Detected AIR P> (PID TARGET PRESS set value+INTEGRAL SCALE) Integral calculation based on this data
		PROP GAIN	0010	Track speed of PID TARGET PRESS set value , the bigger the data, the faster the track; the smaller the data the slower the track.
		INT. GAIN	0012	Track the speed of PID TARGET PRESS set value and STEADY STATE ERROR, the bigger the data ,the faster the track and the smaller the STEADY-STATE ERRORS; the smaller the data ,the slower the track and the bigger the STEADY-STATE ERRORS
		DIFF	0000	Track the hysteresis system(such as

GAIN		temperature) not use very often and normally set as "0000"
MAX FREQ	050.0Hz	The max frequency in LOADING MODE
MIN FREQ	030.0Hz	The min frequency in LOADING MODE
U.L. FREQ	010.0Hz	Permitted operating frequency in UNLOAD MODE
DIFF.P	00.72MPa	When use compressor to adjust speed and balance pressure and the AIR P is detected higher than the set DIFF P, the DIFF F works
DIFF.F	005.0Hz	When use compressor to adjust speed and balance pressure and the AIR P is detected higher than the set DIFF P ,sent the data (CONTROL FREQUENCY based on the PID OPERATION FREQUENCY- SET FREQUENCY) to inverter to avoid AIR P over PID TARGET PRESS too far which may cause the compressor loading and unloading frequently.
VF 0	Z2000/	Set the inverter model, controller read the operation parameter based on user model

		MD320	
	STOP MODE	SLOW-D/FREE-S	When STOP MODE set as FREE-S in FACTORY PARA:compressor receive stop command,16 terminal opens and valve is de-energized ,13 and 14 terminals keep closed until 1 S before STOP DELAY finish .When STOP MODE set as SLOW-D in FACTORY PARA:compressor receive stop command,13 and 14 terminals open and 16 terminal opens, valve is de-energized .The compressor will stop if SLOW D is set to zero
	PID	000.5 S	
HARDWARE FUNCTION SET	3 FUNC	3,4 terminal digital input function set	EMERG.,NOFUNC,REMOTE-OFF,REMOTE-ON,ON/OFF,REMOTE(INCHING) , ALARM(NC),ALARM(ON), FAULT NC/NO), AIR FIL (NC), AIR FIL(NO), O-A SEP.(NC), OIL FIL(NC), OIL FIL(NO), RUN/REMOTE/ALARM NC: NORMAL CLOSE ; NO: NORMAL OPEN
	4 FUNC		
	12FUNC.	RUN/REMOTE/ALARM	No.17 terminal relay function can be as run indication ,remote indication , alarm indication.

table 3: factory parameter table

3.3.8   Operating Authorization and Password

Controller provides multiple passwords and access management. According to different levels of passwords, controller provides different levels of operating authorization, details as following:

3.3.8.1   User code: , factory set: 1688

Permissions:Allows to modify all CUSTOMER PRAMETER.

3.3.8.2 Factory code:fixed:1688

Permissions: Allows users to modify all CUSTOMER PARA and FACTORY PARA.

3.3.8.3   CODE 2: set in FACTORY PARA,FACTORY CODE is required for reset.

Permissions: Allows users to modify all USER PARA,all FACTORY PARA except

TOTAL RUN TIME,LOADING TIME,MAX LIFE TIME,MAX ALARM,FREQ,PHASE

PRO,CODE2,TIME CODE.

3.3.8.4   TIME CODE: set in FACTORY PARA,FACTORY CODE is required for reset.

Permissions:Allows users to modify all USER PARA；part of FACTORY PARA such as

TOTAL RUN TIME,LOADING TIME,MAX LIFE TIME,MAX ALARM,FREQ,PHASE PRO

3.3.8.5   CALIBRATE CODE:fixed:0003

Permissions:Calibrate relative coefficient of fan current

4.   Fault reason and solutions

◎Cut off the power supply and ensure there isn't residual air pressure in the pipeline before inspecting the failure.

◎The air compressor only can be repaired after cooling naturally to prevent hurt (stop the machine over 30mins) due to the surface temperature is very high when the machine runs. Forbid to cool the machine with water.(table 4)

	Failures	Predicted reasons	Solution
1	The motor doesn't run	Power off	Turn on the power switch and leakage circuit switch
		The cord is disconnected	Exchange
		Reverse wiring	Change the positions of any two wires in power cord.

		Fault of control panel	Exchange
		Thermal relay action of electromagnetic switch	Check the power voltage and contact the sales agent if it is normal.
		Fault on air end , motor	Exchange
2	Abnormal vibration or noise of air compressor	Bolt of isolator is loose	Tighten the bolt
		Moving part touches other part	Contact with the sales agent
		Abnormal noise on the air end ,motor	Check and contact with the sales agent
		Rubber isolators are aged	Exchange the rubber isolators
		Fault on check valve	Exchange the check valve
		The air end reverses after starting	Check the phase sequence is right
		The air end reverses after stopping	Fault on check valve
3	Pressure can't rise or rise too slowly	Leakage on the pipeline	Check the pipeline and contact the supplier
		The air filter is blocked	Clean the filter with air gun, exchange if the block is serious
		Leakage on safety valve	Exchange the safety valve
		Leakage on check valve	Exchange the check valve
4	The air discharge pressure is upper than the specified value	Fault on pressure control	Check the elements of pressure control
5	Internal temperature of case is too high	Poor ventilation and heat dissipation	Check , repair
		Axial fan reverses or stops	Exchange the axial fan
6	Overload protection trips	Phase voltage is unstable	Check the power voltage
		The main circuit terminal is loose	Check, reinforce
		The motor loading increases when the air end internal has been damaged but still run	Repair, exchange
7	Fault on motor	Loud noise, big vibration	Check the holding screws and motor bearings
		Temperature is too high	Check, repair
		Motor burns out caused by locking air end	Exchange the motor
		Fail to start	Check the power supply and resistant of motor
		Low speed	Check phase of motor is loss

8	Fault on air receiver tank pipeline	Air leakage, capacity decreases	Check the valves and connectors are leakage
		Check valve is leaked, air back flow, air end is reversed	Exchange the check valve
		Metal pipe leakage	Exchange the metal pipe
		Temperature of integrated machine increases, temperature of air and air tank is too high ,caused by cooling device failure	Check the cooling fan
		Small tank volume and air storage capacity, caused by the electronic draw-off valve doesn't drain	Exchange the electronic draw-off valve
		The safety valve pipe breaks ,and the leakage result in the air discharge deceases, the valve does not trip	Exchange the safety valve
		The draw-off valve leakage	Exchange the draw-off valve
		No display on pressure meter	Exchange the pressure meter
9	Electric components	No power on air switch, fail to start	Check the power switch
		Wrong phase sequence , air end reverses	Exchange the two phase sequences at will
		Fail to start the phase sequence relay	Exchange the relay
		Fail to start the thermal overload protection	Exchange the thermal overload
		Fail to start AC contactor	Exchange the AC contactor
		Fail to start transformer	Exchange the transformer
		The electric element burns out caused by loose cord, overload tripping	Exchange the electric elements

table 4: failure reason and removing methods table

5. Maintenance

To get longer life time of oil free scroll air compress operates in safe state, daily maintenance is very important. Check and maintain the machine according to the following specified run time in the maintenance periodic table. (table 5)

	Contents	Check, maintain, exchanging time/period						Remark
		everyday	every 400h every 2 months	every 1500h every 6 months	every 2500h every 1 year	every 5000h every 2 years	every 10000h every 4 years	
air receiver tank	Inspect , drain the water	○						Drain the water at any time
Draw-off valve	Inspect , drain the water	○						Drain the water at any time
Air filter	Remove the surface dust		○	○				Prolong or shorten the maintaining time according to the ambient dust condition
	Exchange the filter element				●☆			
V-belts	Adjust the tightness		○ first time	○				Prolong or shorten the exchanging time according to the wearing condition
	Check and exchange the serious wear belts				●☆			
Tip seals	Exchange					●☆		Buy from supplier
Add grease on bearings	Add new grease					●☆		Buy from supplier
Rubber isolator	Check, exchange					○	●☆	Exchange if abnormal
Safety valve	Check the sensitivity				○		●☆	Exchange if abnormal
Check valve	Check, exchange				○			

Temperature sensor	Check, exchange				○			Exchange if abnormal
Pressure sensor/meter	Check				○			Exchange if abnormal
Discharge pipe	Check, exchange				○			Exchange if abnormal
Remove the dust on air cooler	Clean, remove the dust				○			Remove by using air gun
Fan	Check, exchange				○			Exchange if abnormal
Air end	Check,maintain, exchange				○			Maintain, exchange if abnormal
Motor	Check the insulation and bearing of motor				○			Maintain according to the motor instruction manual

table 5: maintenance periodic table

○ Refers to exchange the parts if abnormal during the regular inspection time after the machine operates or parts replaces.

● Refers to the replacement time of parts

5.1 Regular inspection and maintenance

5.1.1 Discharge the condensate

Cut off the main power and discharge the condensate water and compressed air from air tank after ending the operation of a day. Stop the machine and drain the condensate once a day if the machine runs 24 hours.

5.1.2 Abnormal vibration, noise

Check according to the following reasons when there is abnormal vibration and noise.(table 6)

predicted reason	Solutions
Have not removed the bolts and transport fixed pin	Remove the bolts and transport fixed pin
There is a gap between the machine and ground	Insert a rubber plate to remove the gap
Loose bolt, screw	Tighten again
Moving part touches with other parts	Contact with sales agent
Abnormal noise on the air end, motor	Exchange the rubber isolators
Fault on check valve	Exchange the check valve(contact with sales agent)
Abnormal noise on V-belts	Contact with sales agent

Table 6：**fault reasons table**

5.1.3　Regular inspection and clean

Confirm the air filter is unblocked, and no dust in the case and inside of case.

5.1.4　Leakage of check valve

The check valve may be abnormal when the air compressor stops but the device reverses. Contact the retailer for inspecting and exchanging the check valve.

5.1.5　Check safety valve

Gently pull the safety valve when the pressure is near 1.0 Mpa. Confirm to enable the safety valve and there is air discharges. In addition, confirm the safety valve does not open under the max pressure. Keep your face away from the device when check the safety valve.

5.1.6　Loose bolt, nut, screw

Confirm the bolts are tight. Tighten them with suitable wrench, screwdriver when the bolts are loose.

5.1.7　Inspect and clean the air filter element regularly.

　　1). Open the cover of filter and disassemble the wing nut.

2). Remove the filter element and blow out the dust with air gun.(figure 2)

If the dirt around the filter element is serious, and no dust goes into the filter mounting joint, remove the dust with air gun and disassemble the element.
3). Exchange the filter element if the dirt is serious.

5.1.8   Regular inspection of V-belts (only for belt compressor)

No abnormal noise when runs. Slipping, abnormal noise, wear will occur when the belts are too loose.

5.2   Repair and exchange for air end

Refer to the instruction manual and after-sales maintenance guide of air end

6.   After sales service and warranty

6.1   Method of purchasing parts

6.1.1   Use original parts only when repairing.

6.1.2.   Check the following information before purchasing from supplier when entrust maintenance and exchange parts:

a. Model;

b. Material code;

c. Operation time of start-up No. and purchasing date;

d. Detail of fault and shutdown status.

6.2   About warranty

Use the machine correctly according to the 《instruction manual》.The company will supply free maintenance service for the faults and damages occur in normal use condition and damaged parts caused by quality problems. The follow cases are out of warranty and are paid services:

1.) Damages caused by incorrect use of the product according to the instructions in the 《manual》.

2.) Damages caused by do not follow the inspection and maintenance instructions in the 《manual》.

3.) Damages caused by out of the specified warranty time.

4.) Damages caused by out of the specified ambient temperature and rated/max pressure, voltage range.

5.) Damages caused by use the product in the horrible environment other than those specified.

6.) Damages and faults cause by improper setting, operation.

7.) Damages caused by modify the air end, parts and product dimension without permission after purchasing.

8.) Damages caused by fire, earthquake, flood and other natural disasters .

In addition, faults of product or associated with the production compensation, business compensation, repair costs and other secondary compensation guarantees, as well as faults or associated with the material damage, personal damage and other secondary damage cannot be guaranteed.

Warranty card

Product name: _____ Model No.:

Serial No.: _____ Manufacturing date:

User name:

Address:

Contact person: _____ Tel:

date	maintenance items	parts name	qty	signed by repairer	signed by customer	remark