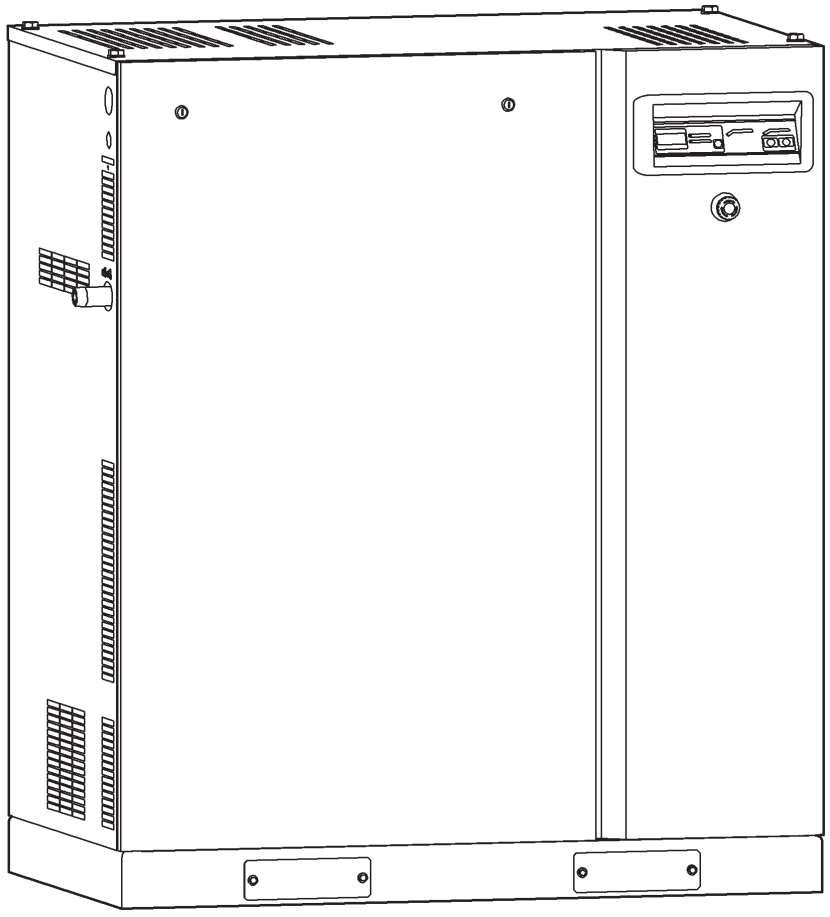
HITACHI

Instruction Manual

SRL-Series

HITACHI OILFREE SCROLL COMPRESSOR

Model : SRL-7.5M6LL/SRL-7.5M6ML
SRL-7.5M6LH/SRL-7.5M6MH
SRL-11M6LL/SRL-11M6ML
SRL-11M6LH/SRL-11M6MH
SRL-16.5M6LL/SRL-16.5M6ML
SRL-16.5M6LH/SRL-16.5M6MH



Pressure Units Clarification

Pressure is indicated in units of "psig" in this Instruction Manual. Please review the table below for the conversion of "psig" units to "MPa" units.

Unit of pressure measurement	psig	122	145
	MPa	0.84	1.0

Conversion - 1 psig = 0.00689 MPa

Thank you for the recent purchase of a HITACHI Oilfree Scroll Air Compressor. Please read this instruction manual carefully for installation, maintenance and inspection guidelines of the HITACHI Scroll Air Compressor. After reading this instruction manual, please keep it on hand for future reference.

CM1E029-00 | Jul. 2011

Attention

- The SRL air compressor is a piece of equipment for producing compressed air. The use of the SRL air compressor should be limited to general industry. Since handling compressed air can be dangerous, the operator should use the SRL air compressor only after acquiring technical knowledge. HITACHI assumes no responsibility for machine failure, personal injury or an accident caused by the use of the SRL air compressor without the operator acquiring relevant technical knowledge.

- The SRL air compressor is designed for indoor use.

- Personnel in charge of operation, maintenance and inspections of the SRL air compressor should have easy access to this instruction manual.

- Thoroughly read this instruction manual and the SRL warning label to obtain vital information regarding:
  - ○ Proper Installation
  - ○ Proper Operation
  - ○ Maintenance and Inspection
  - ○ Safety Guidelines
  - ○ Warning and Caution Information

- Observe the operating ranges of the air compressor in the instruction manual prior to use. To prevent failures from occurring, perform proper maintenance and inspection.

- Do not operate, handle or modify the air compressor in any way that is not described in the instruction manual and use genuine HITACHI parts when performing maintenance. HITACHI shall assume no responsibility for any accidents and/or failures to the air compressor attributed to the above.

- If any description in the instruction manual in unclear, please contact the local Hitachi distributor.

- Sections of this instruction manual may be subject to change without notice.

- If service is required and/or an alarm occurs, please contact the local Hitachi distributor with the following information:
  - ○ Model and Serial Number
  - ○ Vital information regarding the status of the air compressor (for example, alarm information in as much detail as possible).

- Do not reprint and/or reproduce any section of this instruction manual without permission from Hitachi.

Safety Precautions

Improper use of the Oilfree Scroll Air Compressor may result in an accident or injury. Thoroughly read the instruction manual before proceeding with installation, operation, maintenance or inspection of the air compressor. Before using the air compressor, become familiar with all of the air compressor equipment, safety information and the safety precautions. Dangerous and important information are highlighted by the WARNING and CAUTION graphics. These graphic descriptions are detailed below.

Graphic Descriptions

⚠WARNING This is a warning. If handled improperly, death or severe injury could result.

⚠CAUTION This is a caution. If handled improperly, injury and/or physical damage could result.

Serious injury : Serious injury indicates the following could occur: blindness, injury, burns (mild and excessive), electric shock, and/or toxic poisoning that require hospitalization or long term medical treatment.

Injury : Injury indicates the following could occur: burns, electric shock that does not require hospitalization or long term medical treatment.

Property Damage : Property damage means the following could occur: breaks and/or damage to equipment.

⃠ Prohibition This is a Prohibited Operation.
Any operation illustrated by this symbol is strictly prohibited.

These safety precautions cover vital safety aspects of the Oilfree Scroll Air Compressor. Make sure to establish safety measures in accordance with local and national codes and standards.
Hitachi Industrial Equipment Systems Co., Ltd. shall assume no responsibility for anything resulting from disregard to these safety precautions.

Safety Precautions (continued)

Items requiring extra safety attention are described below. Observe the items described below, as well as other items in the instruction manual that require safety attention.

⚠ WARNING

- Do not use the air compressor to compress any gas other than air.
  Using the air compressor to compress any gas other than air may lead to damage of the air compressor.

- SRL air compressors are not designed, intended or approved for breathing air applications. Hitachi does not approve specialized equipment for breathing air applications and assumes no responsiblity or liability for compressors used for breathing air services.

- If the scroll air compressor is used for any important production equipment, it is highly recommended to utilize a back up air compressor.
  A back up air compressor will keep production running in the event of a failure to an air compressor.

⚠ CAUTION

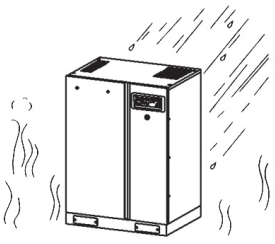
- Oil, dust and abrasive powder may be present in the air, and can be ingested into the air compressor and mixed into the compressed air discharge.

Installation Safety Precautions

⚠ WARNING

Avoid installing the air compressor in the dangerous areas described below:

- Avoid places subject to rain, water and/or high humidity.
  Failure to adhere to this precaution may cause electric current leakage, rust and/or reduction in air compressor life.
- Avoid outdoor installation or areas subject to direct sunlight.
  Failure to adhere to this precaution may cause air compressor overheating, discoloration, alteration and/or deterioration.



Prohibition

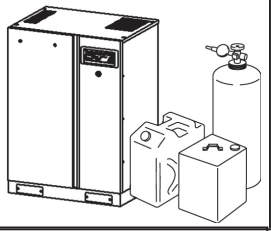
- Avoid areas subject to foreign matter, such as: iron powder, sand dust, powdered dust, wood chips, textile waste, stone powder, and fine iron powder fumes.
  Failure to adhere to this precaution may cause premature clogging of the air filter and aftercooler fins, excessive temperature rise, air compressor damage and reduction in life and/or explosive accidents.

Prohibition

- Avoid areas where corrosive gases are present, such as: organic solvents (benzene, toluene, etc.), acid, chloride gas, ozone gas, ammonia, significant oil mists and/or bromine.
  Failure to adhere to this precaution may cause rust to the air compressor components and/or reduction in air compressor life.

Prohibition

- Avoid areas of close proximity to explosives and/or flammable gases, such as: acetylene, propane gas, organic solvents, explosive powdered dust and/or fire.
  Failure to adhere to this precaution may cause accidents.



Prohibition

⚠ CAUTION

- Make sure that the installation ares has sufficient space for ventilation cooling. The compressor should operate at room temperature in between 32° F and 104° F. If the room temperature exceeds104° F, the air compressor's protective devices will stop compressor operation.
  Excessive temperatures may lead to reduction in bearing life, seal life and seizure of the scroll head.

- Do not install the air compressors in a high location where the air compressor or air compressor parts can be dropped.

- Install a pressure tight, heat resistant rubber hose at the compressed air discharge.
  Do not use improper rubber hose or flexible tubing as they may crack and/or break.

- Verify that the power supply is 208/230/460 volt, 3 phase, 60 Hertz.
  Failure to adhere to this precaution may cause motor and/or start failure.

- Do not install heavy objects, such as a filter, directly on the compressed air discharge.
  Installing heavy objects on the compressed air discharge can cause damage to the piping and/or an accident.

Safety Precautions (continued)

Operation Safety Precautions

⚠ WARNING

- If the Compressor Operation light is lit, keep all human body parts away from the rotating parts (pulley, V-belt and ventilating fan) of the air compressor, as the air compressor will automatically start when pressure drops.
  Failure to adhere to this precaution may cause injury and/or accidents.
- Do not touch the air piping and check valve inside the air compressor package during operation and immediately after the air compressor has stopped, as they will generate excessive heat.
  Failure to adhere to this precaution may cause burns.
- Do not operate the air compressor with an inverter and/or generator.
  Failure to adhere to this precaution may cause damage to the air compressor and/or accidents.

⚠ CAUTION

- Make sure to ground (earth) the air compressor.
  Failure to adhere to this precaution may cause electric shock and/or injury.
- Remove all the transport fixtures prior to operation. (7.7/11kW : 2 locations, 16.5kW : 3 locations)
  Failure to adhere to this precaution may cause excessive vibration and/or damage to the air compressor.
- Turn off the power supply during a power failure and/or electric storm.
  Failure to adhere to this precaution may cause damage to the air compressor and/or accidents.

Maintenance and Inspection Safety Precautions

⚠ WARNING

- Carry out the standard scheduled maintenance and service (See page 21).
  Failure to adhere to this precaution may cause damage to the air compressor and/or accidents.
- Before performing any maintenance and/or inspection, ensure that the power supply has been disconnected and all compressed air in the air receiver and air compressor piping has been released.
  Failure to adhere to this precaution may cause electric shock and/or injury.

【122PSIG Model】

- Contact the local Hitachi distributor for the completion of the maintenance required every 10,000 hours or every 4 years of standard use. The maintenance has to be completed in this period, or earlier depending on the operating environment. Do not operate beyond the scheduled period.
  Failure to adhere to this precaution may cause damage to the air compressor and/or accidents.
  For more details, contact the local Hitachi distributor.

【145PSIG Model】

- Contact the local Hitachi distributor for the completion of the maintenance required every 5,000 hours or every 2 years of standard use. The maintenance has to be completed in this period, or earlier depending on the operating environment. Do not operate beyond the scheduled period.
  Failure to adhere to this precaution may cause damage to the air compressor and/or accidents.
  For more details, contact the local Hitachi distributor.

【122PSIG Model】

- Contact the local Hitachi distributor for the completion of the overhaul required every 20,000 hours or every 8 years of standard use. The overhaul has to be completed in this period, or earlier depending on the operating environment. Do not operate beyond the scheduled period.
  Failure to adhere to this precaution may cause damage to the air compressor and/or accidents.
  For more details, contact the local Hitachi distributor.

【145PSIG Model】

- Contact the local Hitachi distributor for the completion of the overhaul required every 10,000 hours or every 4 years of standard use. The overhaul has to be completed in this period, or earlier depending on the operating environment. Do not operate beyond the scheduled period.
  Failure to adhere to this precaution may cause damage to the air compressor and/or accidents.
  For more details, contact the local Hitachi distributor.
- For maintenance and service inspections, please contact the local Hitachi distributor.
- Do not remove or modify the safety devices and/or insulating parts of the air compressor.
  Failure to adhere to this precaution may cause damage to the air compressor and/or accidents.
- Use genuine HITACHI parts when maintaining or servicing the air compressor.
  Failure to adhere to this precaution may cause damage to the air compressor and/or accidents.
- Do not use the air receiver if it has developed a leak. Do not attempt to repair or rework a leaking air receiver.
  Failure to adhere to this precaution may cause personal injury, damage to the air compressor and/or pressurized rupture.

Safety Precautions (continued)

⚠ CAUTION

- If the air compressor has not run in over one (1) month, carry out the long term storage operation prior to restarting the air compressor (See page 28).
  Failure to adhere to this precaution may cause abnormal wear to the air compressor components, damage to the air compressor and/or accidents.
- Verify that the front door chain has been connected before closing the door.
- Make sure the V-belt is tightened properly prior to operation. If the V-belt is loose, tighten the V-belt prior to operation.
  Failure to adhere to this precaution may cause belt slippage, damage to the air compressor and/or excessive noise.

Introduction

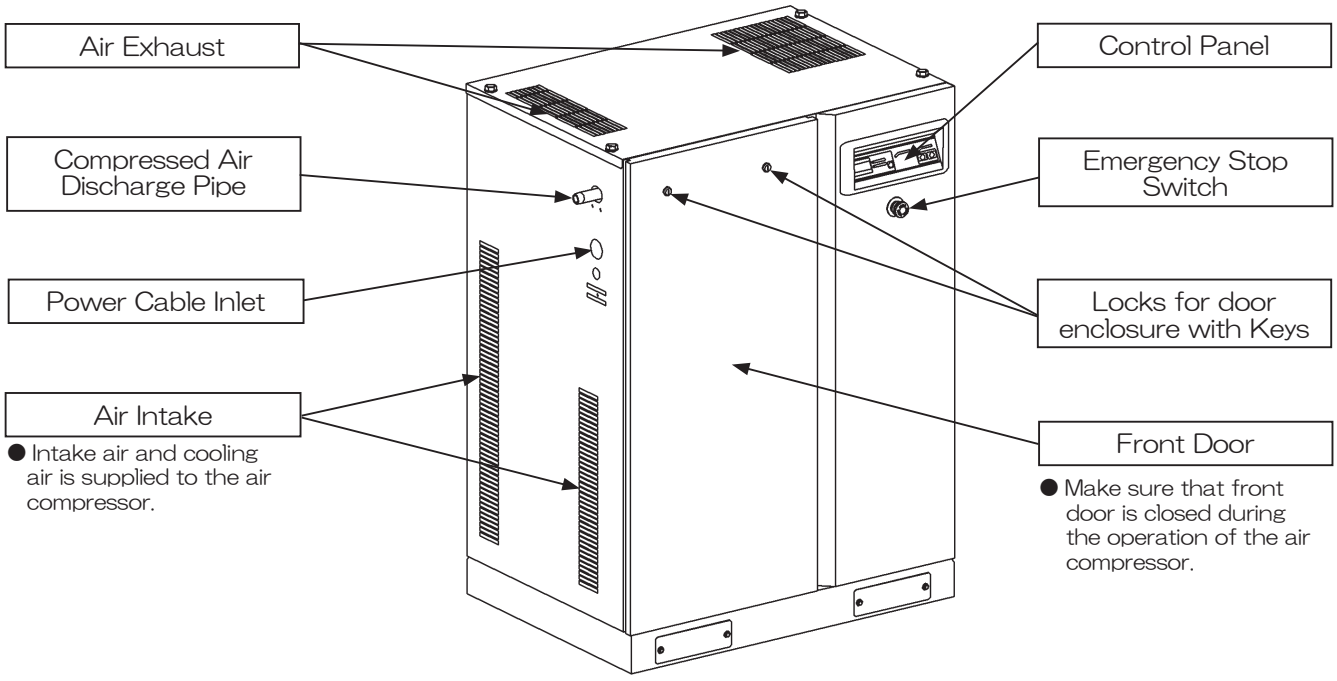
The instruction manual gives details related to the specifications, construction, installation, operation, maintenance and inspection of the Oilfree Scroll Air Compressor.
This instruction manual describes the proper operation method to smoothly and safely utilize the functions of the Oilfree Scroll Air Compressor.

Table of Contents

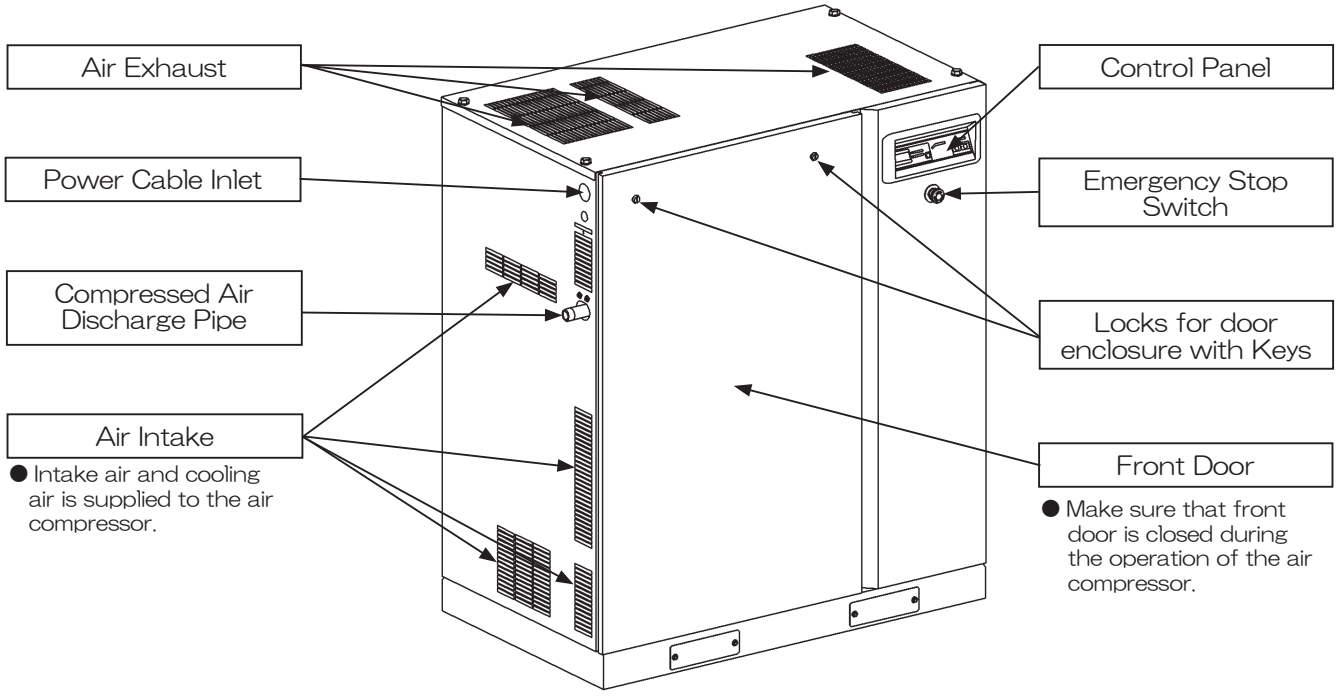
Daily Operating Components

Air Compressor Exterior

SRL-7.5M6LL/ML/LH/MH
SRL-11M6LL/ML/LH/MH



SRL-16.5M6LL/ML/LH/MH



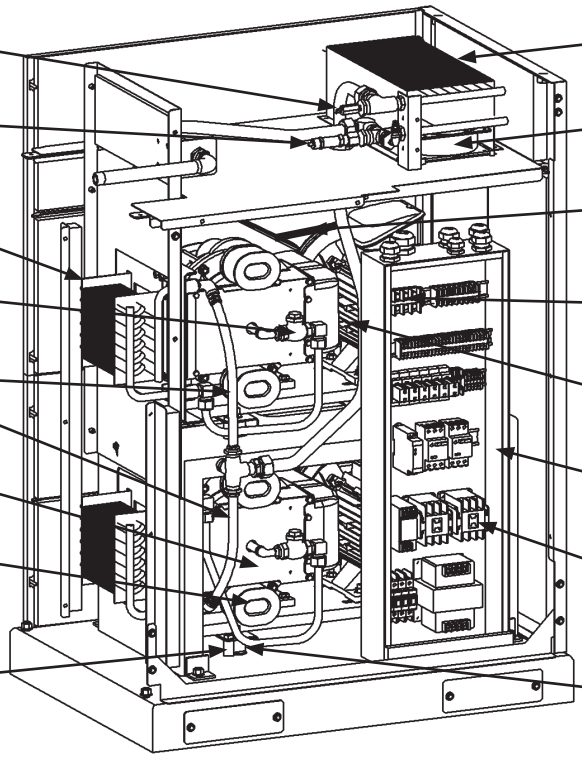
⚠ CAUTION

● Do not leave the front door open during operation.
Failure to adhere to this precaution may cause dust to be ingested, excessive vibration and/or noise to be generated and/or reduction in air compressor life due to excessive temperature rise.

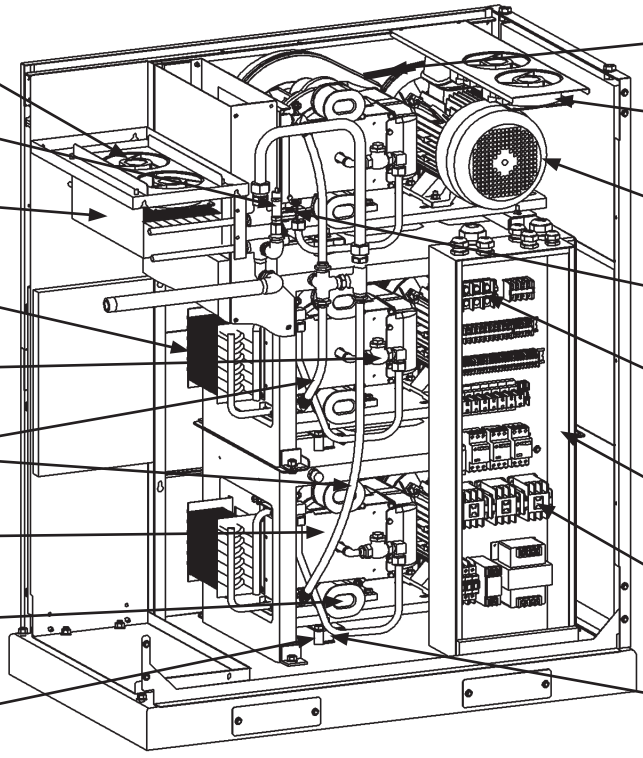
Daily Operating Components (continued)

Air Compressor Interior

SRL-7.5M6LL/ML/LH/MH
SRL-11M6LL/ML/LH/MH



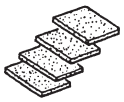
SRL-16.5M6LL/ML/LH/MH



Installation

1 Product Confirmation

1. Check the air compressor nameplate to verify that the proper model air compressor was delivered.
2. Verify that there has been no damage to the air compressor during transportation.
3. Verify that the items shown below are included with the air compressor.

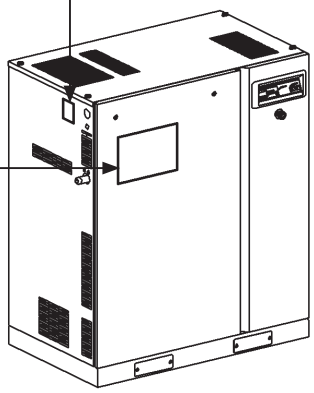
Rubber vibration sheets for installation - 4 Sheets	Instruction Manual 1 copy	4 - Steel plates & 8 - Bolts
		

Model Nameplate

● Review the model number, serial number, power requirements and compressor specifications.

Warning Label

● Read the Warning Label before use.



⚠ CAUTION

● Do not use an air compressor with a power supply differing from the specified power requirement. Incorrect power supply may cause fire and/or abnormal vibration.

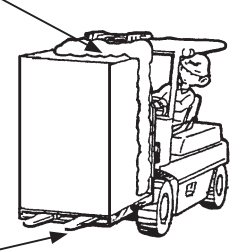
2 Transporting the Air Compressor

Transporting the Air Compressor

Moving with a Forklift

Place a buffer plate in between the air compressor and the forklift to protect the air compressor panels.

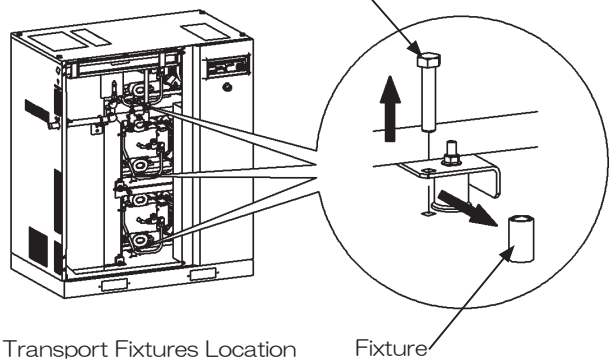
Do not tilt the forks of the forklift too much. Too much tilt may cause the air compressor to drop.



Removing the Transport Fixtures

Remove the transport fixtures

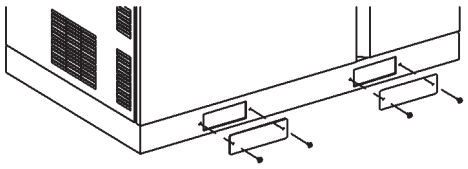
● Open the front door, remove the yellow bolts and remove the transport fixtures prior to operating.



Transport Fixtures Location
7.7/11kW : 2 locations
16.5kW : 3 locations

【Reference】

● After installing air compressor, please be sure to attach the plates shown in the figure to the right.
These plates are shipped with the compressor and will greatly reduce compressor noise during operation.



⚠ WARNING

● It is recommended that properly trained personnel move the air compressor.

● Operation of the air compressor with the transport fixtures installed will lead to excessive vibration of the air compressor and the package may rupture. The transport fixtures must be removed prior to operation of the air compressor.

Installation (continued)

3 Installing the Air Compressor

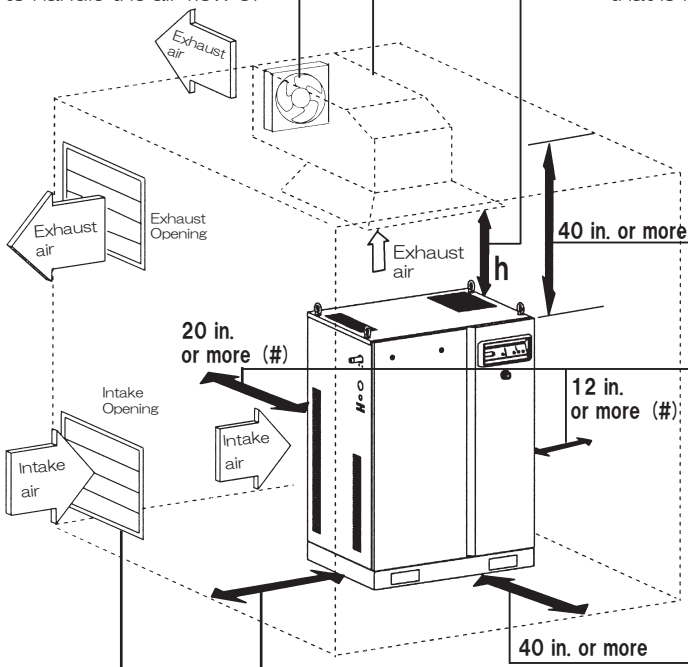
1. Install the air compressor inside a room with adequate space, ventilation and relatively low humidity.
2. Keep the operating room temperature in between 32° F and 104° F.
3. Install the air compressor with the recommended spacing shown in the figure below for ease of maintenance and temperature control.
   - The air compressor is designed to inhale air from the left side of the package and exhaust the air out of the top of the package. It is recommended to provide suction and exhaust openings as shown in the figure below to properly ventilate the room. If the suction and exhaust openings cannot be provided, do not modify the air compressor without consulting the local Hitachi distributor.
4. The allotted space located to the right and to the rear of the air compressor must be maintained to perform maintenance. Ensure that this space is maintained if the air compressor is going to be permanently installed. (#)

Ventilating fan

- If the temperature exceeds 104° F in the room, install a ventilating fan to keep the room temperature below 104° F.
- Select a ventilating fan with more than enough capacity to handle the air flow of the room.

Exhaust duct

- Do not directly connect the duct with the air compressor. The ducting hood should maintain a distance (indicated as "h") between the air compressor and the duct that is larger than the diameter of the duct.



Ventilation and Exhaust Space

- Secure enough space for proper ventilation.
- Absence of intake space causes the suction resistance to increase, resulting in temperature rise in the package, which may cause a reduction in the life of air compressor components.

Maintenance Space for Right & Rear Sides

- If a space of more than 12 in. and/or 20 in. cannot be secured, utilize a piping connection that can be easily removed for maintenance purposes.

Front Maintenance Space

- Secure the proper amount of space to open the front door of the air compressor for inspection.

Intake Opening

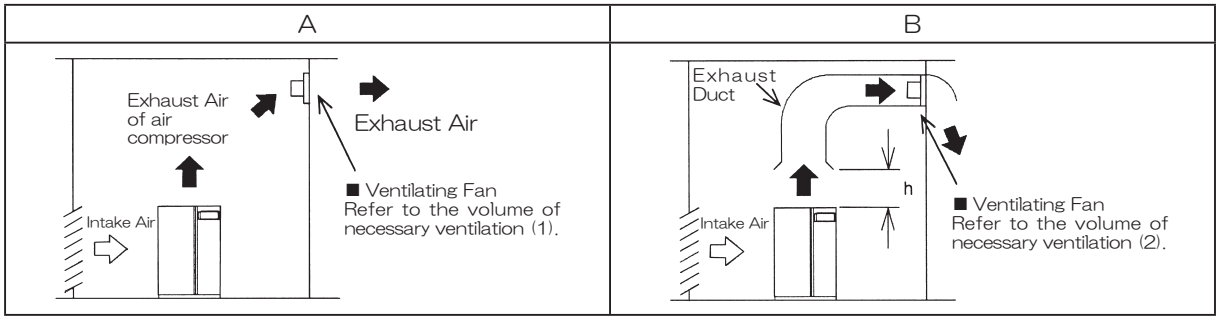
- The intake opening should be installed as low as possible. The area of the opening should be calculated as 1,550 sq in.(1m^2) per compressor1.
- Conditions of the ambient air, including dust and toxic substances, should be considered when selecting the location for the intake air opening.

Maintenance Space, Intake Air, Discharge Piping and Wiring

- Secure enough space for proper ventilation.
- Absence of intake space causes the suction resistance to increase, resulting in temperature rise in the package, which may cause a reduction in the life of air compressor components.
- Secure enough space for wiring and piping.

【Reference】

■ Guidance for construction of ventilating fan and exhaust duct



Installation (continued)

【Please see the table to the below for Reference】
■ Generated Heat & Required Ventilating Capacity Table
The required ventilating capacity value is the required capacity to keep the temperature rise in the room within 9° F (5℃) when only one Oilfree Scroll Air Compressor is operating.

Item \ Model	SRL-7.5M6LL SRL-7.5M6ML SRL-7.5M6LH SRL-7.5M6MH	SRL-11M6LL SRL-11M6ML SRL-11M6LH SRL-11M6MH	SRL-16.5M6LL SRL-16.5M6ML SRL-16.5M6LH SRL-16.5M6MH
Generate Heat kJ/h	25,116	36,000	54,000
Cooling Air Flow CFM (㎥/min)	990 (28)	1,240 (35)	1,520 (43)
Cooling Air Differential Temperature ° F (℃)	63 (35)	63 (35)	63 (35)
Required ventilating capacity (1) CFM (㎥/min)	2,472 (70)	3,532 (100)	5,297 (150)
Required ventilating capacity (2) CFM (㎥/min)	777 (22)	1,130 (32)	1,695 (48)

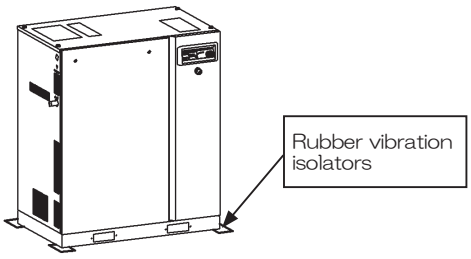
⚠ WARNING

- Keep the ambient room temperature in between 32° F and 104° F. If the temperature exceeds 104° F or there is a defect in the installation, the air compressor protective devices may stop air compressor operation and/or damage or reduction in compressor life may occur.
- The air compressor discharges air exhaust from the top. Make sure that there are no items such as lights, or wirings that are above the air compressor and can be affected by the exhaust air.
- Do not modify the intake or exhaust of the air compressor package, otherwise the temperature may become unbalanced, resulting in the protective devices of the air compressor to function improperly.
- Do not install ducting on the intake or the exhaust of the Oilfree Scroll Air Compressor, as it may cause damage to the air compressor.
- Do not install the air compressor in an area above the ground, as the air compressor and/or parts of the air compressor may fall.

5. Install the Air Compressor on Level Ground with a Sufficient Weight Load. If there is a gap between the air compressor and the ground, adjust the gap with the attached rubber vibration isolators to eliminate the gap.

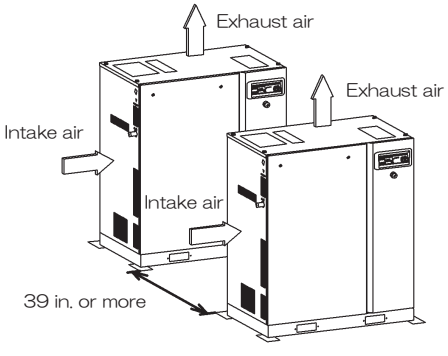
⚠ WARNING

- Do not install the air compressor on ground with insufficient weight load. Do not operate the air compressor attached to a pallet or packaging table.
- Do not install on any type of rubber other than the attached rubber vibration isolators and do not bolt to the concrete. This may result in excessive vibration and/or damage to the air compressor.



Install the Air Compressor on Level Ground with a Sufficient Weight Load.

6. For parallel operation, install the air compressors as shown in the figure to the right. If the air compressors cannot be installed as shown in the figure to the right, install in a way that prevents the exhaust of one air compressor from entering the air intake of the other air compressor.

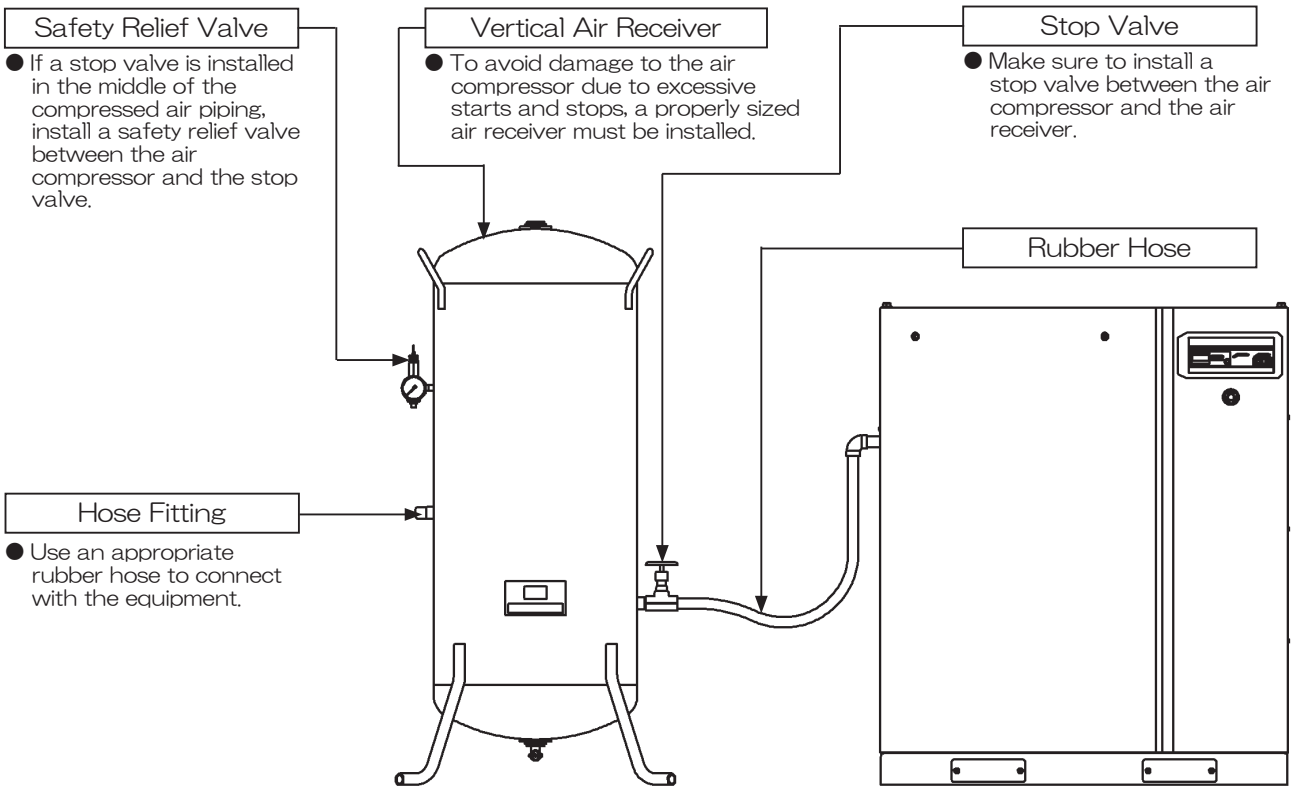


Installation (continued)

4 Piping the Air Compressor

1. Ensure that a properly sized air receiver is installed (80 gallons or more). Without a properly sized air receiver it is possible that the air compressor can be damaged due to excessive starts and stops.

2. Use a textile reinforced, heat resistant rubber hose (hydraulic) of appropriate rating to connect the Oilfree Scroll Air Compressor to the plant air system piping.



⚠ WARNING

- Use a heat resistant, pressure tight rubber hose to connect the Oilfree Scroll Air Compressor to the plant air system piping. The rubber hose will prevent damage to the plant air system piping due to vibration.
- Use of an improper rubber hose may lead to cracks and/or leaks due to hose deterioration.
- Do not operate the air compressor when the stop valve between the air receiver and the air compressor is closed.
- Do not install heavy objects, such as drain traps and filters, to the compressed air discharge as they may damage the discharge line of the air compressor.
- If a remote vertical air receiver is installed, it is recommended to attach the air receiver to the ground with foundation bolts.

■ It is necessary to install a properly sized air receiver to this compressor in order to reduce excessive starts and stops.
■ Without a properly sized air receiver, it is possible that the main motor or electromagnetic contactor may receive unwarranted wear due to excessive starts and stops.

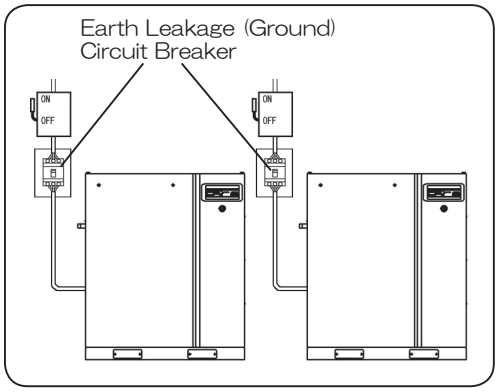
⚠ WARNING

- Without a properly sized air receiver, it is possible that a serious accident may occur due to the unwarranted wear of the main motor or electromagnetic contactor.
- For the protection of the air compressor, if excessive starts and stops occur the compressor will shut off and display : cycle error [E.CY]. This will stop the supply of compressed air.
- The error message cycle error [E.CY] is an indication that the volume of air receiver is insufficient for proper operation. An increase in the volume of the air receiver will eliminate the cycle error [E.CY].

Installation (continued)

5 Wiring the Air Compressor

Connecting the Main Power



1. Carry out the electrical work according the local and national electric codes and standards.

2. Connect the power supply for the main motor through an earth leakage (ground) circuit breaker between the main power and the Oilfree Scroll Air Compressor.

3. Wiring capacities are as follows.

Model	Power	Wiring Capacity			
		Minimum Wire Thickness (mm/AWG)	Minimum Ground Line Wire Thickness (mm/AWG)	Circuit Breaker Capacity (A)	Fuse Capacity (A)
SRL-7.5M6LL SRL-7.5M6LH	208/230V 3 Phase 60 Hertz	3.9/AWG8	3.9/AWG8	75	75
SRL-11M6LL SRL-11M6LH		4.9/AWG6	4.9/AWG6	100	100
SRL-16.5M6LL SRL-16.5M6LH		6.8/AWG4	6.8/AWG4	100	100
SRL-7.5M6ML SRL-7.5M6MH	460V 3 Phase 60 Hertz	3.9/AWG8	3.9/AWG8	40	40
SRL-11M6ML SRL-11M6MH		4.9/AWG6	4.9/AWG6	50	50
SRL-16.5M6ML SRL-16.5M6MH		6.8/AWG4	6.8/AWG4	50	50

Note) 1. Use a UL489 listed circuit breaker or UL listed dual-element time delay branch circuit type fuses.
2. The Circuit Breaker and Fuse capacity depend on "UL standard".

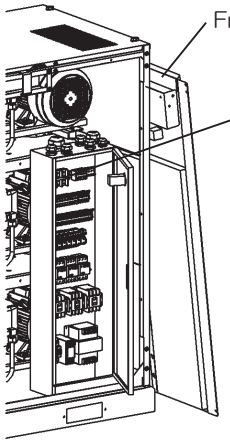
⚠ CAUTION

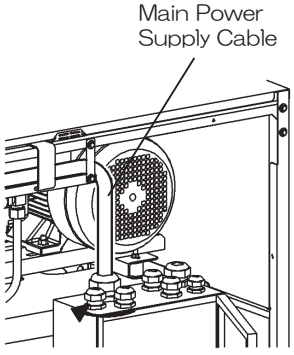
- Verify that the power supply for the facility corresponds with the power supply of the air compressor.
  Failure to adhere to this precaution may lead to starting failure, electric motor failure and/or damage to the air compressor.
- The SRL air compressor should be wired per the local and national electric codes. Improper wiring may lead to excessive voltage drops.
- Do not use a generator.

Wiring the Air Compressor

1. Internal air compressor wiring has been completed prior to shipment from the factory.

2. Remove the front panel, open the door to the power supply panel and connect the main power supply cable to the terminal block.

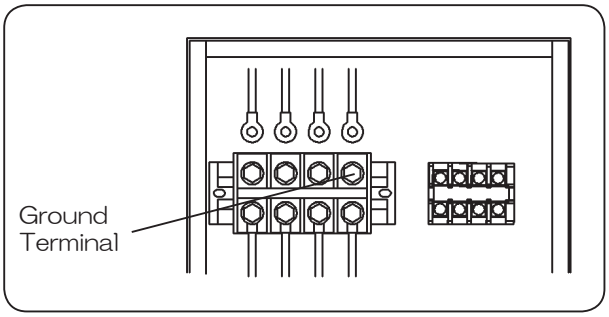




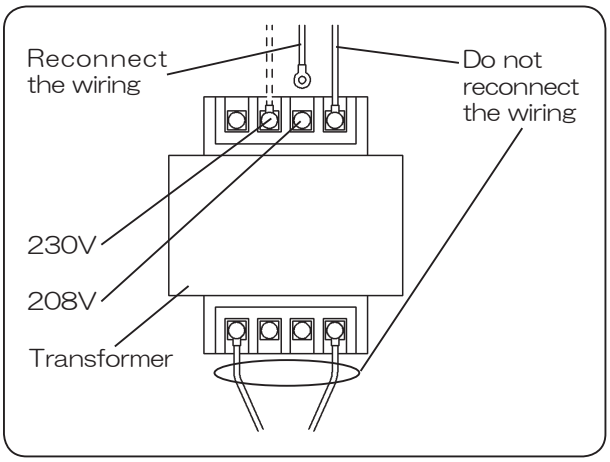
Tighten the nut after connecting the power cable.

Installation (continued)

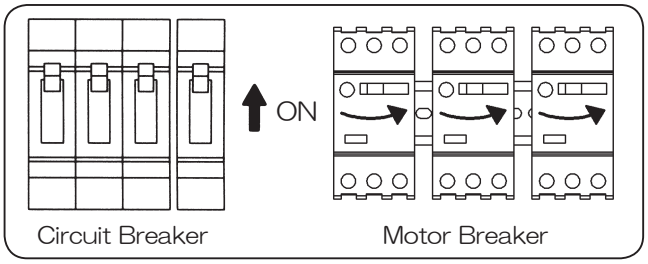
3. Make sure to ground the air compressor.



4. For AC208/230V models, the air compressor ships wired for AC230V, to operate the air compressor at AC208V, reconnect the wiring of the transformer primary to the 208V terminal.

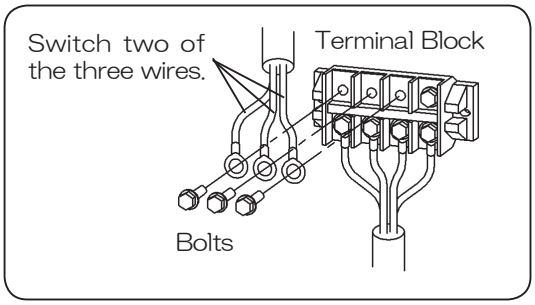


5. Turn ON the circuit breakers and motor breakers.

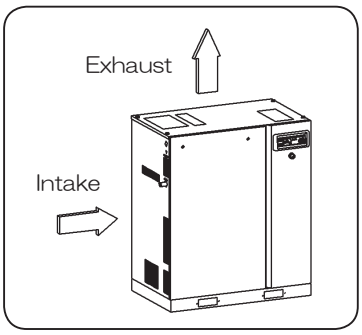


6. Turn on the main power to verify that the voltage is the specified voltage and phase.

7. Press the start button to verify that the compressor operates during a trial run. If [E.rE] is indicated on the digital display, the air compressor is in a reverse phase condition. To fix the problem, turn off the main power and reconnect the power after switching two of three wires of the main power. If nothing has changed after reconnecting, please refer to P.29.



8. If the air compressor is rotating correctly, the cooling air flows as shown in the figure to the right.



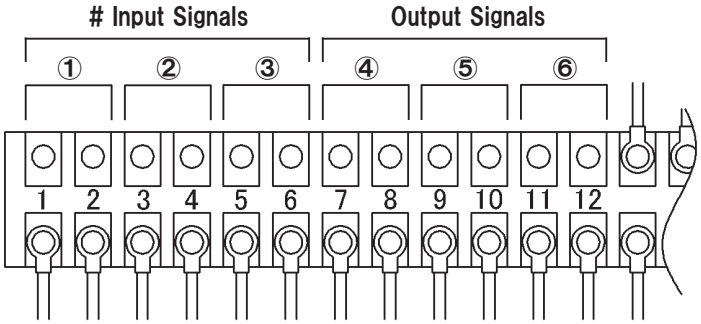
⚠ CAUTION

- Make sure to turn off the main power supply before carrying out any wire connections.
- Firmly tighten the screws connecting the main power wiring to the air compressor. Loose wires may lead to excessive overheating and/or accidents.

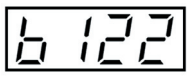
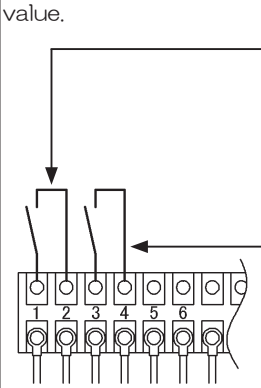
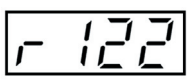
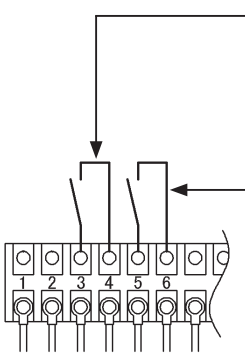
Installation (continued)

Remote Input and Output Signals

The following input and output signals terminal block is equipped in the power supply control panel.



 # Use shielded wires as input signal wires.

No.	Terminal Description	Content	How to use
①	Customer Control Run Change-over Signal	When utilizing customer control run, connect this to the external terminals of the customer's controller. When controlled by a customer's controller, "b" will be indicated on the digital display. (Only pressure switch control mode is allowed.) 	The input signal is approximately 5VDC, 10mA. Use a switch or a relay contact with the minimum applicable load of this value.  Customer Control Run Change-over Switch Install the customer control run change-over switch near the air compressor. Switch ON : Customer controlled operation is running. Switch OFF : Local operation is running. Remote Operation & Stop Switch Install the remote operation & stop switch for remote control. Switch ON : Compressor is running. Switch OFF : Compressor has stopped.
②	Remote Operation Command Signal	Under remote operation, the operation of the air compressor is controlled by the input signal from the remote switch. Under customer control run, the operation of the air compressor is controlled by the input signal from the control panel of the customer.	
③	Remote Operation Change-over Signal	Before the remote operation of the air compressor can be used, the operation switch must be activated. If the mode of the air compressor is changed to remote operation a change-over signal will occur. A character "r" (Remote mode) is displayed on the left most position of the digital display.  When remote control is to be used, the remote operation change-over signal must occur before activating the remote operation command signal.	The input signal is approximately 5VDC, 10mA. Use a switch or a relay contact with the minimum applicable load of this value.  Remote Operation & Stop Switch Install the remote operation & stop switch for remote control. Switch ON : Compressor is running. Switch OFF : Compressor has stopped. Remote Operation Change-over Switch Install the remote operation change-over switch near the air compressor. Switch ON : Remote operation is running. Switch OFF : Local operation is running.

Installation (continued)

No.	Terminal Description	Content	How to use
④	Operation Signal	This signal is outputted when the operation is ON.	The output is a non-voltage signal. The load connected should be 250VAC/30VDC, 5A or less and should use an auxiliary relay of small load.
⑤	Error Signal	This signal is outputted when the errors occur and the air compressor cannot be restarted.	
⑥	Alarm Signal	This signal is outputted when an alarm, such as a maintenance alarm, occurs.	

Caution Note: The "Customer Control Run mode (①)" and "Remote Operation mode (③)" cannot be used at the same time.

(#) Compressor Head Error
This unit has a back-up function that will allow the unit to continue operating even if one compressor head breaks down. If there is an error on one compressor head, the error signal will come ON and the operation of other compressor head(s) will continue.

⚠ CAUTION

- When carrying out the wiring connection for the terminal block, make sure to turn off the main power supply.

Operation

1 Control Panel Descriptions

● If an error during start up occurs, please contact the local Hitachi distributor.

Control Panel

Digital Display (Yellow)

Indicates:
1) Discharge Pressure
2) Total Running Hours
3) Alarm/Errors (if applicable)

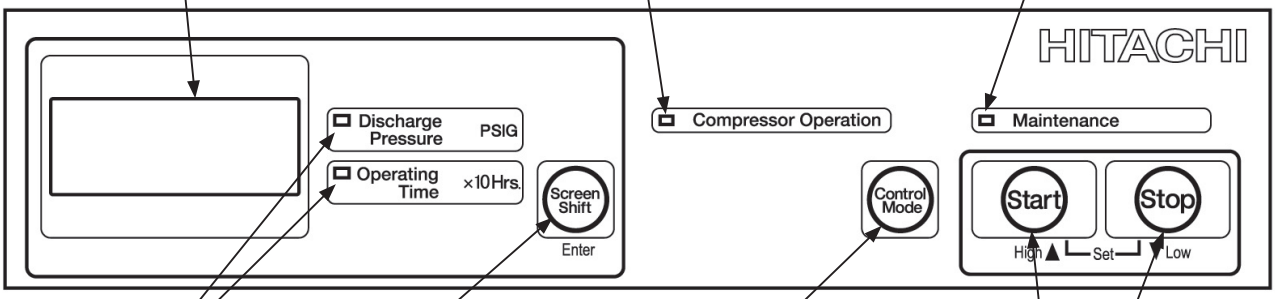
If the digital display is lit, main power to the air compressor is ON.

Compressor Operation Light (Green)

Lights up during compressor operation.

Maintenance Alarm Light (Red)

Lights up to inform operating personnel that maintenance is required based on hours of operation.



Indication Light (Red)

Screen Shift Switch

Toggles the digital display from discharge pressure and total running hours for three seconds.

Control Mode Switch

Press this switch to select the proper control mode.

Start and Stop Switch

Pressing these switches starts and stops the air compressor, respectively.

⚠ CAUTION

● If nothing displays in the digital display, even with power on, either the emergency stop switch is operating or the circuit breaker in the UL power supply panel is OFF. Always turn off the power supply prior to inspection.

Operation (continued)

【Screen Shift Switch Operation】

The total operation time of the unit and each compressor head is indicated. Press the switch and the display will change as indicated in the diagram below. The total operation time of the unit or each compressor head will only be displayed for 3 seconds, and then the discharge pressure will be displayed.

Press Screen Shift Switch Once
Pressing the Screen Shift Switch once will show the total operating hours of the air compressor for three seconds.

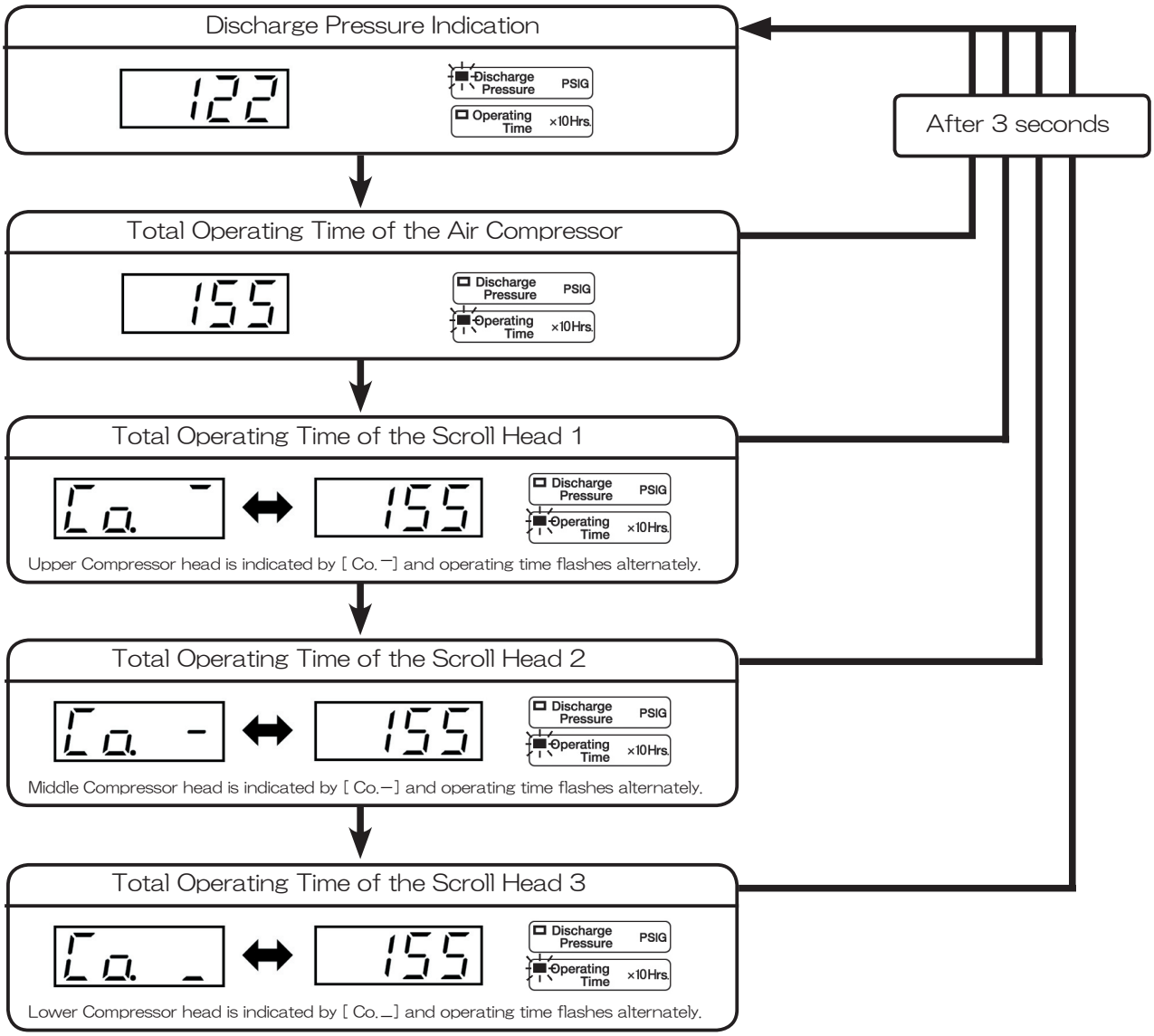
Note : The air compressor total operating hours can be used as a guide for scheduling maintenance for: the air intake filter, V-belt, and other normal inspection/maintenance items.

Press Screen Shift Switch Again Within Three Seconds
Pressing the Screen Shift Switch again within three seconds will show the total operating hours of the Scroll Head for three seconds.

Note : Displays the total operating hours of the scroll head only.

Use these displays as a guide for maintenance schedule.

Note : The total operating hours indicated on the digital display is the total operating hours in multiples of ten (for example : 155 on the digital display = 1,550 total operating hours).



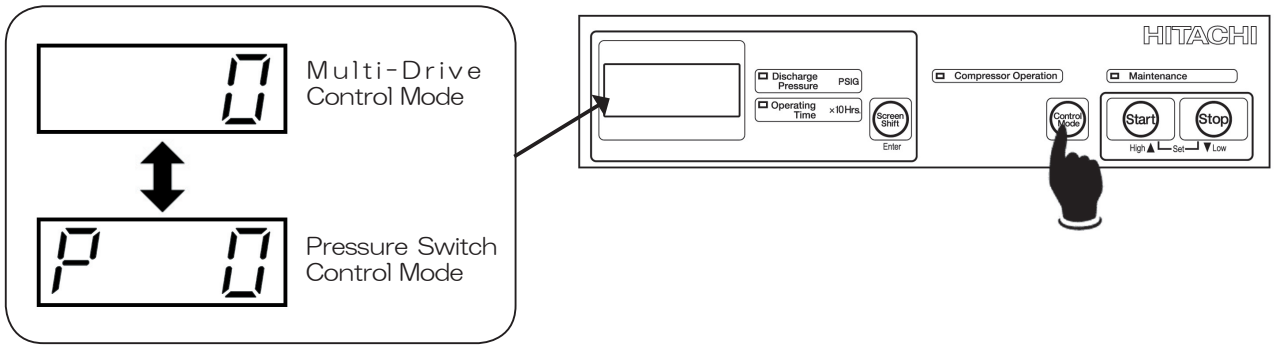
Operation (continued)

2 Prior to Operation

● This section details the operation, activation and control methods of the SRL air compressor. It is possible to select the operation control mode of the air compressor, change the control pressure settings and set the automatic recovery from power failure. It is recommended that the selection of the appropriate settings be selected based on the conditions in which the compressor will be used. (In the case that "Customer Control Run mode" is selected, only the pressure switch control mode will be available.)

How to select the control mode

Press the "Control Mode Switch" when the main power in ON and while the air compressor is not running. The operation control mode will be changed as follows when you press the switch.

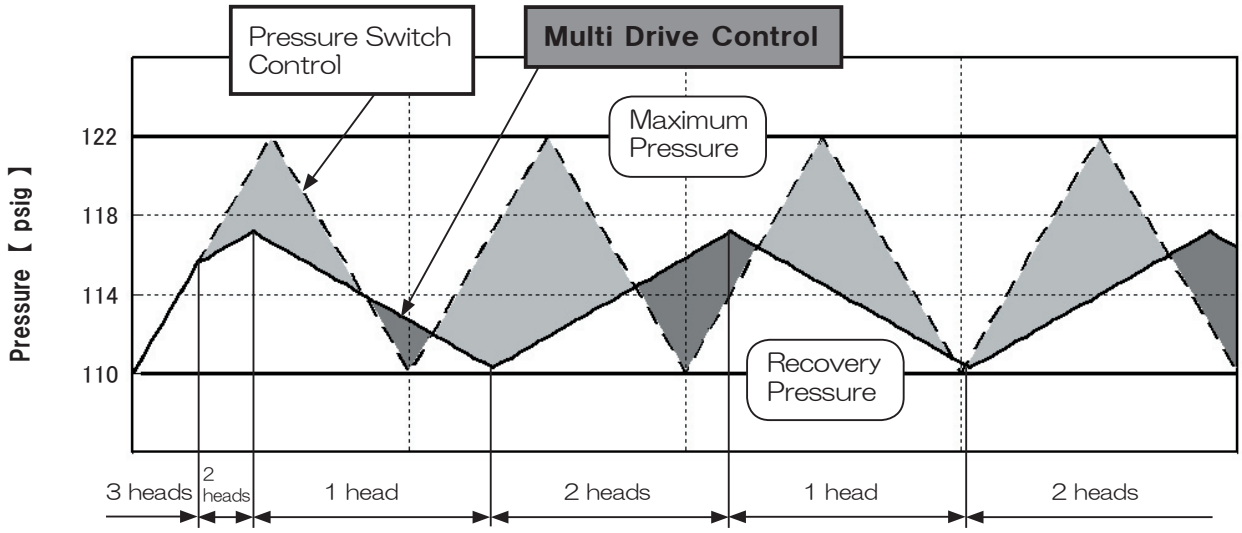


1. Operation Control Mode Setting

It is possible to change between Multi-Drive control mode and pressure switch control mode. The operation of the air compressor can be controlled as followed.

(1) Multi-Drive Control Mode (Energy Saving mode)

Responding to the need of compressed air, the operation of SRL compressor heads is modified automatically to keep the delivery pressure at around the necessary pressure (recovery pressure). This operation allows the compressor to save energy by avoiding useless operation of compressor heads.



(2) Pressure Switch Control Mode

The operation of SRL compressor heads is controlled by Pressure Switch Control Mode. The operation of all SRL compressor heads are stopped simultaneously when the unit stops operating.
When starting the unit, the operation of each SRL compressor head starts one after another in approximately 1.5 second increments to reduce the starting load.

Operation (continued)

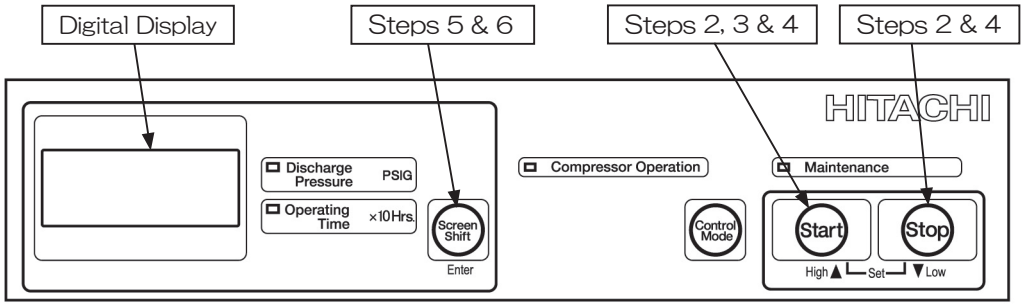
2. Changing the Pressure Settings

The control pressure can be changed with the switches shown below on the control panel. An energy saving operation can be performed to lower wasted energy by lowering the maximum (stop) pressure. The normal pressure settings of the air compressor are shown in the figure to the right. Under the Muti-Drive control mode, the delivery pressure is to be above the "recovery pressure + 12/15psig" , and will not reach the maximum setting pressure normally. Under Multi-Drive control mode, more energy savings is possible by lowering the recovery pressure.

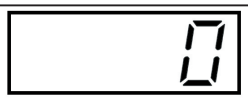
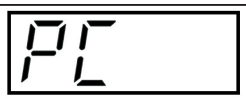
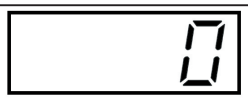
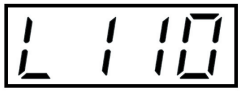
	Pressure Setting	
	122PSIG Model	145PSIG Model
Maximum (Stop) Pressure (psig)	122	145
Recovery (Start) Pressure (psig)	110	115

■ Procedure for changing the control pressure setting

Press the "Stop" switch, and drop the pressure in the air receiver to 70psig or lower (it is impossible to change the control pressure setting if the pressure in the air receiver is above 71psig). Once the pressure in the air receiver is below 70psig the control pressure setting can be changed by following the procedure below.



EX. 122PSIG Model

Steps		Digital display
1	Verify that the pressure is indicated on the digital display.	
2	Press the stop switch and then press the start switch and hold both buttons for 5 seconds to change the indication on the digital display to PC.	
3	To change the maximum (stop) pressure, press the start switch. The indication on the digital display changes to H122 (this is an example of what the indication on the digital display will be for the pressure settings from the factory).	
4	Pressing the stop switch will lower the maximum pressure setting by 1 PSIG.	
	Pressing the start switch will raise the maximum pressure setting by 1 PSIG.	
5	After the change in pressure setting has been set, press the Screen Shift switch and the digital display indication will change to PC.	
6	Pressing the Screen Shift switch again will change the digital display indication to the pressure display.	
To change the recovery (start) pressure, press the stop switch in steps 3 above to change the digital display indication to L110 (this is an example of what the indication on the digital display will be for the pressure settings from the factory) and then change the pressure settings as shown in steps 4 and later.		

Operation (continued)

■ Changeable Pressure Ranges

122 PSIG Model				
Pressure Description	Maximum (Stop) Pressure (psig)	Recovery (Start) Pressure (psig)	Pressure Bandwidth (psig)	Pressure Unit Interval of Change
Standard Pressure	122	110	12	-
Changeable Pressure Range	122 - 92	110 - 80	12	1
145 PSIG Model				
Pressure Description	Maximum (Stop) Pressure (psig)	Recovery (Start) Pressure (psig)	Pressure Bandwidth (psig)	Pressure Unit Interval of Change
Standard Pressure	145	115	30	-
Changeable Pressure Range	145 - 95	130 - 80	15	1

Notes: 1. When operating the air compressor with a pressure bandwidth of 30 psig it is recommended that a large size vertical air receiver is installed.
2. The pressure bandwidth of the maximum pressure and the recovery pressure cannot be lower than 12/15psig. The interval of pressure change is 1psig.
3. The air compressor may keep running over the maximum pressure of 122psig/145psig because of the Start Frequency Protection even if the maximum pressure is lowered.

■ Cycle Control Logic (CCL): Operation and protection from excessive cycling of the main motors

● The SRL air compressor measures the ″ON-OFF cycle number″ after the pressure settings have been changed and automatically adjusts the maximum (stop) pressure to prevent the ″ON-OFF cycle″ from increasing when the ″ON-OFF cycle number″ increases exponentially, thus protecting the scroll head, electric motor and electromagnetic contactor (Please see the figure below).

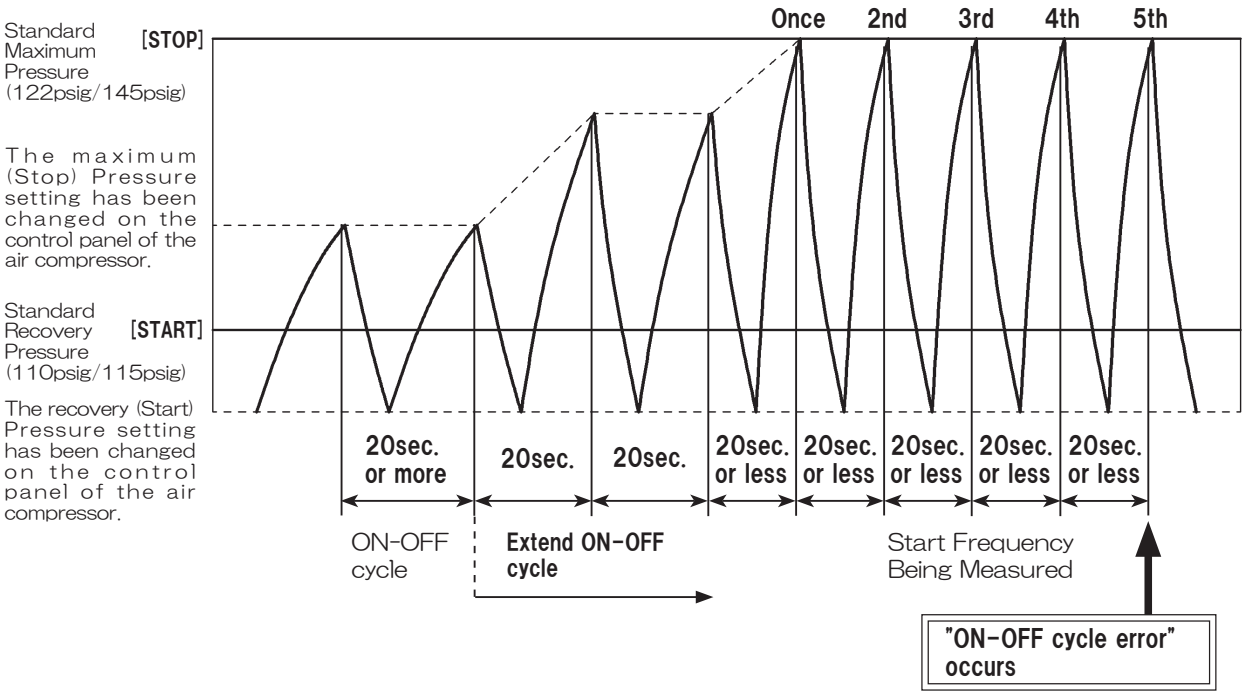
● After the CCL adjusts the maximum (stop) pressure, the CCL continues to automatically measure the ″ON-OFF cycle number″ and lower the maximum (stop) pressure within the permissible range of the ″ON-OFF cycle number″, until the CCL nears the set maximum (stop) pressure of the air compressor and the ″ON-OFF cycle number″ becomes consistent.

● A protection device is equipped on this unit to prevent frequent ON-OFF operations. Start Frequency Protection automatically measures cycles of ON-OFF, and in the case that the cycle of ON-OFF is less than 20 seconds, the operation will continued for 20 seconds even if the maximum pressure setting is lowered. In the event that it takes less than 20 seconds to reach the standard maximum pressure (122psig/145psig) the controller will stop the operation of the air compressor at 122psig/145psig. If this happens 5 times continuously, it is defined as a「ON-OFF cycle error」. If this occurs「E.CY」 will be indicated on the digital display, and the operation of the air compressor will stop to protect the compressor head, electric motors and electromagnetic contactor.

● Pressing the Stop switch will reset the unit from the「ON-OFF cycle error」, and allow it to restart the operation of the air compressor. However, if the situation which caused the「ON-OFF cycle error」is not eliminated, the「ON-OFF cycle error」will occur again.

● To lower the amount of cycles of ON-OFF the recovery pressure will need to be lowered by following the procedure for changing the control pressure setting. (Refer to P.15)
If the recovery pressure is already set at its lowest point, a larger air receiver will need to be installed.

Operation (continued)

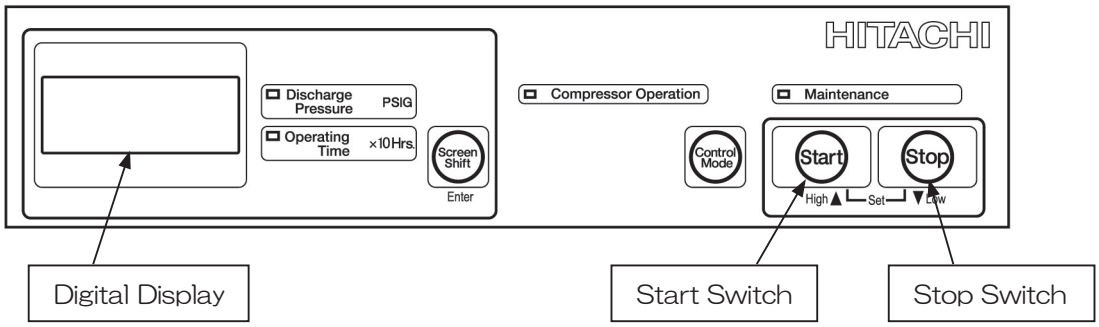


⚠ CAUTION

- As the protection device extends the ON-OFF cycle, the discharge pressure may exceed the setting maximum pressure. This is not an error.

Operation (continued)

Automatic recovery from power failure does not function under default setting.
It is possible to set automatic recovery from power failure by operation on the control panel.



Operate the switches on the control panel as shown below in order to automatically recover from power failure.

	Steps	Digital Display
1	Verify if the pressure is indicated on the digital display.	0
2	Press the stop switch continuously for three seconds. "P-0" is indicated on the digital display.	P - 0
3	Press the start switch until "P-1" is indicated on the digital dispiay and power failure automatic recovery is set.	P - 1
4	To cancel the power failure automatic recovery, carry out steps 1 to 3 to indicate "P-1" to "P-0" on the digital display.	P - 0
5	Pressure is again indicated on the digital display after three seconds.	0

NOTE: Even if the power failure automatic recovery has not been set, the pressure indication will return to the digital display after three seconds.

⚠ WARNING

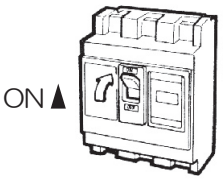
- When operating in automatic power recovery, the operation of the air compressor will start automatically when the main power supply returns. Make sure to press the Stop switch before turning off the main power supply when conducting maintenance.
- In the case of a power failure, turn off the main power supply. Be aware that residual pressure may exist even though there is not a digital display.
- When restarting the operation of the air compressor turn on the main power supply and verify the operation control mode before pressing the Start switch.

Operation (continued)

3 Start Up (Please contact the local Hitachi distributor for start up.)

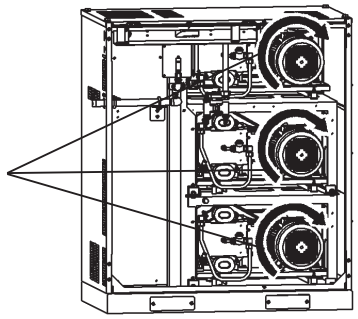
① Close the front door and fully open the discharge stop valve.

② Check the earth leakage (ground) circuit breaker to make sure it is ON. Turn ON the main power supply to the air compressor.



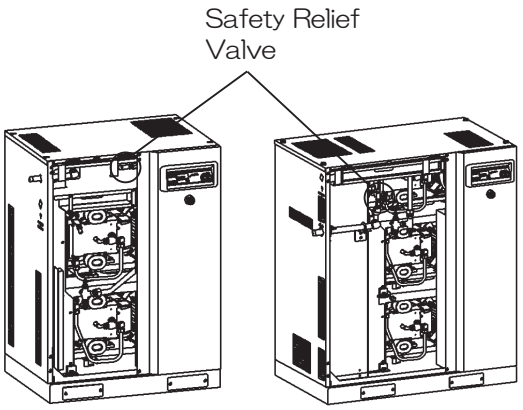
③ Press the Start switch.

④ Verify that the rotating direction of the main electric motor is clockwise when viewed from the front as shown in the diagram below.

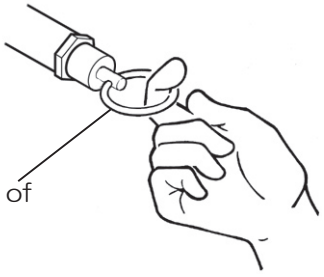


⑤ Close the stop valve on the air receiver and verify that the operation of the air compressor stops when the pressure reaches maximum pressure (under pressure switch control mode).
During operation of Multi-Drive control mode, the SRL compressor heads will stop one after another, and maximum pressure will not be reached. This is not a failure.

⑥ Slightly pull the spindle of the safety relief valve when the air compressor is near maximum pressure.



7.5/11M6 16.5M6



Slightly pull the spindle of the safety relief valve.

⑦ Open the discharge stop valve to lower the pressure and verify that the air compressor restarts at the load pressure setting.

Note) It is normal that the operation of the air compressor restarts at a pressure higher than the recovery pressure under Multi-Drive control mode.

⚠ CAUTION

- During inspection of the safety relief valve, a loud noise will be emitted from the safety relief valve, therefore, prepare for the noise in order to prevent personal injury.
- If there is excessive vibration or abnormal sound, please refer to page 25 for adjustment.
- If the air compressor is not operating and the discharge stop valve is closed, the pressure indication on the digital display may lower, which is due to a decrease in temperature. This is normal.
- Turn off the power in the case of a power failure or electric storm to prevent damage to the air compressor and/or personal injury.

Operation (continued)

4 Daily Operation

■ Start

① Completely open the stop valve on the air receiver.

② Verify that the earth leakage (ground) circuit breaker is ON.

③ Turn ON the main power supply.

④ Select appropriate operation control mode of the air compressor.

⑤ Press the Start switch.

⑥ Automatic operation turns ON.

■ Stop

① Press the Stop switch.

② Completely open the vertical air receiver stop valve to remove the residual pressure and depressurize the system to 0 psig.

③ Turn OFF the main power.

⚠ WARNING

- Do not operate a damaged and/or improperly activated air compressor.
- Do not put any human body parts near the rotating parts of the air compressor during operation, as they may become entangled and result in a serious injury. Take note that the air compressor has the capability to automatically restart without notice.
- Do not touch the discharge piping in the front of the scroll head or the air piping leading to the air receiver and the check valve, as they reach excessively high temperatures during operation and immediately after the air compressor has stopped. Failure to adhere to this precaution may lead to burns.

⚠ CAUTION

- Since the air compressor has the capacity to automatically start and stop when the Start switch has been pressed, press the Stop switch and turn off the main power supply prior to inspecting the inside of the air compressor.
- If the ambient temperature is above 104° F, the pressure indicated on the digital display may not read 0 psig, even if the air receiver has been de-pressurized. Ventilate to lower the ambient temperature.
- In the case of a power failure and/or electric storm, ensure that the main power supply has been turned off. Pay attention that residual pressure may exist since there is no digital display.

Maintenance and Inspection

■ Daily inspections of the SRL air compressor are imperative to long safe operation. Review the total operating hours on the control panel of the air compressor with the operation time schedule shown on the table below and carry out the inspection at the proper time intervals.
■ Maintenance and inspection time interval indicates the time for maintenance and inspection, not the guaranteed time of the air compressor or parts.

【122PSIG Model】

Component	Inspection Instructions	Maintenance and Inspection Time Interval						Remarks
		Daily	Every 500 Hours or 2 Months	Every 2,500 Hours or 1 Year	Every 5,000 Hours or 2 Years	Every 10,000Hours or 4 Years	Every 20,000Hours or 8 Years	
Air Receiver Tank (Option)	Drain accumulated condensate in air receiver.	○						
Accumlation of dirt of dust	Check or clean.	○						
Complete Air Compressor	Inspect for excessive noise and vibration.	○						Refer to page 25.
Safety Relief Valve	Inspect operation.	○						Replace the safety relief valve if there is any damage.
Pressure Sensor	Inspect operation and pressure display confirm.	○						Replace the sensor if there is any damage.
Check Valve	Inspect for leaks or replace.	○				●		
Ventilating Fan	Inspect or replace the ventilating fan.	○				●		Refer to page 26.
Bolts, Nuts & Screws	Inspect and tighten any loose items.		○					Refer to page 26.
Intake Air Filter	Replace a dirty or clogged filter.		○	●			◎	Refer to page 26.
Sirocco Fan & Scroll Fin	Clean the dirt off these components.					○	◎	
Scroll Bearing	Grease or inspect the bearing.					○	◎	Replace the scroll head if there is any damage with bearing.
Tip Seal & Face Seal	Replace the seals.					●	◎	
Bearings	Inspect the bearings.					○	◎	Replace the scroll head if there is any damage with bearings.
Scroll Head	Replace the scroll head.						●	
Rubber Hose	Inspect for leaks.			○	●			Replace the rubber hose if there is any damage.
V-Belts	Inspect, adjust and/or replace a loose or damage v-belt			○		●		Refer to page 27.
Electromagnetic Contactor	Inspect or replace.			○		●		
Rubber Vibration Isolator Pads	Inspect for any damage and/or hardness.					○		Replace the pads if there is any damage.
Electric Main Motor	Inspect for any damage.					○		Replace the motor if there is any damage.
Coolers	Clean the dirt off or replace.					○	●	

Maintenance and Inspection (continued)

【145PSIG Model】

Component	Inspection Instructions	Maintenance and Inspection Time Interval						Remarks
		Daily	Every 500 Hours or 2 Months	Every 2,500 Hours or 1 Year	Every 5,000 Hours or 2 Years	Every 10,000Hours or 4 Years	Every 20,000Hours or 8 Years	
Air Receiver Tank (Option)	Drain accumulated condensate in air receiver.	○						
Accumlation of dirt of dust	Check or clean.	○						
Complete Air Compressor	Inspect for excessive noise and vibration.	○						Refer to page 25.
Safety Relief Valve	Inspect operation.	○						Replace the safety relief valve if there is any damage.
Pressure Sensor	Inspect operation and pressure display confirm.	○						Replace the sensor if there is any damage.
Check Valve	Inspect for leaks or replace.	○			●			
Ventilating Fan	Inspect or replace the ventilating fan.	○				●		Refer to page 26.
Bolts, Nuts & Screws	Inspect and tighten any loose items.		○					Refer to page 26.
Intake Air Filter	Replace a dirty or clogged filter.		○	●		◎		Refer to page 26.
Sirocco Fan & Scroll Fin	Clean the dirt off these components.				○	◎		
Scroll Bearing	Grease or inspect the bearing.				○	◎		Replace the scroll head if there is any damage with bearing.
Tip Seal & Face Seal	Replace the seals.				●	◎		
Bearings	Inspect the bearings.				○	◎		Replace the scroll head if there is any damage with bearings.
Scroll Head	Replace the scroll head.					●		
Rubber Hose	Inspect for leaks.			○	●			Replace the rubber hose if there is any damage.
V-Belts	Inspect, adjust and/or replace a loose or damage v-belt			○		●		Refer to page 27.
Electromagnetic Contactor	Inspect or replace.			○		●		
Rubber Vibration Isolator Pads	Inspect for any damage and/or hardness.					○		Replace the pads if there is any damage.
Electric Main Motor	Inspect for any damage.					○		Replace the motor if there is any damage.
Coolers	Clean the dirt off or replace.					○	●	

※ ○ represents the periodic inspection period during operation or after parts have been replaced and a ● represents the parts replacement period.
※ ◎ represents parts that should be replaced at the same time as the scroll head replacement.
※ Operation time on the control panel digital display is the total running hours of the SRL air compressor.
※ The maintenance and service time intervals shown are for normal operation. The inspection period may differ slightly for different operating conditions, such as high temperature and/or humidity. If the operating conditions are severe and/or unsatisfactory, reduce the inspection time intervals.
※ Carry out the maintenance and inspections based on the recommended total operating hours and/or calendar time in the maintenance schedule, whichever occurs first.
※ It is recommended to request maintenance and inspection from the local Hitachi distributor for any items in the shaded area ( ).

Maintenance and Inspection (continued)

⚠ WARNING

- The inside of the air compressor may be extremely hot right after the operation. Therefore, wait at least 30 minutes before performing the maintenance and inspection.
- Operating the air compressor continuously without performing maintenance and inspection may result in serious accidents and/or damage to the air compressor.
- Turn off the main power supply and vent the pressurized air in the air compressor prior to performing any maintenance or inspections. This will prevent electric shock and/or personal injury.
- The maintenance and inspection schedule is not guaranteed and is designed for normal operating conditions. The maintenance and inspection schedule may change, depending on the operating conditions. (temperature, humidity, high dust, etc.). If the operating conditions are severe, use a more frequent maintenance and inspection time interval to prevent accidents and/or damage to the air compressor.
- If the operating conditions cause the air compressor to operate in excessive temperatures, perform maintenance and inspection more frequently.
- Do not disassemble the scroll head. Disassembling the scroll head may lead to air compressor failure and/or accidents.

When the maintenance or overhaul time arises, the digital display will show the following messages: "A.nnT" or "A.OH" (please see page 30 for message indication) and the maintenance alarm light will illuminate. Press the Screen Shift Switch and check whether the air compressor package or Scroll Head requires maintenance or an overhaul. The operation time of the components that are in need of maintenance or overhaul will flash in red.

Note: There may be instances where both air compressor package and the Scroll Head require maintenance.

Maintenance Period Notification

EX. Pressure Indication — Alternately flashes — Maintenance Indication

Overhaul Period Notification

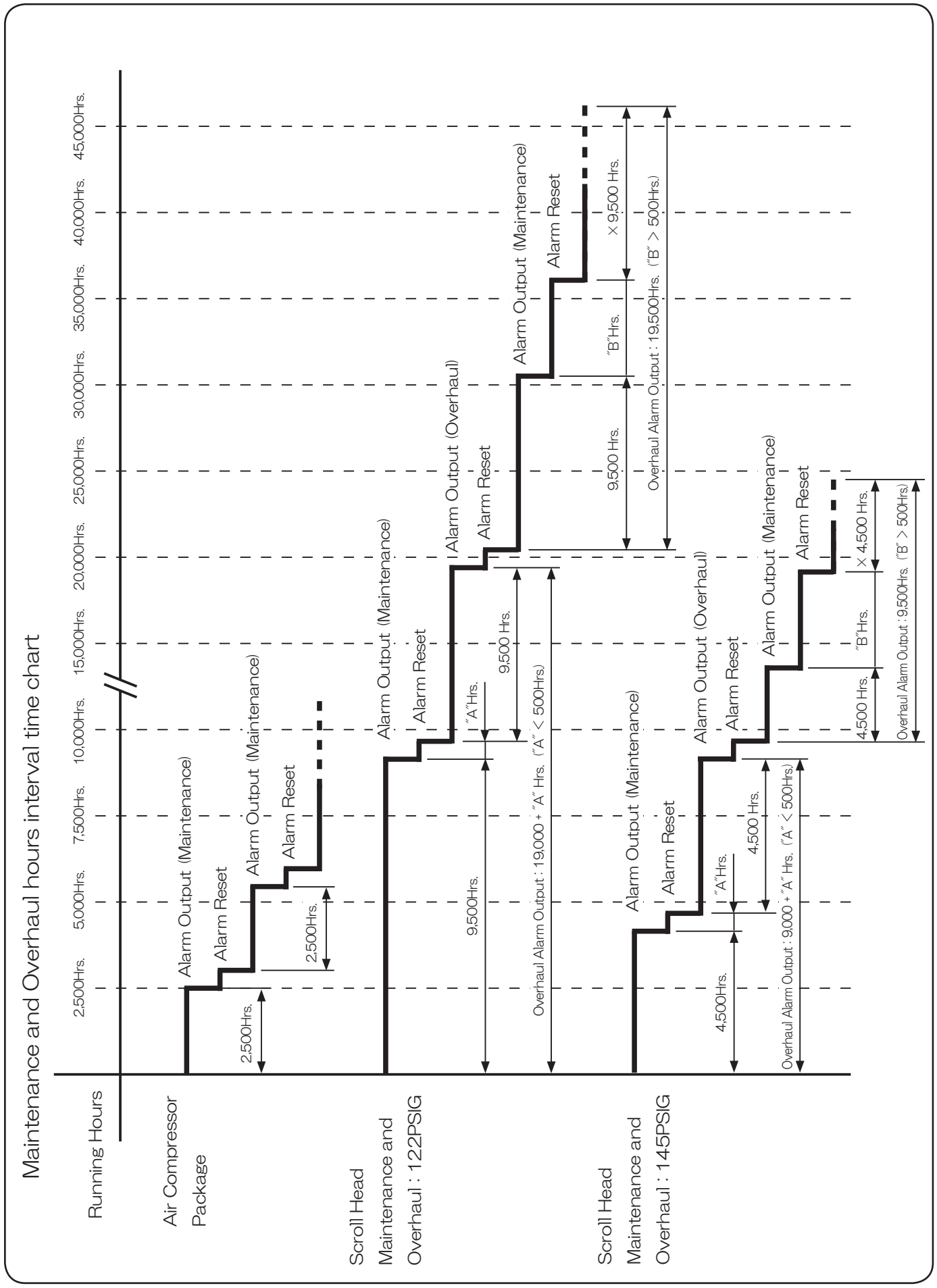
EX. Pressure Indication — Alternately flashes — Overhaul Indication

- The Maintenance Alarm Light will illuminate for the air compressor package every 2,500 hours. (the same for both 122 & 145 psig models).
- Maintenance Alarm Light will light for the Scroll Head at the hours detailed below:
  122PSIG model : 9,500 hours
  145PSIG model : 4,500 hours
  and the overhaul warning:
  122PSIG model : 19,000 - 19,500 hours
  145PSIG model : 9,000 - 9,500 hours

⚠ CAUTION

- Be sure to perform all maintenance and overhauls according to the maintenance schedule. Contact the local Hitachi distributor, in order to reset the warning.

Operation (continued)



Maintenance and Inspection (continued)

Daily Maintenance and Inspection Procedures

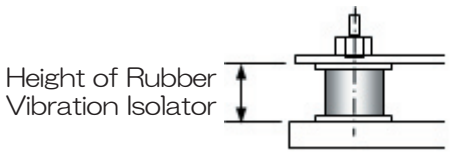
● Draining the Condensate
At the end of the day, turn off the main power supply and open the condensate drain valve to remove the accumulated moisture from the air receiver. If the air compressor operates 24 hours a day, remove the condensate once per day.

● Inspection and Cleaning
Make sure that there is no dirt and/or clogging of the intake air filters and that no accumulation of dust has occurred around and inside the package.

● Excessive Vibration and Noise
If there is excessive vibration and/or noise, please verify the possible conditions in the table below.

Possible Consequence	Corrective Action
The transport fixtures (Shipping bolt and fixture) have not been removed.	Remove the transport fixtures. (Refer to page 4)
There is a gap between the base of the air compressor and the ground.	Insert the attached rubber vibration isolator pads to eliminate the gap (Refer to page 6).
Loose bolts and screws.	Re-tighten any loose bolts and screws.
Any moving components have come in contact with other components.	Contact the local Hitachi distributor.
Scroll head and/or electric motor have excessive viblation and/or sound.	
The installation area cannot handle the weight load of the air compressor.	Relocate the air compressor to an area that can sufficiently handle the weight load or strengthen the existing installation area.
The rubber vibration isolators have deteriorated.	Replace the rubber vibration isolators as shown in the figure below or contact the local Hitachi distributor.
Check Valve has failed.	Replace the check valve or contact the local Hitachi distoributor.
Abnormal noise from V-belt.	Contact the local Hitachi distributor.

● When to Replace the Rubber Vibration Isolators.
If the height of any one of rubber vibration isolator is less than 1.142inch (29mm), contact the local Hitachi distributor to replace all of the rubber vibration isolators at the same time.



● Check Valve Inspection
To inspect the check valve, stop the air compressor. If the air compressor reverse rotates for 3 seconds or longer when it stops, the check valve is leaking and should be replaced. Contact the local Hitachi distributor for replacement.

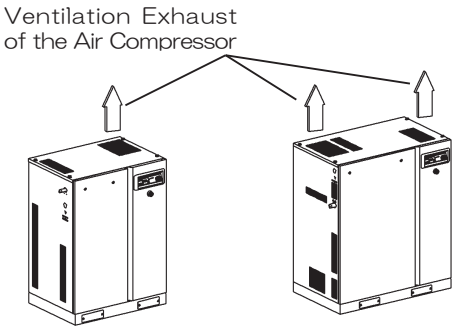
● Safety Relief Valve Inspection
Open the front door of the air compressor and verify that the safety relief valve is operating properly by lightly pulling the spindle of the safety relief valve when the air compressor is near maximum pressure(122psig or 145psig). Make sure that the safety relief valve dose not operate below the maximum pressure.

⚠ CAUTION

- The safety relief valve is an important safety device that prevents the over-pressurization of the air compressor and damage to the air compressor components. To prevent damege of these components and/or accidents, carefully inspect the operation of the safety relief valve.
- When checking the functionality of the safety relief valve, a loud noise may occur during discharge. Prepare for the discharge noise by wearing earplugs in order to prevent a personal injury. It is also possible that dust may be dispersed by the discharged air, so ensure that protection glasses are worn.
- Contact the local Hitachi distributor if the safety relief valve needs to be adjusted.

Maintenance and Inspection (continued)

● Inspection of the Ventilating Fan
Verify that there is a discharge from the air exhaust port of the air compressor to confirm that the ventilating fans operate properly.



500 Hours and/or 2 Months Maintenance and Inspection Procedures

⚠ WARNING

● When performing the inspection and cleaning, make sure to press the STOP switch, turn off the main power supply and open all the valves so that no residual pressure remains.
● The inside of the air compressor may be extremely hot right after the operation. Therefore, wait at least 30 minutes before performing the inspection and cleaning.

● Inspection for any Loose Bolts, Nuts & Screws
Check all of the bolts, nuts & screws to verify that they are not loose. If any of these components are loose, completely tighten them with a wrench or screwdriver.

● Intake Air Filter Inspection
① Open the front door of the air compressor and remove the wing nut for the intake filter as shown in Fig.1.

② Remove the intake air filter and the holding plate. Replace the intake air filter and filter spacer if required.

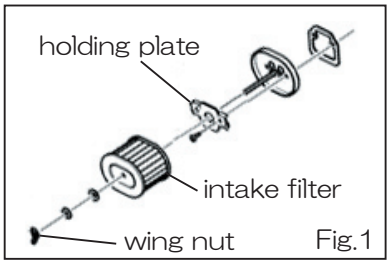


Fig.1

⚠ CAUTION

● Wear the proper eye or body protection when servicing the air compressor to prevent inhaling harmful particles, such as dust.
● Replace the intake air filter and filter spacer, if the intake air filter is considerably dirty and/or clogged. This will prevent the intake air filter from causing compressed air reduction, excessive temperature rise, excessive vibration and sound and/or damage to the air compressor.
● Do not allow any foreign objects to enter the intake port of the scroll head during inspection of the intake air filter. This will prevent damage to the scroll head.

2,500 Hours and/or Annual Maintenance and Inspection Proceedures

⚠ WARNING

● When performing the inspection and cleaning, make sure to press the STOP switch, turn off the main power supply and open all the valves so that no residual pressure remains.
● The inside of the air compressor may be extremely hot right after the operation. Therefore, wait at least 30 minutes before performing the inspection and cleaning.

Maintenance and Inspection (continued)

● V-belt Inspection
Verify that there is no abnormal noise during operation. Loose V-belts can slip creating noise and may lead to damage to the air compressor.
※ Contact the local Hitachi distributor if V-belt adjustment is required.

● Intake Air Filter Replacement
Replace the intake air filter every 2,500 hours or every year. Failure to replace the intake air filter each year may cause compressed air reduction, excessive temperature rise, excessive vibration and sound and/or damage to the air compressor.

⚠ CAUTION

● Make sure that oil and dust do not adhere to the V-belt as they will cause slippage, excessive noise and/or damage to the air compressor.
● Wear the proper eye or body protection when servicing the air compressor to prevent inhaling harmful particles, such as dust.

5,000 Hours and/or 2 years Maintenance and Inspection Proceedures

● Rubber Hose Replacement
Replace the rubber hose every 5,000 hours or 2 years. Contact the local Hitachi distributor for replacement.

10,000 Hours and/or 4 Years Maintenance and Inspection Procedures ・・・・ 122PSIG Model

5,000 Hours and/or 2 Years Maintenance and Inspection Procedures ・・・・・ 145PSIG Model

It is recommended to call the local Hitachi distributor for these maintenance and inspection items.
During this service, replace the following parts:
(1) Tip seal
Wear of the tip seal obstructs the appropriate amount of compression and causes excessive temperature rise, etc. It can lead to a temperature error「E.TP.」to show on the display.
(2) Grease the scroll bearing
Over time the grease in the scroll bearing deteriorates and requires replacement, if the bearing is not cleaned and re-greased at the 10,000 or 5,000 hour service requirement, serious damage to the air compressor may occur. If the scroll does not rotate smoothly and/or a large amount of grease leaks from the bearing contact the local Hitachi distributor immediately.
(3) Check valve
The seating section and valve body of the check valve will wear over time, causing a malfunction to the check valve and damage to the air compressor.
(4) Ventilating Fan, Electromagnetic Contactor and V-belt.

⚠ WARNING

【122PSIG Model】
● Four (4) years or 10,000 hours is the recommended replacement period during normal operation. Do not operate longer than 10,000 hours without replacing these components, as they will cause damage to the air compressor and/or accidents.

【145PSIG Model】
● Two (2) years or 5,000 hours is the recommended replacement period during normal operation. Do not operate longer than 5,000 hours without replacing these components, as they will cause damage to the air compressor and/or accidents.

Maintenance and Inspection (continued)

20,000 Hours and/or 8 Years Maintenance and Inspection Procedures •••• 122PSIG Model

10,000 Hours and/or 4 Years Maintenance and Inspection Procedures •••• 145PSIG Model

It is recommended to call the local Hitachi distributor for these maintenance and inspection items, including the replacement of the scroll head (see page 21 and/or 22).

⚠ WARNING

【122PSIG Model】

● Eight (8) years or 20,000 hours is the recommended replacement period during normal operations, Do not operate longer than 20,000 hours without replacing these components, as they will cause damage to the air compressor and/or accidents.

【145PSIG Model】

● Four (4) years or 10,000 hours is the recommended replacement period during normal operations, Do not operate longer than 10,000 hours without replacing these components, as they will cause damage to the air compressor and/or accidents.

Long Term Storage - SRL Air Compressor Out of Service for Over One Month

(1) Perform the following steps every month to prevent reduction in the grease life from moisture accumulation:

- Idle the air compressor for longer than 30 minutes.

(2) Perform the following procedure every six (6) months to prevent rusting of the air compressor:

1. Operate the air compressor in a no-load state for 10 minutes.
2. Increase the pressure of the air compressor to verify correct operation (see page 19).
3. Operate the air compressor for another 10 minutes in a no-load state before stopping the air compressor.
4. Completely drain the condensate in the air receiver.

(3) Storage Location

Store the air compressor in the one of the following areas:

1. Storage area with minimal moisture.
2. Storage area that is not subject to contaminants and/or dust.

Troubleshooting

● Use the following table for the proper corrective actions to any of the SRL air compressor alarms.

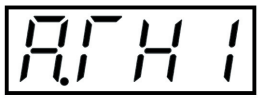
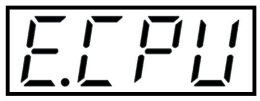
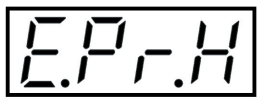
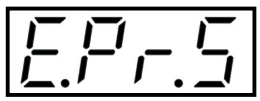
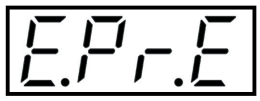
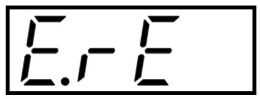
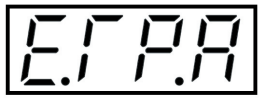
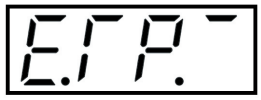
⚠ WARNING

- When performing the troubleshooting, make sure to press the Stop switch, turn off the main power supply and open all the valves so that no residual pressure remains.
- The inside of the air compressor may be extremely hot right after the operation. Therefore, wait at least 30 minutes before performing the troubleshooting.

Type of Problem	Probable Cause	Corrective Action
Electric Motor will not run	Power supply is turned off	Turn on the power supply.
	Wires are broken	Replace and/or fix the wiring.
	Phase reversal connection	Reconnect the wiring (see page 9).
	Printed circuit board failure	Replace the printed circuit board (Please contact the local Hitachi distributor).
	Motor breaker trips (″E.CO.″ is indicated on digital display)	Please contact the local Hitachi distributor to eliminate the probable cause and reset the thermal relay.
	Scroll head and/or electric motor failure	Replace the scroll head and/or electric motor (Please contact the local Hitachi distributor).
	Excessive voltage drop-Improper wire thickness	Replace with a properly sized wire.
	Power supply panel circuit breaker has tripped	Eliminate the cause of failure and reset the circuit breaker (Please contact the local Hitachi distributor).
	Power supply panel fuse is damaged	Replace the fuse.
	Emergency stop switch has been pressed	Reset the emergency stop switch.
Low discharge pressure	Leak in the internal air compressor piping	Re-tighten all of the air compressor pipe fittings.
	Safety relief valve leaks	Replace the safety relief valve.
	Clogged and/or dirty intake air filter	Replace the intake air filter element.
	Check valve failure	Replace the check valve (Please contact the local Hitachi distributor).
High discharge pressure	Printed circuit board failure	Replace the printed circuit board (Please contact the local Hitachi distributor).
	Electromagnetic contactor failure	Replace the electromagnetic contactor (Please contact the local Hitachi distributor).
Excessive noise is generated	Improper installation	Install the air compressor on level ground according to the installation procedure on page 6.
	Transport fixtures were not removed	Remove the transport fixtures (see page 4).
	Rubber vibration isolators are worn	Replace the rubber vibration isolators (Please contact the local Hitachi distributor).
	The SRL reverse rotates for longer than 3 seconds after it has stopped	Replace the check valve (Please contact the local Hitachi distributor).
	Loose V-belt	Re-tighten and/or replace the V-belt.
	Scroll head failure	Replace the scroll head (Please contact the local Hitachi distributor).
	Electric motor failure	Replace the electric motor (Please contact the local Hitachi distributor).
Overheating of the Electric Motor	Motor bearing has failed and/or the seal has shows wear	Replace the electric motor (Please contact the local Hitachi distributor).
	Short Circuited Motor	Replace the electric motor (Please contact the local Hitachi distributor).

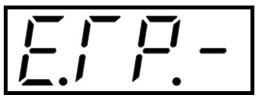
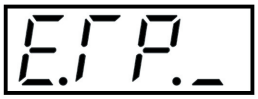
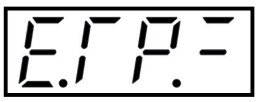
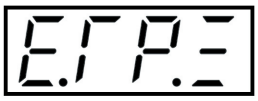
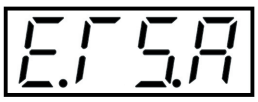
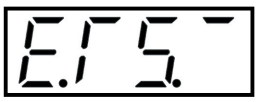
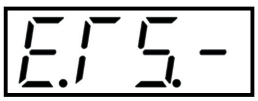
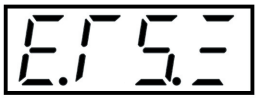
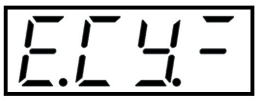
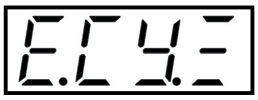
Troubleshooting (continued)

Digital Display Error and Alarm Indications (Default function)

Digital Display	Display	Error/Alarm Description	Corrective Action
	A.THI	High ambient temperature alarm	Verify that the ambient temperature is below 104 ° F and reset the air compressor. If the error re-occurs and the ambient temperature is below 104 ° F, contact the local Hitachi distributor.
	A.nnT	Maintenance alarm	This alarm is displayed when the total operating hours exceeds 2,500 hours. Carry out inspection and maintenance of the air compressor.
		Scroll head maintenance alarm	This alarm is displayed when the total operating hours exceeds 9,500 hours (145PSIG Model : 4,500 hours). Carry out inspection and maintenance of the scroll head.
	A.OH	Overhaul alarm	This alarm is displayed when the total operating hours exceeds between 19,000 to 19,500 hours (145PSIG Model : between 9,000 to 9,500 hours). Carry out overhaul of the Scroll Head.
	E.CPU	Microcomputer error	Turn off the main power supply to reset the air compressor and turn the power back on. If the error re-occurs, replace the Printed Circuit Board. (Contact the local Hitachi distributor.)
	E.Pr.H	Air compressor high pressure error	The Electromagnetic Contactor, Printed Circuit Board, Pressure Sensor or another electrical component has failed. Contact the local Hitachi distributor.
	E.Pr.S	Pressure sensor error	Tighten the pressure sensor wire and reset the air compressor. If the error re-occurs, replace the pressure sensor (Please contact the local Hitachi distributor).
	E.Pr.E	Air compressor high pressure emergency stop error	The Printed Circuit Board has failed. Contact the local Hitachi distributor to replace the Printed Circuit Board.
	E.rE	Phase reversal error	Change two of the three incoming power cables.
		Damage to reversal phase wiring	Confirm that there is no disconnection or damage to the phase reversal wiring. If the error re-occurs, contact the local Hitachi distributor.
	E.Co. ⁻	Upper main motor thermal overload error	Please contact the local Hitachi distributor to eliminate the probable cause and reset the main motor thermal overload error.
	E.Co. -	Middle main motor thermal overload error	
	E.Co. _	Lower main motor thermal overload error	
	E.Co. =	All main motors thermal overload error (7.5/11M6)	
	E.Co. ≡	All main motors thermal overload error (16.5M6)	
	E.TP.A	High ambient temperature error	Verify that the ambient temperature is below 104 ° F. Turn off the main power supply to reset the air compressor and turn the power back on. If the error re-occurs and the ambient temperature is below 104 ° F, contact the local Hitachi distributor.
	E.TP. ⁻	Upper scroll head high temperature error	

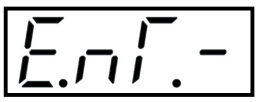
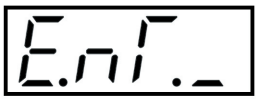
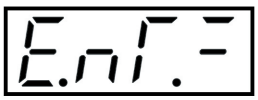
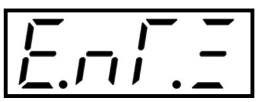
Troubleshooting (continued)

Digital Display Error and Alarm Indications (Default function)

Digital Display	Display	Error/Alarm Description	Corrective Action
	E.TP.-	Middle scroll head high temperature error	Verify that the ambient temperature is below 104 ° F. Turn off the main power supply to reset the air compressor and turn the power back on. If the error re-occurs and the ambient temperature is below 104 ° F, contact the local Hitachi distributor.
	E.TP._	Lower scroll head high temperature error	
	E.TP.=	All scroll heads high temperature error (7.5/11M6)	
	E.TP.≡	All scroll heads high temperature error (16.5M6)	
	E.TS.A	Ambient temperature sensor error	Check the temperature sensors and the wiring to verify that they are not broken and the connectors are not disconnected. Reset the air compressor and if the error re-occurs, contact the local Hitachi distributor.
	E.TS.-	Upper scroll head temperature sensor error	
	E.TS.-	Middle scroll head temperature sensor error	
	E.TS._	Lower scroll head temperature sensor error	
	E.TS.=	All scroll heads temperature sensor error (7.5/11M6)	
	E.TS.≡	All scroll heads temperature sensor error (16.5M6)	
	E.CY.-	Upper main motor excessive ON-OFF cycle frequency	Turn off the main power supply to reset the air compressor and turn the power back on. Reset the pressure bandwidth in order to lower the frequency of ON-OFF cycles.
	E.CY.-	Middle main motor excessive ON-OFF cycle frequency	
	E.CY._	Lower main motor excessive ON-OFF cycle frequency	
	E.CY.=	All main motors excessive ON-OFF cycle frequency (7.5/11M6)	
	E.CY.≡	All main motors excessive ON-OFF cycle frequency (16.5M6)	

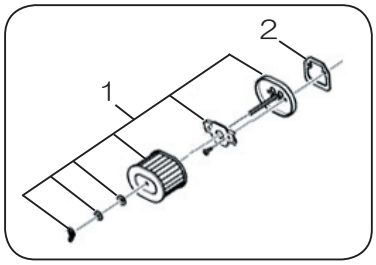
Troubleshooting (continued)

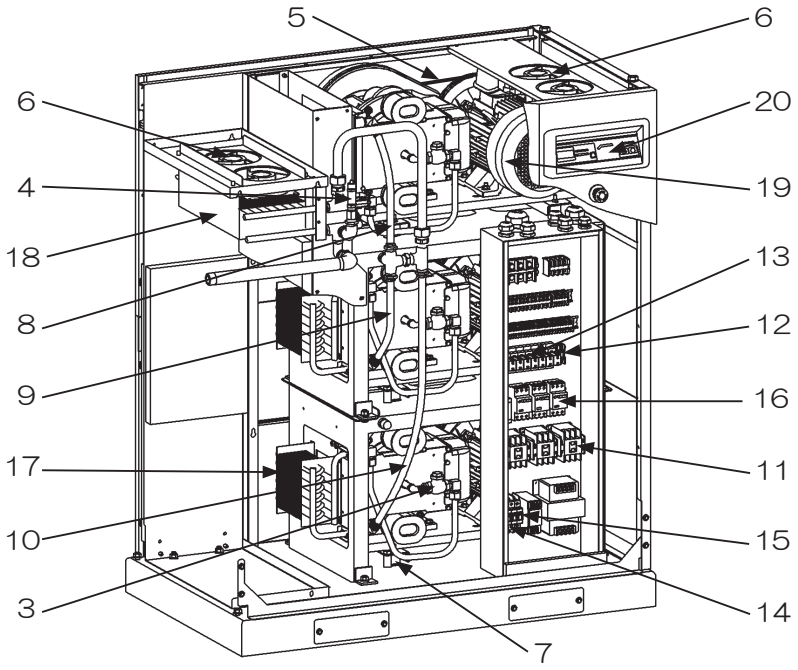
Digital Display Error and Alarm Indications (Optional function)

Digital Display	Display	Error/Alarm Description	Corrective Action
	A.PLo	Air Compressor low pressure alarm	If pressure falls below the set value, this alarm is displayed while the air compressor continues to operate.
	E.nT.¯	Upper scroll head maintenance shutdown	If the total operating hours exceeds the required maintenance interval, the air compressor ceases operation and this alarm is displayed.
	E.nT.-	Middle scroll head maintenance shutdown	
	E.nT._	Lower scroll head maintenance shutdown	
	E.nT.=	All scroll heads maintenance shutdown (7.5/11M6)	
	E.nT.≡	All scroll heads maintenance shutdown (16.5M6)	

NOTE; For other error indications, please contact the local Hitachi distributor.

Parts List



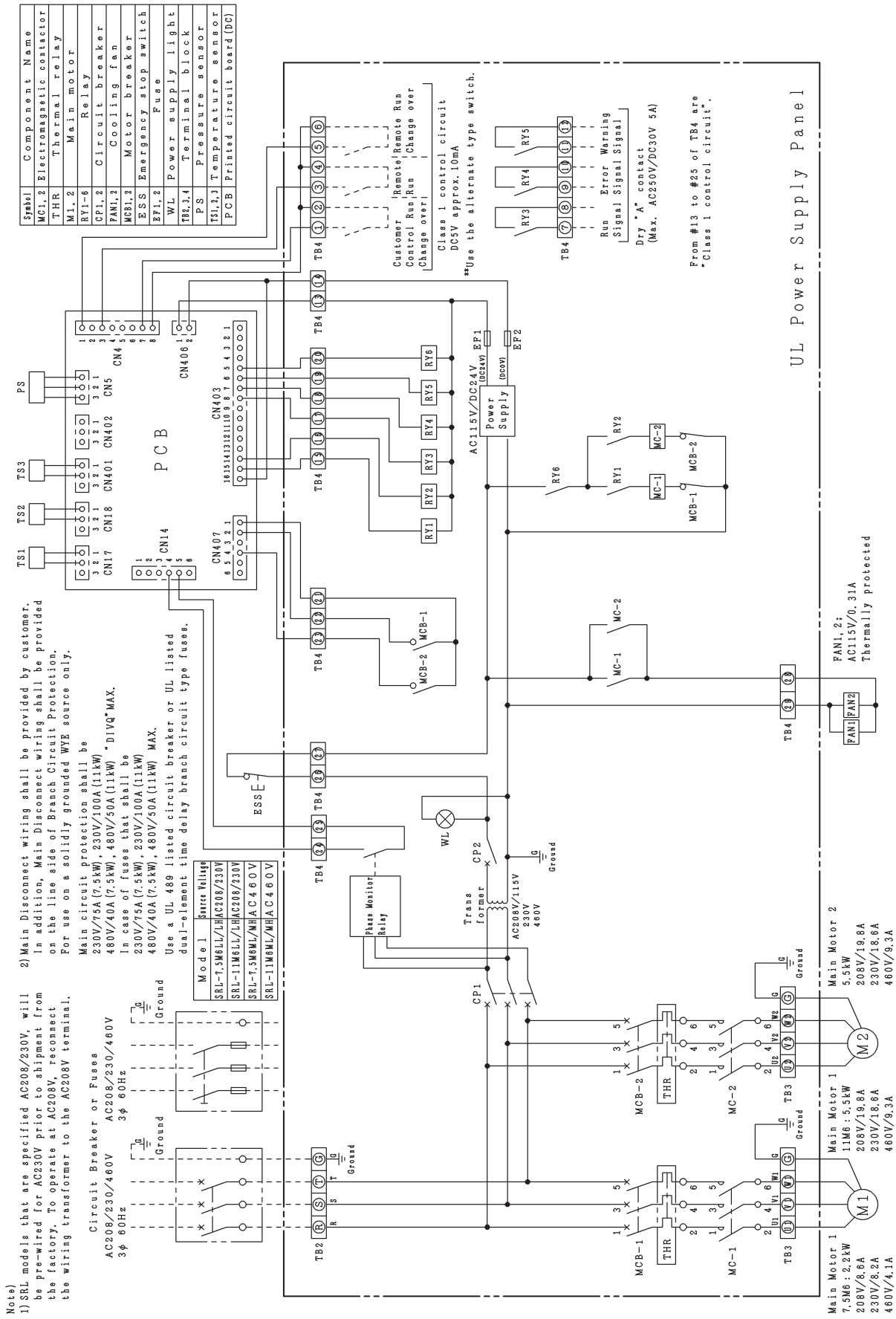


No.	Parts Name	Parts No.	Quantity/Unit											
			SRL-7.5M6				SRL-11M6				SRL-16.5M6			
			LL	ML	LH	MH	LL	ML	LH	MH	LL	ML	LH	MH
1	Intake Air Filter	758334	3	3	3	3	4	4	4	4	6	6	6	6
2	Intake Air Filter Gasket	741227	3	3	3	3	4	4	4	4	6	6	6	6
3	Check Valve	742044	2	2	2	2	2	2	2	2	3	3	3	3
4	Safety Relief Valve (for 122psig)	742323	1	1	-	-	1	1	-	-	1	1	-	-
	Safety Relief Valve (for 145psig)	742324	-	-	1	1	-	-	1	1	-	-	1	1
5	V-Belt	742231	1	1	3	3	-	-	4	4	-	-	6	6
	V-Belt	740751	2	2	-	-	4	4	-	-	6	6	-	-
6	Ventilating Fan	742326	2	2	2	2	2	2	2	2	4	4	4	4
7	Rubber Vibration Isolator	754472	4	4	4	4	-	-	-	-	-	-	-	-
	Rubber Vibration Isolator	755661	4	4	4	4	8	8	8	8	12	12	12	12
8	Rubber Hose	743493	1	1	1	1	1	1	1	1	1	1	1	1
9	Rubber Hose	743494	1	1	1	1	1	1	1	1	1	1	1	1
10	Rubber Hose	742193	-	-	-	-	-	-	-	-	1	1	1	1
11	Electromagnetic Contactor	760200	1	1	1	1	-	-	-	-	-	-	-	-
	Electromagnetic Contactor	760201	1	1	1	1	2	2	2	2	3	3	3	3
12	Fuse (for UL Power Supply Panel)	742352	2	2	2	2	2	2	2	2	2	2	2	2
13	Relay	760207	6	6	6	6	6	6	6	6	7	7	7	7
14	Circuit breaker (No.1) (for AC208/230V)	760198	1	-	1	-	1	-	1	-	1	-	1	-
	Circuit breaker (No.1) (for AC460V)	760199	-	1	-	1	-	1	-	1	-	1	-	1
15	Circuit breaker (No.2)	742351	1	1	1	1	1	1	1	1	1	1	1	1
16	Motor Breaker (for AC208/230V)	760202	1	-	1	-	-	-	-	-	-	-	-	-
		760203	1	-	1	-	2	-	2	-	3	-	3	-
	Motor Breaker (for AC460V)	760204	-	1	-	1	-	-	-	-	-	-	-	-
		760205	-	1	-	1	-	2	-	2	-	3	-	3
17	Primary Cooler	743384	2	2	2	2	2	2	2	2	3	3	3	3
18	Secondary Cooler	743385	1	1	1	1	1	1	1	1	1	1	1	1
19	Electric Motor (IE3 3HP)	760195	1	1	1	1	-	-	-	-	-	-	-	-
	Electric Motor (IE3 7.5HP)	760197	1	1	1	1	2	2	2	2	3	3	3	3
20	Printed Circuit Board	760210	1	1	1	1	1	1	1	1	-	-	-	-
		760211	-	-	-	-	-	-	-	-	1	1	1	1
-	Pressure Sensor	740374	1	1	1	1	1	1	1	1	1	1	1	1
-	Temperature Sensor	743274	3	3	3	3	3	3	3	3	4	4	4	4
-	Orifice Fitting	756504	1	1	1	1	1	1	1	1	1	1	1	1

Note: Contact the local Hitachi distributor for any parts not mentioned on the list provided above.

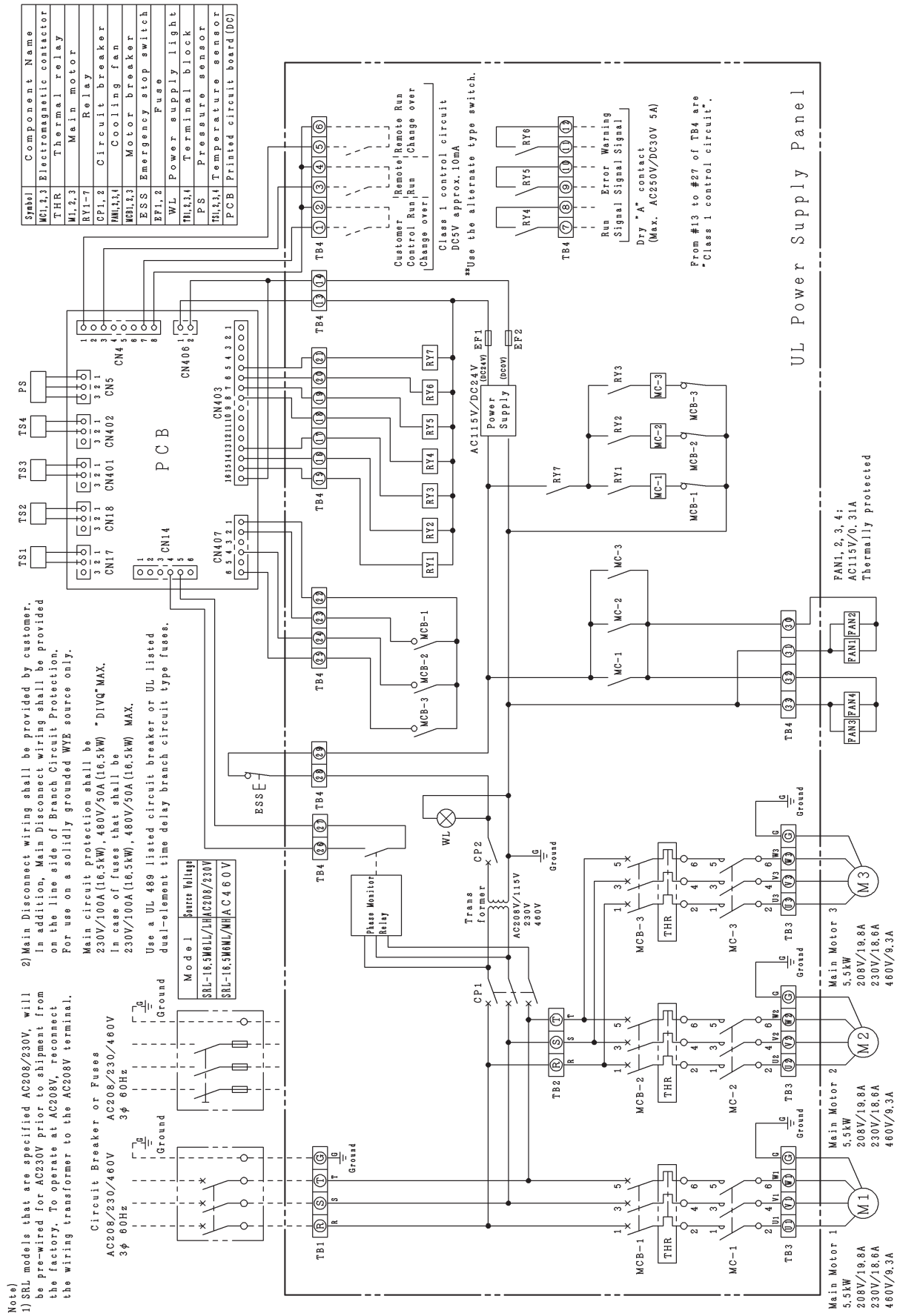
Wiring Diagram

SRL-7.5M6LL/ML/LH/MH, SRL-11M6LL/ML/LH/MH



Wiring Diagram (continued)

SRL-16.5M6LL/ML/LH/MH



Standard Specifications

Model	SRL-7.5M6LL	SRL-11M6LL	SRL-16.5M6LL
Output HP(kW)	10 (7.7)	15 (11)	22 (16.5)
Maximum Rated Pressure PSIG (MPa)	122 (0.84)		
Factory Pressure Settings PSIG (MPa)	ON : 110 (0.76) − OFF : 122 (0.84)		
Operating Ambient Temperature Range ° F (℃)	32 − 104 (0 − 40)		
Free Air Delivery CFM (L/min)	30.2 (855)	43.1 (1,220)	64.6 (1,830)
Power Requirements V/ Φ /Hz	AC 208 or 230/3-ph/60		
Main Electric Motor Amp Draw (208/230) A	8.6 + 19.8/8.2 + 18.6	19.8 × 2/18.6 × 2	19.8 × 3/18.6 × 3
Total Package Amp Draw (208/230) A	30.6/28.7	40.9/38.5	61.1/57.5
Scroll Head Revolutions min^{-1}	3,415 (2.2kW) 3,340 (5.5kW)	3,340	3,340
Compressed Air Discharge Connection Size	″3/4″ NPT Male		″1″ NPT Male
Inside Air Receiver	Without (External air receiver should exceed 80 Gallons)		
Package Dimensions [L × W × H] Inch (mm)	38.58 × 27.95 × 52.95 (980 × 710 × 1,345)		50.39 × 30.31 × 58.86 (1,280 × 770 × 1,495)
Weight lb (kg)	814 (369)	891 (404)	1,283 (582)
Sound Level dB[A]	57	59	61

Model	SRL-7.5M6ML	SRL-11M6ML	SRL-16.5M6ML
Output HP(kW)	10 (7.7)	15 (11)	22 (16.5)
Maximum Rated Pressure PSIG (MPa)	122 (0.84)		
Factory Pressure Settings PSIG (MPa)	ON : 110 (0.76) − OFF : 122 (0.84)		
Operating Ambient Temperature Range ° F (℃)	32 − 104 (0 − 40)		
Free Air Delivery CFM (L/min)	30.2 (855)	43.1 (1,220)	64.6 (1,830)
Power Requirements V/ Φ /Hz	AC 460/3-ph/60		
Main Electric Motor Amp Draw A	4.1 + 9.3	9.3 × 2	9.3 × 3
Total Package Amp Draw A	14.4	19.3	28.8
Scroll Head Revolutions min^{-1}	3,415 (2.2kW) 3,340 (5.5kW)	3,340	3,340
Compressed Air Discharge Connection Size	″3/4″ NPT Male		″1″ NPT Male
Inside Air Receiver	Without (External air receiver should exceed 80 Gallons)		
Package Dimensions [L × W × H] Inch (mm)	38.58 × 27.95 × 52.95 (980 × 710 × 1,345)		50.39 × 30.31 × 58.86 (1,280 × 770 × 1,495)
Weight lb (kg)	814 (369)	891 (404)	1,283 (582)
Sound Level dB[A]	57	59	61

Model	SRL-7.5M6LH	SRL-11M6LH	SRL-16.5M6LH
Output HP(kW)	10 (7.7)	15 (11)	22 (16.5)
Maximum Rated Pressure PSIG (MPa)	145 (1.0)		
Factory Pressure Settings PSIG (MPa)	ON : 115 (0.79) − OFF : 145 (1.0)		
Operating Ambient Temperature Range ° F (℃)	32 − 104 (0 − 40)		
Free Air Delivery CFM (L/min)	23.7 (670)	32.7 (925)	48.9 (1,385)
Power Requirements V/ Φ /Hz	AC 208 or 230/3-ph/60		
Main Electric Motor Amp Draw (208/230) A	8.6 + 19.8/8.2 + 18.6	19.8 × 2/18.6 × 2	19.8 × 3/18.6 × 3
Total Package Amp Draw (208/230) A	30.6/28.7	40.9/38.5	61.1/57.5
Scroll Head Revolutions min^{-1}	3,015 (2.2kW) 2,785 (5.5kW)	2,785	2,785
Compressed Air Discharge Connection Size	″3/4″ NPT Male		″1″ NPT Male
Inside Air Receiver	Without (External air receiver should exceed 80 Gallons)		
Package Dimensions [L × W × H] Inch (mm)	38.58 × 27.95 × 52.95 (980 × 710 × 1,345)		50.39 × 30.31 × 58.86 (1,280 × 770 × 1,495)
Weight lb (kg)	814 (369)	891 (404)	1,283 (582)
Sound Level dB[A]	57	59	61

Standard Specifications (continued)

Model		SRL-7.5M6MH	SRL-11M6MH	SRL-16.5M6MH
Output	HP(kW)	10 (7.7)	15 (11)	22 (16.5)
Maximum Rated Pressure	PSIG (MPa)	145 (1.0)		
Factory Pressure Settings	PSIG (MPa)	ON : 115 (0.79) − OFF : 145 (1.0)		
Operating Ambient Temperature Range	° F (℃)	32 − 104 (0 − 40)		
Free Air Delivery	CFM (L/min)	23.7 (670)	32.7 (925)	48.9 (1,385)
Power Requirements	V/ Φ /Hz	AC 460/3-ph/60		
Main Electric Motor Amp Draw	A	4.1 + 9.3	9.3 × 2	9.3 × 3
Total Package Amp Draw	A	14.4	19.3	28.8
Scroll Head Revolutions	min^{-1}	3,015 (2.2kW) 2,785 (5.5kW)	2,785	2,785
Compressed Air Discharge Connection Size		″3/4″ NPT Male		″1″ NPT Male
Inside Air Receiver		Without (External air receiver should exceed 80 Gallons)		
Package Dimensions	[L × W × H] Inch (mm)	38.58 × 27.95 × 52.95 (980 × 710 × 1,345)		50.39 × 30.31 × 58.86 (1,280 × 770 × 1,495)
Weight	lb (kg)	814 (369)	891 (404)	1,283 (582)
Sound Level	dB[A]	57	59	61

NOTE:
1. The capacity is the compressed air value for which the air quantity is discharged at maximum pressure and is converted to an atmospheric condition.
2. The sound level is measured at 59 in. in the front and at a height of 39 in. at full-load in an anechoic room.
3. It is necessary to add a remote air receiver with a volume that exceeds 80 Gallons.
4. The specification and design of the SRL air compressor may be subject to change without notice.
5. The package dimensions represent the enclosure panel dimensions.
6. The total package amp draw includes the amperage draw of the electric motor and ventilating fan of the air compressor package.

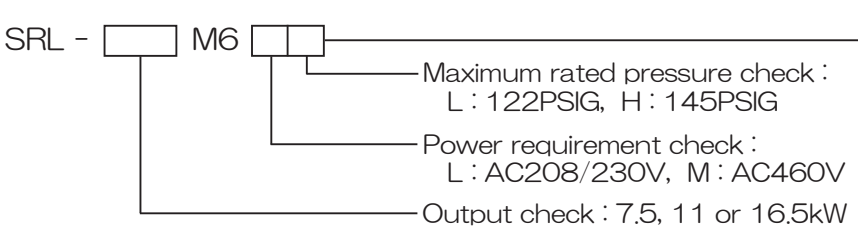
⚠ WARNING

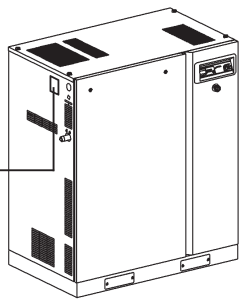
- Do not use the air compressor to compress any gas other than air.
  Using the air compressor to compress any gas other than air may lead to damage of the air compressor.
- SRL air compressors are not designed, intended or approved for breathing air applications. Hitachi does not approve specialized equipment for breathing air applications and assumes no responsibility or liability for compressors used for breathing air services.
- If the scroll air compressor is used for any important production equipment, it is highly recommended to utilize a back up air compressor.
  A back up air compressor will keep production running in the event of a failure to an air compressor.

Aftermarket Ordering Procedure

Ordering Replacement Parts

1. Use genuine HITACHI parts.
2. Verify the information on the compressor nameplate (see page 4) prior to contacting the local Hitachi distributor for parts and/or service.
3. Review the Parts List on page 33 prior to contacting the local Hitachi distributor.





Log Book

Log Book

Maintenance Logbook

Prior to operation, fill out the vital information in the table below. This information will be valuable during maintenance and inspection.

Model	SRL - M6 60 Hz
Serial No.	
Purchased date (MM/DD/YYYY)	/ /
Start Up Date (MM/DD/YYYY)	/ /
Local Hitachi Distributor Name	
Tel	

Maintenance and Inspection Logbook Table

Inspection date	Maintenance service date of completion (MM/DD/YYYY)	Next Inspection and service schedule date	Maintenance and inspection results					Initials of employee
			Intake air filter	Check valve	Rubber hose	Ventilating fan	Other	

Hitachi Industrial Equipment Systems Co., Ltd.