
SCREW AIR COMPRESSOR

CSST13020 Instruction Manual



Release August 2018

TABLE OF CONTENTS

1. Safety Information.....	4
1.1 Safety Alert Symbols.....	4
1.2 Safety Precautions.....	5
1.3 Pressure.....	5
1.4 Fire and Explosion.....	6
1.5 Moving Parts.....	6
1.6 Hot Surfaces.....	6
1.7 Proper Compressed Air Applications.....	6
1.8 Electrical Shock.....	7
2. General Information.....	8
2.1 Introduction.....	8
2.2 The Compression Cycle.....	9
2.3 Compressor Lubrication and Cooling System.....	10
2.4 Compressor Discharge System.....	10
2.5 Air-end, Inlet Valve and Filtration System.....	11
2.6 Control Panel Layout.....	12
2.7 Technical Data.....	14
3. Fluid Information.....	15
3.1 Fluid Guide.....	15
3.2 Fluid Change and Recommendations.....	15
4. Installation.....	16
4.1 Compressor Mounting, Support and Location.....	16
4.2 Ventilation and Cooling.....	16
4.3 Piping Connection.....	18
4.4 Fluid Level Inspection.....	19
4.5 Electrical.....	19
4.6 Motor Rotation Inspection.....	20
4.7 Fan Rotation Inspection	21
5. Operation.....	22
5.1 Routine Operation.....	22
5.2 Operating Procedures (Electrical Control Panel).....	24
5.3 Display Unit Status and Operations.....	24
5.4 Customer Parameter and Functions.....	27

TABLE OF CONTENTS

5.5	Manufacturer Parameters.....	31
5.6	Control Principle.....	39
5.7	Network Control.....	41
5.8	Temperature Control of Fan.....	41
5.9	Failure Shutdown and Emergency Shutdown.....	41
5.10	Early-Warning and Prompts.....	41
5.11	Control Protection.....	42
5.12	Common Failure Solving.....	44
5.13	Electrical Control Diagram	46
6.	Servicing.....	47
6.1	Fluid Change.....	47
6.2	Air Filter.....	47
6.3	Fluid Filter.....	48
6.4	Air/Oil Separator.....	48
6.5	Maintenance Schedule.....	49
7.	Troubleshooting Guide.....	50
8.	Standard Terms and Conditions	53

Safety Information

Thank you for choosing our Compressor. Please read this instruction manual carefully before using the compressor. This manual must be kept in the safe place for future reference. Our Compressor's authorized distributors provide maintenance service for CS series rotary screw compressors. A certified technician is required to ensure compressors maintenance is safely handled. By following the instructions in this manual, the user will minimize possibility of an accident throughout the useful life of this equipment.

1.1 SAFETY ALERT SYMBOLS

Key hazards are used throughout this manual. The level of hazards seriousness is symbolized as follows:



This symbol identifies immediate hazards which **will** result in severe personal injury, death or substantial property damage.



This symbol identifies hazards or unsafe practices which **could** result in personal injury, death or substantial property damage.



This symbol identifies immediate electrical hazards which **will** result in severe personal injury, death or substantial property damage.



This symbol identifies hazards or unsafe practices which **could** result in personal injury or substantial property damage.



This symbol identifies immediate hot surface hazards which **will** result in severe personal injury.



NOTICE

Identifies important installation, operation or maintenance information which is not hazard related.

Safety Information

1.2 SAFETY PRECAUTIONS

This manual describes the safety precautions, structure and functions of all systems and components, as well as the operation and maintenance methods for the GC series rotary screw air compressors. The owner and operator shall read the manual carefully. Only after thorough understanding should the machine be operated for the first time. This manual gives you a general description of the, mechanical and electrical systems and maintenance. However, if you have any questions about operating and maintenance of the compressor; please contact your authorized distributor or our service department personnel.

Do not modify the compressor and/or controls in any way except with written factory approval. While not specifically applicable to all types of compressors with all types of prime movers, most of the precautionary statements contained herein are applicable to most compressors and the concepts behind these statements are generally applicable to all compressors.



Failure to follow any of these precautions may result in severe personal injury, death, property damage and/or compressor damage

1.3 PRESSURE

A properly sized pressure relief valve must be installed in the discharge piping ahead (upstream) of any shutoff valve (block valve), heat exchanger, orifice or any potential blockage point. Failure to install a pressure relief valve could result in the rupturing or explosion of some system component. Relieve all pressure internally to the compressor prior to servicing. Do not depend on check valves to hold system pressure. Do not change the pressure setting of the pressure relief valve, restrict the function of the pressure relief valve, or replace the pressure relief valve with a plug. Over pressurization of system or compressor components can occur, resulting in death, severe personal injury or property damage. Do not operate the compressor at pressures in excess of its rating. Never use plastic pipe, rubber hose, or soldered joints in any part of the compressed air system. Failure to ensure system compatibility with compressor piping is dangerous.

Safety Information

1.4 FIRE AND EXPLOSION

Clean up any spills of lubricant or combustible liquid immediately. Keep sparks and flame away from the compressor. Do not permit smoking during servicing, such as checking or adding fluid. Wipe down spills immediately using industrial cleaner as required. Do not use flammable material for cleaning purposes. Do not operate the compressor in a hazardous environment unless the compressor has been specially designed for that environment. Wear personal protective equipment including safety goggles and clothing during servicing the compressor. Never use a flammable or toxic solvent for cleaning the air filter or any parts.

1.5 MOVING PARTS

Keep hands, arms and cloths away from the coupling and fans of the compressor. Do not remove any guards or cabinet panels or attempt to service any compressor part while the compressor is operating.

1.6 HOT SURFACES

Do not touch any hot surface and parts during the compressor's operation. Keep all body parts away from air/oil receiver tank, steel tubing, air end and after-cooler. Wear personal protective equipment including gloves while servicing the compressor.

1.7 PROPER COMPRESSED AIR APPLICATIONS

Air from this compressor will cause severe injury or death if used for breathing or food processing. Air used for those processes must meet OSHA and applicable industry regulations. This compressor is designed for use in the compression of normal atmospheric air only. No other gases, vapors or fumes should be exposed to the compressor intake, nor processed through the compressor. Keep personnel away from the compressed air discharge. Use compressed air for cleaning purpose, only with effective chip guarding and personal protective equipment which meet OSHA standard and/or any federal, state, local codes, standard and regulation.

Safety Information

1.8 ELECTRICAL SHOCK

Never start the compressor unless it is safe to do so. Do not attempt to operate the compressor with a known unsafe condition. Tag the compressor and render it inoperative by disconnecting and locking out all power at the source or otherwise disabling its prime mover so others who may not know of the unsafe condition cannot attempt to operate it until the condition is corrected. Install, use and operate the compressor only in full compliance with all pertinent OSHA regulations and/or any applicable Federal, State, and Local codes, standards and regulations. Never assume it is safe to work on the compressor because it is not operating. Many installations have automatic start/stop controls and the compressor may start at any time.



NOTICE

- Follow all maintenance procedures and check all safety devices on schedule.
- Use the correct compressor fluid at all time
- Do not rely on the discharge check valve to isolate the compressed air service line
- Keep panels closed at all times and stay away from hot surfaces to prevent hazards



NOTICE

These instructions, precautions and descriptions cover GC series air compressors. As a service to our customers, we often modify or construct packages to the customer's specifications. This manual may not be appropriate in those cases.

Every effort has been taken to ensure complete and correct instructions have been included in this manual. However, possible product updates and changes may have occurred since printing this manual. Compressor reserves the right to change specifications without incurring any obligation for equipment previously or subsequently sold.

General Information

2.1 INTRODUCTION

The GC series offer models with power ranging from 7.5 kw to 132 kw. The compressor is a single stage, positive displacement, fluid-flooded rotary screw. A complete unit of following:

- Screw air compressor
- Dryer(optional)
- Filters(optional)
- Air tank(optional)

All components are assembled on a structural steel base with enclosure. The control panel is located in the front of the enclosure door panel. Acoustical enclosure is one of the standard features for all compressors.

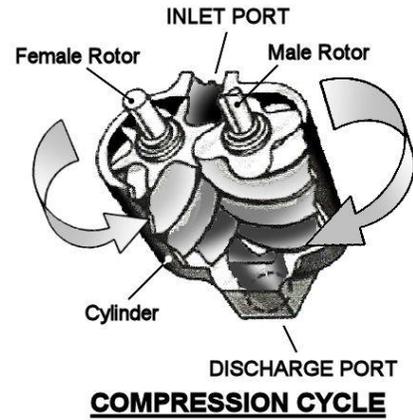


Dismantling the compressor's enclosure may void its warranty.

NOTICE!

2.2 THE COMPRESSION CYCLE

The compressor housing contains of two rotors; Male and Female rotors. The male rotor has five lobes and female rotor has six flutes. They are constantly and precisely meshed, and housed in the cylinder with two parallel adjoining bores. All parts are machined to exacting tolerances. The rotors provide positive-displacement internal compression smoothly and without surging. As the rotors rotate, air is drawn into the cylinder through the inlet port. A volume of air is filled and trapped as the rotor lobes pass the inlet port in the cylinders. Compression occurs as the male rotor rolls into the female flute, progressively reducing the space thereby raising the pressure. Compression continues until the lobe and flute pass the discharge port. The compressed air is then discharged into the air/oil separator tank. There are five complete compression cycles for each complete rotation of the male rotor.



When the compressor is operating, a partial vacuum is produced at the compressor inlet. Fluid is injected into the compressor unit and mixed with the air. The fluid has three basic functions:

- As a coolant, it controls the rise in air temperature normally associated with the heat of compression.
- It seals the leakage paths between the rotors and stator and also between the rotors themselves.
- It acts as a lubricating film between the rotors allowing one rotor to directly drive the other, which is an idler.

After air/fluid mixture is discharged from compressor to the reservoir, fluid is separated from the air in the separator tank. Compressed air then flows through the after-cooler for moisture removal while the lubricant is being cooled by the fluid-cooler for re-injectio

General Information

2.3 COMPRESSOR LUBRICATION AND COOLING SYSTEM

The lubrication and cooling system consists of a reservoir, centrifugal fan, fan motor, aluminum finned fluid-cooler and after-cooler, thermal valve & fluid filter. High pressure forces the lubricant through a series of direction changes in the reservoir where it is separated from the air. The fluid is then delivered to the thermal valve and fluid-cooler. Cooled fluid will be filtered before being re-injected back into the compressor.

Ambient air is being forced through the cooler fins by the centrifugal fan, which cools the fluid and compressed air in the cooler tubes. The after-cooler helps separate the water content in the discharge air, and through the automatic condensate drain, the water will be drained. This avoids water contamination problems downstream (in service lines). Cooler fins must be kept clean at all times.

Fluid from reservoir circulates to the thermal valve. The thermal valve is fully closed when the fluid temperature is below 70°C (158°F). Fluid (below 158°F) will bypass the thermal valve and inject directly to the aircend. As the discharge temperature rises above 80°C (176°F), due to heat of compression, the thermal valve begins to open and fluid will be circulated to the cooler.

2.4 COMPRESSOR DISCHARGE SYSTEM

Air/fluid mixture has been forced into reservoir after compression. The reservoir has two basic functions:

- It acts as a primary fluid separator.
- It serves as the compressor fluid sump.

The compressed air/fluid mixture enters the reservoir and is directed against the internal baffle. Turbulent flow occurs and velocity is significantly reduced, thus causing large droplets of fluid to form and fall to the bottom of reservoir. Fluid collected in the reservoir will then be returned to the compressor due to the pressure differential.

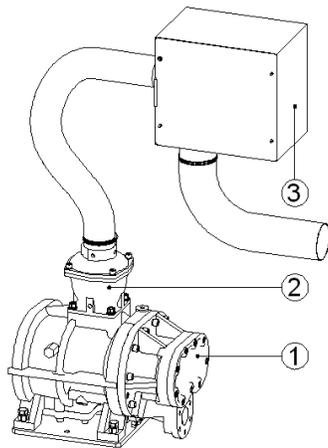
The sight glass enables the operator to visually monitor the reservoir fluid level. Fluid is added to the reservoir by removing the fluid filling cap after all system pressure is relieved. The fluid level should remain at the top red lines on the sightglass. Fluid refill is required once its level drops below the lower red line.

General Information

The minimum pressure check valve assures the reservoir maintains a minimum pressure between 58 psig and 72 psig (4Bar and 5Bar) during unloading conditions. This pressure is necessary for air/fluid separation and fluid circulation.

2.5 AIREND, INLETVALVE AND FILTRATION SYSTEM

The compressor inlet system consists of a Kerry air filter, Kerry inlet valve. & **SKK** airend. The Kerry inlet valve controls the air intake volume. It is also acts as the check valve to prevent the reverse pressure and rotation when compressor is shutting down.



①	SKK air end
②	<i>Kerry</i> inlet valve
③	Casing for <i>Kerry</i> air filter

General Information

2.6 CONTROLLER PANEL LAYOUT

Standard GC compressor is equipped with microprocessor control panel.

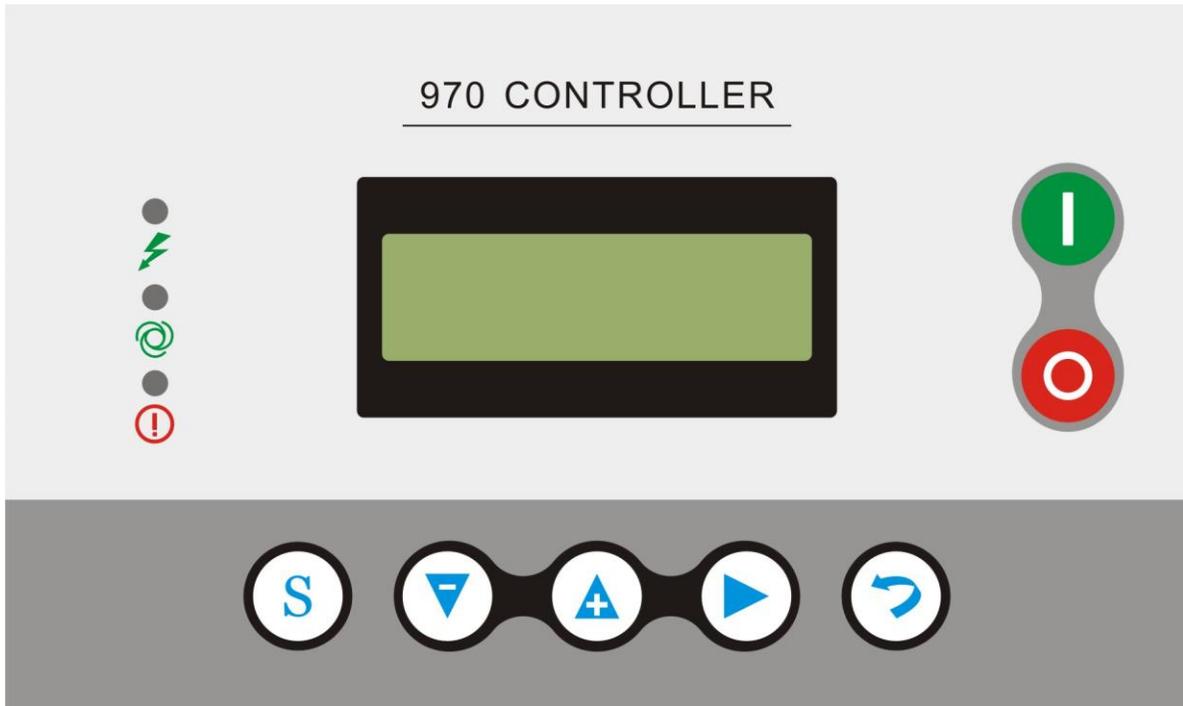


Figure 1.1.1

-  — Start Button: Press this button to start the compressor.
-  — Stop button: Press this button to stop the compressor.
-  — Set Button/ Loading / unloading Button: After modification, press this to confirm and save modified data; When the compressor is running ,press this button to load or unload under a certain pressure.
-  — Move up button/increase button: Data at current position is increased by pressing this button when data are modified; Menu is moved upwards when menu is selected.
-  — Move down button / Descending button: Data at current position is descended by pressing this button when data are modified; menu is moved downwards when menu is selected.

General Information



—Shift button /Enter button: This button services as shift button when data are modified and services as enter button when menu is selected.



—Back button / Reset button: This button services as back button when operate menu to come back parent menu; resetting is carried out by pressing this button for a little long time when failure shutdowns



Always check power supply before you service the unit. The power indication light could be in faulty status.

General Information

2.7 TECHNICAL DATA

The specification of the models are as follow

Model	Pressure	Capacity	Main Motor	Exhaust connection	Weight	Dimensions
	bar	m3/min	KW		kg	mm
GC7.5-8	0.8	1.2	7.5	G3/4	470	800×620×800
GC7.5-8G	0.8	1.2	7.5	G3/4	200	1020×820×1150
GC11-8	0.8	1.7	11	G1	370	1020×820×1150
GC11-10	1.0	1.5	11	G1	370	1020×820×1150
GC11-13	1.3	1.2	11	G1	370	1020×820×1150
GC15-8	0.8	2.4	15	G1	380	1020×820×1150
GC15-10	1.0	2.2	15	G1	380	1020×820×1150
GC15-13	1.3	1.7	15	G1	380	1020×820×1150
GC18-8	0.8	3.0	18	G1 1/2	500	1080×880×1235
GC18-10	1.0	2.7	18	G1 1/2	500	1080×880×1235
GC18-13	1.3	2.3	18	G1 1/2	500	1080×880×1235
GC22-8G	0.8	3.6	22	G1 1/2	560	1410×850×1235
GC22-8	0.8	3.6	22	G1 1/2	540	1410×850×1235
GC22-10	1.0	3.2	22	G1 1/2	540	1410×850×1235
GC22-13	1.3	2.7	22	G1 1/2	540	1410×850×1235
GC30-8	0.8	5.0	30	G1 1/2	650	1120×930×1290
GC30-10	1.0	4.4	30	G1 1/2	650	1120×930×1290
GC30-13	1.3	3.6	30	G1 1/2	650	1120×930×1290
GC37-8G	0.8	6.0	37	G1 1/2	740	1530×900×1435
GC37-8	0.8	6.0	37	G1 1/2	730	1530×1030×1435
GC37-10	1.0	5.5	37	G1 1/2	730	1530×1030×1435
GC37-13	1.3	4.6	37	G1 1/2	730	1530×1030×1435
GC45-8	0.8	7.1	45	G1 1/2	820	1240×1030×1595
GC45-10	1.0	6.5	45	G1 1/2	820	1240×1030×1595
GC45-13	1.3	5.6	45	G1 1/2	820	1240×1030×1595
GC55-8	0.8	9.5	55	G1 1/2	1200	1540×1200×1470
GC55-10	1.0	8.5	55	G1 1/2	1200	1540×1200×1470
GC55-13	1.3	7.4	55	G1 1/2	1470	1540×1200×1470
GC45-8GH	0.8	7.1	45	G1 1/2	970	1700×1050×1255
GC55-8GH	0.8	10.0	55	G1 1/2	1180	1790×1050×1255
GC75-8GH	0.8	13	75	G2	1470	2000×1200×1500
GC90-8GH	0.8	16	90	G2	1520	2000×1200×1500
GC110-8GH	0.8	20	110	G2	2210	2410×1300×1670
GC132-8GH	0.8	22	132	G2	2370	2410×1300×1670

Fluid Information

3.1 FLUID GUIDE

GC compressors are filled & tested with Kerry lubricant. Refer *Figure 3-1* for filler port, sightglass, quarter-turn valve location on the reservoir. The compressor is filled with the manufacturer's recommended quantity of Kerry fluid. Inspection of the reservoir fluid level during installation or operation is recommended.

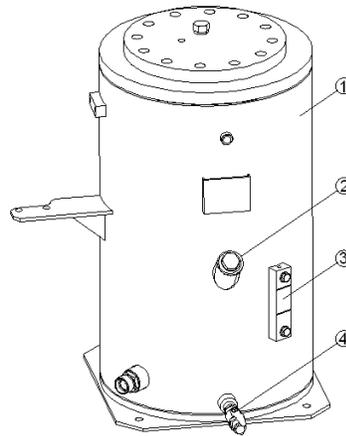


Figure 3-1: Fluid Fill Location



Do not use different fluid. Using different fluid will void compressor's warranty.

3.2 FLUID CHANGE RECOMMENDATIONS

LUBRICANT	FLUID CHANGE	FLUID FILTER CHANGE	SEPARATOR CHANGE
<i>Kerry</i> 4000 Or equivalence*	Every 4,000 hours	Every 2,000 hours	Every 3,000 hours

Installation

4.1 COMPRESSOR MOUNTING, SUPPORT AND LOCATION

Compressor should be located on a flat surface in a clean, well-lit and well ventilated area. The location must have sufficient access for maintenance equipment and lifting vehicle. Four feet (4') of clearance around the compressor is recommended for daily inspection and easy access to all compressor components. The area must have sufficient lighting for technicians to safely operate the compressor as well as perform maintenance work. The location should be free from standing water.

The compressor's base must be securely bolted to the floor with lag bolts. Rubber pad with 5 - 15mm thickness or pliable material should be placed under the bottom of the base if floor surface is uneven or irregular. A stationary compressor will prevent accidents such as broken piping or electrical connections. Do not over tighten the lag bolts because this may cause the frame to twist or bind which could result in possible breakage of fluid coolers, piping and the reservoir.



Brand new compressor has “Orange Color” shipping bracket installed under airoend assembly. Please remove the bracket after the unit is installed.

NOTICE!



Removal or paint over of safety labels will be a safety hazard. This could result in personal injury or property damage. Warning signs and labels should be conspicuous and on a bright legible surface. Do not remove any warning, caution or instructional material attached with unit.

4.2 VENTILATION AND COOLING

Ambient temperature should not exceed 40°C (104°F). High ambient temperatures may result in high air temperature shutdown.

Installation



Do not install and operate compressor if the ambient temperature is below 5°C (41°F). Pre-heat option must be installed with the unit for lower ambient temperatures.

NOTICE!

The compressor air inlet must be located in the opposite direction to other compressors or heat generating equipment. The object is to avoid hot air being drawn into the system. Do not block the exhaust air from cooler or fan. Hot exhaust air must be vented outside through a duct to prevent high ambient room temperature. The compressor room must be properly ventilated to avoid compressor high temperature shutdown.



Maintain clean & fresh air, dust free, metal particle free and chemical vapor free in the compressor's room. Housing the compressor within a poorly ventilated enclosure will cause higher operating temperature.



Under no circumstances should a compressor be installed in an area exposed to toxic, volatile or corrosive atmosphere, nor should toxic, volatile or corrosive agents be stored near the compressor.

All models are intended for indoor installation; however, it is possible, with certain modifications, to accommodate some outdoor locations. Models with standard enclosure are water-resistant but not water tight. Shelter is needed to protect the unit from rain, snow and freezing temperatures. An optional weather hood or air grille could be installed to protect compressor against blowing rain and snow as well as cabinet heater additions if ambient temperature will be below 5°C (41 F).

Installation

4.3 PIPING CONNECTION

Before installation, review the complete air systems layout, which includes compressor(s), receiver tank, dryer(s), line filter(s), pipe size, water drain and isolator valves. Never join pipes or fittings by soldering. Never use PVC pipe or non-genuine rubber hose in the air system. Use flexible connections to prevent pipe load from being transmitted to the compressor. Never use a different pipe size other than the manufacturer specification for the compressor unit.

A service line shut off valve must be installed after the compressor air outlet connection with a pressure relief valve installed to release compressed air to the atmosphere. For a single compressor and air receiver tank, manual shut off valves are typically being installed. A union connector must be installed after the ball valve (quarter turn, shut off valve) at the compressed air outlet. This will allow unit isolation for maintenance.



Release system pressure by opening manual pressure relief valve prior to servicing. Failure to relieve system pressure could result in death or serious injury and property damage.

The compressor after-cooler comes with an automatic condensate drain. The drain line should be installed to remove the condensate during compressor operation.

A receiver tank should be installed if compressed air demands fluctuate. Service line piping is recommended to be sized to match the compressor's discharge connector. All piping & fittings should be rated to withstand greater pressure than the discharge pressure. Isolation valves & drain valves are installed to isolate the compressor when service is required. These valves should have water drip legs with the drain direction facing downward to the floor. Piping should all line up properly with an adequate loop radius or bend radius given for easy installation and to prevent bending stress, flow restriction and damage due to thermal expansion. Piping support brackets must be mounted independent of the compressor and motor. This will avoid damage caused by vibration.

Installation

Pressure relief valves are sized to protect the system. Never change the pressure setting or tamper with the valve. Only the valve manufacturer and their authorized representatives are allowed to make such changes.



Pressure relief valves are used to protect system integrity in accordance with safety standards. Failure to provide properly sized valves will result in death or serious injury.

Pressure relief valves are installed prior to any potential blockage point such as shutoff valves, heat exchangers and discharge silencers. Ideally, the valve should be threaded directly into the pressure point it is sensing, not connected with tubing or pipe. Always direct discharge from relief valves to a safe area away from personnel.

4.4 FLUID LEVEL INSPECTION

Inspect the fluid level when the compressor is in shut down mode. Fluid level is indicated on the reservoir sight glass (see figure 3-1). The maximum fluid level is at the top red-mark. Add fluid until the top red-mark is reached.

4.5 ELECTRICAL

Before installation, the electrical supply should be checked for adequate wire size and capacity. User must comply with national & local electrical codes. The codes specify the surrounding clearance requirement for the electrical panel. Wiring work should be undertaken only by a qualified electrician in compliance with OSHA, national or local electrical code. GC compressor provides wiring diagrams for user reference. Refer to the electrical control schematic in the parts manual for wiring diagrams. Genuine fused disconnect switch or circuit breaker should be purchased from the manufacturer. Any unreasonable voltage imbalance (5%) between phases must be eliminated and low voltage problems must be corrected to prevent excessive current draw. Air compressors must be grounded in accordance with applicable codes, regulations and requirement.

Installation



Our Compressor would like to emphasize the importance of providing adequate grounding for air compressors. The common practice of grounding units to a building's structural steel may not provide adequate grounding protection, as paint and corrosion build-up may exist.



All electrical supply cables must be adequately sized to prevent overheating due to current draw.



Enclosure panels and drive grille must be fastened in place before starting the compressor and never removed before lock out / tag out of the main power supply.

A starter hole is provided for an incoming power connection. If a different location for the starter hole is needed, the certified technician must make sure to keep control box clean after the hole is created. The original hole must be capped if another hole is used. Inspect incoming voltage to match the compressor's specification. Inspect motor starter and overload heater sizes. Check electrical connections L1-L2-L3 for tightness and cleanliness.

4.6 MOTOR ROTATION INSPECTION

Motor rotation must be checked after the wiring has been installed. Operating the compressor in incorrect rotation will result in severe damage to the compressor and warranty coverage will be voided. Motor rotation can be viewed through the opening in the drive grille. The drive motor end of the compressor is marked with an arrow noting the proper rotation.



To inspect rotors rotation, pull out the "EMERGENCY STOP" button and press once, quickly press the "START" and "STOP" button in sequence, allowing the motor to turn 2 or 3 revolutions. Observe the drive shaft for correct direction. If reverse rotation is observed, disconnect the power supply, reverse power input leads at the motor starter. Recheck for proper rotation.

Installation

4.7 FAN ROTATION INSPECTION

Fan motor rotation should be inspected. CS compressors uses an axial fan for cooling. Fan rotation is inspected through an arrow shaped observation hole above the fan motor. The fan must rotate in the direction indicated by the arrow.



NOTICE!

Always inspect fan rotation through the observation hole. Never assume the fan rotation is correct based on the induced air flow across the coolers. A centrifugal fan can pull the airflow across the coolers when rotating in either direction; however, incorrect rotation will cause high discharge temperature.

Operation

5.1 ROUTINE OPERATION



Provisions should be made to have the instruction manual readily available to the operator and maintenance personnel. If, for any reason, any parts of the manual become illegible or if the manual is lost, have it replaced immediately. The instruction manual should be read periodically to refresh one's memory. This may prevent a serious accident.

Before compressor start up, inspect fluid level in reservoir. After start up, observe the control panel screen for operation status. Ensure the compressor is running at its optimum level.

Close the service valve to plant air distribution system. Allow pressure to build up within the reservoir until compressor fully unloads. Press the stop button.



Always close the service valve when compressor is not being used. It prevents back pressure from the service line and avoids leakage due to check valve failure.

NOTICE



Emergency shutdown. Press the emergency stop button or pull the circuit breaker at the main power terminal.

NOTICE

Operation

CONTROL PANEL LAYOUT

Standard compressor is equipped with microprocessor control panel.

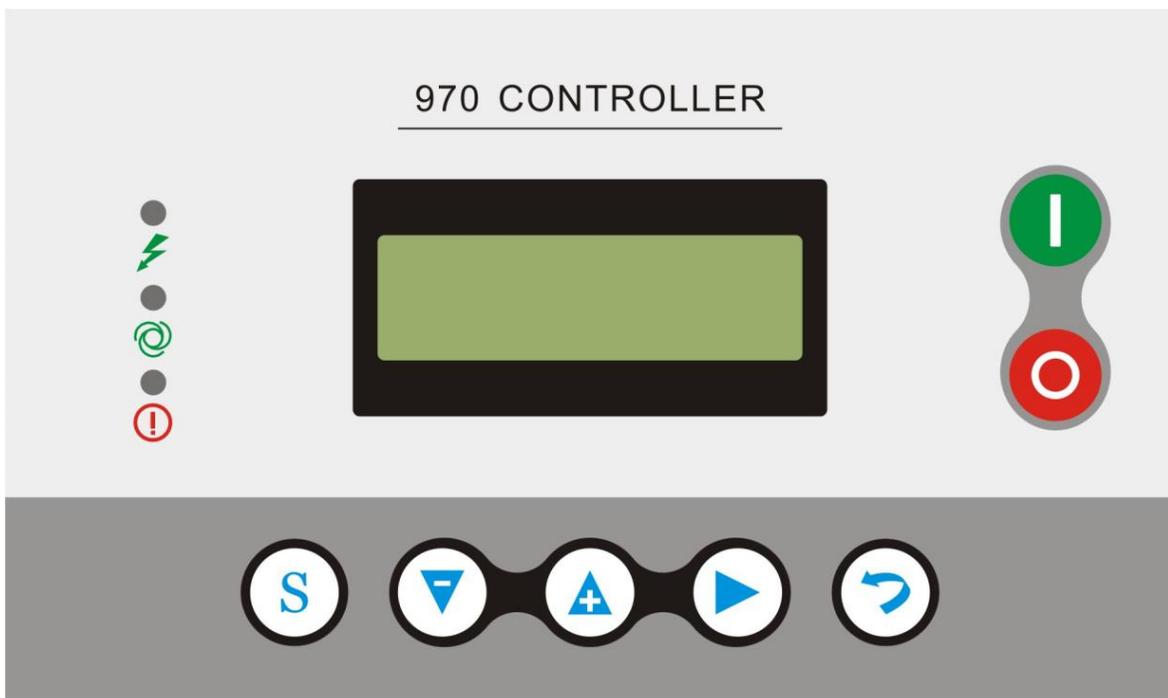


Figure 1.1.1

 — Start Button: Press this button to start the compressor.

 — Stop button: Press this button to stop the compressor.



——Set Button/ Loading / unloading Button: After modification, press this to confirm and save modified data; When the compressor is running ,press this button to load or unload under a certain pressure.



——Move up button/increase button: Data at current position is increased by pressing this button when data are modified; Menu is moved upwards when menu is selected.

Operation



——Move down button / Descending button: Data at current position is descended by pressing this button when data are modified; menu is moved downwards when menu is selected.



——Shift button /Enter button: This button services as shift button when data are modified and services as enter button when menu is selected.



——Back button / Reset button: This button services as back button when operate menu to come back parent menu; resetting is carried out by pressing this button for a little long time when failure shutdowns

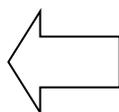
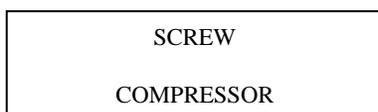
5.2 OPERATING PROCEDURES (ELECTRICAL CONTROL PANEL)

Control Panel Functions:

- LCD English display
- All-round protection against short-circuit, locking, phase failure, overload and imbalance for the motor.
- Control function: start, stop and operation of motor.
- Protection function: prevent rotor reverse rotation.
- Measure and control temperature.
- Automatically adjust loading rate and control system pressure balance.
- Selection of remote and local control.
- Selection of interlocking and independent operating modes

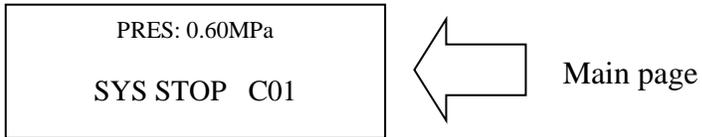
5.3 STATUS DISPLAY AND OPERATIONS

The display interface is as following when the units are POWERED ON:



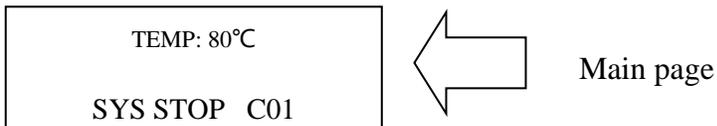
After power on, screen show this page

After 5 seconds, the main page will show up as:

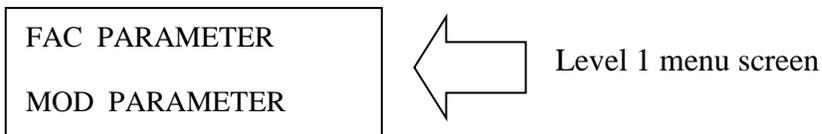
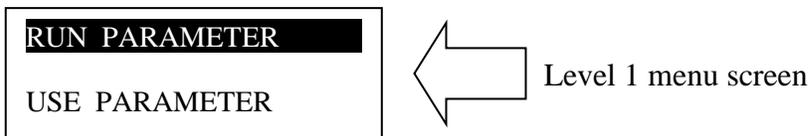


Operation

Press shift button, the main page will show up as:

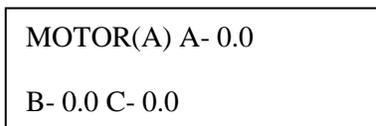


Press “Move down button” to enter into Menu Selection Interface:



Run the Parameter Review

Press “Move down button” or “Move up button” to move the black cursor to “RUN PARAMETER”, press enter button to pop up submenu:



Continuously press “Move down button” you can see run parameters and run state parameters as follows:

Fan current, Total run time, Total load time, This run time, This load time,

Oil filter time, O-a filter time, Air filter time, Lube time, Grease time, Belt time.....etc.

Operation

CUSTOMER PARAMETERS

Parameter Modification

== The Customer Parameters and the Factory Preset Parameters can not be modified during the Running State and Stop Delaying period ==

In primary menu,, press the move button to move the black slider to the " USE PARAMETER" menu, press the shift button to switch to the following menu:

LOAD PRES: 00.65MPa

In this menu, Press shift button , Switch to the following interface requirements to enter a user password

PASSWORD:0***

After showing this interface , The first bit data or password started flashing , press “increase button” or “descending button” to modify the flashing data equal to the first bit of password, Press the shift button, move the cursor to the next data bit,modify the current data is equal to the second password data, Accordance with the above , modify the third and fourth Finally, press the “Set button” to confirm the input, the system verify the password is correct, switch to the following interface:

LOAD PRES: *
00.65MPa

The upper right corner with "*" prompt said the system has passed the password authentication.

In as shown above interface, press "enter button", then the data of loading pressure start to flash, users can press "increase button" or "Descending button" to modify the present data. When finished, press "Set Button" to confirm and save. the controller prompt sends out the short voice to tip.

Operation

5.4 Customer Parameter (CUSTOMER SET) and Functions

Parameters	Preset Value	Functions
LOAD PRES.	*.**MPa	LOADING PRESSURE VALUE
UNLOAD PRES.	*.**Mpa	UNLOADING PRESSURE VALUE
FAN START TEMP	***°C	Control the fan starting. This value will be set as "120°C" if there is no fan present or the fan is not required to be protected."
FAN STOP TEMP	***°C	Control the stopping of the fan
MOTOR DELAY TIME	0008S	When using the controller to protect the motor, it is required that the time set here will not meet the impulse starting current of the motor, the value here must be longer than the STAR DELAY TIME plus LOAD DELAY TIME
FAN DELAY TIME	0006S	When using the controller to protect the motor, it is required that the time set here will not meet the impulse starting current of the motor.
STAR DELAY TIME	0006S	Star pressure descending start delay time.

LOAD DELAY TIME	0002S	The loading delay time after star pressure descending.
EMPTY DELAY	0020M	Load free continuous running time, the machine will automatically stop after this time
STOP DELAY TIME	0010S	The machine will not stop until the load free running status lasting till this time
START DELAY TIME	0100S	Machine can not be restarted before this set time after stopped or over time operation at load free state

Operation

START MODE	LOCAL/FAR	When the remote mode is set, both the button on the controller and the remote control button can turn on and off the machines; When the near mode is set, only the button on the controller can turn on and off the machines.
LOAD MODE	AUTO/MANUAL	When the manual mode is set, the Load/Unload function can only be executed by pressing "load/unload" button
COM MODE	PROHIBIT/COMPUTER/SEQUENCE	When this is set as "PROHIBIT" the communication function is not available When this is set as "COMPUTER" the Controller as a slave, in accordance with MODBUS protocol communications with external devices When this is set block, block control active
COM ADDRESS	0255	Communication address

SEQ STATE	MASTER/S LAVE	Service as main or assistant air compressor during interlocking operation. The MAIN controls the SLAVE
TOGGLES TIME	9999 H	During interlocking operation, if one air compressor continuously operates for time period more than time set here and rest time of one air compressor in interlocking network has reached the time set here, alternative rest is achieved by starting the resting air compressor and stopping the operating air compressor
SEQ NUMBER	0016	Number of air compressors in interlocking network during interlocking operation

Operation

SEQ LOAD PRES.	*.**MPa	The main air compressor searches for one device in the interlocking network for loading or starting when main air compressor's gas supply pressure is less than the value set here during interlocking operation
SEQ U.L. PRES.	*.**MPa	The main air compressor searches for one device in the interlocking network for unloading or stopping when main air compressor's gas supply pressure is more than the value set here during interlocking operation
SEQ DELAY TIME	0030S	The least waiting time that the main air compressor needs to continuously sends control commands two time
OIL FILTER RST	0000H	Reset time for the duration of oil filter changing

O/A FILTER RST	0000H	Reset time for O/G Separator changing
AIR FILTER RST	0000H	Reset time for gas filter changing
LUBE RESET	0000H	Reset time for Lubricate Oil Changing
GREASE RESET	0000H	Reset time for Lubricate Grease Changing
BELT RESET	0000H	Reset time for Belt Grease Changing
OIL FILTER SET	9999H	Set this value to “0” will make the oil filter alarm not available
O/A FILTER SET	9999H	Set this value to “0” to disable the O/G separator alarm function
AIR FILTER SET	9999H	Set this value to “0” to disable the alarm function of gas filter

Operation

LUBE SET	9999H	Set this value to “0” to disable the time alarm of lub. oil
GREASE SET	9999H	Set this value to “0” to disable the time alarm of Lub. Grease
BELT SET	9999H	Set this value to “0” to disable the time alarm of belt.
LANGUAGE SEL	ENGLISH/C HINESE	Set this value to “EN” , Display text in English Set this value to “CH” , Display text in Chinese
USER PASSWORD	****	Customer could modify the user password

Operation

5.5 Manufacturer Parameters

The difference of the FACTORY PARAMETERS and the CUSTOMER PARAMETERS is that the FACTORY PARAMETERS can not be modified unless you have the initial password from the manufacturer. The modification method of the FACTORY PARAMETER is the same as that of the CUSTOMER PARAMETER. The main functions of the parameters are as the following table.

Parameter	Initial Value	Functions
Host rated current	MAXIMUM OVERLOAD VAULE OF THE MOTOR /1.2	After the starting delay time, when the motor current is greater than 1.2 times of the set value and less than 4 times of the set value, the unit will jump as per overload feature.
Fan rated current	Maximum allowable motor overload value/1.2	Same as above
Pre-alarm T.	105°C	Pre-alarm when the temperature reaches this set value
Stop T.	110°C	Alarm when the air exhausting temperature reaches this set value.

Stop P.	10Bar	Alarm and stop the machine when the air supply temperature reaches this set value
Unload P. upper limit	8Bar	The Unload Limit Pressure in the Customer Parameter must be set lower than this value.
MODI LOAD TIME	****Hours	The manufacturer can modify the load running time
MODI TOTAL TIME	****Hours	The manufacturer can modify the total running time
History fault reset	****	Input the history failure password to clear all the history failures.
Unbalance scope	0006	When (the max. phase current / min. phase current) is greater than (1+set value), the unbalance protection will stop the machine. If the set value is greater than 15, the unbalance protection will be unavailable.
Lack phase protection	005.0S	Set the LACK PHASE TIME $\geq 20S$, the Lack phase protection will be disabled
PRODUCT DATE	****_**_**	The manufacturer input the product date of the unit.

Operation

SERIAL NUMBER	*****	The manufacturer input the product No. of the unit
PHASE PROTECT	ON/OFF	ON:Select sequence protection OFF:Not select sequence protection
SELECT FREQ	50H	Set the power frequency
SEQ MODE	COMPATIBLE/ADVANCED	
HIGH VOLTAGE	****V	Controller detects the voltage higher than the set value, the shutdown protection, reported voltage is too high. Set this value to 0000, the high voltage function is no function

LOWER VOLTAGE	****V	Controller detects the voltage lower than the set value, the shutdown protection, reported voltage is too low. Set this value to 0000, the low voltage function is no function
LOW T PROTECT	-48℃	Controller detects the temperature is lower than this value, display temperature is too low, not allowed to start the air compressor
MAX RUN TIME	0000H	When the compressor run time is greater than TIME LIM set, the controller will stop the compressor and alarm ;If the value set as '0000'the function is disable.
ALARM LONG STOP	0010H	Warning time over here to set, compressor report "warning too long" and stop
COM SET PAR.	DISABLE/ENABLE	
PARAMETER 1	****	

Operation

Functions and Technical Parameters

1. Digital input: Digital input of 3# circuit; digital output of relay of 5# circuit;
2. Simulation quantity: Pt100 temperature input of 1# circuit; 4~20mA input of transducer of 1# circuit; two groups of three phase current input(CT provided) ;
3. Input voltage of phase sequence: three phase 380V/220V;
4. Controller's power supply: AC20V,50Hz,10VA;
5. Measurement range displayed:
 - a) Oil temperature:-50~150℃; precision: ±1℃.

- b) Air temperature:-50~150°C ; precision:±1 °C.
 - c) Running Time: 0~999999Hours.
 - d) Current Display Measuring Range: 0~999.9A.
 - e) Pressure: 10~16Bar, Accuracy: 0.1Bar.
6. Phase-sequence protection: When protector inspects wrong phase, response time≤2s (optional);
7. Protection of motor: this controller has five basic protection functions for main motor and fan's motor
- ① Block protection: When working current reaches to from 4 times to 8 times of set current after finish starting, response time ≤0.2s;
 - ② Short circuit protection: when testing current reaches above 8 times of set current, response time≤0.2s;
 - ③ Protection of phase failure: in case of phase failure of any one phase, operation time equals setup time;

Operation

- ④ Unbalance protection: when currents of any two phase differ 60~75%,operation time equals set time;
- ⑤ Protection characteristics of reverse time limit of overload (time unit: second), please see following table (table 2.1.1) , multiple= $I_{\text{actual}} / I_{\text{set}}$

motor operates with delay time according to overload factors and operation time shown in following table (table 2.1.1) when motor's working current is larger or equal to from 1.2 times and 3.0 times of set current.

$I_{\text{act}}/I_{\text{set}}$	≥1.2	≥1.3	≥1.5	≥1.6	≥2.0	≥3.0
---------------------------------	------	------	------	------	------	------

Time Para						
Action time	60	48	24	8	5	1

8. Temperature Protection: When the actual detected temperature is higher than the set temperature, the protection activates and the activate time $\leq 2s$.

9. The output relay contactor capacity: 250V 5A. The life time of the contactors: 500000 times of running.

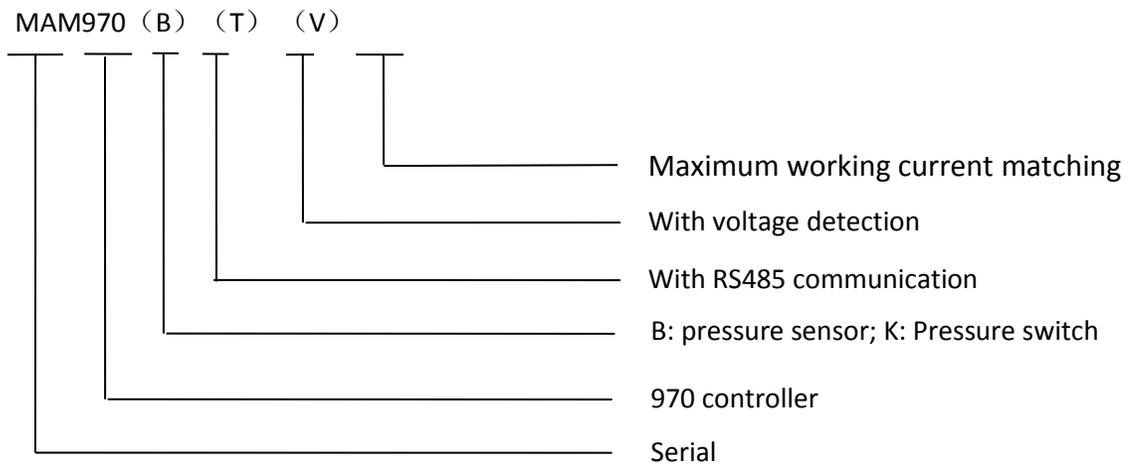
10. The current display tolerance $< 1.0\%$.

11. RS—485 communication.

Operation

Specifications

1. Specification Description



2. Adopted motor Power Specification

Parameter Specification	Current range (A)	Suited main motor power (KW)	Remark	Description
MAM970 (20)	8~20	4~10		Fan has three levels of current, such as 0.2-2.5A, 1-5A and 4-10A, determined according to fan's current
MAM970 (40)	16~40	8~20		
MAM970 (100)	30~100	15~50		
MAM970 (200)	80~200	40~100		
MAM970 (400)	160~400	80~200		
MAM970 (600/5)	100~600	50~300		

Operation

Measurement and Installation

1. Mechanical Installation

A. Mutual Inductor Installation

The installation of the mutual Inductor should be located at the places accessible for measuring the motor line current (rated current) so that the setting of the controller could be according to the nameplate of the motor. The recommended installation sizes are as below:

Figure 2. CT1 Structure Size ($\phi 36$ perforations)

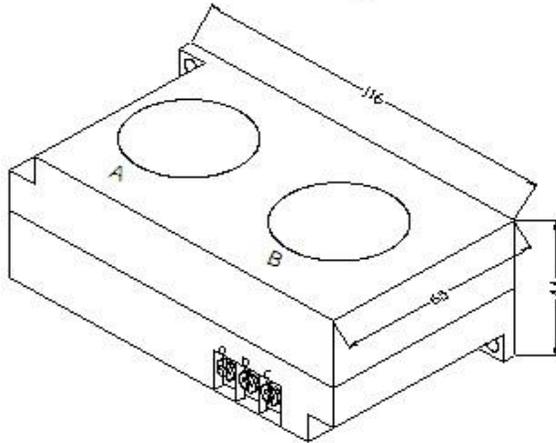


Figure 3. CT1 Installation Size

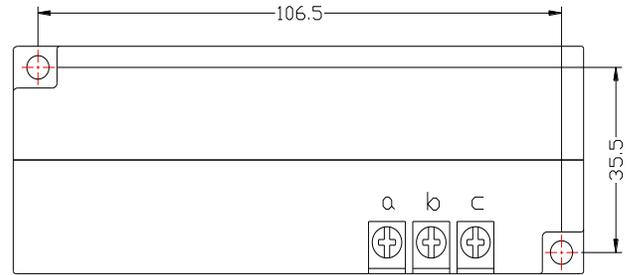


Figure 4. CT2 Structure Size ($\phi 10$ perforations)

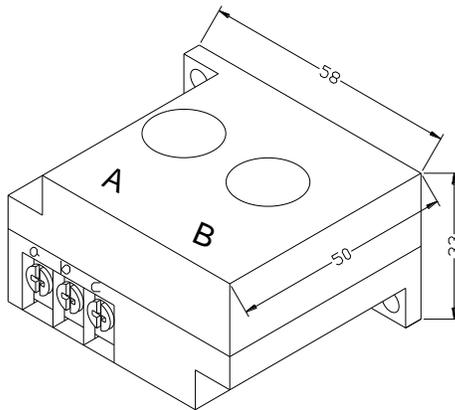
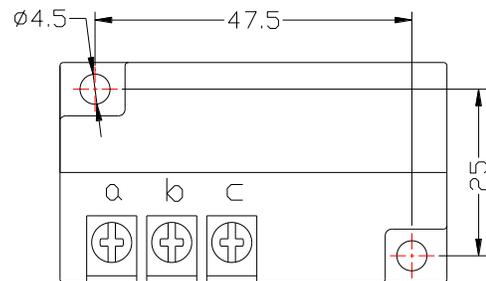


Figure 5. CT2 Installation Size



Operation

B. The installation of the controller

The controller is installed as plate. Room should be left around controller for wiring. The

specific dimensions are as follows:

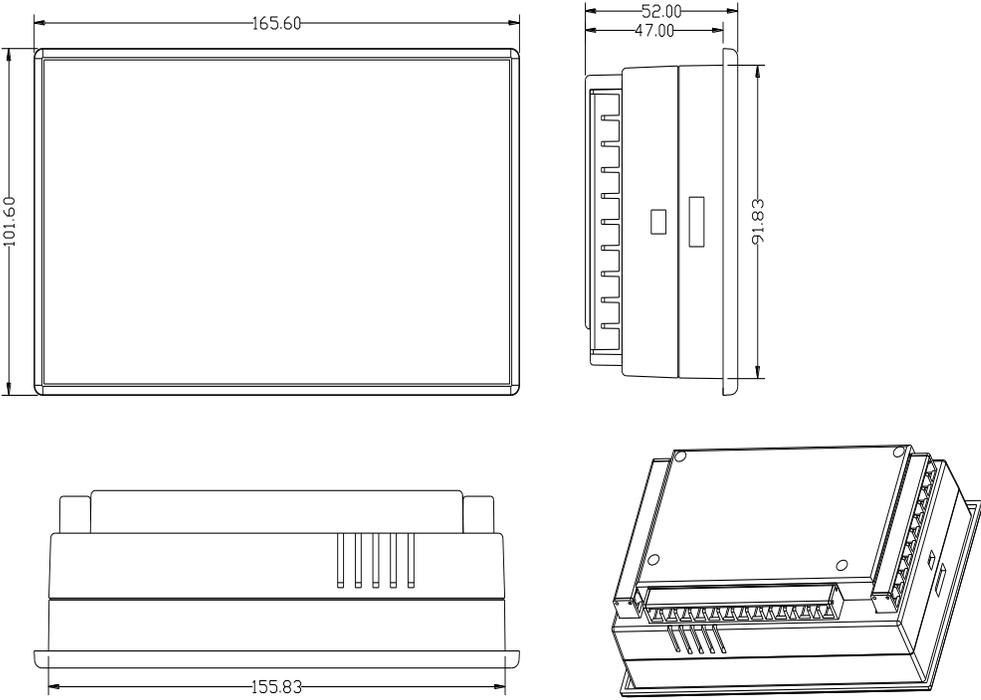
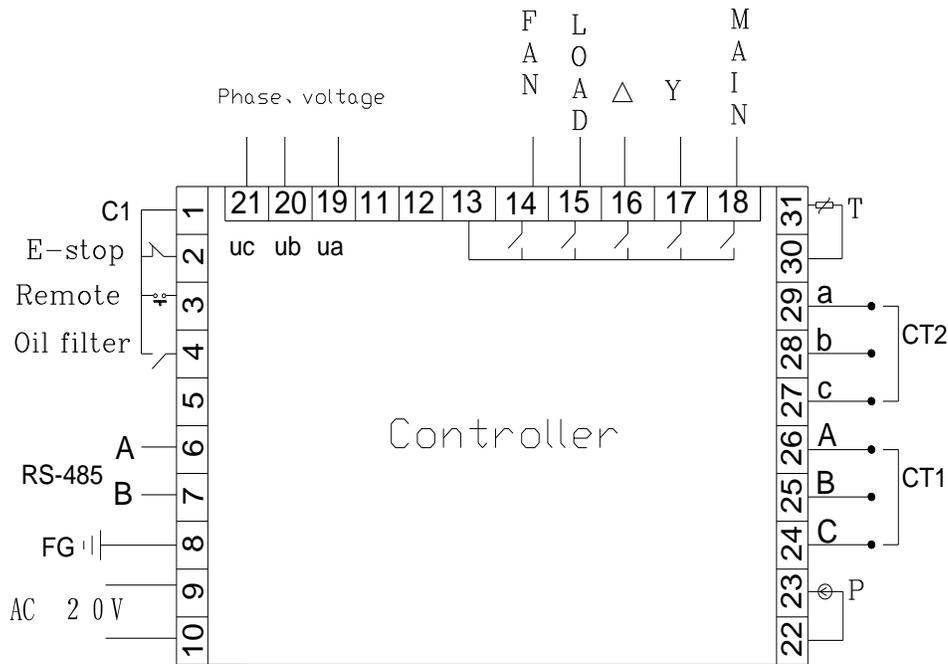


Figure 6 Controller structure dimensions

Operation

Terminal arrangement diagram



Terminal blocks of controller:

1 is common terminal COM1; 2 is input terminal for emergent stop signal; 3 is remotely controlled on/off signal input terminal; 4 terminal is used to detect oil filter blocked; 6 is RS485 A; 7 is RS485 B; 8 is the simulated ground (Earth); 17 and 18 are the AC20V power source; 22,23 terminals are Pressure Sensor signal input; 24,25,26 terminals are motor mutual inductor CT1 input; 27,28,29 terminals are Fan mutual inductor CT2 input; 30,31 terminals are Temperature Sensor signal input; 19,20,21 terminals Used to detect the phase sequence and voltage; 13 terminals is common terminal of output relay; 14 terminals controls fan; 15 terminals controls load valve; 16 terminals controls angle-shaped contactor ; 17 terminals controls star-shaped contactor ; 18 terminals controls main contactor.

NOTE: Electromagnetism coil shall be connected with surge absorber during wiring, and dotted lines are extendable functions.

Operation

5.6 Control Principle (Refer to the attached for the Electric schematic circuit)

(1) Local Automatic control

① press down start button for starting: (Y- Δ start)

There is five of self-test after controller is energized and it can not be started by pressing start button. The air compressor starts by pressing start button after self-test finished. The course of compressor's start as followed: KM3 and KM2 are energized \rightarrow Y-type status of start \rightarrow delay time is reached (Y- Δ change-over time); KM3 is de-energized (KM1 and KM3 are interlocked) and KM1 is energized \rightarrow motor operates with Δ type to finish start. During the course of starting, all electromagnetism valves are de-energized to achieve no load start.

② Automatic Running Control:

When the motor is started to running in Δ status and load the magnetic valve with power applied after a certain period of delay. air compressor is loaded and pressure inside gas tank begins to increase. When increased air pressure is more than higher pressures limit (value of unload pressure), electromagnetism valve for loading is de-energized and electromagnetism valve for discharging is energized, meanwhile, the air compressor operates without load. If air pressure decreases to set lower pressure limits (value of load pressure), the electromagnetism valve for loading is energized again and electromagnetism valve for discharging is de-energized. Air compressor operates normally to increase pressure in air tank. If the unload run time exceeds the set delay time of non-load, the compressor will automatically stop motor's operation to achieve automatic shutdown after works without load for long time. Only when pressure decreases to lower pressure limits, the motor start operation according to course of starting, then circularly repeat this step.

③. Manual loading/unloading under automatic status

When compressor in automatically runs state and runs at unload operation, press down load or unloading button, the electromagnetism valve for loading joggles a little and comes back to unloading status; if the pressure is less than relief pressure, the electromagnetism valve for loading is energized and it returns to unloading status until gas supply pressure becomes larger than relief pressure and device is at loading status.

Operation

Unloading is performed when press down unloading button "S". If the pressure is higher than loading pressure, the electromagnetism valve for loading is de-energized and turns to

status of loading until gas supply pressure is less than loading pressure. If pressure is less than loading pressure, the unloading button do not function.

④. Normal shutdown:

Press the button , the load magnetic valve will loss power and the unload magnetic will be applied with power, after a while of delay (stop delay), the motor contactor will loss power, the host and fan will stop running, after the restarting delay completed, the unload magnetic will loss power. Only pressing the button could restart the motor.

⑤. Control of preventing frequent starting

Press stop button to stop operation; Air compressor can not be started up immediately after shutdown due to operation without load for long time or failure shutdowns, and it can be started up again when remaining delay time is zero which the time display window of the controller in a variety of shutdown state shows.

(2) Remote Automatic Control

Remote automatic control and local automatic control are basically same, but the difference is that starting up or stopping of devices can be achieved by means of control of remote switch.

(3) Local Manual Control

Control of starting and stopping are same as automatic control, but device is in status of unloading operation after finish starting up and loading is carried out by pressing down loading and unloading button to load. When gas supply pressure is more than relief pressure, the device unloads automatically. If doesn't press loading, unloading button, the device will operate with unloading until stops without load. During unloading, press loading and unloading button to load. During loading, press loading and unloading button to unload.

(4) Remote Manual Control

The remote automatic control is almost the same as the local manual control, the only difference is that the start and stop of the unit is controlled by remote control.

Operation

5.7 Network control

①: When communication method is set “computer”, network control between computer and controllers can be achieved

②: When communication method is set “interlocking”, network control between controllers can be achieved, but the main air compressor only can service as 1# compressor.

5.8 Temperature control of Fan

When exhausting temperature is higher than fan’s starting temperature, fan operates; when exhausting temperature is lower than fan’s stopping temperature, fan stops operation.

5.9 Failure Shutdown and Emergency Shutdown

When electrical failure or high exhausting temperature appears during process of operation, the controller stops motor’s operation immediately. Air compressor only can be started up after failure is eliminated. In case of emergency, press down emergency stop button to cut off power of controller and contactors

5.10 Early-Warning and Prompts

1, Indication of early warning of oil filter

①. Early warning for blockage of oil filter

The controller can display the message on the text display to remind the operator that “ the air filter is blocked” by checking the pressure difference switch operating state.

②. Set the running time alarm of the air filter

The Text displays “OIL FILTER LIFE END” when the using time of the oil filter terminates.

2, Indication of early warning for air filter

The Text displays “AIR FILTER LIFE END” when the using time of the oil filter terminates.

Operation

3, Indication of early warning for oil separator

The Text displays “O/A LIFE END” when the using time of the oil separator terminates.

4, Indication of early warning for lubricating oil

The Text displays “LUBE LIFE END” when the using time of the lube terminates.

5, Indication of early warning for grease

The Text displays “GREASE LIFE END” when the using time of the grease terminates.

6, Indication of early warning for belt

The Text displays “BELT LIFE END” when the using time of the belt terminates.

7, High air temperature warning

Controller detects the air temperature high, the text display “HIGH TEMPERATURE”

5.11 Control Protection

1, Motor Protection

MAM-970 air compressor controller provides all-round protection functions of short-circuit, locking, phase failure, overload, imbalance for motor.

Electronic failure	Failure Display	Reason
Short circuit	Display failure “HOST/FAN SHORT”	Short circuit or rated current is set by mistake
Blocked	Display failure “HOST/FAN BLOCK”	Too large load, bearing wear and other mechanical failure
Overload	Display failure “HOST/FAN OVER CARRY”	Too large load, bearing wear and other mechanical failure
Phase failure	Display failure “HOST/FAN LACK PHASE”	Power supply, contactor and phase failure of motor
Unbalance	Display failure “HOST/FAN UNBLANCE”	Poor contact of contactor, inside open-loop of motor

Operation

2, Gas Exhaust Over-temperature Protection

When the Air exhaust temperature is higher than the upper limit of set temperature, the controller would be stopped ,The display will show “**HIGHT T**”.

3, Non-reversing Protection of Air Compressor

When three-phase supply phase sequence connected to the air compressor is not the same with that set for the controller, the on-site failure is displayed as “**PHASE REVERSAL**”, as a result, the controller cannot start up the motor. Then just change any arbitrary two-phase power lines leading to check the rotation of motor.

4, Overpressure Protection of Pressure Supply

When the gas exhaust pressure is higher than the upper limit of set pressure, the controller would be stopped for warning, the on-site failure is displayed as “**HIGH P**”.

5, Malfunction Protection of Sensor

When pressure sensor or temperature sensor is disconnected, the controller would be stopped for warning. the on-site failure is displayed as “****SENSOR FAULT**”.

Operation

5.12 Common Failure Solving

When a fault occurs, the controller in the main interface displays the current fault content. For example, when the pressure sensor failure, it displays the following interface:

<p>STOP:</p> <p>P SENSOR FAULT</p>

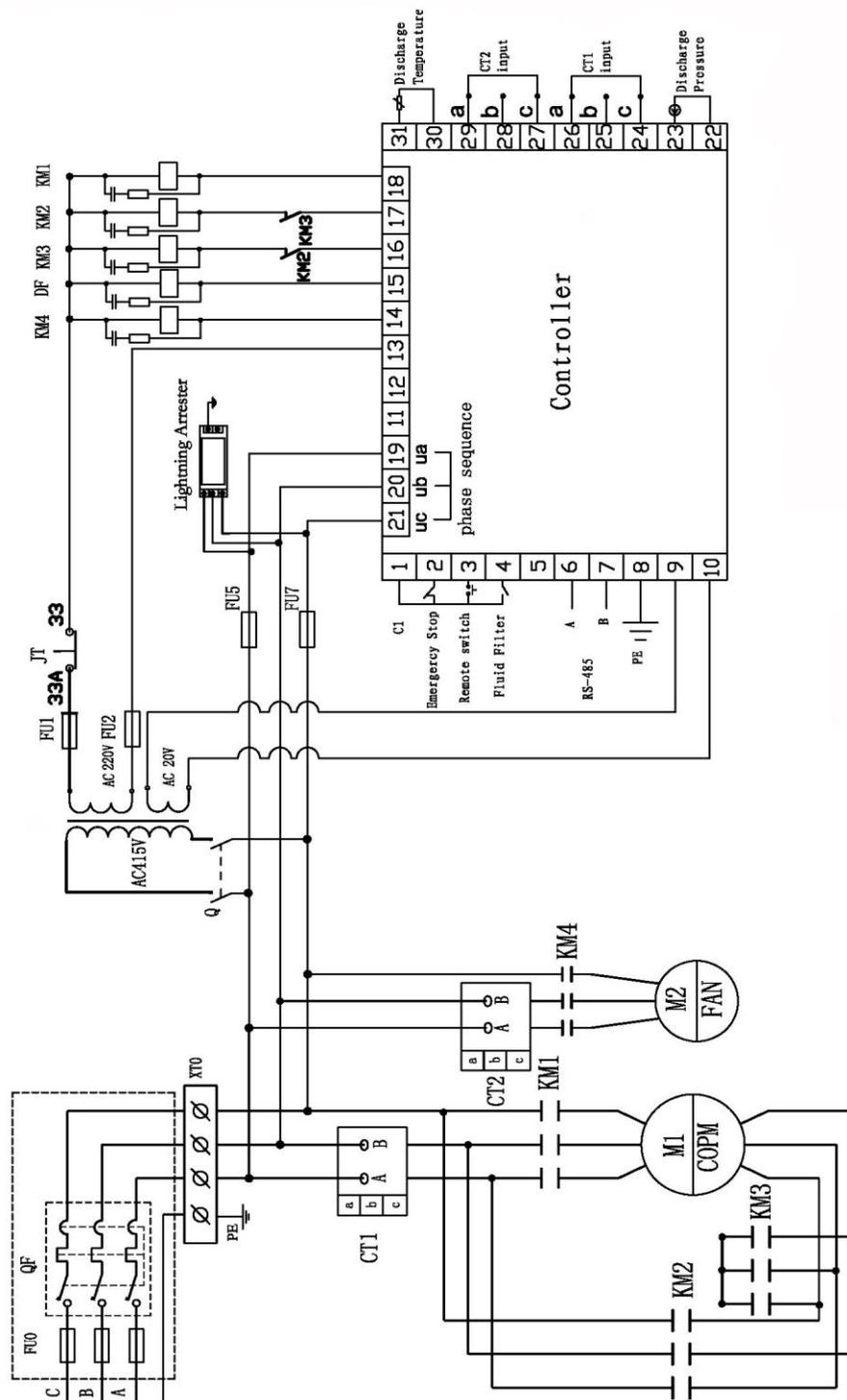
COMMON FAILURE AND THE CAUSES:

Failure	Reason	Disposal method
Air Exhaust Temperature too high	Bad vent condition, Oil lacking etc.	Check the vent condition and lubricant amount etc.
Temperature Sensor Failure	Cable off or PT100 damaged	Checking the wiring and PT100
Over Pressure	The pressure too high or the pressure sensor failure	Check the pressure and the pressure sensor
Pressure Sensor Failure	Cable off, Sensor damaged or the cable connected reversed	Check the wiring and sensor transformer
Lack Phase	Power phase lacking or the Contactor terminal damaged	Check the power and contactors
Overloaded	Voltage too low, tubes blocked, Bearing Wear off or other mechanical failure or wrong set data etc.	Check the set data, Voltage, bearings, tubes and other mechanical system.
Unbalance	Power unbalance, Contactor damaged or the internal open of the motor	Check the power, contactors and the motor

Operation

Rotor Lock	Voltage too low, tubes blocked, Bearing Wear off or other mechanical failure or wrong set data etc.	Check the set data, Voltage, bearings, tubes and other mechanical system.
Short Circuit	Wrong Wiring, Incorrect Data setting etc.	Checking the wiring and set the data correctly
Wrong Phase Sequence	Reversed Phase sequence or phase off	Check the wiring
Overload or Rotor locking during starting process	Host start time set to a valueless than the star angel time delay	Reset the host starting time to be longer than star angel delay + Load delay time
Main Contactor activate time to time	The emergency button loose	Check the wiring
Air Exhaust Temperature too high	Bad vent condition, Oil lacking etc.	Check the vent condition and lubricant amount etc.
Temperature Sensor Failure	Cable off or PT100 damaged	Checking the wiring and PT100
Over Pressure	The pressure too high or the pressure sensor failure	Check the pressure and the pressure sensor

Electrical Control Diagram



Servicing

The compressor requires the minimum amount of inspection and maintenance. The controller and indicator alerts the operator to perform required maintenance or repair unit problems.

6.1 FLUID CHANGE

CS series compressors utilize a pressurized fluid drain. Use the following procedure to drain and replace the compressor fluid.

- i. Press the emergency stop button and remove the right side cabinet panel (if applicable).
- ii. Check the pressure gauge reading on reservoir and wait until reservoir pressure drops to approximately 0.5Bar (7psig).
- iii. Close the 1/4 turn valve on the blow-down valve.
- iv. Remove the drain plug and attach the 1/4 NPT barb fitting and drain tube (supplied with the unit) to the drain on the oil/air separator tank.
- v. Slowly open the 1/4 turn valve on the drain of oil/air separator tank. The pressure remaining in the tank will force the fluid out. When air begins to escape from the tank, close the valve.
- vi. After closing the valve, remove the tubing and barb fitting and reinstall the drain plug.
- vii. Remove the plug from the fluid fill port and refill the reservoir with the appropriate amount of Kerry 4000 fluid.
- viii. Before starting the compressor opens the 1/4 turn valve on the blow-down valve to ensure the blow-down valve functions correctly.



NOTICE

The 1/4 turn valve on the blow-down valve **MUST** be open for the unit to blow down during regular unit operation.

6.2 AIR FILTER

The standard Kerry air filter is a single stage, dry type element. Air filter maintenance should be performed when the maintenance gauge shows red with the compressor running full load, or every 2,000 hours, or once a year, whichever comes first. Daily cleaning of the filter element is common in dirty conditions. If dirty conditions exist, it is advisable to relocate the intake air to an outside source. Each time the filter is serviced, inspect the filtered air side of the air cleaner canister and the suction manifold for dirt. If dirt is found, determine the cause and correct. Always make sure all gaskets, threaded connections, flange connections, and hose connections between the air filter and air compressor-are airtight. Dirty filters result in reduced airflow and can distort the element and allow dirt to bypass the filter element.

Servicing



NOTICE

Intake filtration equipment supplied from the factory may not be adequate for extremely dirty applications or some forms of dust or vapors. It is the customer's responsibility to provide adequate filtration for those conditions. Warranty will be voided if inadequate filtration causes a failure.

6.3 FLUID FILTER

The fluid filter is a spin on, full flow unit. Replacement of the filter requires spinning off the cartridge and replacing it with a new one. The initial filter change should occur after the first 500 hours of operation. During normal service, the filter cartridge should be replaced under the following conditions, whichever occurs first:

- ◆ As indicated by the fluid filter maintenance indicator when the fluid is at normal operating temperature
- ◆ Every 2,000 hours
- ◆ Every fluid change



NOTICE

The fluid filter maintenance indicator may read high upon start up on cool mornings due to sluggish fluid creating higher than normal differential pressures. Monitor indicator after the fluid warms up.

6.4 AIR/OIL SEPARATOR

The air/oil separator is using coalescent filter element. Replacement requires unbolting and lifting the separator cover and replacing it with a new one. The air/oil separator should be replaced as indicated in the maintenance schedule or as follows:

- ◆ If excessive fluid carryover is observed.
- ◆ 4,000 hours MAX, or-as indicated by differential pressure indicator.
- ◆ As indicated by the gauge (if equipped).

Servicing

6.5 MAINTENANCE SCHEDULE

This Schedule is intended to be used as a guideline only. Depending on the specific operating conditions of your compressor, maintenance requirements may vary. The instructions in this section will give more details about determining when specific service should be performed.

First 500 hours	Check fluid filter and fluid level
Every 500 hours	Drain water from air/oil separator tank. Check fluid level Clean air filter Clean after-cooler fins. Check for loose fluid and air tubing, electrical wiring connection.
Every 1000 hours	Clean air filter or replace with new element. Clean after-cooler fins.
Every 2000 hours	Replace air filter. Check oil level. Check safety valve Replace fluid filter.
Every 4000 hours	Clean after-cooler fins. Check oil level.
Every 4000 hours	Replace air/oil separator. Replace fluid. Check equipment power supply and earth-grounding.

Troubleshooting Guide

Information below is a troubleshooting guideline; it describes symptoms and possible cause. Do not assume that these are the only faulty condition that may occur.

Table 7-1: TROUBLE SHOOTING GUIDE		
Symptom	Possible Cause	Solution
Fail to Start	Power failure	Check power supply to the unit
	Low incoming voltage	Check voltage and power source, or contact local power company.
	Fuse blown	Replace Fuse
	Faulty start switch	Check the switch for malfunction or loose connection.
	Emergency button	Reset emergency button
	Motor starter overload tripped	Check motor starter wiring before removing motor. Remove motor and have tested at motor manufacturer repair center.
	Loose wire connections	Check all wiring terminals for contact and tightness
	Air-end failure	Contact a local authorized distributor.
Compressor shuts down during loaded condition	High ambient temperature	Make fresh air intake openings or install ducts to discharge the hot air.
	Low incoming voltage	Check voltage and power source, or contact local power company.
	High operating pressure	Reset, check line pressure and ensure it does not exceed the compressor's maximum operating pressure.
	Low fluid level	Top-up fluid
	PLC controller indicate separator requires maintenance	Replace separator element.
Line pressure rises above unload pressure set-point	Control system air leakage causing loss of pressure	Check for leak
	Plugged air filter	Replace air filter element
	Air Intake valve stuck open	Remove the intake hose and check the inlet valve for proper operation
	Defective blow-down valve	Check the receiver tank to ensure that it is exhausting air to the atmosphere when the solenoid opens - repair or replace if necessary.

Troubleshooting Guide

Table 7-1: TROUBLE SHOOTING GUIDE (Continued)		
Symptom	Possible Cause	Solution
Compressor does not reload when service line pressure drops to reset	Faulty solenoid	Repair or replace as necessary
	Loose wiring connection	Check and tighten wiring terminals
	Faulty proportional valve	Orifice plugged. Clean or replace as necessary
	Jammed air inlet valve assembly	Check and repair air inlet valve
	Faulty air pressure sensor	Repair or replace as necessary
High air discharge temperature	Low Fluid Level	Check oil level
	Incorrect fluid brand	Check oil code number, replace as necessary
	High ambient temperature	Check air exhaust, reduce room temperature.
	Plugged oil filter	Change oil filter
	Plugged internal aftercooler	Chemical cleaning for after-cooler
	Dusty after-cooler fins	Chemical wash for after-cooler fins
	Fan motor setting	Adjust
	Temperature sensor failure	Check and replace as necessary
	Loose wire	Check and tighten
Low air capacity delivery	Plugged air filter	Clean air filter or replace with new element
	Air Intake valve failure	Remove the intake hose and check the inlet valve for proper operation
	Separator failure	Replace separator element
	Faulty indirect proportional valve	Adjust or replace as necessary
	Faulty solenoid	Repair or replace as necessary
	Faulty safety valve	Repair or replace as necessary
	High oil level	Check oil level
Excessive oil carry over in discharge compressed air.	Plugged oil orifice valve	Clean or replace as necessary
	Low discharge pressure	Adjust
	Air/oil separator element failure	Clean or replace as necessary
	Minimum pressure valve malfunction	Check for leaking, replace as necessary
	Loading function Failure	Solenoid valve failure
Pipe leak		Check and replace as necessary
Proportional valve failure		Check and replace as necessary
Air Intake valve stuck open		Remove the intake hose and check the inlet valve for proper operation
Minimum pressure valve failure		Check for leaking, replace as necessary

Troubleshooting Guide

Table 7-1: TROUBLE SHOOTING GUIDE (Continued)		
Symptom	Possible Cause	Solution
Unloading failure at working pressure, causing safety valve to release pressure	Pressure loading setting	Adjust as necessary
	Solenoid valve failure	Check and replace as necessary
	Plugged air/oil separator	Check and replace as necessary
	Air Intake valve stuck open	Remove the intake hose and check the inlet valve for proper operation
	Safety valve failure	Repair or replace as necessary
	PLC controller failure	Check and replace as necessary
Compressor air discharge pressure below normal operating settings	Plugged air filter	Clean or replace as necessary
	Air Intake valve stuck closed	Remove the intake hose and check the inlet valve for proper operation
	Plugged air/oil separator	Check or replace as necessary
	Indirect proportional valve setting	Adjust or replace as necessary
	Solenoid valve failure	Check and replace as necessary
	Safety valve failure	Check and replace as necessary
Short period of load/unload	Pipe leak	Check and replace as necessary
	Pressure setting	Change setting above 1Bar
	Receiver tank too small	Check or increase volume of receiver tank
	Air flow into the main network restricted	Increase pipe size. Checks filter cartridge failure.
Oil vapor leak from air filter when compressor stops	Air inlet valve failure	Check and replace as necessary
	Minimum pressure valve failure	Check for leaks and replace as necessary
	Pressure relief valve failure	Check and replace as necessary
Excessive Fluid Consumption	Different oil is being used.	Use genuine fluid.
	Separator element damaged	Check and replace as necessary.
	Oil level too high	Drain off oil until the correct level.
	Fluid foaming	Drain off oil and change
	Oil return line or orifice clogged	Clean and replace as necessary.

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Standard Terms and Conditions

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Acceptance / Returns: Shipments will be deemed to have been accepted by Buyer upon delivery of the said shipments to Buyer unless rejected upon receipt. Buyer shall perform all inspections and tests. Buyer deems necessary as promptly as possible but in no event later than 7 days after receipt of Products, at which time Buyer will be deemed to have irrevocably accepted the Products. Any discrepancy in shipment quantity must be reported within 7 days after receipt of Products. Buyer may not return Products without a Return Material Authorization ("RMA") number. RMA's valid for 30 days from the date issued.

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claim whether in contract, tort, warranty, or otherwise. Buyer will indemnify, defend and hold seller harmless from any claims based on (a) Seller's compliance with buyer's designs, specifications, or instructions, (b) Modification of any products by anyone other than Seller, or (c) use in combination with other products not supplied by seller.

Standard Terms and Conditions

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