

# KOBELCO

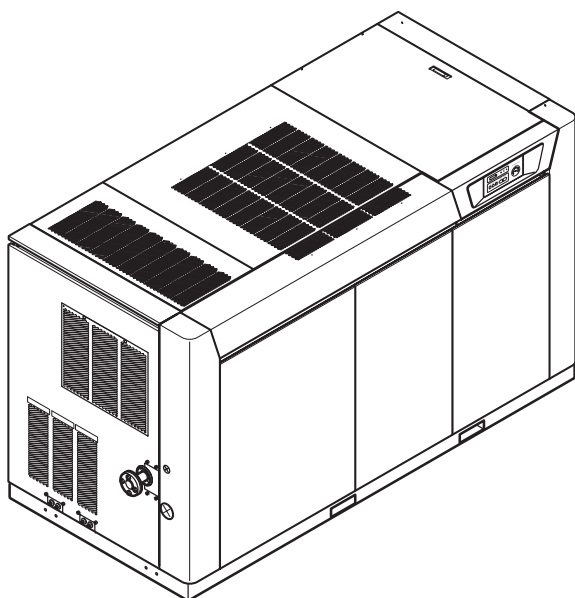
SMALL OIL-FLOODED SCREW COMPRESSOR

## Kobelion

SCREW COMPRESSOR

SG900A / SG900AD  
SG1230A / SG1230AD

### Instruction Manual



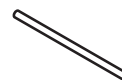
Thank you for your purchase of KOBELCO Small Oil-Flooded Screw Compressor "Kobelion".  
You are advised to read through this instruction manual carefully before you attempt to carry out operation and maintenance.  
Please keep the manual at hand for ready reference.

#### Accessories

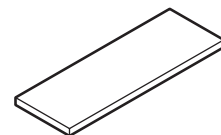
Model	SG900A/AD		SG1230A/AD	
	W/O dryer SG900A	W/dryer SG900AD	W/O dryer SG1230A	W/dryer SG1230AD
Parts name				
Union	1		1	
Drain separator	1*1)		1*1)	
Fork hole cover (magnet sheet)	4		4	
Nipple	1		1	
Tube	1		1	



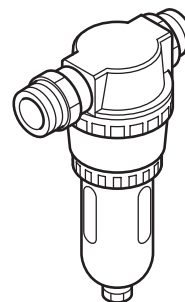
Nipple



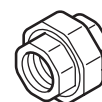
Tube



Fork hole cover  
(magnet sheet)



Drain separator



Union

\*1) Drain separator for SG900A ,SG1230A has a nipple on the main body.

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# 1 . Safety Information

## Safety Information

Please carefully read and understand the general precautions and the descriptions for alert symbols and safety marks. Then proceed to **3** Safety Rules on page 1-4 where you will find itemized safety instructions.

### 1 General Precautions



Carrying-in work, installation, operation, maintenance and inspections of the machine must be done by the well-trained personnel.

We shall not be responsible for any personal injury and faults/damage of the machine resulting from modification by the customer.




Strictly follow the local regulations and the safety standard established in the field.

## 2 Alert Symbols and Safety Marks

For safety and trouble-free operation, the following alert symbols and safety marks are given to the important items in order to call your attention. Please follow these instructions.

### Alert symbols



Alert symbols give you important messages to use the product correctly and prevent damage to persons and property.

 WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or property damage. *1
 Reference	Indicates supplemental information to the operation.

\*1 Property damage means the loss of the machine itself and/or incidental or consequential loss of peripheral equipment and facility.

### Safety marks

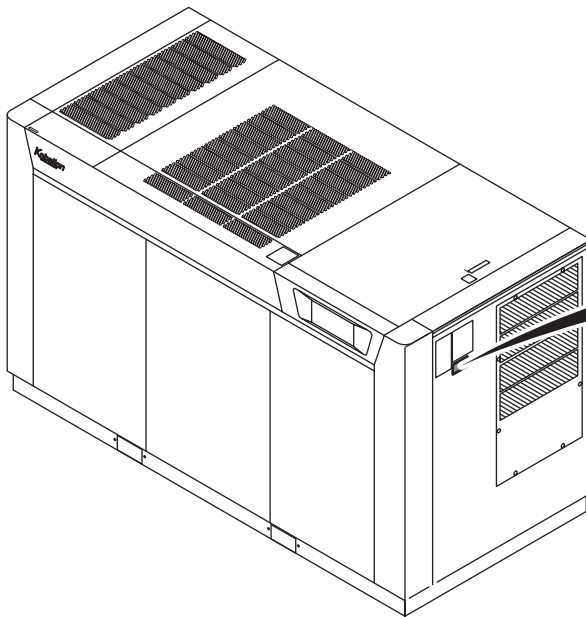
The following marks are used together with alert symbols and pictographs to discriminatively indicate actions which the operator must not take, and which the operator must take.

Mark	Meaning
	Indicates the item to be prohibited. Concrete information is given by picture or sentence in or near the mark.
	Indicates the forced (mandatory) item. Concrete information is given by picture or sentence in or near the mark.

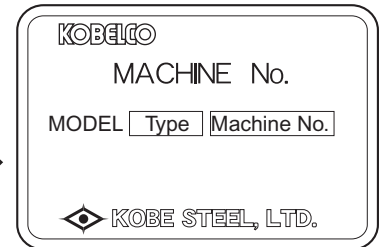
## Check on Machine No. Name Plate

Make sure that the machine No. name plate is attached to the machine.  
If the name plate is missing or not readable, contact our company or the distributor.

SG900A/SG900AD  
SG1230A/SG1230AD



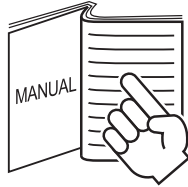
Machine No. name plate



Please let us know the model and machine No.  
when asking for repair or ordering spare parts.

### 3 Safety Rules

#### *Rules common to all works*

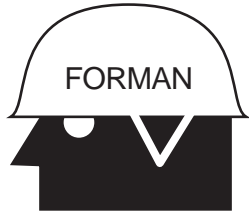


Fully understand the descriptions shown in the instruction manual before operation/maintenance/inspection of the machine. The operators and the administrator must not allow those who do not understand the manual to operate the machine.



Wear appropriate clothing and protectors during the work. Especially when installing, disassembling or assembling the machine, be sure to wear a helmet and safety shoes. Also wear safety glasses to protect eyes from pressurized air.

It is necessary to establish and observe the safety standards for the field where the machine is used.



Inspection and maintenance must be done by experts. Those who have little experience must be closely supervised.



Use only genuine KOBELCO parts. If not observed, it can cause malfunction and/or failure.



Be sure to earth the machine, or the electrical problems including noise may damage the electric unit or cause electric shock.

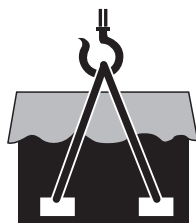
## Carrying in

### When using a forklift



Carry the machine with fork arms into fork holes of the base plate. Put protector between the sound proof cover and the fork lift to prevent damage.

### When using a crane



Pass nylon slings through fork holes of the base plate and protect the front top surface of the sound proof cover with cloth.

Lift the machine slowly keeping the slings at a 45 degree angle with the top of the sound proof cover.

\*For detailed information, see **1** Unloading on page 4-1.



## Installation/Installation site

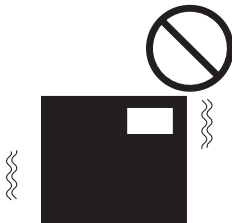
### Transfer



When moving the machine using a forklift or a crane, protect the sound proof cover with a pad cloth against damage.

Do not drop the machine or carry it at a slant of 45 degree or more when moving it.

### Installation site



This machine is designed for indoor use only. Do not install the machine outdoors or semi-outdoors.

- Installation in a place exposed to rain or in a humid basement can cause an electric leak, drain and/or rust.
- Installation in a place where dust such as iron powder and sand is lifted can cause low insulation performance of electric parts and damage to the rotor.
- Installation in the atmosphere containing toxic gas can cause deterioration of lubricating oil and corrosion in parts.



Do not install the machine near a work place where flame is used or the ambient temperature is over 40°C {104°F} . Do not put inflammable objects near the compressor.

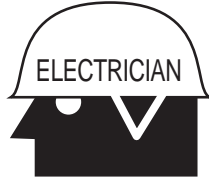
### Installation



When installing the compressor in a closed room, provide air suction and exhaust openings, and equip the exhaust opening with a ventilating fan having a proper capacity.

## Electric wiring

### Electric wiring

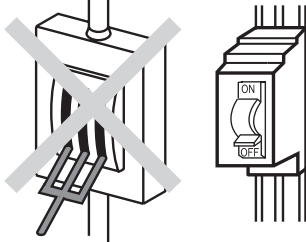


Electric wiring must be performed by qualified electricians.

- Leading into the power source should be done not to expose wiring. Wiring in the starting board requires a protective bushing in the through hole in order to protect the wires.
- Electric leak, low insulation performance, overcurrent, short circuit, incorrectly phased operation and malfunction of the safety device can produce spark in the motor, wiring and electric circuit.

### Breaker

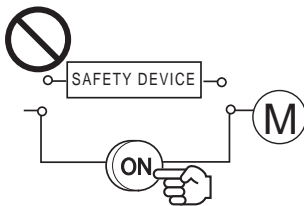
Only knife switch



Use an earth leakage breaker for the power source in accordance with the machine model.

Do not use the knife switch without any earth leakage breaker in terms of protection.

### Installation



Removal or modification of the safety device or any change in the set value can cause an accident.

Any change in the set value for the safety device and operation without the safety device can abnormally heat lubricating oil to start a fire. Never change the set value or operate the machine without the safety device.

### Earth



Connect the earth wire with the earth terminal (marked with E) on the starting board in the compressor.

The earth resistance should be 100  $\Omega$  (class D) for 200/220V and 10  $\Omega$  (class C) or less for 380/400/415/440V.

A specialist should perform the earthing work.

Be sure to connect the earth wire directly to the ground. Operation without earthing may cause electric shock and failure in the compressor.

## Operation

### Dangerous objects

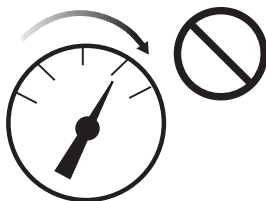


Do not put any inflammables around the machine. Never work using flame near the machine.

- The compressor can catch a fire from spark producing work carried out near the machine, including welding, which may result in a fire.
- The dryer contains refrigerating gas (Fron gas). If the gas leaks and contacts with fire, it may produce harmful gas and irritate your eyes and throat. If it happens, wipe the floor and ventilate the room as Fron gas has a greater specific gravity than air.
- Do not touch the exhaust outlet and the peripheral area which are heated up during the operation and may cause a burn.



### Pressure



Operate the machine within the limits specified in this manual.

### Rotating portions



When the power lamp is lit, never touch the rotating portions even if the compressor is stopped.

- To contact any rotating part, such as ventilating fan, always turn off the main power.
- Note that the compressor is automatically started when the pressure drops to the recovery point.

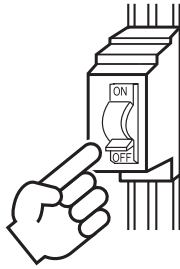


## Shutdown

### Parallel operation

Close the stop valve of discharge pipe in the compressor which is stopped and let the drain out.

### Long-term shutdown



Turn off the power supply and close the discharge valve of the compressor.

Be sure to perform a break-in (for 20 minutes) once a week. This is essential to prevent rust in the compressor.

## Inspection during shutdown

### Pressure

Before inspecting the compressor proper and the dryer, or refilling the lubricating oil, stop the compressor and turn off the earth leakage breaker. Also make sure that the pressure in the piping has been relieved completely.

### Power supply

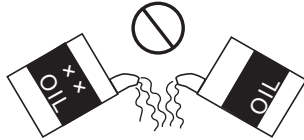
To inspect the starting board, always turn off all the power sources.

### Safety valve

The safety valve has undergone the close function test, so it does not require overhaul. If any problem occurs, contact our service personnel.

## Lubrication

### Lubricating oil



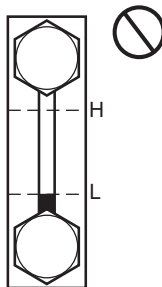
Use the **KOBELCO GENUINE SCREW OIL** or recommended lubricating oil.  
Never mix oils of different brands.



CAUTION

Deterioration, shortage or emptiness of lubricating oil, and a bad oil circulation resulting from high viscosity can abnormally raise the lubricating oil temperature as hot as to start a fire. Be sure to visually check the oil level on the oil gauge and, if it is low, replenish or change the oil.

### Replenishment



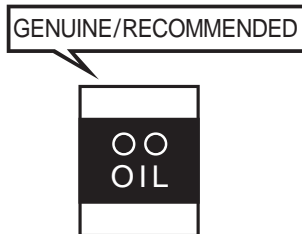
If the oil level is below the lower limit when in operation, replenish oil.



WARNING

- Before inspecting the compressor proper and the dryer, or refilling the lubricating oil, stop the compressor and turn off the earth leakage breaker. Also make sure that the pressure in the piping has been relieved completely.
- Residual pressure exists in the oil separator for 2 minutes or more after the compressor is stopped. Before refilling the lubricating oil, always make sure that the pressure in the oil separator has been relieved completely.

### Oil change



Maximum service life of the lubricating oil is 3,000 hours, though it depends on the operational conditions. Be sure to change oil in the full amount.

Deteriorated oil requires immediate change in the full amount.

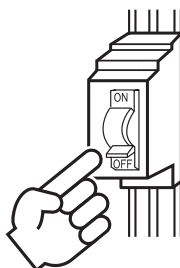


WARNING

Oil deterioration will cause the deteriorated carbon to adhere to the separator element. The deteriorated carbon may be partially heated up by oxidization heat to start a fire and explode.

When changing lubricating oil, be sure to replace the oil element.

### Overhaul



Overhaul shall be performed every four years, regardless of operation hours.

At that time, change the main motor bearing and clean the coil.

To overhaul the compressor, cut all of the power supply.



WARNING

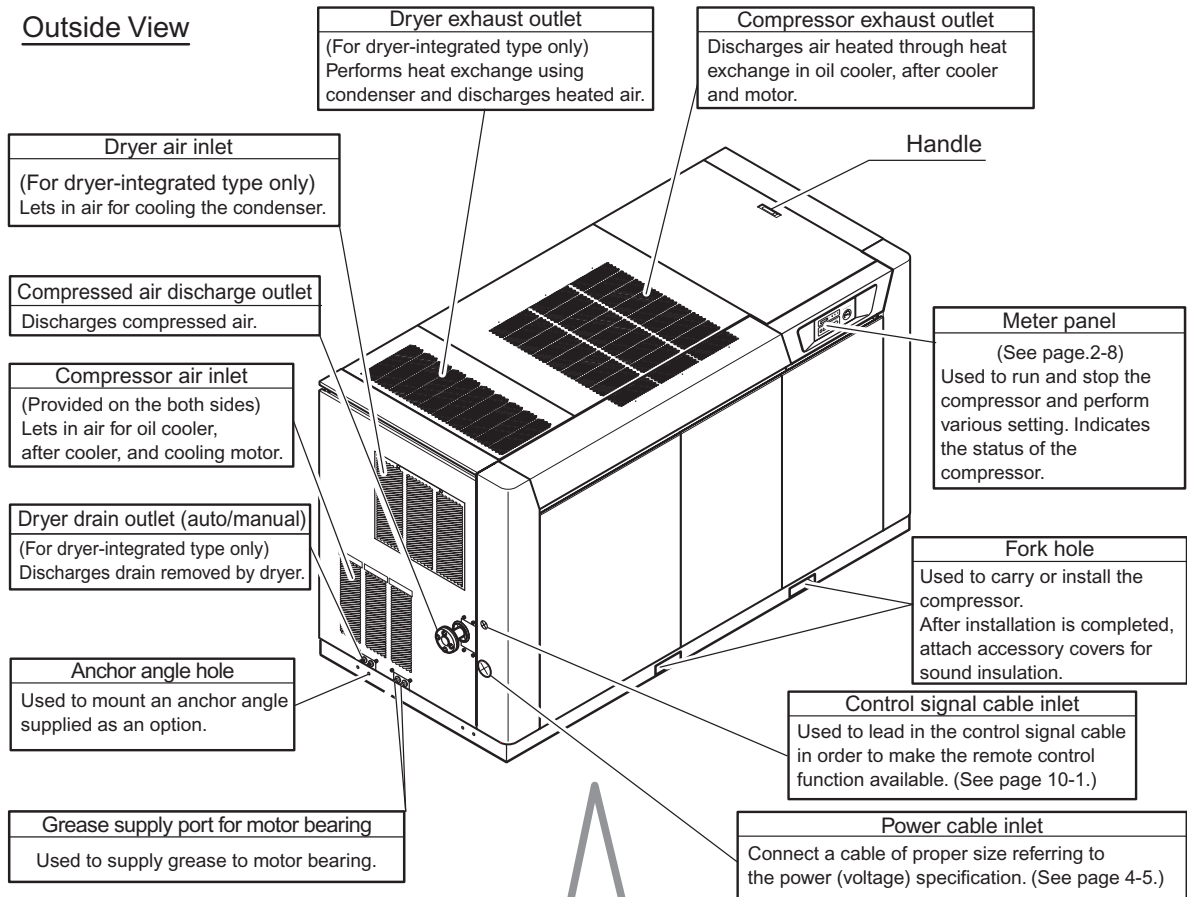


## 2 . Part Names and Functions

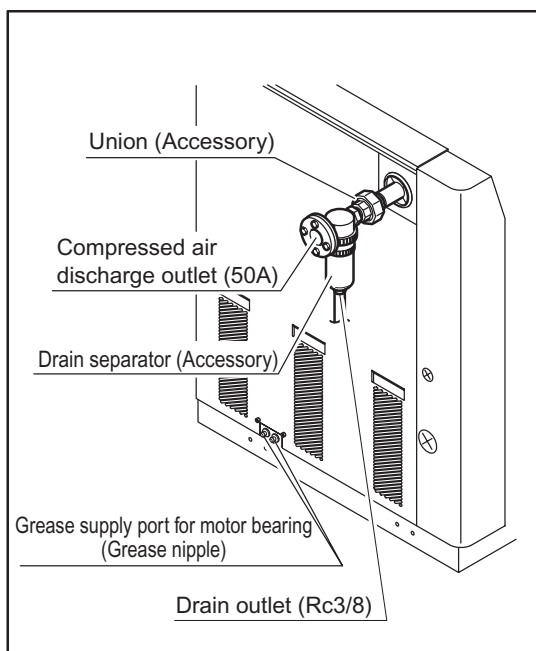
### 1 Part Names

#### SG900A/SG900AD

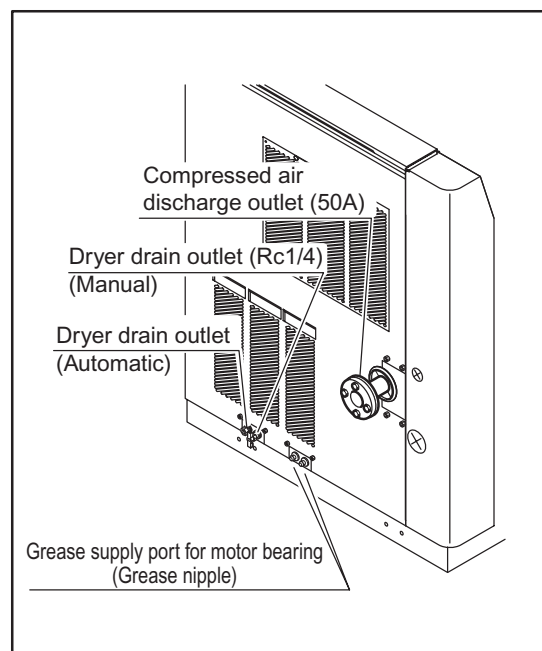
##### Outside View

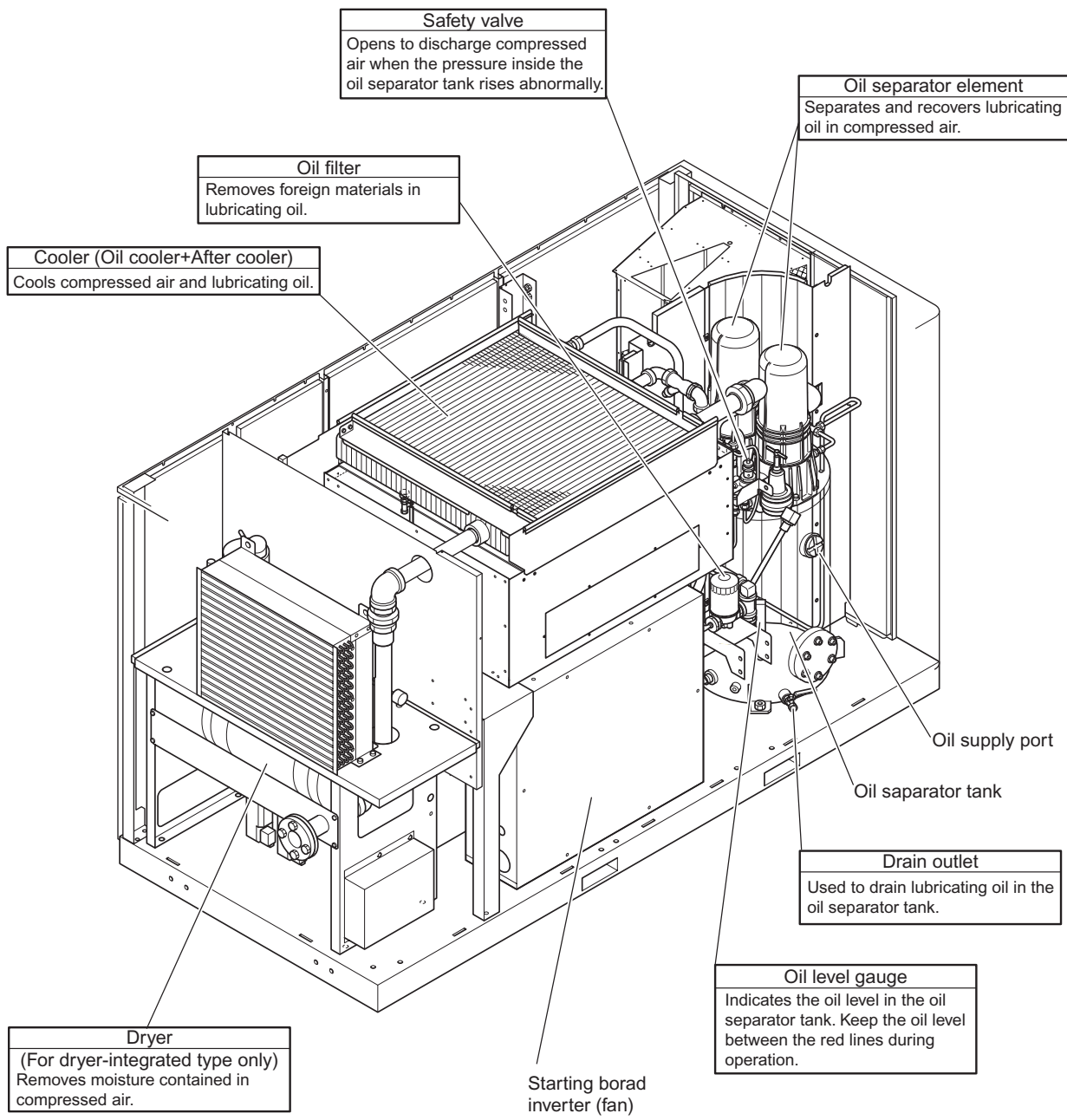


##### Left side (Type SG900A)



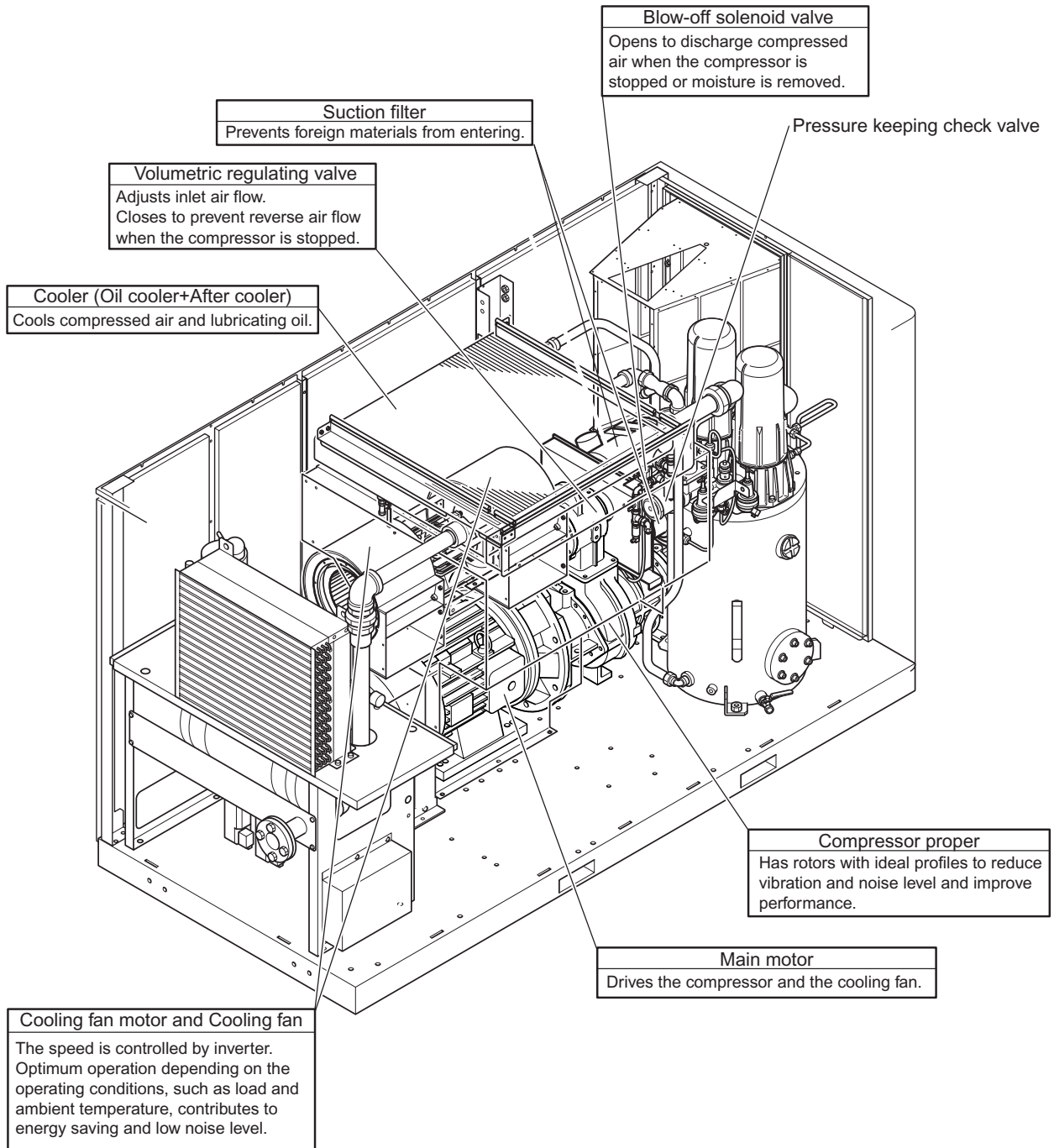
##### Left side (Type SG900AD)







## Internal Construction

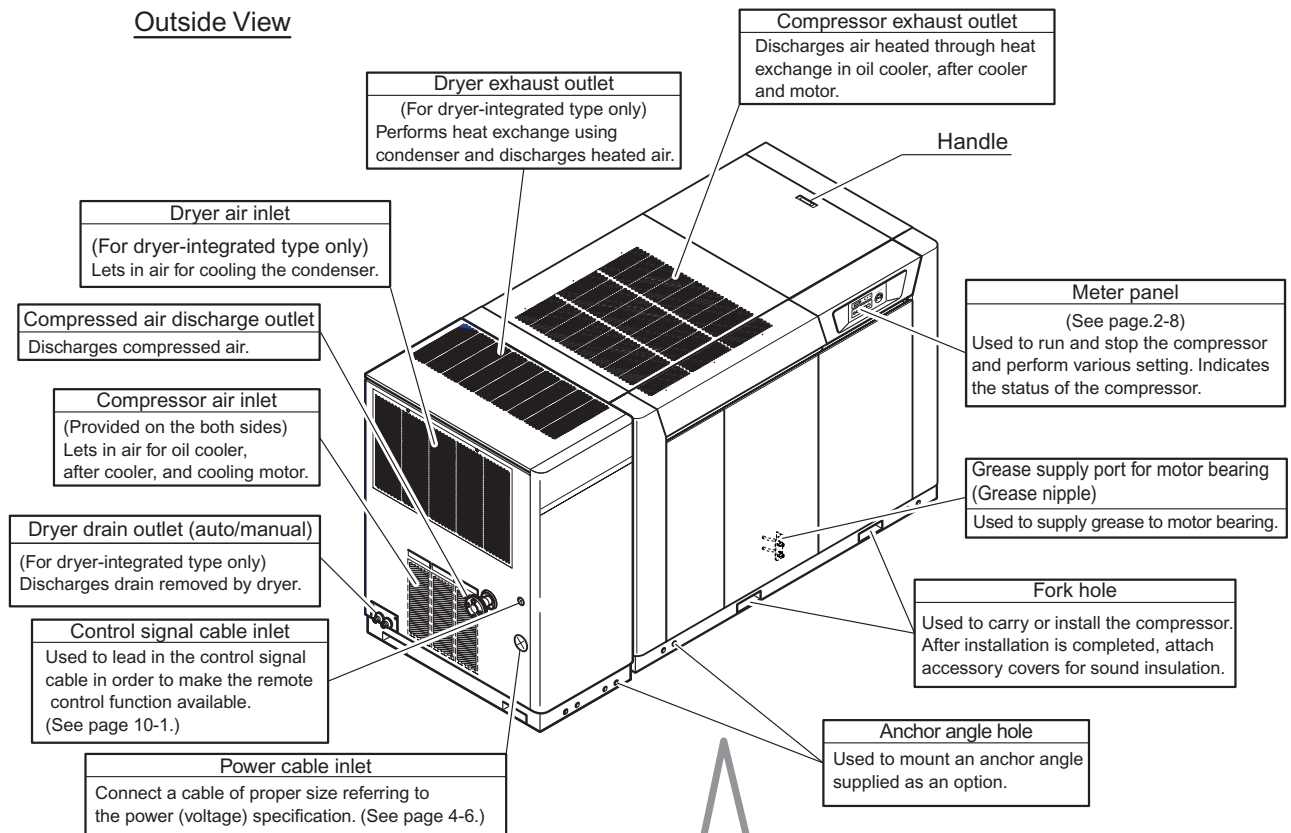


Any modification without prior permission shall invalidate the warranty even within the warranty period.  
Please consult us whenever modification is required.

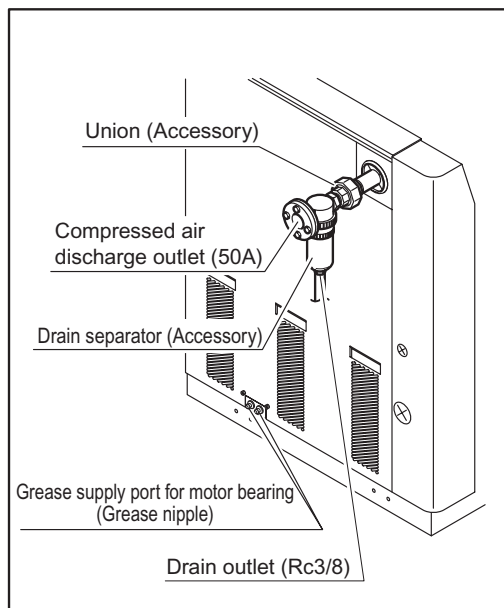


# SG1230A/SG1230AD

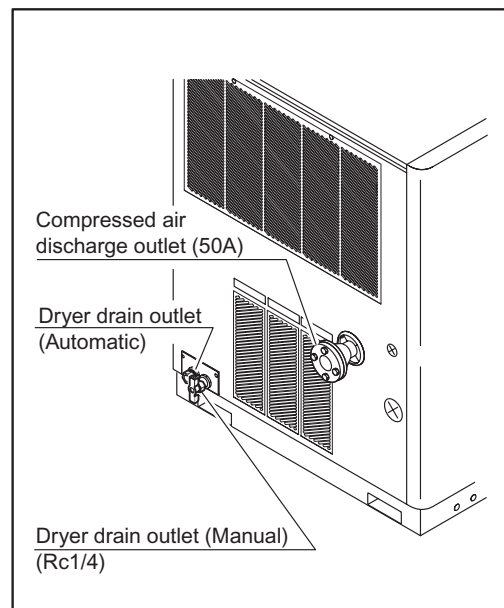
## Outside View



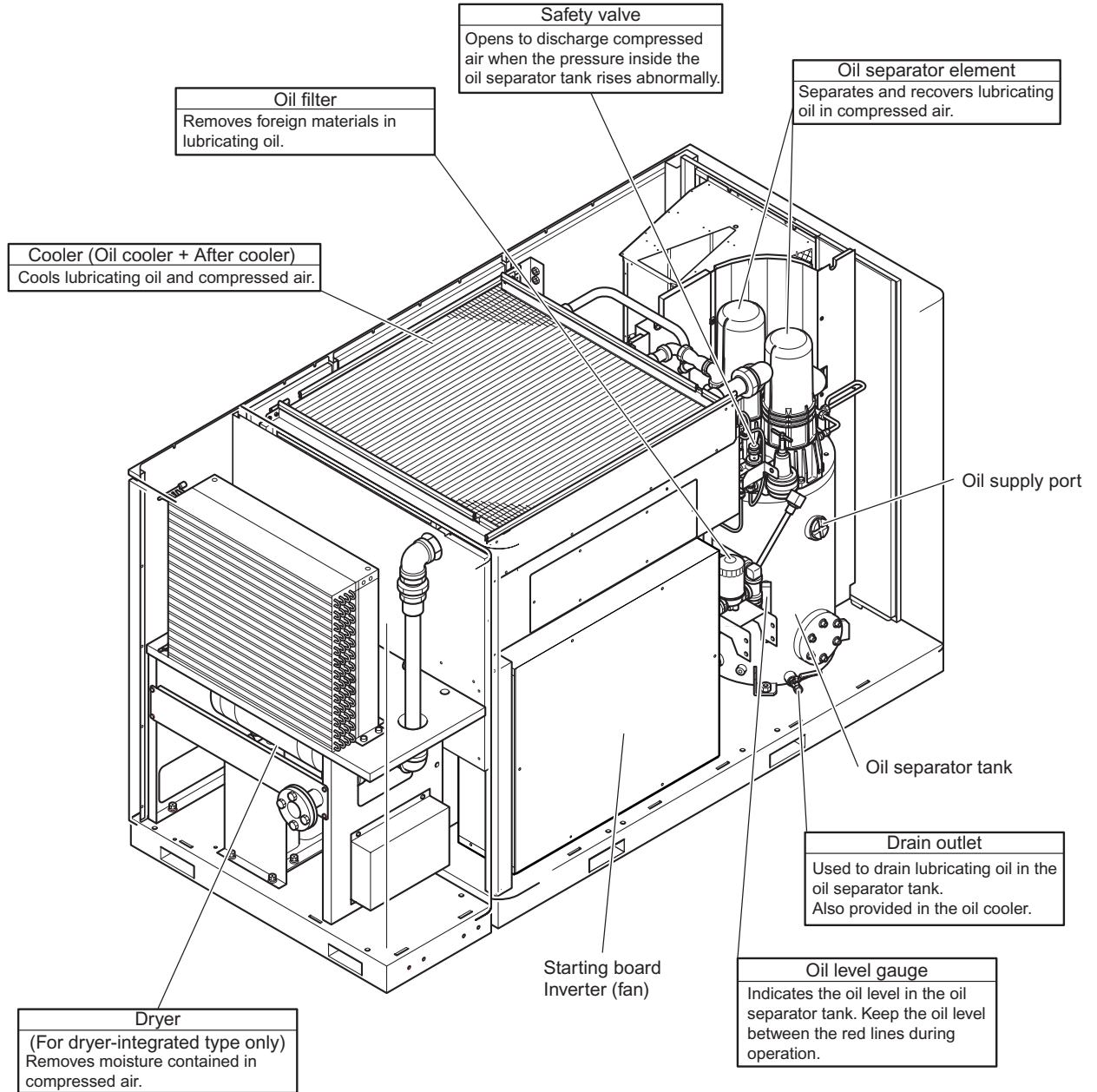
Left side (Type SG1230A)



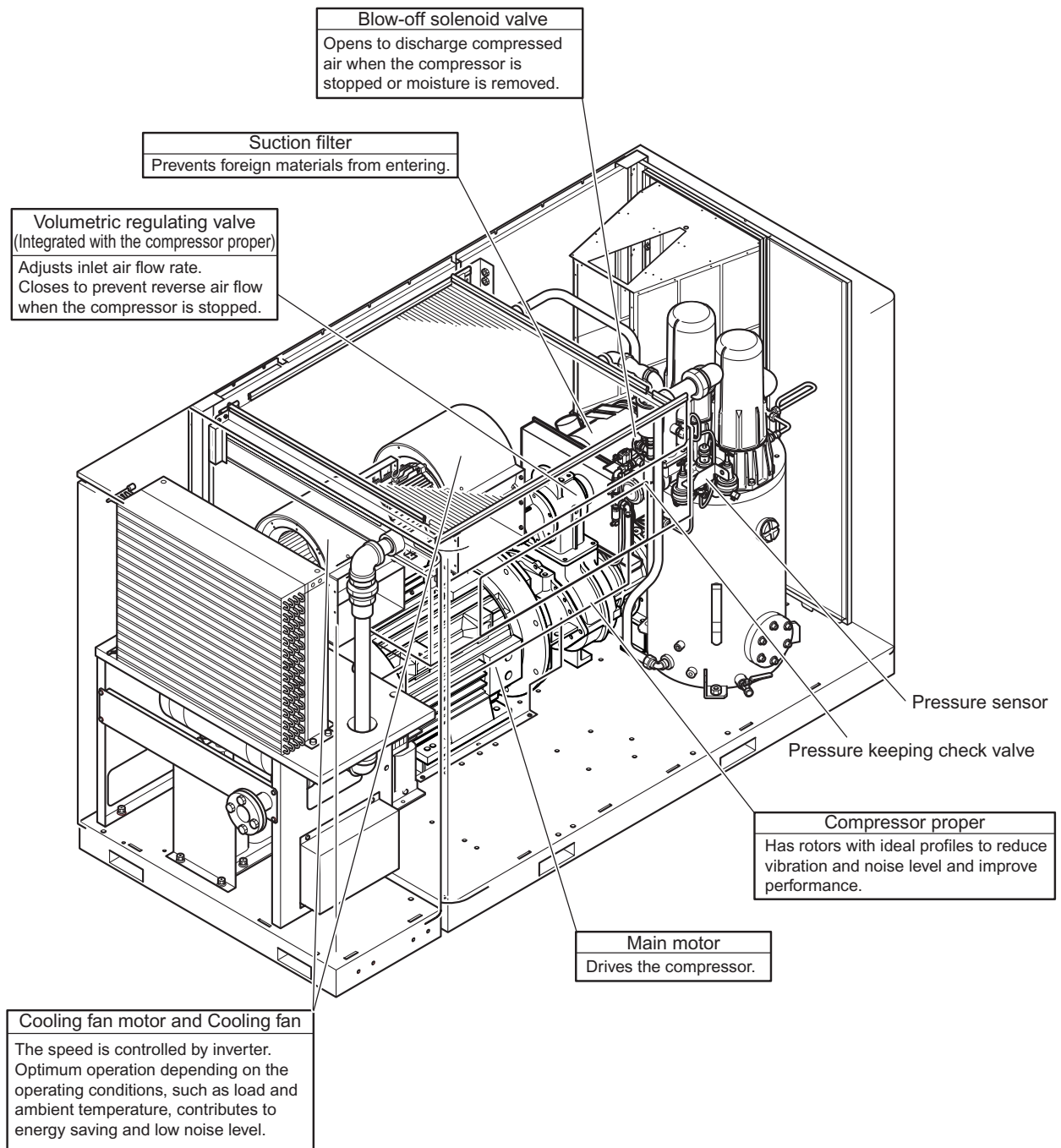
Left side (Type SG1230AD)



## Internal Construction



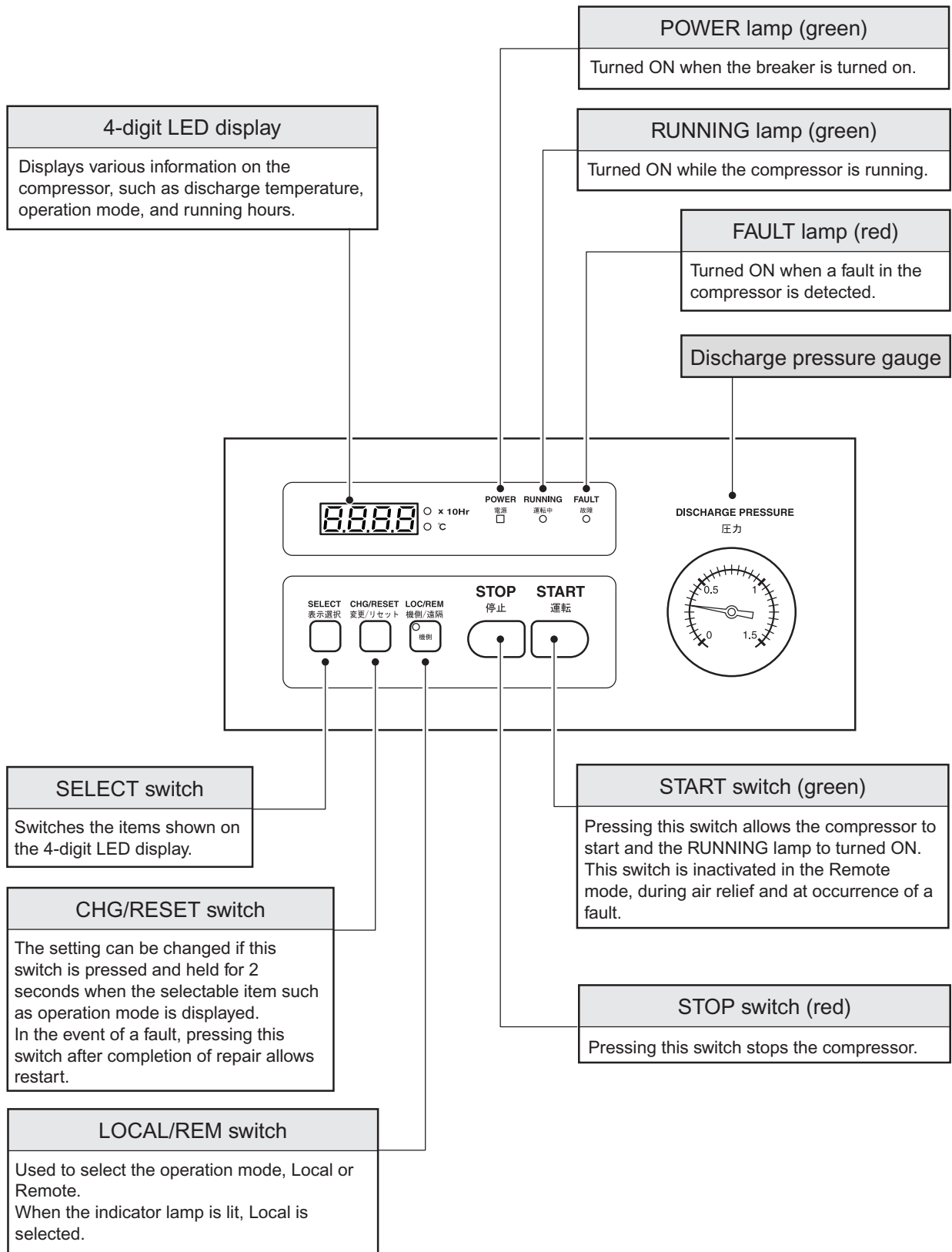
## Internal Construction



Any modification without prior permission shall invalidate the warranty even within the warranty period.

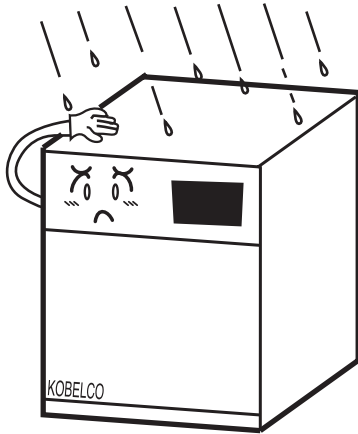
Please consult us whenever modification is required.

## 2 Meter Panel



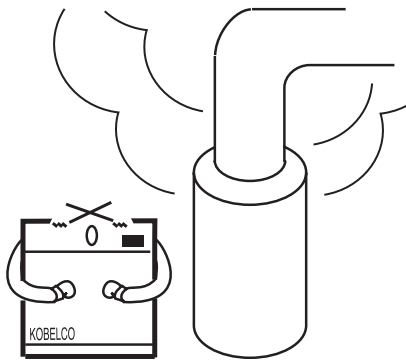
## 3 . Location for Installation

### 1 Places to be Avoided



- Avoid outdoors. This machine is designed for indoor use only.
- Avoid rain. Use or store in locations where the machine is protected from rain. Exposure to rain may cause electrical leakage or rust, as the machine is equipped with electrical parts.
- Avoid places where the atmosphere contains a lot of dust such as iron powder and sand, or harmful gases such as chlorine, hydrogen sulfide, zinc oxide, and high concentration ozone. Such substrates may cause damage to the compressor main body, poor insulation in electrical components, deterioration of lubricants, or corrosion in parts.
- Avoid places where the ambient temperature exceeds 40° C { 104° F}. It may cause serious accidents such as burning of the machine and fire.
- Install the machine on a flat and level floor. Placing the machine on blocks may hinder the proper operation.
- Avoid places where excessive vibration is expected.
- The noise level may change depending on the building construction and the installation site.

### 2 Environments to be Avoided



Avoid environments where the unit may suck in:

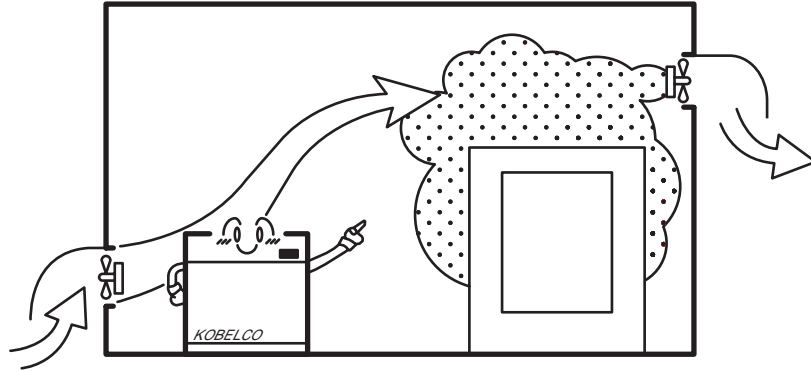
- Mist of cutting fluids from machine tools,
- Exhaust/smoke from boilers,
- Cracked gases of plastics,
- Vapor of waste water/liquids in food processing plants,
- Emission from vehicles including trucks, or
- Any other harmful gases including NH<sub>3</sub>, SO<sub>4</sub>, and NO<sub>x</sub>.



Avoid installation in environments where the machine may suck in harmful gases containing substances listed above. Sucking in such gases may cause clogging of the oil separator elements, resulting in malfunctioning shutdown.

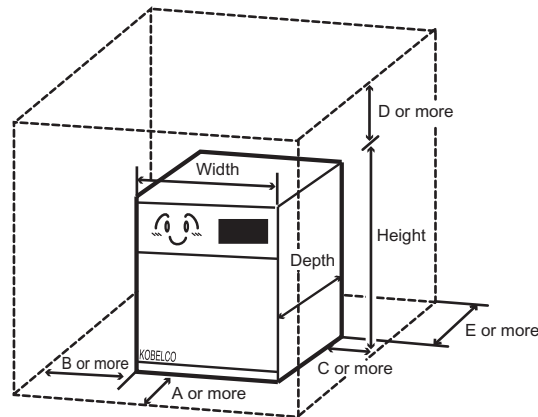
## Ventilation to avoid sucking harmful gases/ mist

- Provide a suction or exhaust fan, or ventilation duct.
- Do not install the compressor in the downstream of gas flow.



### 3 Installation Space for Safe Operation

- Secure sufficient space away from the outlet above the inlet on both side faces of the machine to ensure proper functions.
- Secure sufficient space away from the front and upper faces of the machine to ensure proper opening and closing of doors, operation, and maintenance.



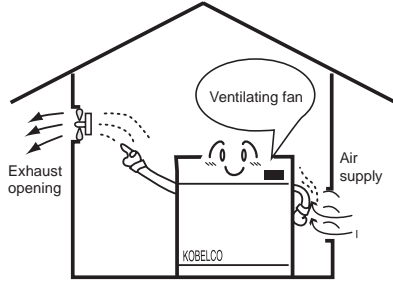
[mm]

Model	Dimensions			Minimum maintenance space				
	Width	Depth	Height	Front side	Right side	Left side	Top	Rear side
				A	B	C	D	E
SG900A	2080	1200	1500	600	600	600	1000	500
SG900AD	2580							
SG1230A	2080							
SG1230AD	2580							



## 4 Installing the Machine in an Enclosed Room

### Installation of Ventilating Fan and Duct



- Use in a closed room will increase the room temperature, causing the compressor to stop. To avoid this, provide an air supply opening to take fresh air in and an exhaust opening to discharge hot air, on the walls of the room. Also install a ventilating fan at the exhaust opening. (The exhaust outlet must be located in the higher position, and the air supply opening in the lower position.)
- The air supply opening must be wide enough to prevent negative pressure in the room.
- Select a ventilating fan with a capacity higher than the value specified in the table below.
- Note that a lower ceiling may cause higher ambient temperature as the exhaust heat moves to the air supply side.
- Use at the room temperature of 40°C {104°F} or higher may cause the compressor and the dryer to trip. In such a case, improvement is required to decrease the room temperature.

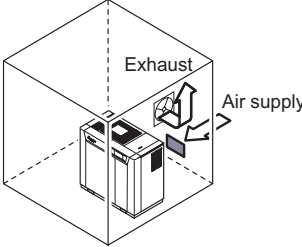
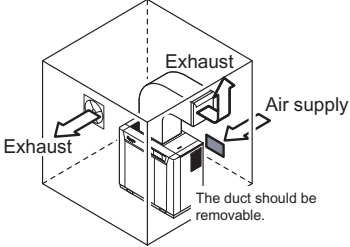
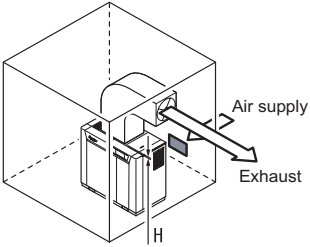

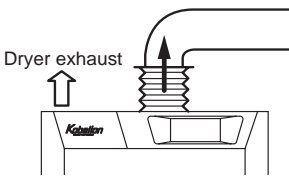

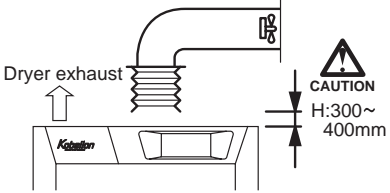

### Ventilation Method and Fan Capacity

Model	Generated calories		Compressor cooling air		Minimum ventilation capacity <sup>(*)2</sup>			
			Exhaust air volume	Allowable pressure loss in exhaust duct	Entire ventilation		Ventilating duct	Ventilating duct & fan
						Local ventilation <sup>(*)1</sup>		
[MJ/h]	[kcal/h]	[m <sup>3</sup> /min]	[mmH <sub>2</sub> O]	[m <sup>3</sup> /min]	[m <sup>3</sup> /min]	[m <sup>3</sup> /min]	[m <sup>3</sup> /min]	
SG900A	216	51,600	110	5	600	280	60	170
SG900AD	237	56,674			660	340	120	230
SG1230A	305	72,756	150	5	850	395	85	235
SG1230AD	334	79,808			930	475	170	320

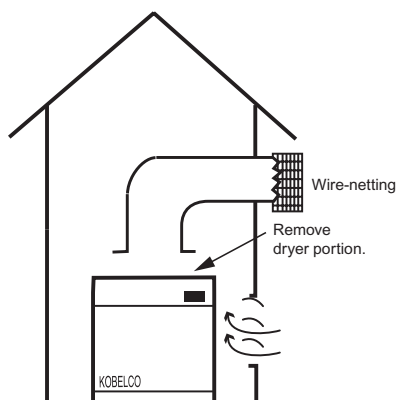
\*1: Local ventilation is a method to exhaust air by directly exhausting one third to a half of compressor-exhausted air using a ventilating fan installed near the compressor exhaust outlet.

\*2: Ventilation capacity indicates the value at the allowable room temperature of 5°C {9°F} higher than the ambient temperature.

## Installation of Ventilating duct

Entire ventilation/local ventilation(*1)	Ventilating duct	Ventilating duct & fan
	 <p style="text-align: center; font-size: small;">The duct should be removable.</p>	
	 <p style="text-align: center; font-size: x-small;">CAUTION</p> <p>*Never install any independent duct or duct shared by the compressor on the dryer exhaust outlet. It could prevent the dryer from exhausting air.</p> 	 <p style="text-align: center; font-size: x-small;">CAUTION</p> <p>*Never install any independent duct or duct shared by the compressor on the dryer exhaust outlet. It could prevent the dryer from exhausting air.</p>  <p style="text-align: center; font-size: x-small;">CAUTION H:300~400mm</p>
<p>The ventilation capacity is for ventilating the entire room. (at the allowable room temperature of 5°C {9°F} higher than the ambient temperature) The air supply opening should be adjusted so that the flow rate will be 2 m/s or less.</p> <p>(*1) Local ventilation is a method to exhaust air by directly exhausting one third to a half of compressor-exhausted air using a ventilating fan installed near the compressor exhaust outlet.</p>	<ul style="list-style-type: none"> <li>• Calculate the pressure loss (resistance) in the ventilating duct based on the exhaust air volume of the compressor. If the result is not more than 5 mmH<sub>2</sub>O for air cooling type, the exhaust from the compressor exhaust outlet through the duct will be possible.</li> <li>• Connect the ventilating duct referring to the duct installation mark at the top of the compressor. The duct should be removable. Do not fix the duct with screws. It may hinder repair and maintenance work.</li> <li>Use of KOBELCO genuine expansion duct is recommended, as shown on the next page.</li> <li>• Minimize bends in the duct to avoid resistance.</li> <li>• When installing the duct, provide a full radius. Duct resistance over 5 mmH<sub>2</sub>O could reduce the exhaust volume, causing temperature rise to stop the compressor.</li> <li>• Even if the duct is connected directly to the compressor, the temperature will rise. In such a case, install a ventilating fan mentioned in the previous page (at the allowable room temperature of 5°C {9°F} higher than the ambient temperature).</li> <li>• Prevent rain water from entering the duct outlet.</li> <li>• If the pressure loss in the ventilating duct is over 5 mmH<sub>2</sub>O, install a ventilating fan at the duct outlet. (See method .)</li> <li>• Follow the same installation procedure to install a ventilating fan and air inlet as that of entire ventilation.</li> </ul> <p>The opening area for air supply shall be adjusted so that the flow rate will be 2 m/s or less.</p>	<ul style="list-style-type: none"> <li>• The pressure loss (resistance) in the ventilating duct is over 5 mmH<sub>2</sub>O, install a ventilating fan with the specified capacity inside the duct taking the pressure loss into consideration.</li> </ul> <p style="text-align: center;">   <b>CAUTION</b> </p> <p>In such a case, clearance "H" of 300 mm to 400 mm must be secured between the ventilating duct inlet and the compressor exhaust outlet. Avoid smaller clearance or duct installation direct to the top cover. Since the oil temperature is controlled by the fan control method on the compressor, drain could be generated due to excessive cooling, and as a result failure in the compressor could occur. The duct frame is available as an option.</p> <ul style="list-style-type: none"> <li>• Turn on the ventilating fan while the compressor is running, and turn it off when the compressor is stopped.</li> <li>• The opening area of air inlet shall be adjusted so that the flow rate will be 2 m/s or less.</li> <li>• Do not use any duct with a ventilating fan for exhaust from the dryer. The forced exhaust may cause the inside of the heat exchanger in the dryer to be frozen.</li> </ul>

## Installation of Ventilating Duct



- Be sure to install a ventilating duct if a ventilating fan cannot be installed.
- Do not fix the compressor directly to the duct with screws or others.
- Cover the exit of the duct with a wire-netting to prevent obstacles from entering the duct. Also take necessary measures to prevent rain water from coming in.
- Minimize bends in the duct as much as possible.
- Equip the duct exit with a ventilating fan if the pressure loss in the duct exceeds 5 mmH<sub>2</sub>O.
- When installing a ventilating fan in the exhaust duct, always secure a clearance of 300 mm to 400 mm between the exhaust duct and the exhaust outlet of compressor.

### KOBELCO Genuine Expansion Duct

Model	Part No.	
	Straight type	Elbow type
SG900A	P-CC11-559	P-CC11-560
SG900AD		
SG1230A	P-CC11-561	P-CC11-562
SG123AD		

### KOBELCO Genuine Duct Frame

Model	Part No.
SG900A	4H06A01125FC
SG900AD	
SG1230A	4H06A01125FD
SG1230AD	



Be sure to select a heat-resistant ventilating fan (high temperature type [80°C {176°F}]).

## 4 . Precautions before Operation

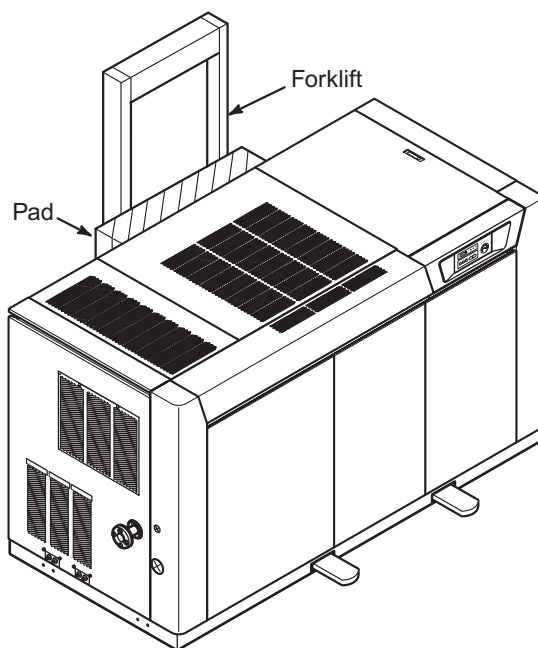
### 1 Unloading

When unloading and carrying, use the openings on the base plate of the compressor. The openings are large enough to fit forklift forks, which allows unloading and carrying by a forklift.

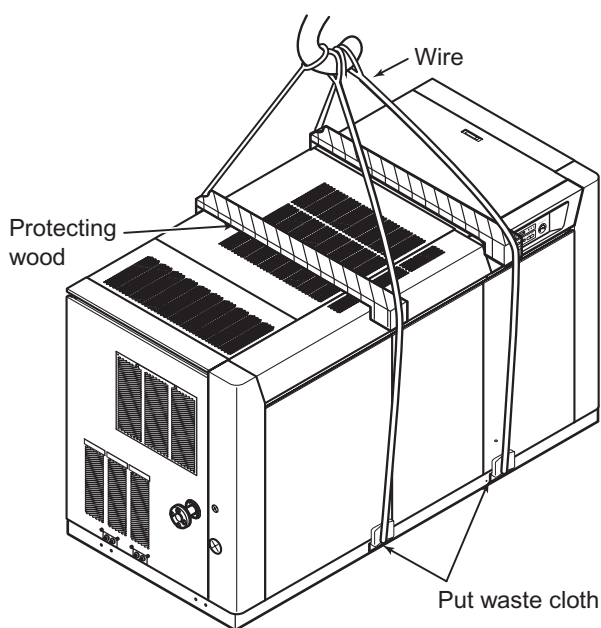


Reference

Be sure to read the section "Carrying in" of **3** Safety Precautions on page 1-5 before starting work.



Using a forklift



Lifting up



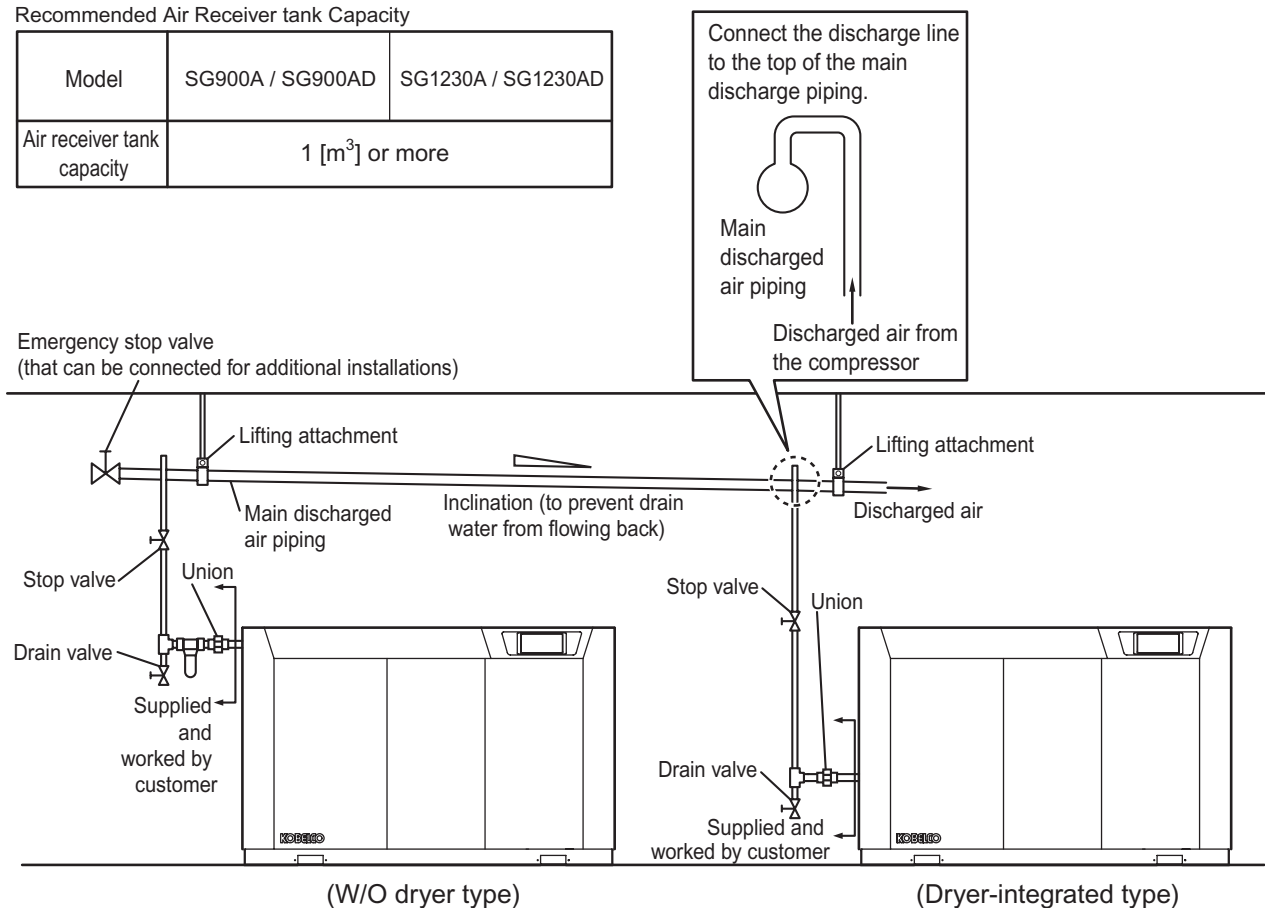
- Make sure that the front cover is closed up to prevent it from opening unexpectedly.
- The supplied fork covers are designed to reduce the noise level. Attach the fork covers on both front and rear faces after the completion of installation.

## 2 Precautions for Piping

- Vibration may be produced in a long, unsupported piping structure and be transmitted through the pipes, resulting in damage to the devices and components connected to the piping. Therefore, it is necessary to fix such long piping with appropriate supports (lifting attachments, clamps, and/or uprights) as shown in the illustration below.
- When two or more compressors are connected to the same main discharged air piping, be sure to install a stop valve, which can be closed when the compressor is stopped, before the main discharged air piping.
- Incline the main discharged air piping toward the flow direction of the discharged air (downward) so that drain water does not stay in the main pipe.
- The dryer-integrated type discharges drain from the dryer. Thus it needs drain piping.
- The air discharge piping **must be equipped with an air receiver tank with specified or higher capacity** to minimize pressure fluctuation.

Recommended Air Receiver tank Capacity

Model	SG900A / SG900AD	SG1230A / SG1230AD
Air receiver tank capacity	1 [m <sup>3</sup> ] or more	



Prevent drain from flowing back in the discharged air piping.

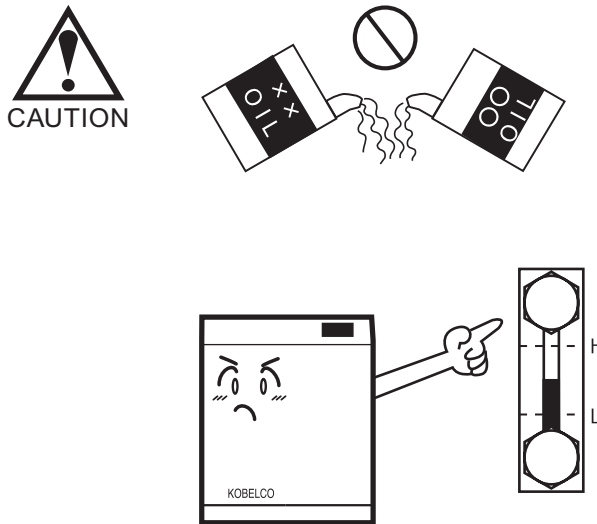
### 3 Lubricating Oil

#### Precautions for lubrication

- Use our genuine brand lubricant, "KOBELCO GENUINE SCREW OIL" or the recommended oil listed below:

#### Recommended lubricating oil ISO VG32 equivalent

Oil manufacturer	Brand
ExxonMobil	Newrex SHT32
	Mobil Rarus 424
Shell	Shell Corena Oil S32
	Shell Corena Oil RS32 (XHVI)



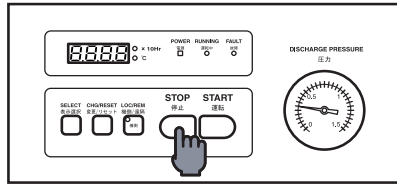
- Never mix different brands of lubricating oil.
- If accidental contact of compressed air with food is expected, vegetable oil "ANDEROL FGC10" may be used. (Exchange oil within 3000 hours.) To use the above oil, please contact our company.
- Maintain the oil level between "H" and "L" during operation.
- Do not operate with the oil level higher than "H". Otherwise, oil may flow out into the discharged air and cause problems. (It is not abnormal that the oil level exceeds "H" when operation is stopped oil returns to the oil separator.)

If the oil level is much higher than that in the previous run, shut down the compressor immediately, drain the oil completely and perform inspection.

#### Guide for refilling oil

Before refilling	Refilled amount		After refilling
	SG900A/SG900AD	2.9L	
	SG1230A/SG1230AD		
	SG900A/SG900AD	5.7L	
	SG1230A/SG1230AD		

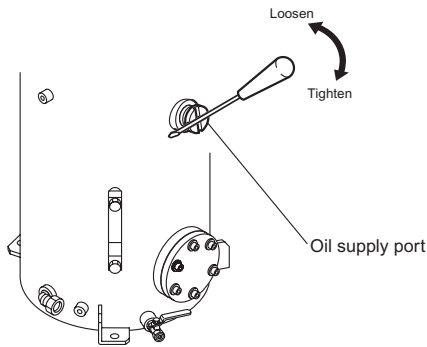
## Refilling oil



- 1 Press the STOP switch (red) to stop the compressor. Make sure that the pressure in the piping has been relieved completely. Then turn off the POWER switch.



- 2 Turn off the earth leakage breaker.



- 3 To open the oil supply port of the compressor, remove the front cover of the compressor and loosen the plug with a wrench.

- 4 When closing the oil supply port, wipe off spilled oil completely and tighten the plug securely.

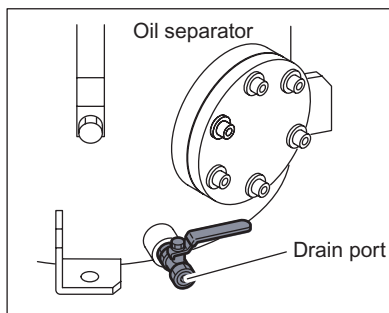
The Quantity of oil required for change in full is shown below. Unit: L

Type	SG900A/SG900AD	SG1230A/SG1230AD
Quantity	56	63



- Pressure remains in the oil separator one minute or more after the compressor is stopped. Wait for about two minutes until the pressure is released, and then replenish oil.
- Oil must be supplied from the oil supply port. If oil were supplied from any other point, the oil level could not be checked.

## Draining oil



- 1 Press the STOP switch (red) to stop the compressor. Make sure that the pressure in the piping has been relieved completely. Then turn off the POWER switch.

- 2 Turn off the earth leakage breaker.

- 3 Open the drain valve at the bottom of the oil separator to drain the lubricating oil. Also drain the lubricating oil from the oil cooler using its drain valve.

## 4 Power Supply Wiring

### *Selection of power supply transformer*

If the transformer is too small or the wiring is too thin and too long, the motor may not accelerate sufficiently or may fail to start because of a sharp voltage drop at the start. Select a transformer of an adequate capacity for the motor considering proper wiring size and routing.

#### Transformer capacity

Type	SG900A/SG900AD	SG1230A/SG1230AD
Transformer capacity	100 or more	150 or more

[kVA]

### *Selection of power supply breaker*

When installing the breaker for the main power supply, select an earth leakage breaker. Use of any breaker without high frequency measures may cause malfunction due to affection of high frequency current.

#### Recommended earth leakage breakers

Type	Voltage (V)	Earth leakage breaker		
		Mitsubishi Electric	Toshiba	Fuji Electric
SG900A/SG900AD	200·220	NV400-SP/300	LSH400-3P/350	SG403B/300
	380·400·415·440	NV225-SW/175	LSS225B-3P/175	SG203B/175
SG1230A/SG1230AD	200·220	NV400-SP/400	LSH400-3P/400	SG403R/400
	380·400·415·440	NV225-SW/225	LSS225B-3P/225	SG225B/225

\* To prevent unexpected functions during start-up, use earth leakage breakers with current sensitivity of 200 mA.



## Selection of cables

Power cable: 600V rated EV cables (600V rated polyethylene cables)  
 600V rated CV cable (600V rated cross-linking polyethylene cables)  
 (JIS C3605-93)

Earth cable: Connect the earth wire to the earth terminal (marked with E) on the power supply terminal block.

The earth resistance should be 100 (class D) for 200·220V and 10 (class C) or less for 380·400·415·440V.

## Cable size

Type	Voltage (V)	Power cable			Earth cable
		5m or less	10m or less	20m or less	5m or less
SG900A/SG900AD	200·220	100	150	150	38
	380·400·415·440	38	60	60	38
SG1230A/SG1230AD	200·220	150	200	200	38
	380·400·415·440	60	60	60	38

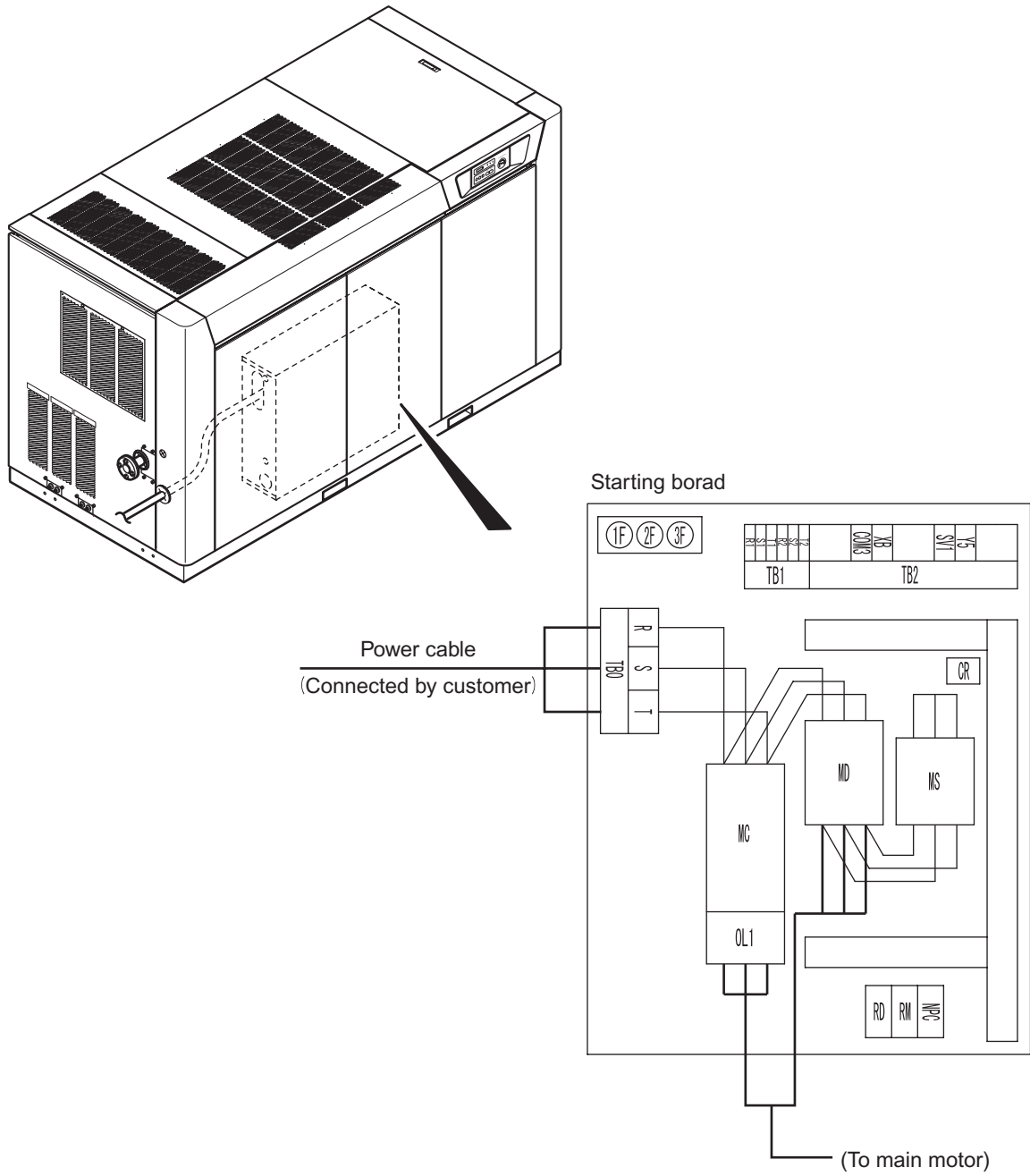
NOTE: 20 m or longer cables must have a sectional size more than those listed above.  
 Use a relay terminal so that the cable size on the local side will be as specified above.

- The power to be supplied is 3-phase 200V [380·400·415V] in the 50Hz area and 3-phase 200V·220V [380·400·440V] in the 60Hz area.
- The earth leakage breaker suitable for the machine should be mounted in the power unit.

## Terminal size

Type	Voltage (V)	Size of terminal thread on terminal block (wired by customer)	
		Power cable	Earth cable
SG900A/SG900AD	200·220	M12	M8
	380·400·415·440	M10	M8
SG1230A/SG1230AD	200·220	M12	M8
	380·400·415·440	M10	M8

## Cable Connection



After removing the front cover and the protection cover for the starting board, connect the cable to the terminal block.

## 5 Connecting the Dryer (SG1230A/AD)

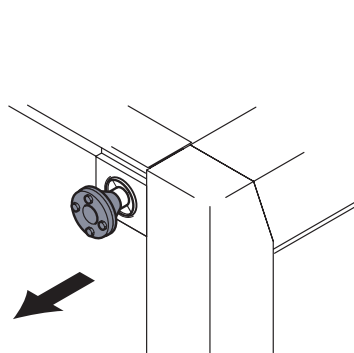
### Pipe connection

1. Make sure that the following are included in the accessories supplied separately.

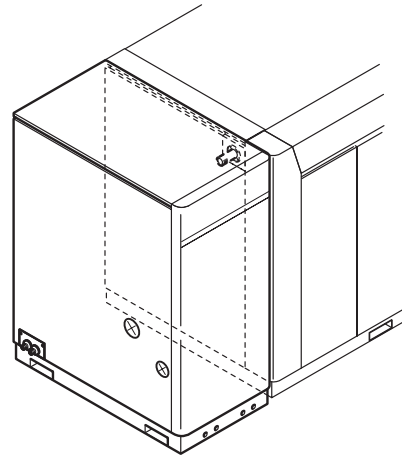
Name	Part No.
Rubber hose	P-FB11-655#01
Elbow	ZG31U32000

2. Remove the discharge pipe flange portion (including nipple) of the compressor unit.

Closely put the dryer unit alongside (left side) of the compressor unit.

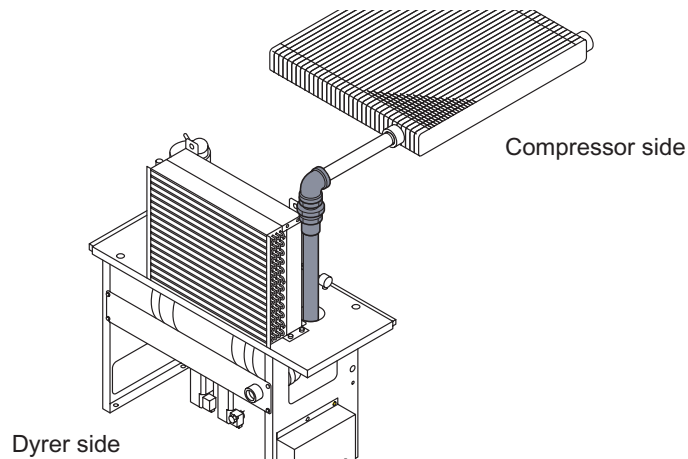


Remove the discharge pipe flange together with the nipple.

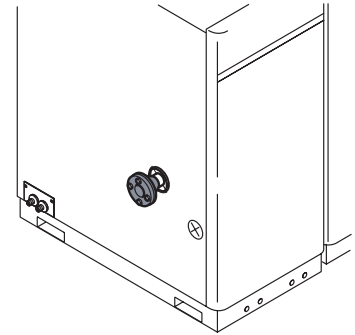


Closely put the dryer unit alongside the compressor unit.

3. Open the front cover of the dryer unit. Securely connect the flangeless discharge piping of the compressor unit to the air inlet of the dryer using the accessories (elbow and rubber hose).



4. Attach the discharge pipe flange, which has been removed from the compressor unit, to the discharge outlet of the dryer unit.

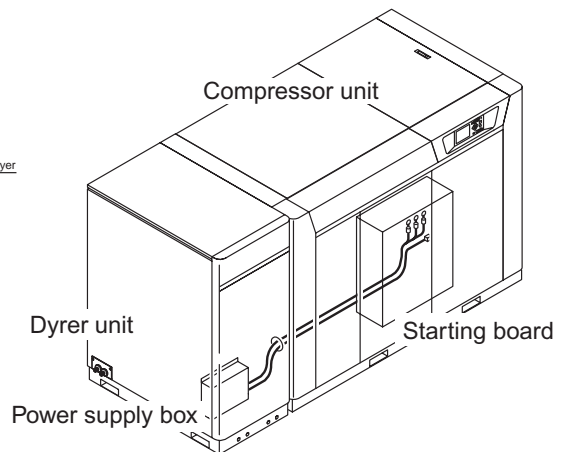
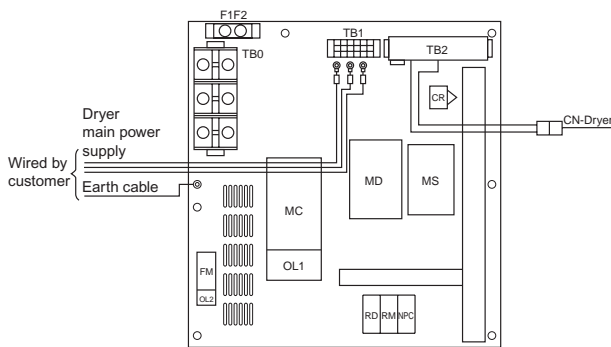


## Electric wiring

1. For the spec. of 200/220V, 380/400/415/440V

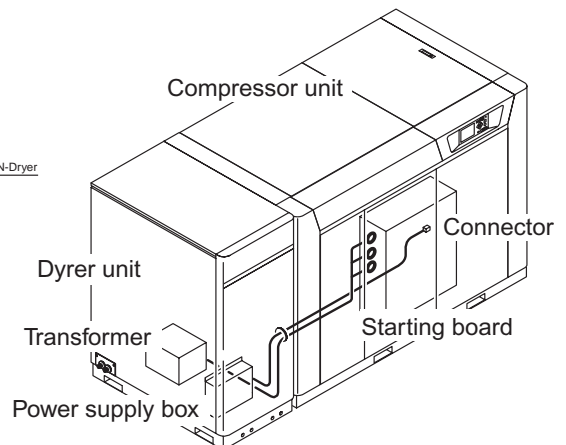
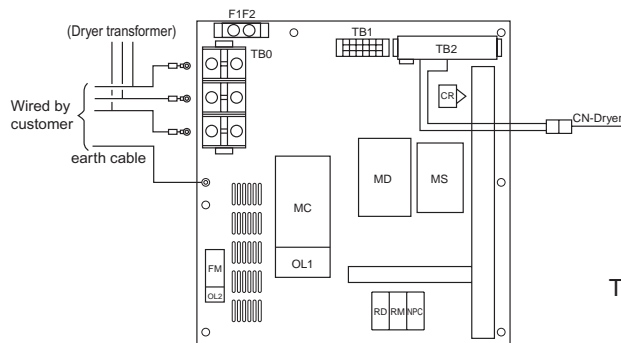
- (1) For the spec. of 200/220V

Connect the main power supply cable (three-phase) and the control line (connector) from the dryer power supply box to the terminal block of the starting board of the compressor unit.

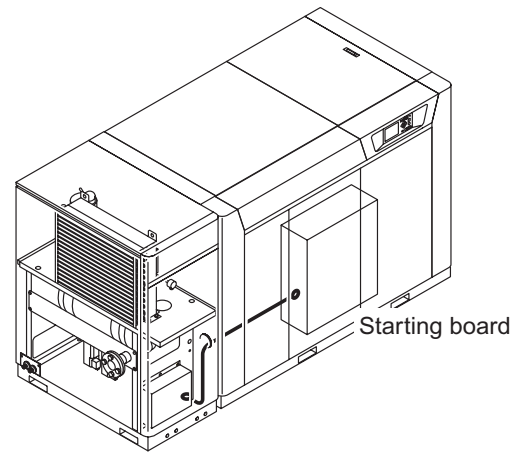


- (2) For the spec. of 380/400/415/440V

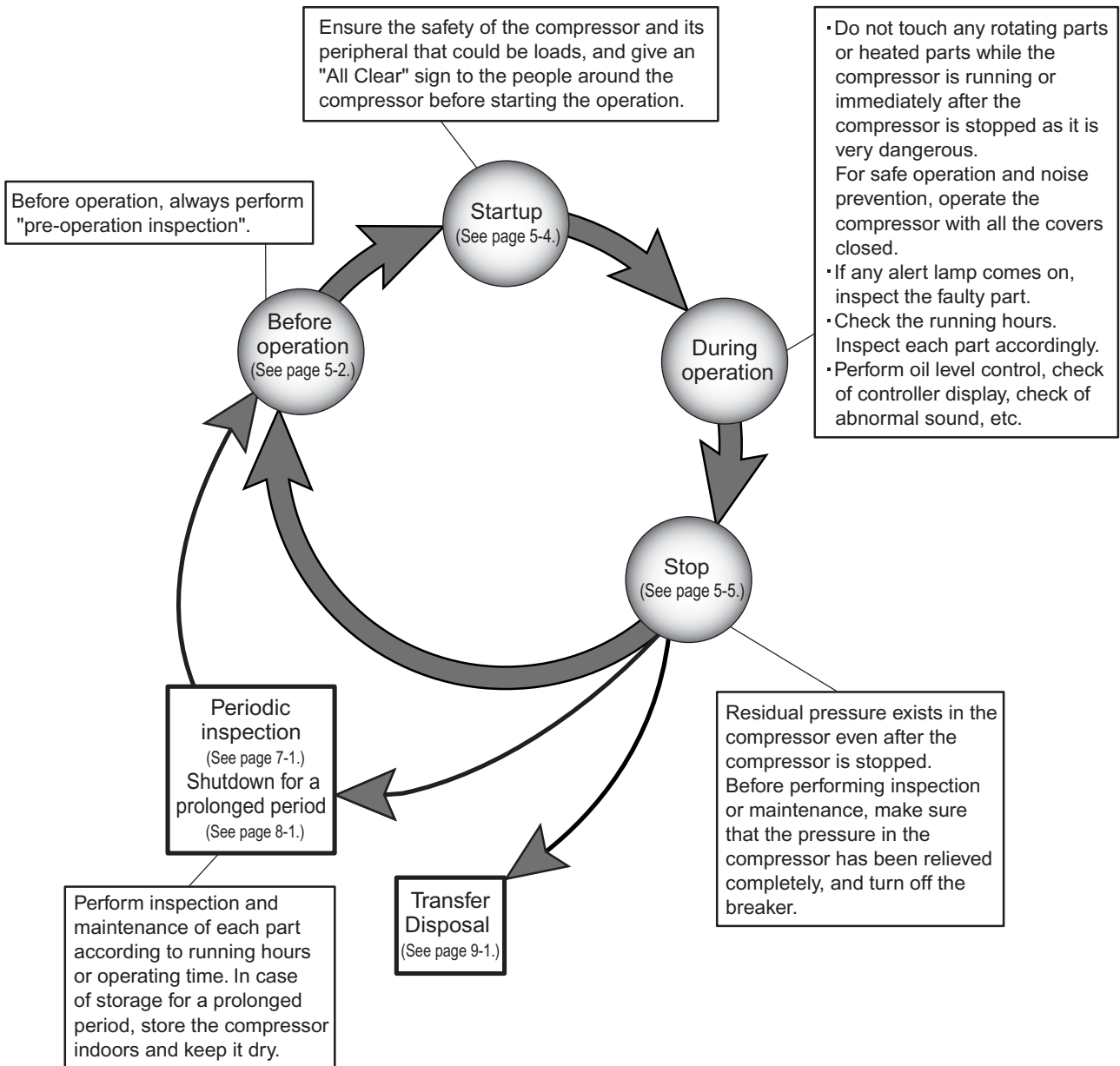
Connect the main power supply cable (three-phase) from the transformer inside the dryer unit and the control line (connector) from the dryer power supply box to the terminal block of the starting board of the compressor unit.



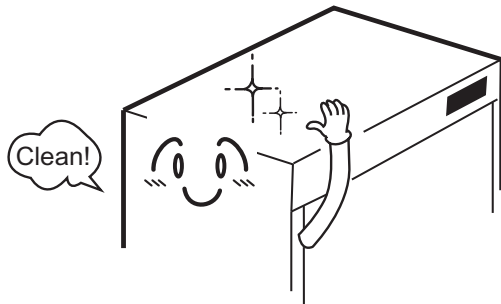
2. Connect the earth wire inside the dryer unit to the terminal block of the starting board.



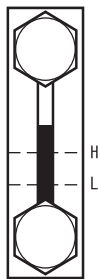
## 1 Procedures for Pre-operation Inspection through Stop



## 2 Pre-operation Inspection



1 Are the air inlets on the right side face, the one on the left side face and the outlet on the upper face not blocked?



2 Is the oil level normal?

If the oil level is lower than the H level when the compressor is stopped, supply oil to the H level and then add oil in the following quantity.

(When the compressor is started, the oil will flow into the oil cooler, piping, etc. As a result, the oil level in the tank will be between H and L, which is the proper level.)

Model

SG900A/AD  
SG1230A/AD

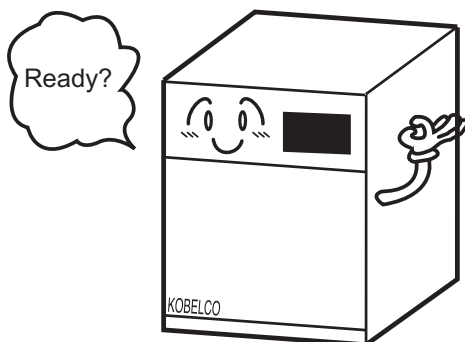
Quantity

Approx. 5L  
Approx. 10L

\* At a stop of operation, the oil level in the tank varies since the return oil flow rates from the oil cooler and other related portions to the tank are different depending on the running condition before the stop.

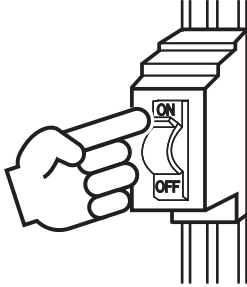
Check that the oil level is between H and L after the compressor is started.

Avoid overfilling as it may deteriorate the oil recovery performance and increase the oil consumption.

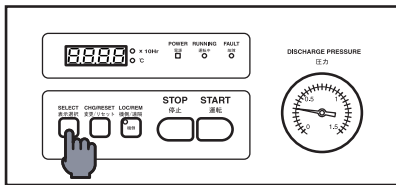


### 3 Operation Procedure

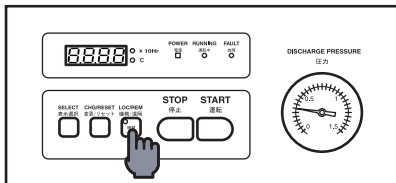
#### Startup



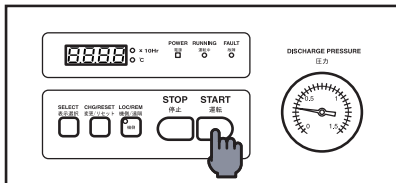
- 1 Turn on the main power.
- 2 Turn on the earth leakage breaker.  
At the same time, make sure that the POWER indicator light on the meter panel is on.



- 3 Press the SELECT switch to make sure the setting for operation mode, continuous operation at dryer fault and dryer preoperation. To change the setting, see page 5-9.



- 4 Select an operation mode using the Local/Remote selector switch.



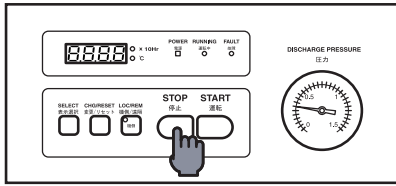
- 5 Press the Start button (green) to start the motor.  
(When “Local” is selected using the Remote/Local selector switch)

- 6 Check the running condition.
  - Oil level should be between red lines.
  - Discharge pressure and temperature should be normal.
  - Drain should be discharged at regular intervals.  
(For dryer integrated type only)

\* If the FAULT lamp is turned on, see page 6-1. After taking the corrective actions, press the CHG/RESET switch with the error code displayed.



## Stop



1 Press the Stop button (red).

\* The compressed air in the compressor will be discharged automatically.



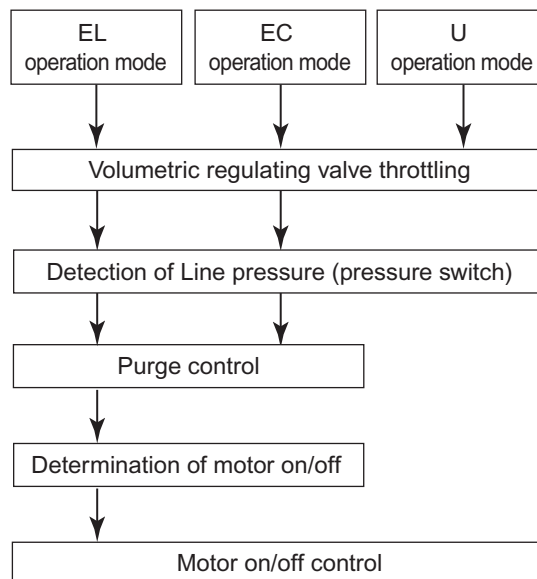
2 Turn off the earth leakage breaker switch.



- If the Start button (green) and the Stop button (red) are pressed several times in a short period, the dryer safety mechanism will be started.
- 3-minute or more interval is needed between stop and start.

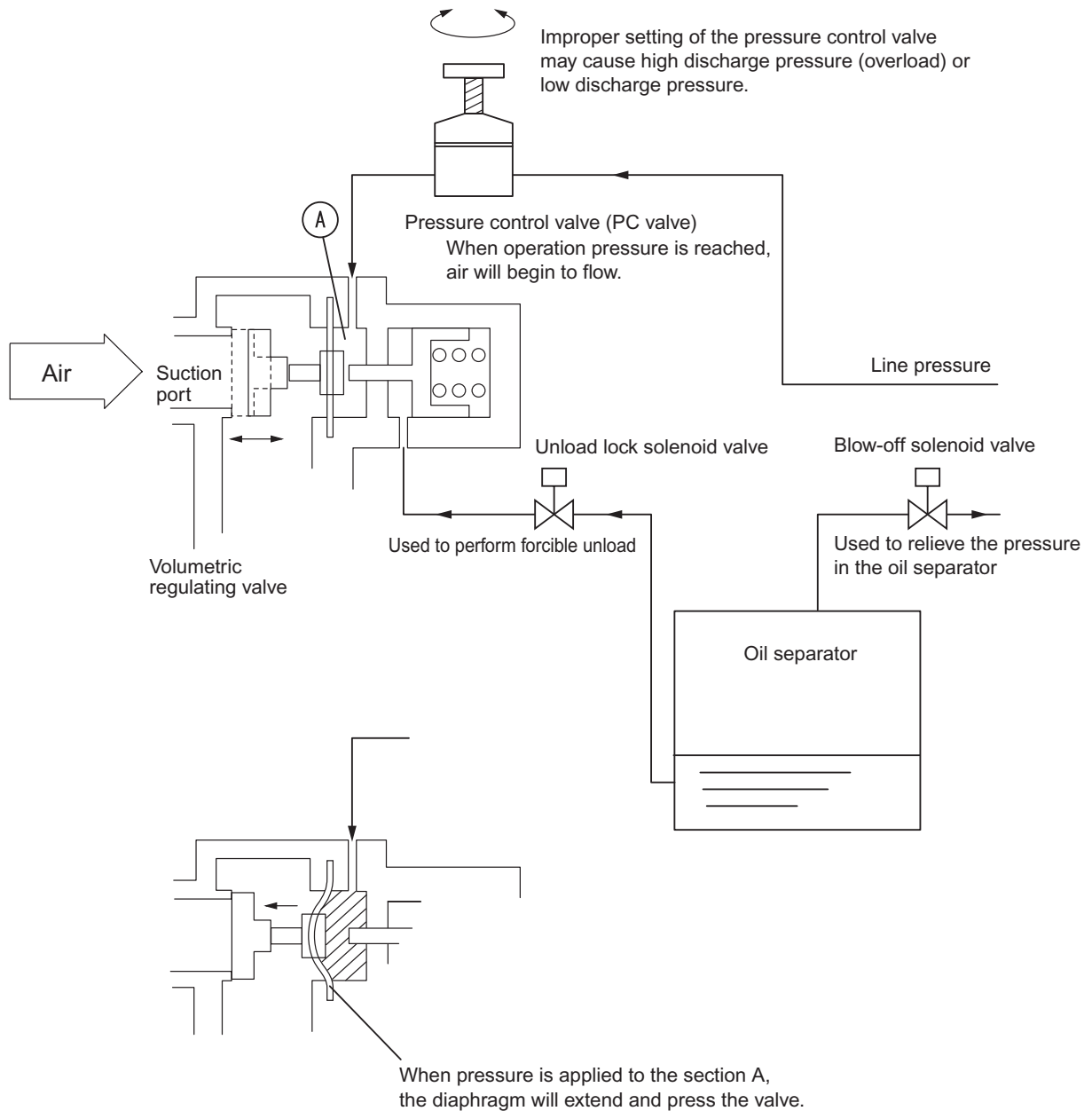
## 4 Operation Modes

Operation mode		Feature	Functions
Efficient in energy saving	<b>【EL】</b> Electronic operation	Auto start/stop ON/OFF function added to the operational characteristics of the EC mode ensures a high level of energy saving efficiency. [In this mode, economical operation is performed. If the system determines there is no air consumption during purging, the motor will be stopped automatically. If the pressure drops, the motor will be started automatically.]	<ul style="list-style-type: none"> <li>• Motor on/off</li> <li>• Purge</li> <li>• Throttling of volumetric regulating valve</li> </ul>
	<b>【EC】</b> Economy operation	In addition to the feature of U mode operation, the purge control is performed to ensure one-rank higher energy saving effect. [Purging allows the compressed air to be discharged into the atmosphere. This enhances energy saving effect during intermediate loading.]	<ul style="list-style-type: none"> <li>• Purge</li> <li>• Throttling of volumetric regulating valve</li> </ul>
Stabilized air supply	<b>【U】</b> Unloaded operation	Minimizes the discharge pressure fluctuation without stopping the compressor, and allows the stabilized air supply. [The suction restriction function steplessly adjusts the capacity depending on the air volume.]	Throttling of volumetric regulating valve



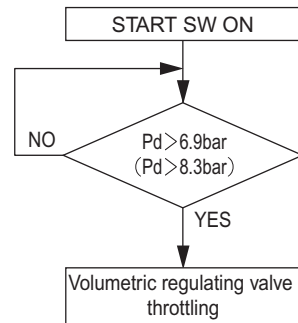
## Volumetric Regulating Valve

Kobelion SG controls intake air flow rate using the volumetric regulating valve. The volumetric regulating valve reduces the torque applied to the compressor at startup. Also this valve smoothly controls discharge air volume between 100% and 0% according to the air demand variation by adjusting the valve disc opening.



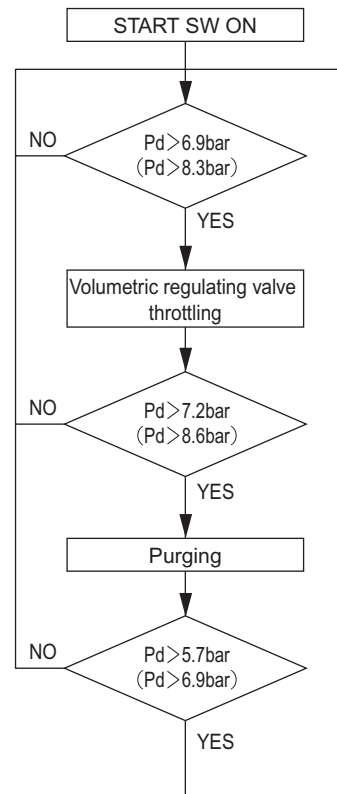
## U Operation Mode

In this mode, the inlet air volume will be reduced if the air consumption decreases and the discharge gauge pressure exceeds 6.9 bar (8.3 bar for H type).



## EC Operation Mode

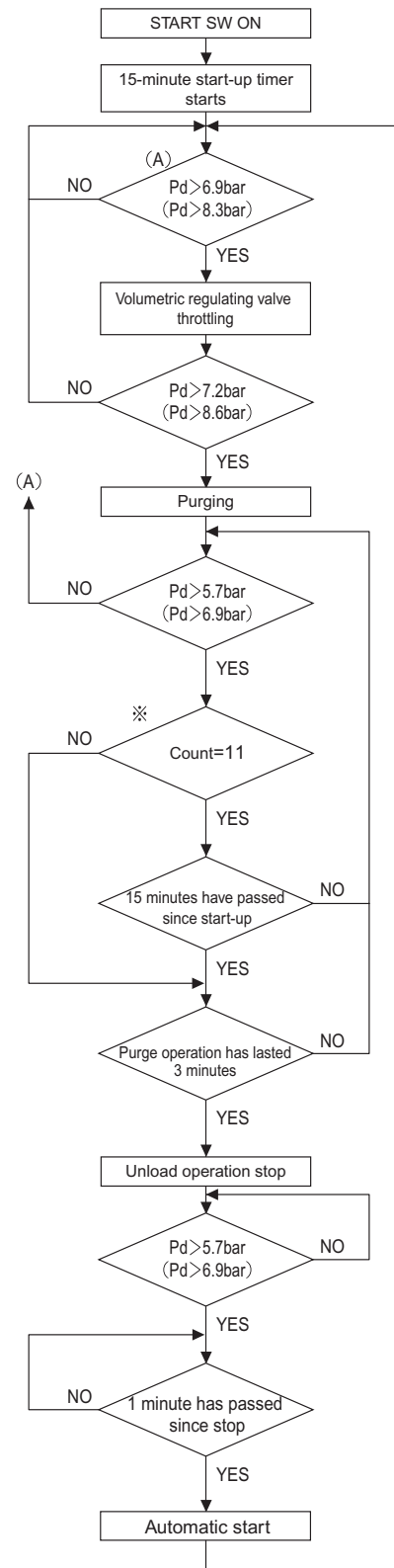
In addition to the feature of the U mode, the EC mode will allow the purge operation (blow-off) if the discharge gauge pressure exceeds 7.2 bar (8.6 bar for H type), which ensures excellent power saving.



## EL Operation Mode

In addition to the feature of the EC mode, the EL mode will allow the compressor to stop automatically if the load operation is continued over the preset time, which provides a high level of energy saving. (Suitable for group control)

\* If less than 15 minutes operations are performed 10 times consecutively, the 15 minutes forced operation will follow in order to cool the motor.



## 5 Controller (Meter Panel) Operation

### Changing Display and Setting

#### Changing Display and Setting

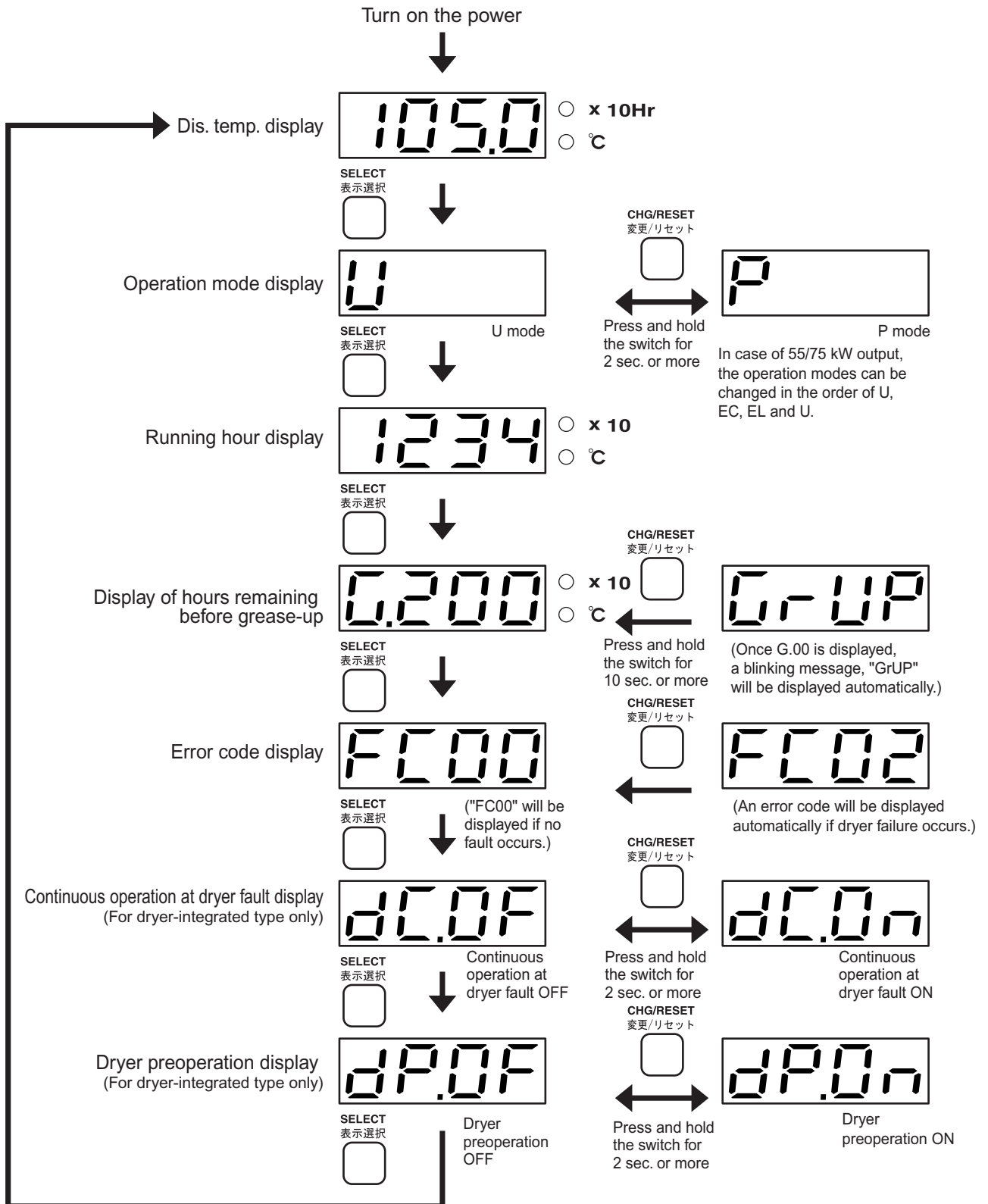
The 4-digit LED display can display the following items.

The setting of “Operation mode”, “Continuous operation at dryer fault” and “Dryer preoperation” can be changed by pressing and holding the CHG/RESET switch for 2 seconds or more.

	Display items	Details	How to change the setting
1	Discharge temp - 15 ~120°C (5 ~248°F)	Displays the discharge temperature at the increments of 1°C {1.8°F}. The “x °C” LED lamp (green) is turned on. When the power is turned on, the discharge temperature will be displayed.	-
2	Operation mode U/P	Displays the operation mode.	Press and hold the CHG/RESET switch for 2 seconds or more.
3	Running hours 0000~9999	Displays running hours while the motor is running at the increments of 10 hours. The “x 10Hr” LED lamp (green) is turned on.	-
4	Hours remaining before grease-up G.200 ~ G.00 (GrUP)	Displays hours remaining before the next grease-up in increments of 10 hours The “x 10Hr” LED lamp (green) is turned on. Once “G.00” is displayed, “GrUP” will be displayed.	After completion of grease-up, press and hold the CHG/RESET switch for 10 sec. or more to set the time to 200 x 10 Hr
5	Error code FC00~FC07	Displays the error code. “FC00” is displayed during the normal operation. In the event of fault, an error code (FC00~FC07) will be displayed automatically. For more information on the error codes, see page 6-1.	After completion of repair, press the CHG/RESET switch and make sure that the error code “FC00” is displayed.
6	Continuous operation at dryer fault (*1) dCOn/dCOF	Used to designate whether operation is continued or not in the event of dryer fault. If dCOn is selected, operation will be continued. If dCOF is selected, operation will be stopped.	Press and hold the CHG/RESET switch for 2 seconds or more.
7	Dryer preoperation (*1) dPOn/dPOF	Used to designate whether dryer preoperation is performed or not. If dPOn is selected, pressing the START switch will allow the dryer to start. The compressor will start 3 minutes later. If dPOF is selected, pressing the START switch will allow the dryer and the compressor to start at the same time.	Press and hold the CHG/RESET switch for 2 seconds or more.

(\*1): For the dryer integrated type only

## 6 Procedure for Changing Display and Setting



## Switching Local-Remote

Pressing and holding the LOC/REM switch on the meter panel for 2 seconds or more allows switching of the starting method, Local (START switch operation on the local side) or Remote (contact signal transmission from the remote side).

If “Local” is selected, the LED lamp (red) for the LOC/REM switch will be turned on.

The compressor can be stopped either locally or remotely, regardless of the Local/Remote selection.

## Default Setting at Shipment

Operation mode	U
Continuous operation at dryer fault	ON (dCO <sub>n</sub> ) (*1)
Dryer preoperation	OFF (dPOF) (*1)
Local/Remote	Local

(\*1): For dryer integrated type only



## 6 . Troubleshooting

### 1 Emergency Stop

If a failure occurs, the FAULT lamp on the meter panel will be turned on, and an error code will be displayed on the 4-digit display.

The compressor will not be restarted even if the START switch is pressed unless the remedial actions are taken and the CHG/RESET is pressed.

Fault code	Major factor	Possible causes	Counter-measures
FC00	Normal	-	-
FC01	Main motor overcurrent. Motor coil temperature high.	Clogged dust filter	No.1
		Improper pressure switch setting	No.9
		Frequent start/stop	No.8
		Power failure	No.5
		Main motor failure	No.6
FC02	Discharge temperature failure	Clogged dust filter	No.1
		High ambient temperature	No.3
		Improper pressure switch setting	No.9
		Clogged oil cooler	No.2
		Clogged oil filter	No.4
FC03	Discharge temperature sensor failure	(Contact service shop.)	
FC04	Dryer failure	Clogged dust filter	No.1
		High ambient temperature	No.3
		Clogged condenser fin	No.7
		Improper pressure switch setting	No.9
		Power failure	No.5
		Dryer motor failure	No.6
FC05	Fan motor overcurrent	Clogged dust filter	No.1
		Power failure	No.5
		Fan motor failure	No.6
FC06	High temperature after oil separator	Oil separator element needs replacement. Stop the compressor and release the oil separator inner pressure to 0 [bar]. Then replace the oil separator element.	
FC07	Temperature sensor failure after oil separator	(Contact service shop.)	

## Countermeasures

Troubleshoot the problem following the countermeasures in the table below.

No.	Major factor	Countermeasures
No.1	Dust filter clogged.	The dust filter should be cleaned. Remove the dust filter and clean it by air-blowing.
No.2	Oil cooler clogged.	The cooler should be cleaned. Stop the compressor, make sure that the fan is stopped, and clean the cooler.
No.3	Ambient temperature high	Lower the ambient temperature to 40°C {104°F} or below. Lower the ambient temperature by ventilation or other measures.
No.4	Oil filter clogged.	The oil filter should be replaced. Stop the compressor, make sure that the oil separator inner pressure is reduced to 0 [bar], and replace the oil filter.
No.5	Power supply error	Stop the compressor. Check voltage drop, pressure balance, single phase, and negative phase, and take corrective actions if necessary.
No.6	Motor failure	Stop the compressor. Measure the coil resistance. If it is 10M or lower, contact our company.
No.7	Condenser fin clogged.	Stop the compressor. Clean the condenser fin of the dryer.
No.8	Too many start & stop	Check that there is sharp pressure fluctuation. Keep the operation cycle of two-minute running and three-minute stop at minimum.
No.9	Pressure switch setting error	Keep the operation cycle of two-minute running and three-minute stop at minimum.

## 2 Before You Suspect Failure

If the compressor malfunctions, check the following items. (call) given in the Countermeasure column means that you are advised to call the designated service shop, dealer or Customer Service of KOBE STEEL.

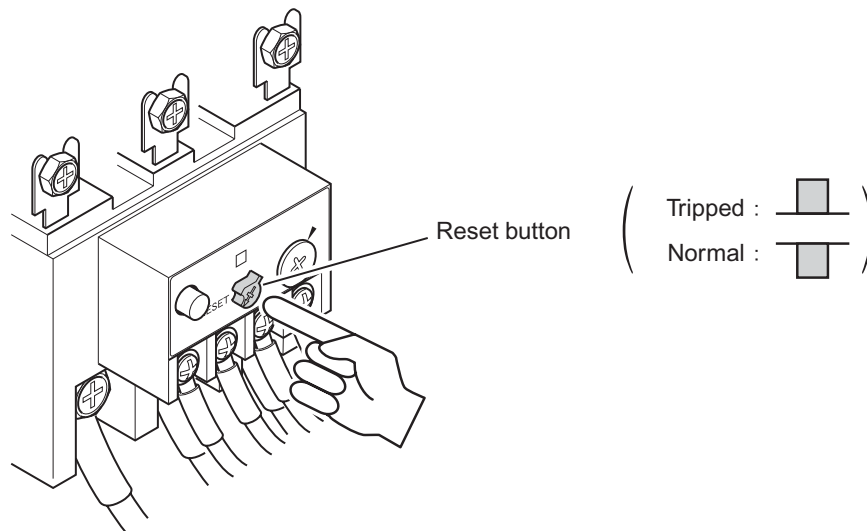
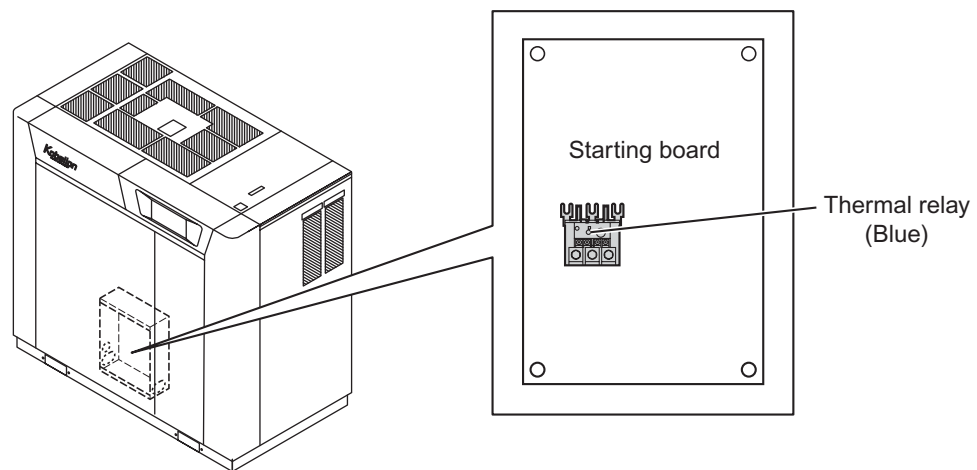
Problem		Causes	Countermeasures (call)
Does not start	Motor is not groaning.	Negative phase	Interchange two power cables out of three.
		Broken cable	Replace the cable.
		Failure in circuit board, or relays, blown fuse, or failure in transformer	Replace the faulty part.
		Motor failure	Check the insulation, and repair or replace the motor.
	Motor is groaning.	Low voltage	For low capacity power supply, change the capacity of the transformer.
		Thin cable	Replace the cable with the specified size.
		Motor failure	Repair or replace the motor. (call)
	Compressor stall	Overhaul the compressor proper. (call)	
Low discharge pressure	Blow-off solenoid valve failure	Readjust or replace the solenoid valve. (call)	
	Leakage from piping	Tighten the fitting or replace the packing.	
	Clogged suction filter	Clean or replace the element.	
	Clogged oil separator	Replace the element.	
Blow-off from safety valve	Pressure higher than the specified value	Select an air reservoir with proper capacity.	
	Safety valve improper adjustment or failure	Readjust, repair or replace the valve. (call)	
High lubricating oil consumption	Clogged oil recovery line	Clean or replace the recovery orifice. (call)	
	Clogged oil separator	Replace the element.	
	Excessive lubrication	Drain the oil so that the oil level will be between the red lines of the oil level gauge.	
Volumetric control failure	Too short load cycle	Increase the capacity of piping (air reservoir).	
	Improper pressure setting	Reset the pressure.	
Premature deterioration of lubricating oil	Use of oil other than KOBELCO GENUINE SCREW OIL or recommended lubricating oil.	Replace the oil with KOBELCO GENUINE SCREW OIL or recommended lubricating oil.	
	High ambient temperature	Lower the temperature by ventilation or other methods.	
	Mixture of water	Inspect the air inlet and drain the oil.	
	Residual deteriorated lubricating oil	Perform flushing at the replacement of lubricating oil. (call)	
Abnormal sound from compressor proper	Foreign material caught in the compressor	Overhaul and repair. (call)	
	Wear or damage on the bearing	Replace the bearing. (call)	
Other abnormal sound	Loose bolts or screws	Tighten the bolt or screw.	
	Improper installation	Fill mortar and fix the compressor horizontally.	
Excessive vibration	Loose bolts or screws	Tighten the bolt or screw.	
	Improper installation	Fill mortar and fix the compressor horizontally.	
	Unbalance due to contaminated cooling fan	Clean the blades.	
Dryer failure	Water droplets formed on the outlet side	Leak of refrigerant	Repair and add refrigerant. (call)
		High inlet temperature	Lower the ambient temperature to 40°C {104°F} or below. Clean the condenser and replace the ventilating fan. (call)
	Hot gas bypass valve failure	Set the pressure to the specified value by adjusting the bypass valve. If adjustment is impossible, replace the valve. (call)	

## Motor Overcurrent

When excessive current passes in the motor coil, the thermal switch trips and the compressor shuts down.

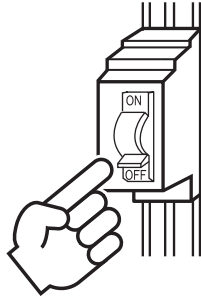
Remove the cause of overcurrent and press the thermal relay reset (blue) button.

Press the CHG/RESET switch on the meter panel with the error code "FC01" displayed. Make sure that the display is changed from "FC01" to "FC00". (At this time, the FAULT lamp is turned off.)



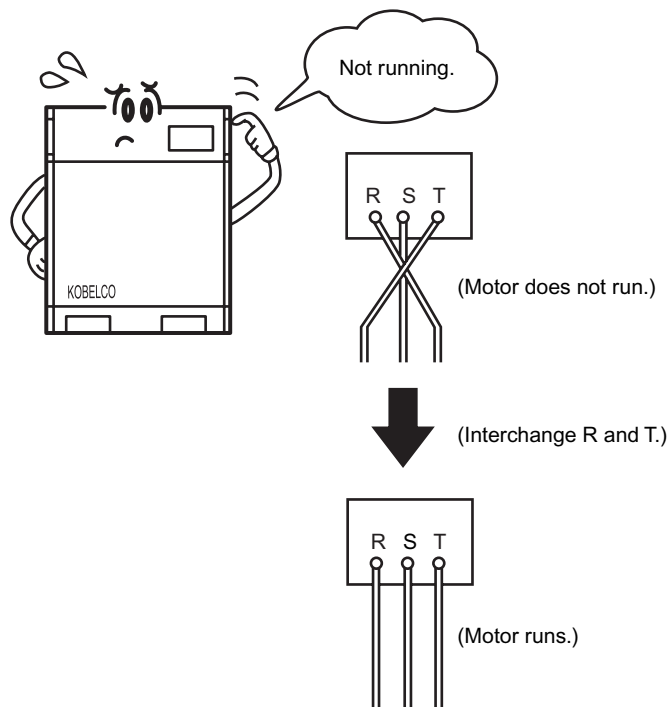
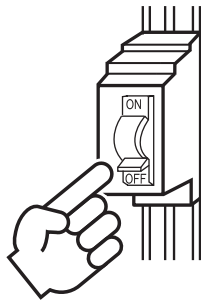
When the motor does not start;

**Step1** Turn off the earth leakage breaker.



**Step2** Interchange two of the three phases in the power unit and connect again.

**Step3** Return the breaker on and see if the motor starts.



# 7 . Maintenance and Part Replacement

## 1 Guidelines for Inspection

Inspection intervals and inspection items depend on the installation site as well as operating conditions. The table below provides the rough guidelines. Sound operation is expected if these guidelines are followed.

	Part name	Spec (section)	Part No.				Maintenance intervals (Service years/months or running hours, whichever comes first)					Remarks		
			SG900A/SG900AD		SG1230A/SG1230AD		Daily	Semi-annually (every 3000h)	Annually (every 6000h)	Every 2 years (12000h)	Every 4 years Overhaul			
				QTY		QTY								
Compressor proper	Bearing	Discharge (male)	P-AC04-586	1	P-AC04-586	1								
		Discharge (female)	P-AC04-584	1	P-AC04-584	1								
Suction (male)		P-AC12-552	1	P-AC12-552	1									
Suction (female)		P-AC13-001#01	1	P-AC13-001#01	1									
	Mechanical seal		P-GA05-501#02	1	P-GA05-501#02	1				Leakage check				
Filters	Dust filter		P-CE05-555#16	4	P-CE05-555#16	4	Cleaning					Increase or decrease the cleaning intervals according to the operating conditions. As a guideline, change every three months. If damaged, replace with new one.		
			P-CE05-521	3	P-CE05-521	3								
			P-CE05-542#01(A) (AD)	0 1	P-CE05-542#02 (A) (AD)	0 1								
	Suction filter (element)		S-CE05-503	2	S-CE05-503	2	Check				The severity of clogging and contamination differs depending on the operating conditions. If severely contaminated, replace with new one.			
	Oil separator element		P-CE03-578	1	P-CE03-577	1					In case of low oil recovery performance, replacement is required.			
	Oil filter (cartridge)		P-CE13-526	1	P-CE13-526	1					When replacing the oil separator element, replace the oil filter at the same time.			
Strainer	Gasket		S-GA21-520	1	S-GA21-520	1	Cleaning					Clean when changing oil.		
Electric system	Pressure switch		P-EA02-566#05	2	P-EA02-566#05	2						For 6.9 bar model		
			P-EA02-566#04	1	P-EA02-566#04	1						For 8.3 bar model		
	Temperature sensor	Discharge, After oil separator	P-EA01-606	2	P-EA01-606	2								
Motor • Inverter (200V class only)	Inverter (Fan)	Cooling fan	P-EB34-577	1	P-EB34-579	1								
			S-EB34-580	1	S-EB34-580	1					Actuation check			
	Motor (Main)	Insulation test											Insulation check	
		Bearing (load side) (fan side)	P-AC02-510#29 P-AC02-510#28	1 1	P-AC02-510#29 P-AV02-510#30	1 1								
	Motor (Fan)	Insulation test											Insulation check	
		Bearing (load side) (fan side)	S-AC02-503#07 S-AC02-503#07	1 1	S-AC02-503#08 S-AC02-503#08	1 1							Noise check	
	Inverter (Fan)	Cooling fan		P-EB34-578	1	P-EB34-580	1							Actuation check
				S-EB34-580	1	S-EB34-580	1							
		Motor (Main)	Insulation test											Insulation check
			Bearing (load side) (fan side)	P-AC02-510#29 P-AC02-510#28	1 1	P-AC02-510#29 P-AC02-510#30	1 1							
		Motor (Fan)	Insulation test											Insulation check
			Bearing (load side) (fan side)	S-AC02-503#07 S-AC02-503#07	1 1	S-AC02-503#08 S-AC02-503#08	1 1							Noise check
Valves	Blow-off solenoid valve		P-FC81-649	1	P-FC81-649	1							Actuation check	
	3-way solenoid valve		P-FC81-599#01	1	P-FC81-599#01	1								
	Valve disc, suction check valve		H05110010	1	H05110010	1							Actuation check	
	Diaphragm		P-AF02-503	1	P-AF02-503	1							if malfunction occurs during operation.	
	Piston for capacity control valve	O-Ring	P-GA02-540#61	1	P-GA02-540#61	1								
			P-GA02-540#14	1	P-GA02-540#14	1								
			ZD11P01000	1	ZD11P01000	1								
	Pressure keeping check valve	Replacement kit (*1)		S-FC12-504	1	S-FC12-504	1							
O-Ring			P-FC12-531##008	1	P-FC12-530##008	1								

	Part name	Spec (section)	Part No.				Maintenance intervals (Service years/months or running hours, whichever comes first)					Remarks	
			SG900A/SG900AD		SG1230A/SG1230AD		Daily	Semi-annually (every 3000h)	Annually (every 6000h)	Every 2 years (12000h)	Every 4 years (Overhaul)		
			QTY		QTY								
Valves	Safety valve							Actuation check					
	Oil recovery check valve							Actuation check					
	Pressure control valve		S-FC32-504 (Inner parts)	1	SP-V31-003 (Inner parts)	1							
	High vacuum preventive solenoid valve		SP-V31-003	1	SP-V31-003	1							
	Dryer (drain discharge solenoid valve)	(Dryer-integrated type only)	S-FC41-531	2	S-FC41-531	2	Actuation check		Actuation check				
Coolers	Oil cooler											Adjust cleaning frequency according to the operating conditions.	
	After cooler							Cleaning					
	Dryer condenser	W/ Dryer type only						Cleaning					
Others	KOBELCO GENUINE SCREW OIL	20 L can	P-HD11-509	1	P-HD11-509	1	Oil level check, Replenishment						
	Recommended lubricating oil		-	-	-	1							
	Oil level gauge		P-EA05-518#01	1	P-EA05-518#01	1							
	Silencer			P-CD01-510	1	P-CD01-510	1						Replace the silencer together with the cup and the filter.
			Cup	4A80L01039P1	1	4A80L01039P1	1						
			Filter	P-CE05-561	1	P-CE05-561	1						
	Rubber hose			P-FB11-654#06	1	P-FB11-654#06	1						
				P-FB11-653#05	1	P-FB11-653#05	1						
				P-FB11-650#05	1	P-FB11-650#05	1						
	Rubber hose (A/C-dryer)	W/ Dryer type only	P-FB11-655#01	1	P-FB11-655#01	1							
	Magnet filter		P-F60-001	6	P-F60-001	6				Cleaning			
	Oil separator tank									Cleaning			
	Drain separator	W/O Dryer type only	SP-FC41-501 (Inner parts)	1	SP-FC41-501 (Inner parts)	1							
	Dryer condenser	(W/ Dryer type only)							Cleaning				
	Vib. iso. Rubber (comp.+motor)		P-HD01-677#07	4	P-HD01-677#07	4							
Oil supply port	O-Ring	P-GA02-540#23	1	P-GA02-540#23	1								
Duct hose		P-FB11-646#03	1	P-FB11-647#01	1								
Vib. iso. Rubber (oil separator)		P-HB01-681	3	P-HB01-681	3								
Motor grease	400g	P-HD11-528#01	-	P-HD11-528#01	-	○ Grease up every 200h							

- The warranty period shall be one year.
- The maintenance intervals listed above are based on normally expected practices, and are not guaranteed. They may be shortened depending on the operating conditions and environment. Therefore adjustment of intervals is required according to the operating conditions.

**NOTE:**

The maintenance intervals in the table above are base on the 6000 running hours per year. In the operation beyond this standard, maintenance is required when the preparation time is reached before the maintenance period.

- Marks in the table indicate the following.
  - : Visual inspection
  - : Inspection, cleaning and maintenance (Some parts may need replacement.)
  - : Replacement
- Replacement parts described in the table are major parts. Packing, O-ring and other small parts to be replaced together with major parts are omitted.
- Overhaul should be performed every 4 years (regardless of running hours). At the same time, replace the fan motor and clean the coil.

\*1. The replacement kit includes O-rings, springs, check valves and piston ass'y.

## 2 Daily Maintenance

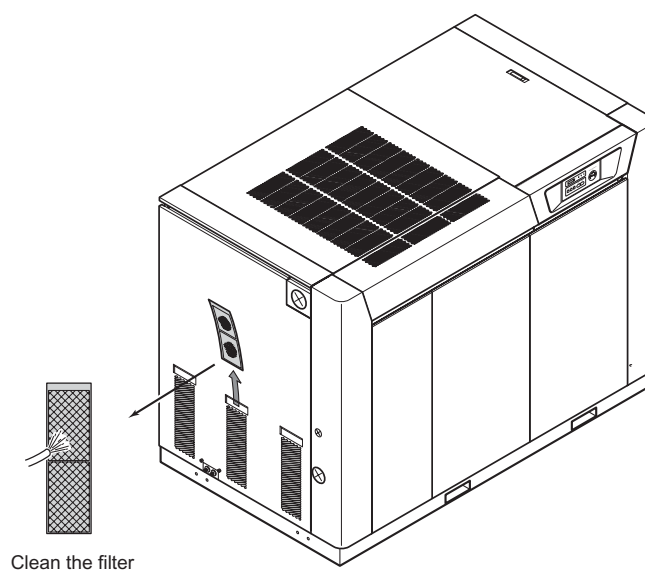
### *Cleaning of dust filter*

#### Cleaning

Remove the dust filter cover and take the filter out.  
The filter should be either vacuumed or cleaned with water.

SG900A/SG1230AD

Name	SG900A (D)	SG1230A (D)
Dust filter	P-CE05-555#16 P-CE05-521 The following part is required on the dryer-integrated type. P-CE05-542#01	P-CE05-555#16 P-CE05-521 The following part is required on the dryer-integrated type. P-CE05-542#02

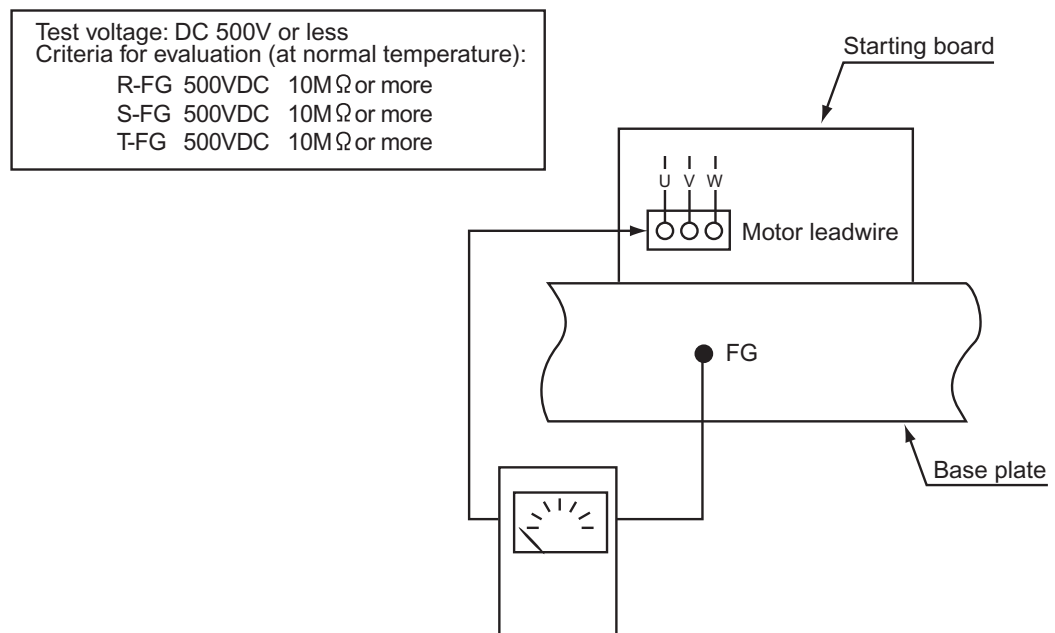




### 3 Insulation Test Procedures for Compressor Unit

This compressor has an meter panel, which consists of electronic parts, and an inverter. Various kinds of surge absorbers are also equipped for noise prevention. Therefore, if insulation tests are made on the unit at the voltage beyond the setting for the surge absorbers, it could cause wrong test results and damage on the controller.

Perform insulation tests following the procedures shown below.



[Insulation test for motor]

1. Measure the insulation of terminals for the motor leadwires and the base plate (FG: frame ground).

[Insulation test for fan motor]

1. Disconnect the motor leadwires (U1, V1 and W1).
2. Measure the insulation of terminals for the motor leadwires and the base plate (FG: frame ground).

[Insulation test for control circuit]

1. Disconnect the power cables (R, S and T) connected to the inverter panel. Also disconnect all the connectors inserted into the controller.
2. Measure the insulation of terminals on the terminal block of starting board and the base plate (FG: frame ground).

The insulation test procedures mentioned above conform to the Electrical Appliance and Material Control Law.

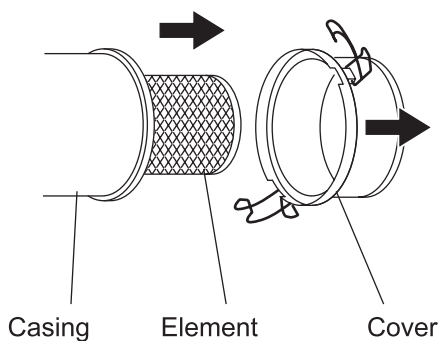
## 4 Cleaning of Suction Filter

### Cleaning

- Open the maintenance door on the right side cover. Take out the element and clean it by blowing air from the inside. If the element is clogged severely, replace it.
- After cleaning, fit the element into the body firmly and attach the cover.
- The suction filter may be clogged early under operating environments where the dust filter is clogged early. In such cases, early replacement is recommended.
- Operation continued without replacing or cleaning the suction filter may cause damage to the duct hose.

Part No.

Suction element	S-CE05-503
-----------------	------------

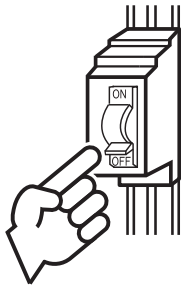


## 5 Motor Grease Control



- Two shaft seals for the main motor incorporate a grease valve. Refill 15 g of grease through each grease valve at intervals of 2000 running hours. Refill grease using a grease gun while the motor is running. Use KOBELCO genuine grease, "KOBELCO GENUINE SUPER GREASE" (sold separately).
- Never mix different brands of grease.

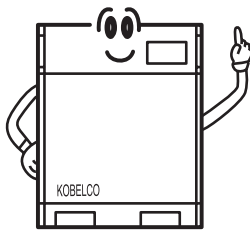
## 8 . Shutdown for a Prolonged Period



- When the compressor is not used for a prolonged period, be sure to turn off the earth leakage breaker.

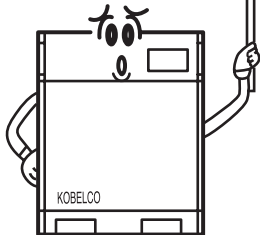
- When the compressor is not used for a prolonged period, be sure to close the discharge air valve.

perform a break-in  
once a week.



- It is recommended to perform a break-in once a week for about 20 minutes to keep the machine in good order and to prepare for the next operation. Follow the steps described in **3** Operation Procedure on page 5-4 for break-ins.

Do not resume operation!



- If any abnormal conditions are detected, request a service in order to ensure a trouble-free run at the next operation.

- Follow the steps described in **3** Operation Procedure when on page 5-4 resuming operation.



Never leave the compressor outdoors.

## 9 . Relocation and Disposal

### Relocation

Kobelion-SG compressors can be used in either of 50 Hz area or 60 Hz area. When relocating the compressors in a different frequency area, parts should be replaced to suit the frequency.

For details, contact the designated service shop, distributor, or Customer Service of KOBE STEEL.

### Disposal

To dispose of any Kobelion compressor, drain the lubricating oil. For the dryer-integrated type, ask the specialist to extract or dispose of (chemical treatment) the refrigerant.

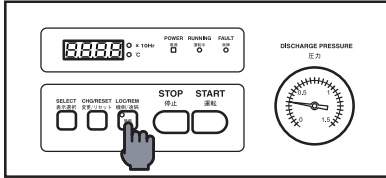
For details, contact the designated service shop, distributor, or Customer service of KOBE STEEL.

# 10 . Remote Control

## Remote Control Setting Procedure

Remote control can be selected following the procedure below.

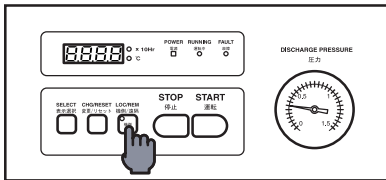
- 1 Turn on the power.
- 2 Press and hold the LOC/REM switch for 2 seconds or more and turn off the LOCAL lamp.



- 3 Turn off the power and connect cables to the following terminals, referring to the Wiring Diagram on page 11-5.  
 H: Remote ON  
 (“a” contact: When closed, the compressor is started.)  
 G: Remote OFF  
 (“b” contact: When open, the compressor is stopped.)  
 F: Common

Use caution not to get electrical shock during wiring work when the line is active.

- 4 To return to the Local operation mode, press and hold the LOC/REM switch for 2 seconds or more.



### NOTES:

- 1) The stop operation using the Stop button on the control panel is valid regardless of LOCAL/REMOTE selection.
- 2) LOCAL/REMOTE selection can be changed during operation.

: Valid    x : Invalid

Selection	Start button	Stop button	Remote ON	Remote OFF
Local			x	x
Remote	x			

## Handling External Signals

The following external signals are provided. (See the electric wiring diagram on page 11-5,6)

<Input signals to compressor>

- |               |               |              |
|---------------|---------------|--------------|
| • Remote Run  | (Terminal H-F | Closed: Run) |
| • Remote Stop | (Terminal G-F | Open: Stop)  |

<Output signals from compressor>

- |                  |               |                    |
|------------------|---------------|--------------------|
| • Fault (common) | (Terminal K-I | Closed: Emergency) |
| • Remote         | (Terminal L-I | Closed: Remote)    |
| • Running        | (Terminal J-I | Closed: Running)   |

### NOTES:

- (1) Input signals to the compressor should be no-voltage contact input.  
Voltage could damage the controller.
- (2) The rated load to use the output signals from the compressor should be AC250V 2A or DC 30V 2A at maximum.
- (3) The terminal G-F has been short-circuited at the factory.  
Remove this terminal in the remote control mode.
- (4) If the RUNNING lamp on the meter panel blinks (during water removing operation), the signal from the controller will continue to be output without flickering in synchronization with the lamp.
- (5) Remote (input signal to controller) should be input by one shot at 500 ms or more.  
Shorter pulse signals may not be recognized.



CAUTION

Any modification without prior permission of KOBE STEEL may invalidate the warranty even within the warranty period.

# 11 . Specifications

## 1 Specifications

### SG900A/SG900AD

Items		Types	SG900A-5/6	SG900A-5/6H	SG900AD-5/6	SG900AD-5/6H
Frequency (Hz)			50/60			
Discharge air volume (m <sup>3</sup> /min)			9.0	7.5	9.0	7.5
Suction condition	Pressure (bar)	Atmospheric pressure (1 bar)				
	Temperature (°C {°F})	2 {36} ~40 {104}				
Discharge condition	Pressure (bar)	6.9	8.3	6.9	8.3	
	Temperature (°C {°F})	45 {113} (at ambient temperature of 30°C {86°F})				
Shaft power (kW)			55.0			
Motor specifications	Type	Three-phase squirrel-cage induction type				
	Nominal power (kW)	55.0				
	Voltage (V)	200 [380·400·415] / 200·220 [380·400·440]				
	Number of poles	2 poles				
	Protection type	Totally enclosed				
	Cooling method	Air cooling				
	Starting method	Star-Delta				
	Insulation class	F				
Motor fan specifications	Type	Three-phase, squirrel-cage induction, totally enclosed type				
	Nominal power (kW)	2.2				
	Number of poles	4P				
	Insulation class	E				
Discharge pipe diameter			10k-50A Flange			
Initial lubricating oil volume (L)			60			
Dimensions: W × D × H (mm)			2080 × 1200 × 1500		2580 × 1200 × 1500	
Weight (kg)			1520		1660	
Noise level [dB (A)]			68 【front = 65】			

#### NOTES:

- (1) Discharge air volume is the value converted from the actual air volume discharged from the outlet to the suction air condition at 30°C {86°F}.
- (2) The discharge pressure gauge indicates the line pressure.
- (3) The compressor is not lubricated when shipped. Before operation, KOBELCO GENUINE SCREW OIL or the recommended lubricating oil must be supplied.
- (4) Noise level is measured at 1.5 m away from the machine and 1.0 m from the floor level in an anechoic chamber.
- (5) The compressed air cannot be used for respiratory equipment from which air is directly aspirated into human bodies.
- (6) The values in parenthesis [ ] are for the specification of 380-400-415/380-400-440 V.
- (7) Consult with us for guaranteed performance.
- (8) The motor's service factor SF is rated at 1.1.

Items		Types	Dryer
Electric characteristics	Frequency (Hz)		Common to 50/60
	Voltage (V)		Three-phase 200 [ 380·400·415 ] / 200·220 [ 380·400·440 ]
	Power consumption (kW)		2.49/3.02
	Current (A)		8.94 [ 4.47 ] / 9.72 [ 4.86 ]
Detailed specification	Outlet dew point (°C {°F})		12 {54} under pressure
	Compressor		Totally enclosed type (rotary type), Class E insulation
	Condenser		Cross fin coil type forced air cooling
	Refrigerant control method		Capillary tube
	Temperature control method		Hot gas bypass valve (pressure control valve)
	Refrigerant		R-407C
	Quantity of refrigerant (g)		1550
Protection instrument			Motor protector (dryer compressor)
			Thermal relay (dryer compressor)
			High pressure switch
			Back stop relay

NOTES:

- (1) The outlet dew point is the value measured at the atmospheric temperature of 35°C {95°F}, humidity of 75% and discharge pressure of 6.9 bar.
- (2) The specification of 380·400·415/380·400·440 V is transformed into 200 or 220 V by the transformer for the dryer.

Items		Types	Fan inverter
Electrical characteristics	Frequency (Hz)		Common to 50/60
	Voltage (V)		Three-phase 200 [380·400·415] / 200·220 [380·400·440]
	Capacity (kVA)		4.2
	Rated current (A)		9.35 [4.67]
Detailed specification	Cooling method		Air cooling
	Control mode		Sinusoidal PWM
	High frequency prevention		Noise filter equipped

NOTE:

- (1) The value in the parenthesis [ ] is for the specification of 400V class.



## SG1230A/ SG1230AD

Items		Types	SG1230A-5/6	SG1230A-5/6H	SG1230AD-5/6	SG1230AD-5/6H
Frequency (Hz)			50/60			
Discharge air volume (m <sup>3</sup> /min)			12.3	10.0	12.3	10.0
Suction condition	Pressure (bar)		Atmospheric pressure (1 bar)			
	Temperature (°C {°F})		2 {36}~40 {104}			
Discharge condition	Pressure (bar)		6.9	8.3	6.9	8.3
	Temperature (°C {°F})		45 {113} (at ambient temperature of 30°C {86°F})			
Shaft power (kW)			76.0			
Motor specifications	Type		Three-phase squirrel-cage induction type			
	Nominal power (kW)		76.0			
	Voltage (V)		200 [380·400·415] / 200·220 [380·400·440]			
	Number of poles		2 poles			
	Protection type		Totally enclosed			
	Cooling method		Air cooling			
	Starting method		Star-Delta			
	Insulation class		F			
Motor fan specification	Type		Three-phase, squirrel-cage induction, totally enclosed type			
	Nominal power (kW)		3.7			
	Number of poles		4P			
	Insulation class		E [B]			
Discharge pipe diameter			10k-50A Flange			
Initial lubricating oil volume (L)			70			
Dimensions: W × D × H (mm)			2080 × 1200 × 1500		2580 × 1200 × 1500	
Weight (kg)			1550		1550+300 (Dryer)	
Noise level [dB(A)]			69 【 front = 67 】			

### NOTES:

- (1) Discharge air volume is the value converted from the actual air volume discharged from the outlet to the suction air condition at 30°C {86°F}.
- (2) The discharge pressure gauge indicates the line pressure.
- (3) The compressor is not lubricated when shipped. Before operation, KOBELCO GENUINE SCREW OIL or the recommended lubricating oil must be supplied.
- (4) Noise level is measured at 1.5 m away from the machine and 1.0 m from the floor level in an anechoic chamber.
- (5) The compressed air cannot be used for respiratory equipment from which air is directly aspirated into human bodies.
- (6) The values in parenthesis [ ] are for the specification of 380·400·415/380·400·440 V.
- (7) Consult with us for guaranteed performance.
- (8) The motor's service factor SF is rated at 1.1.

Items		Types	Dryer
Electric characteristics	Frequency (Hz)		Common to 50/60
	Voltage (V)		Three-phase 200 [ 380· 400· 415 ] / 200· 220 [ 380· 400· 440 ]
	Power consumption (kW)		3.58/4.3
	Current (A)		12.78 [ 6.39 ] /13.83 [ 6.92 ]
Detailed specification	Outlet dew point (°C {°F})		12 {54} under pressure
	Compressor		Totally enclosed type (rotary type), Class E insulation
	Condenser		Cross fin coil type forced air cooling
	Refrigerant control method		Capillary tube
	Temperature control method		Hot gas bypass valve (pressure control valve)
	Refrigerant		R-407C
	Quantity of refrigerant (g)		2300
Protection instrument			Motor protector (dryer compressor)
			Thermal relay (dryer compressor)
			High pressure switch
			Back stop relay

NOTES:

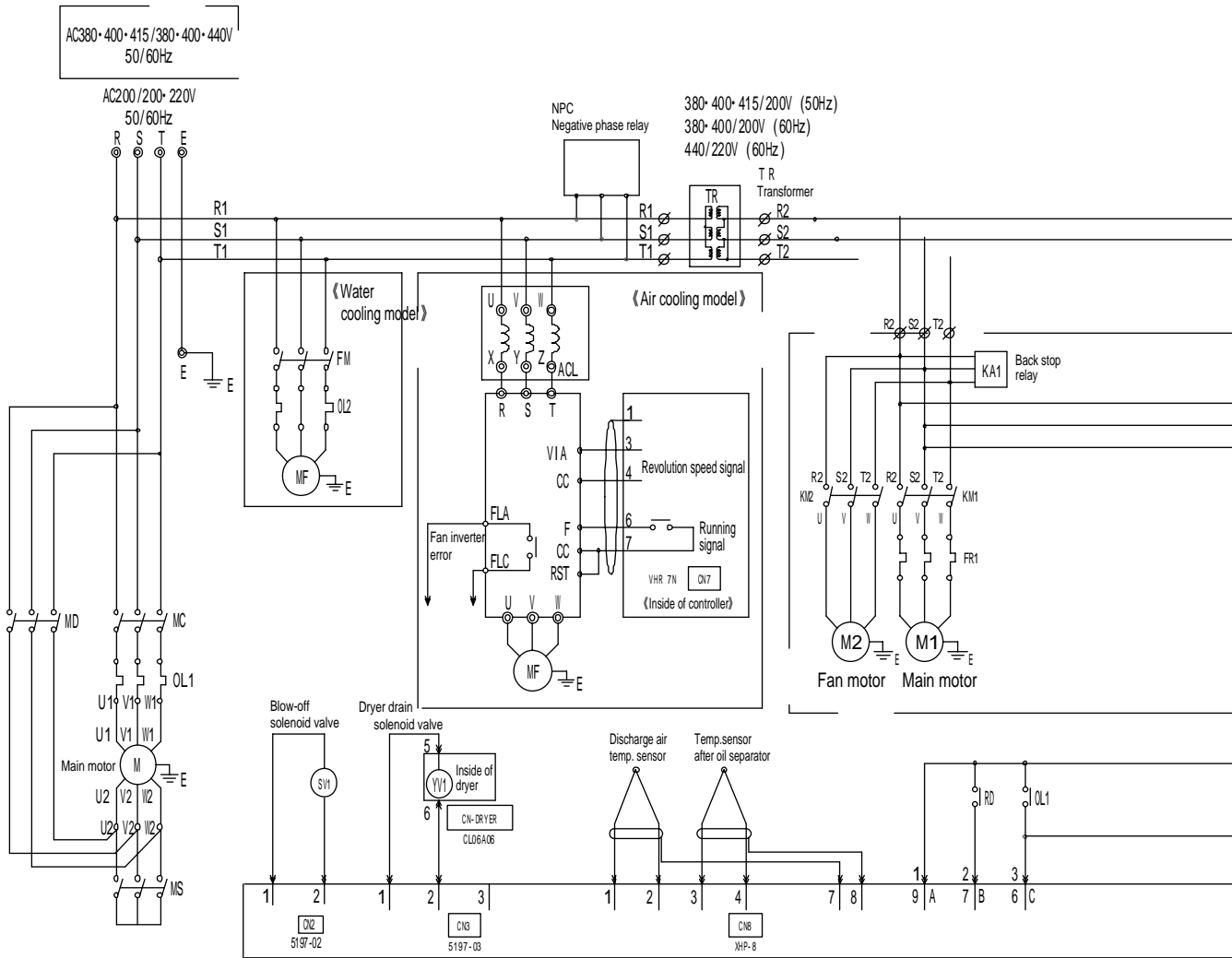
- (1) The outlet dew point is the value measured at the atmospheric temperature of 35°C {95°F}, humidity of 75% and discharge pressure of 6.9 bar.
- (2) The specification of 380·400·415/380·400·440 V is transformed into 200 or 220 V by the transformer for the dryer.

Items		Types	Fan inverter
Electrical characteristics	Frequency (Hz)		Common to 50/60
	Voltage (V)		Three-phase 200 [380· 400· 415] / 200· 220 [380· 400· 440]
	Capacity (kVA)		6.7 [7.2]
	Rated current (A)		14.87 [8.07]
Detailed specification	Cooling method		Air cooling
	Control mode		Sinusoidal PWM
	High frequency prevention		Noise filter equipped

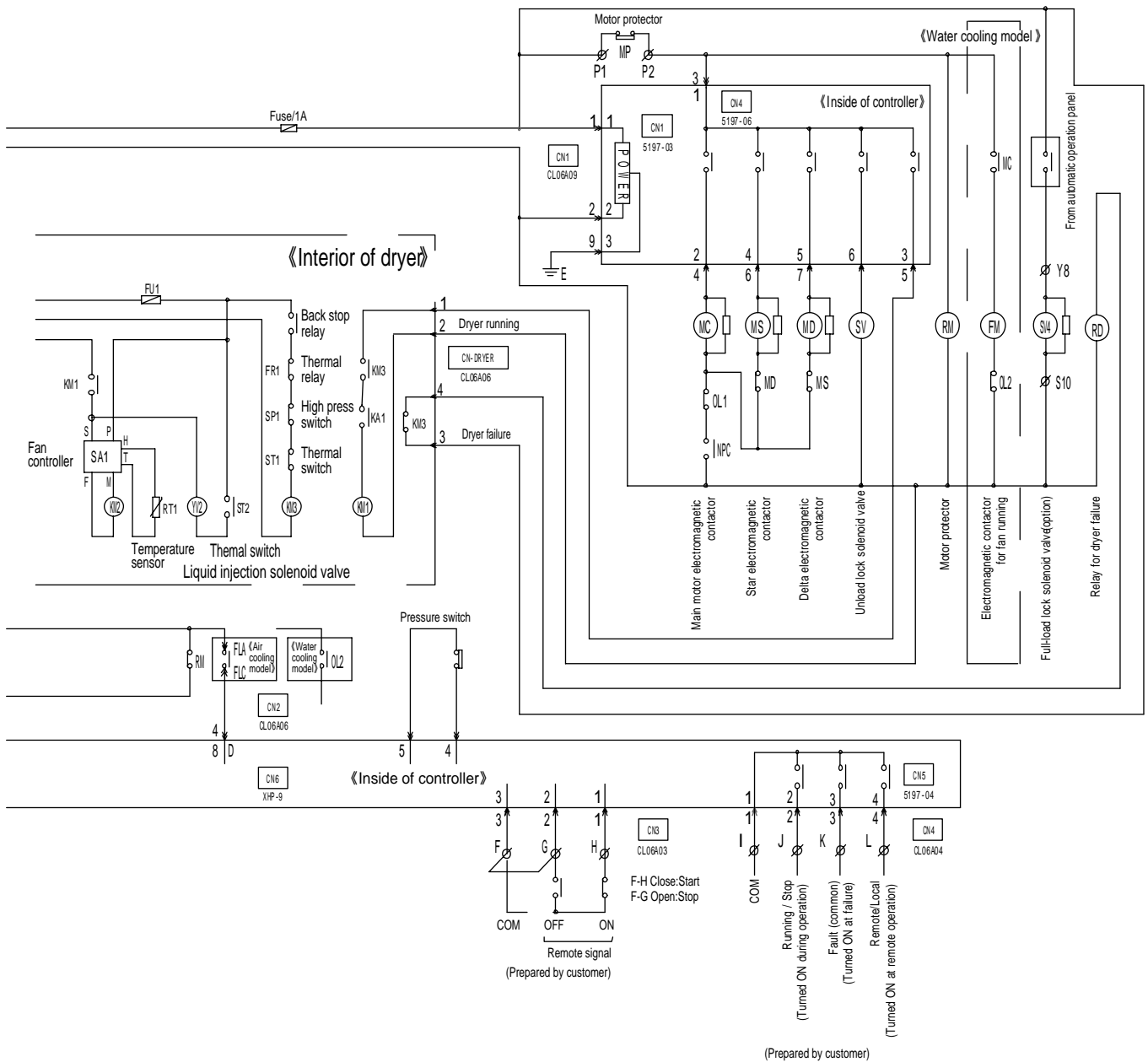
NOTE:

- (1) The value in the parenthesis [ ] is for the specification of 400V class.

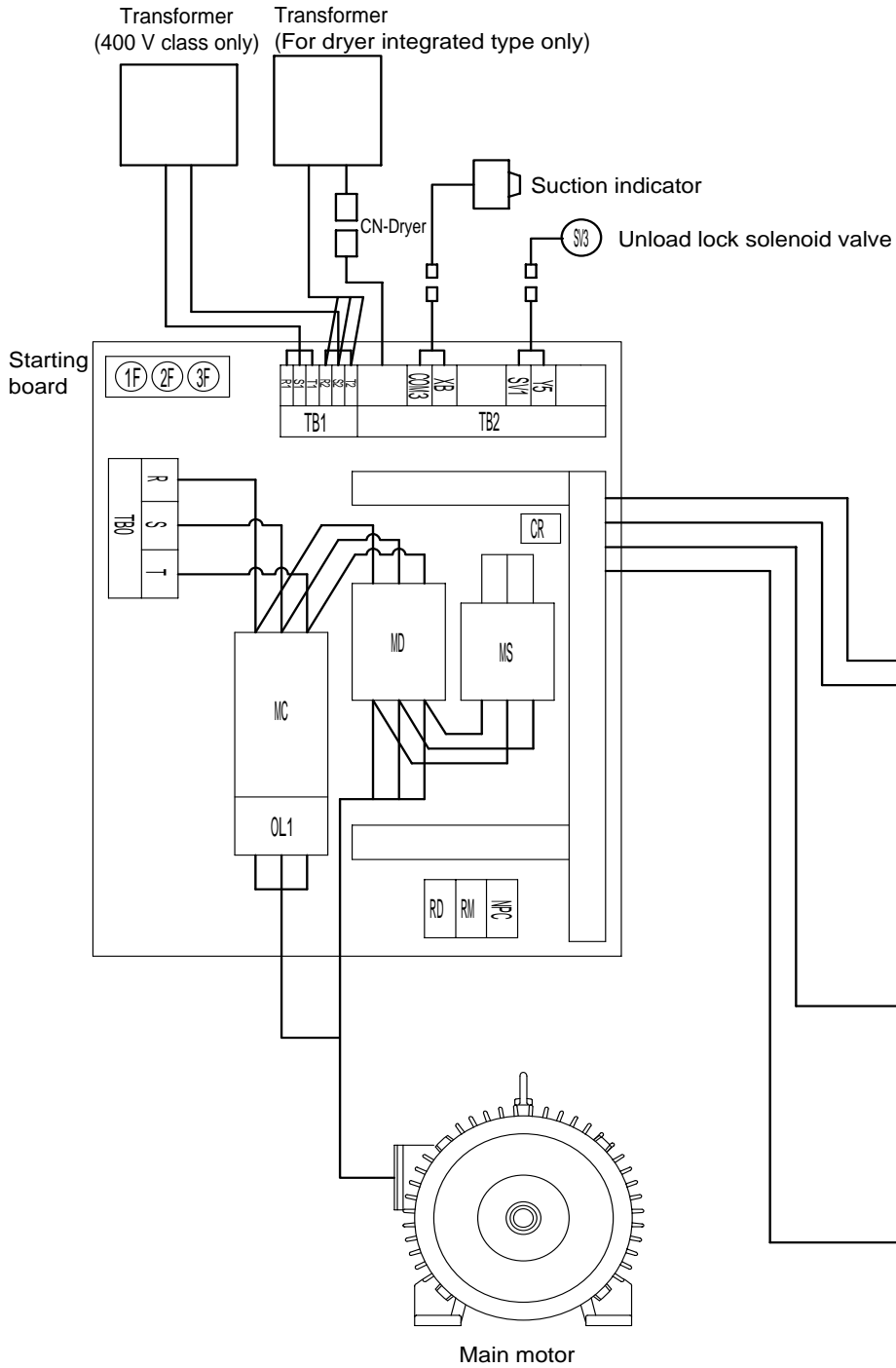
## 2 Wiring Diagram

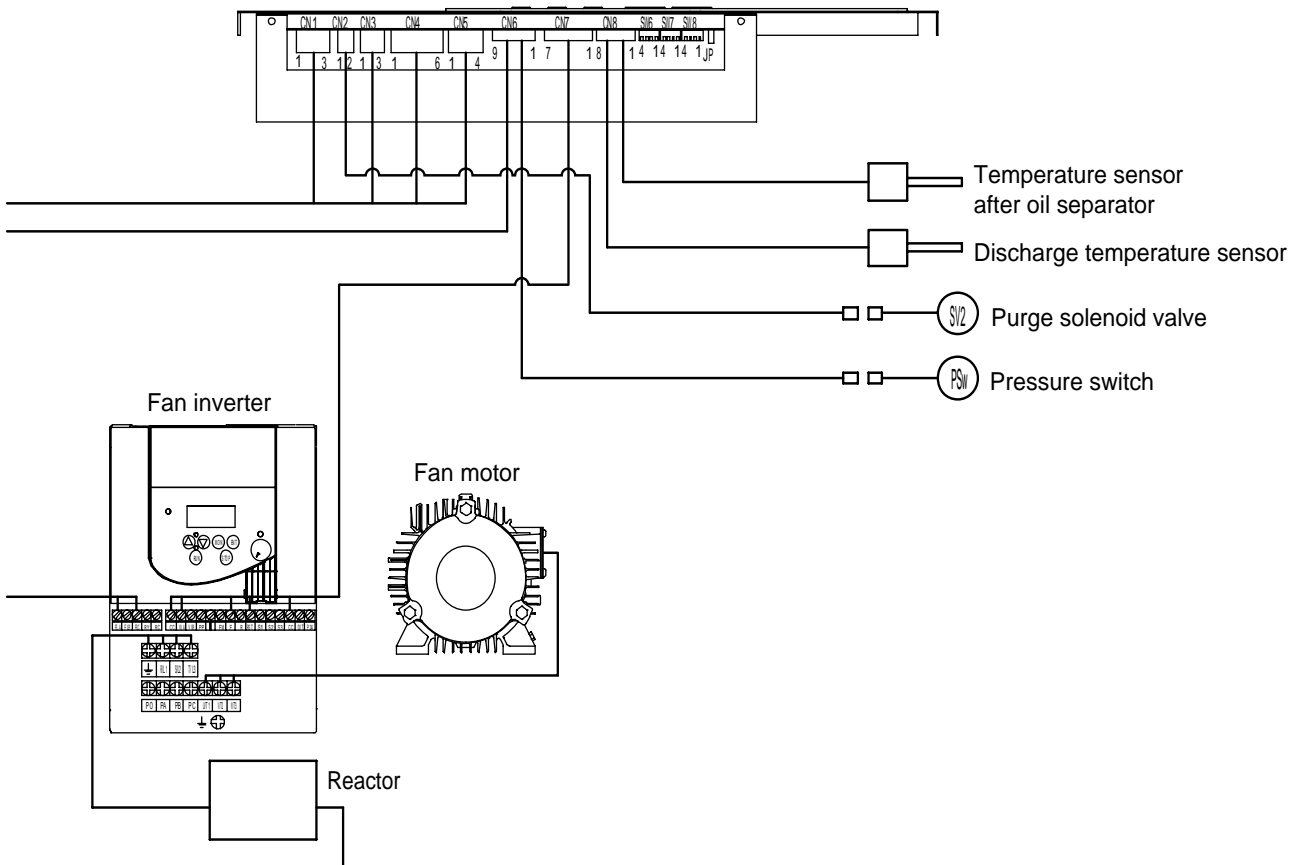
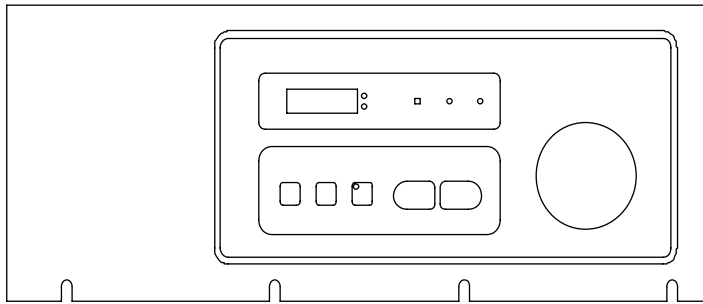


To perform remote control, read Chapter 10 "Remote Control" (page 10-1 and 10-2).



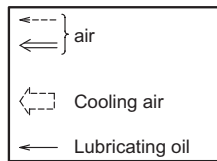
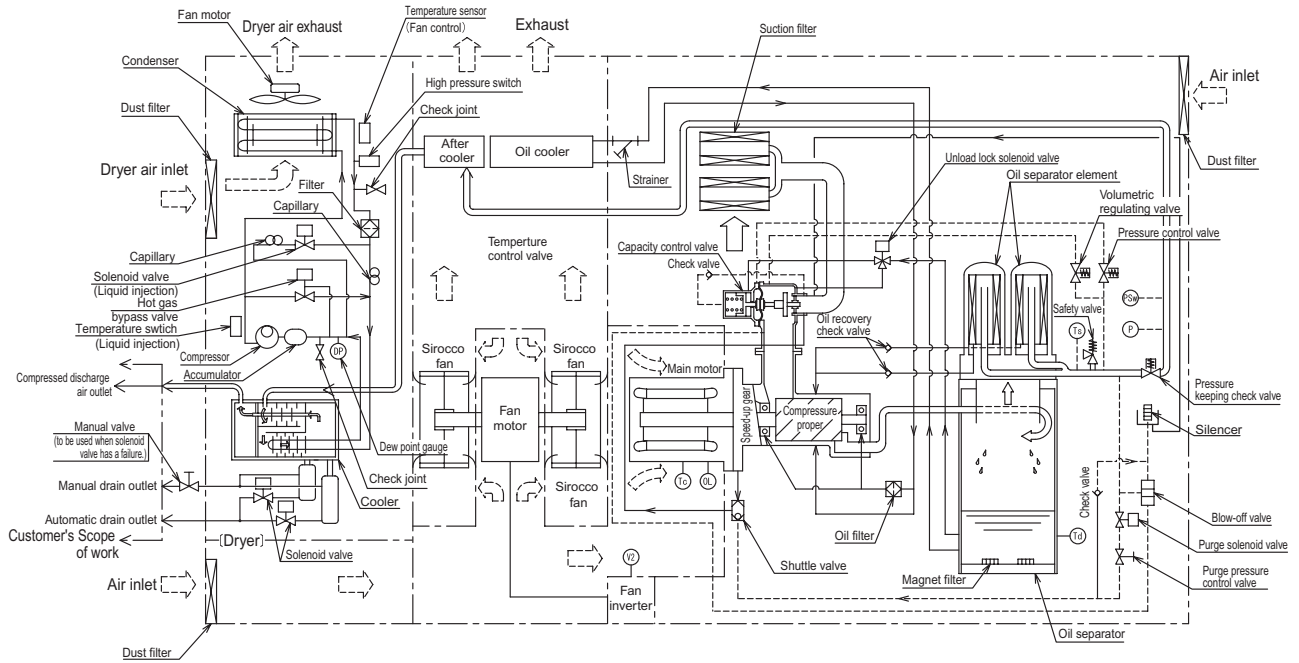
### 3 Connection Diagram





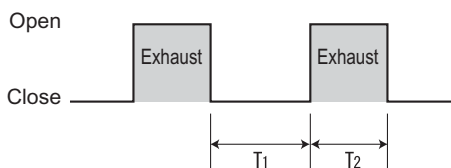
## 4 System diagram

SG900A/SG900AD  
SG1230A/SG1230AD



Symbol	Name
PSw	Pressure switch
P	Pressure gauge
Td	Discharge temperature sensor
Ts	Temperature sensor after oil separator
Tc	Main motor protector
V2	Inverter failure
OL	Overcurrent relay

### Timing for dryer drain exhaust solenoid valve



	(sec.)	
	SG900AD	SG1230AD
T <sub>1</sub>	25	25
T <sub>2</sub>	4	4

## 12 . Warranty

### Warranty

If the machine has a failure when in proper operation according to this instruction manual or other instructions, we will repair on our expense for certain period and on certain conditions. Consult with our distributor.

Each machine has a machine number on it.  
This number is important for quality control of the product. Make sure that the same number is indicated on the machine and the warranty card.

### Warranty period

The warranty period of this machine shall be 12 months from the date of completion of the test run or 15 months from the date of shipment, whichever comes earlier.  
“The date of completion of the test run” means the date of completion of the test run at the site (comissioning).

### Warranty conditions

If a failure occurs due to our design or workmanship within the warranty period, we will make repair or change faulty parts promptly on our expense.

### Exclusion of warranty

We shall not warrant any of the following faults even within the warranty period:

- Any faults caused by natural disasters or force majeure.
- Any faults caused by changes in design or materials made by the customer without prior permission.
- Any faults caused by repairs or modifications made by the customer without prior permission.
- Any faults caused by neglect to follow the instruction for proper operation, regular maintenance and inspection, and storage described in the specifications and the instruction manual.
- Any faults induced by defects in equipment other than the machine, foundation, building, etc.
- Reduction in productivity due to the failure of the machine, compensation for loss of production during the shutdown, or any other damages.

Consult with our distributor for repairs on the machine after the warranty period is expired. Repairs will be made on the customer's expense upon request if the repairs can maintain the performance.





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