



**KOBELCO
COMPRESSORS
(AMERICA), INC**

INSTALLATION AND MAINTENANCE MANUAL



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WARNING

BE SURE TO COMPLETELY READ AND UNDERSTAND THE CONTENTS OF THIS MANUAL BEFORE ANY ATTEMPT IS MADE TO INSTALL, OPERATE OR MAINTENANCE THIS AIR COMPRESSOR.

NOTICE

THE OPERATION OF A ROTARY SCREW AIR COMPRESSOR IS INHERITLY DANGEROUS.

KOBELCO COMPRESSORS (AMERICA), INC. HAS MADE EVERY EFFORT TO PROVIDE YOU WITH A SAFE AIR COMPRESSOR.

ONLY TRAINED PERSONNEL, WHO HAVE BEEN DESIGNATED, SHOULD OPERATE AND MAINTAIN THIS AIR COMPRESSOR.

FAILURE TO FOLLOW THE ENCLOSED INSTRUCTIONS WILL GREATLY INCREASE THE RISK OF BODILY HARM AND/OR DEATH.

A QUALIFIED INDIVIDUAL MUST INSPECT AND APPROVE THE ELECTRICAL SYSTEM, AIR PIPING, FILTER ELEMENTS, COMPRESSOR SUCTION/ DISCHARGE, GAUGES, VALVES AND HOSING AND ANY OTHER COMPONENTS NOT LISTED THAT ARE RELATED TO THE OPERATION OF THIS AIR COMPRESSOR.

DO NOT ATTEMPT TO BEGIN OR CONTINUE TO OPERATE THIS COMPRESSOR WHEN THERE IS RELATED DANGER PRESENT.

ANY MODIFICATION TO THIS COMPRESSOR WITHOUT SPECIFIC WRITTEN APPROVAL FROM THE FACTORY (NOT DISTRIBUTOR) WILL VOID WARRANTY AND COULD GREATLY INCREASE THE RISK OF INJURY.

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GENERAL INFORMATION

General Safety

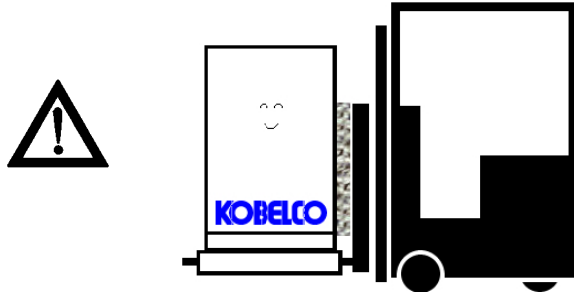
The following is provided to protect the customer from severe personal injury, dismemberment, death, property damage, fire or damage to the compressor. We cannot cover all dangerous situations, thus all users must exercise caution and common sense. All persons working on and operating compressor should only do so after reading this entire manual.

- READ AND UNDERSTAND THE ENTIRE CONTENTS OF THIS MANUAL BEFORE INSTALLING, OPERATING OR MAINTAINING THIS COMPRESSOR.
- Never maintenance machine or attempt to remove guards unless the machine is turned off and the power has been locked out.
- The compressor is equipped with an automatic start control. Never assume it is safe to start maintenance or remove guards. THE MACHINE MAY START AT ANY TIME.
- Inspect compressor daily to insure proper operation. See section 4.1 for more details.
- Periodically confirm all safety devices are properly working. Properly trained personnel only must do this. If not done properly severe bodily and property damage could occur.
- Never bypass, override, tamper or remove any safety device installed on the machine.
- Do not use the air from this compressor for breathing air. THIS UNIT DOES NOT COMPLY WITH OSHA 29 CFR 1910 REGULATIONS.
- Do not allow flammable, toxic, or corrosive gasses or dust to enter the air inlet of the compressor or electrical devices.
- Never remove, alter or deface any of the warning, danger or caution decals applied to the compressor.

- 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 modifications by the customer.
- Strictly follow the local regulations and the safety standard established in the field.
- Use only KOBELCO parts. If not observed, it can cause malfunction and / or failure.
- Be sure to ground the machine, or electrical problems including noise may damage the electric unit or cause electric shock.

Installation / Installation site

Transfer



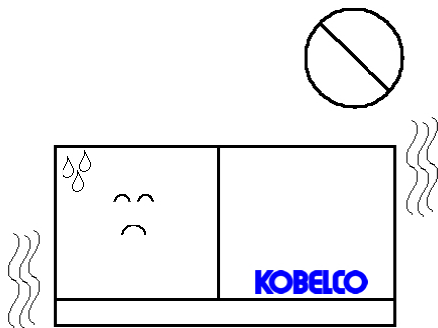
When moving the machine using a forklift or a crane, protect the sound proof enclosure with a padded cloth or padding to prevent damage.

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

Installation Site

This machine is designed for indoor use only. Do not install 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, paper pulp or sand is lifted can cause low insulation performance of electrical parts and can damage the rotor.

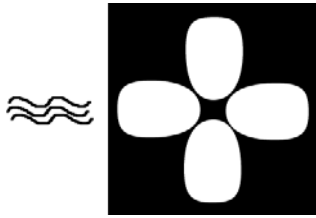
Installation in the atmosphere containing toxic gas can cause deterioration of lubricant and corrosion in parts.

Refer to the Installation Section of this manual for greater detail.

Do not install the machine near a work place where flame is used or the ambient temperature is over 100° F (38° C)

Do not place flammable objects near the machine.





When installing the machine in a closed room, provide the air suction and exhaust openings. The exhaust openings must be equipped with a ventilation fan.

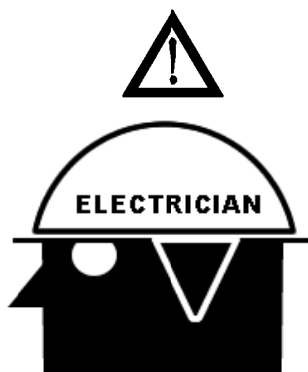
Electrical

Electric Wiring

Qualified electricians must perform electric wiring.

Leading into the power source should be done not to expose wiring. Wiring into the control cabinet requires a protective bushing in the through hole in order to protect the wires.

Electric leak (Grounded), low insulation performance, over current, short circuit, incorrectly phased operation and malfunction of the safety devices can produce spark in the motor, wiring and electric circuit.



Breaker

Use a grounded breaker for the power source in accordance with the machine model.

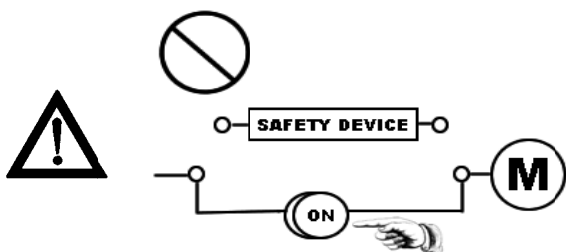
Do not use the knife switch without any grounded breakers in terms of protection.



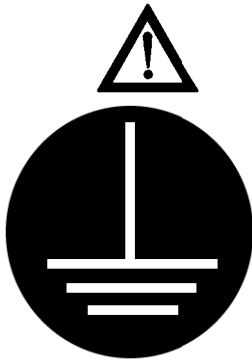
Installation

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

Any change in the set value for the electrical safety devices and operation without a safety device can abnormally heat the lubricant to start a fire. Never change the set value or operate the machine without, or use modified, safety devices.



Ground



Connect the ground wire with the ground terminal (Marked with ground symbol) on the control panel. Grounding must be in accordance with all National and Local electrical code.

Consult a qualified electrician for details.

Operation

Dangerous Objects



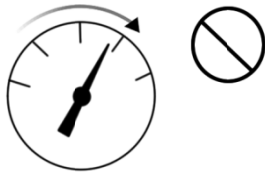
Do not put any inflammables around the machine. Never use an open flame near the machine.

The compressor can catch fire from work being carried out near the machine that produces spark, such as welding.



Do not touch the exhaust outlet and the peripheral area which are heated during the operation of the compressor and could remain hot even after shut down of the machine. This area could cause a serious burn.

Pressure



Operate the machine within the limits specified in this manual.

Rotating Portions



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

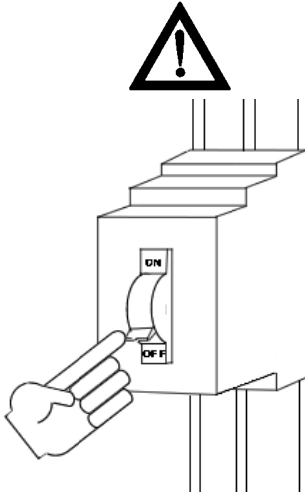
If any maintenance needs to be performed be sure to disconnect and lock out the main power supply.

Shutdown

Parallel Operation

Close the discharge stop valve of the machine which is stopped and relieve the system pressure.

Long Term Shutdown



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

Be sure to perform a start-up (to stabilized discharge temperature greater than 175°) once a month. This is essential to prevent rust in the compressor and bearing damage.

Shutdown Inspection

Pressure

Before inspecting the compressor, stop the compressor and turn off the main power supply breaker. Make sure no pressure remains in the system.

Power Supply

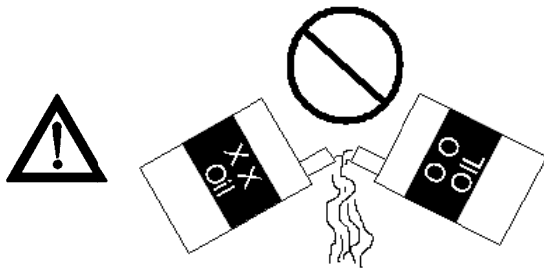
Before replenishing lubricating oil or inspecting the control board, be sure to turn off all the compressors power supply.

Remember the compressor is equipped with an automatic start function and may start at ANY time.

Lubrication

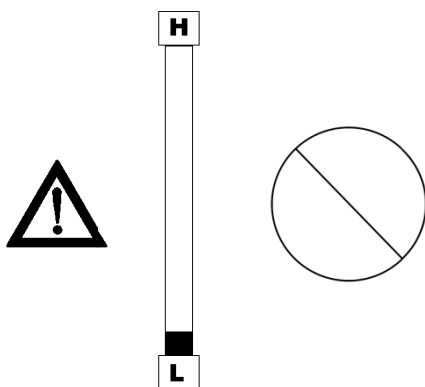
Mixing Lubricants

Use only the specified lubricating oil. Never mix oils of different brands or types.



Deterioration, shortage or emptiness of lubricant and poor lubricant circulation resulting from high viscosity can abnormally raise the lubricant temperature hot enough to start a fire. Be sure to visually check the lubricant level on the lubricant level gauge (located on the primary lubricant separator) and, if it is low, replenish or change it.

Replenishment



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

Before replenishment, be sure to turn off the power supply and stop the compressor. Note that the pressure remains in the oil separator for minutes after the compressor is stopped. Make sure no pressure remains in the system before the lubricant is replenished.

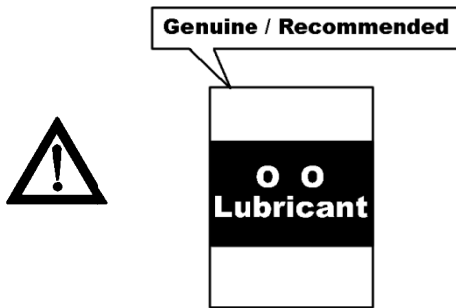
Changing Lubricant

Maximum service life of the lubricant is 3,000 hours, though it depends on the operational conditions. Be sure to completely drain oil lubricant, this included all tubing and coolers.

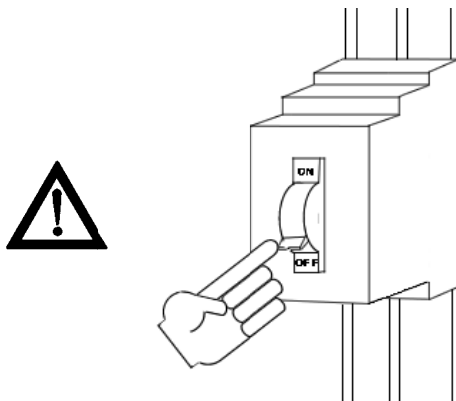
Deteriorated lubricant requires immediate and full change.

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

When changing the lubricant, be sure to replace the lubricant filter element.



Rebuilding



Any overhaul should be performed every five years, regardless of operation hours. At that time, change the main motor bearings and clean the coil.

The power supply must be cut off and locked out to perform an overhaul on this machine.

Description of Components

Motor

The standard Kobelco Ka Series Compressor is equipped with an industrial quality motor. The motor is suitable for service with 480 volts, 240 volts and in some cases as low as 208 volts with a standard three phase 60 Hertz AC input.

The motors are equipped with a NEMA standard C-face. The C-face is used to properly align the compressor with the drive shaft of the motor.

15 – 30 HP compressor packages are equipped with motors that have a dual shaft configuration. The auxiliary shaft is used to drive the cooling fan and the motor has been designed to accommodate the extra HP draw required by the fan.

40 & 50 HP compressors are equipped with a single shaft motor with a secondary fan motor.

If the situation occurs where the motor needs to be replaced after the warranty period expires it is not recommended to replace with a standard motor. You will encounter a shorter motor life. Please contact your distributor or the factory for further consultation.

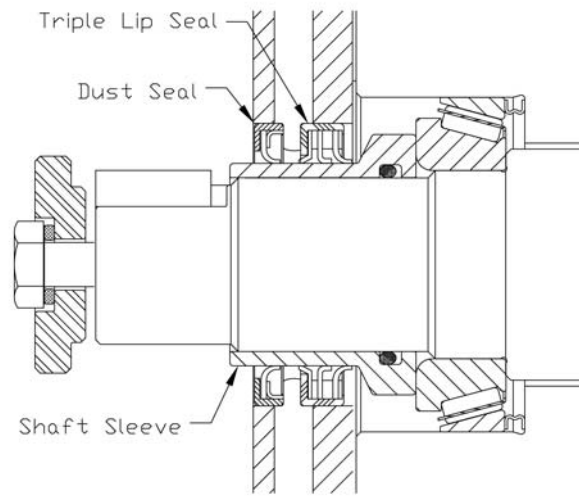
Air End

The basic air compressor is a single stage, positive displacement, lubricated rotary screw unit. The air end has been designed to provide the user with years of reliable usage.

The air end utilizes the inlet valve to supply the user with air at a volume equal to the demand, up to the maximum capacity of the compressor. The inlet valve serves as a check valve when the compressor shuts down, preventing back spinning of the rotors. It also acts as a lubricant stop valve.

Triple Lip Seal

The KA series air compressor comes equipped with a redundant shaft seal arrangement for the compressor drive shaft. This is to insure a leak proof design. The primary seal is triple lip seal riding on a shaft sleeve mounted to the drive rotor shaft. There is a



cavity separating the primary seal and the dust sleeve; this cavity will return any oil back to the suction side of the air end should the primary triple lip seal fail. A check valve is present in this circuit to prevent pressure from entering this cavity when the compressor shuts down. Do not bypass or remove this check valve. Pressurizing this cavity will permanently damage the triple lip seal. The outer dust seal prevent any contamination from entering the cavity and causing possible damage to the triple lip seal.

Intake / Volume Control

The intake / volume control of the KA Series compressor package consists of an air filter inlet valve, condensate bowl, pressure regulator, shuttle valve and a proportion control valve.

Air Filter

The air filter can be easily replaced and maintenance can be performed. The element should be cleaned periodically and replaced according to the "Maintenance Guidelines" section at the end of this manual.

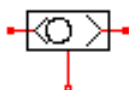
Inlet Valve

The piston actuated intake valve is controlled in two ways. The first way is known as modulation. The second is known as unloaded.

In modulation, the control pressure regulator control sends a variable pressure to the inlet valve piston gradually pushing the piston up and in turn closing the inlet valve. This reduced the amount of air ingested by the air compressor until it equals the amount demanded by the plant. At that point the pressure remains stable.

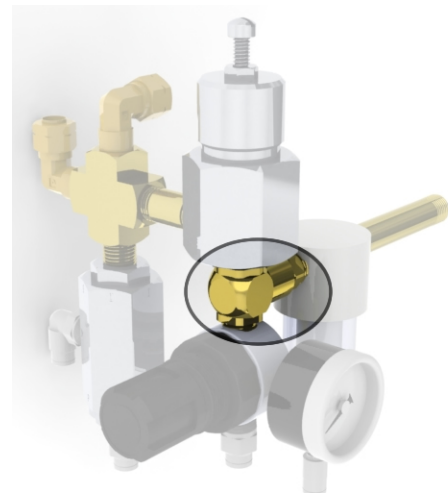
The unload state occurs only when the set pressure of the main operating pressure switch is reached, the solenoid coil for the unload control is de-energized. When the solenoid is de-energized, the air pressure from the shop line/ reserve tank is allowed to pass thru the solenoid and enter the pressure regulator and have the pressure reduced to a minimum of 50 psig. When the air exits the pressure regulator it enters the shuttle valve ("or" logic) circuit. When the line pressure enters the shuttle valve, this pressure is greater than the pressure of the control pressure regulator so the air is allowed to pass to the inlet valve actuator piston forcing closed the air inlet completely. This will stop any ingestion of air into the air end and stop any pressure from being built up.

Shuttle Valve



This fitting is not to be confused with a union fitting. This fitting is also known as an "Or Valve".

This fitting directs air pressure to the inlet valve piston from whichever source has the greatest pressure. The sources are either from the modulation valve (Top of Fitting) or the pressure regulator (Below Fitting).



Primary Separator

The primary lubricant separator is an ASME certified vessel. The vessel has been designed specifically for the KA series air compressor. NO MODIFICATIONS OF ANY KIND SHOULD BE MADE TO THIS VESSEL. This includes, but is not limited to; welding of any kind to the exterior or interior of separator or taping addition holes. Any modification to the separator will void all warranties implied or expressed.

Do not exceed rated pressure or temperature rating of the separator. The standard rating is 200 PSIG at 250°F Maximum continuous operation.

Secondary Separator

Kobelco KA series uses a spin on type secondary element. This element is of a one-piece construction and is not cleanable. The element should be replaced every 3000 hours of operation and differential pressure checked every lubricant change. See “Maintenance Guidelines” towards end of manual for maximum differential pressure.

The separator element should be replaced first if the unit fails to reach normal operating pressure.

If the element is not maintained properly the element in the separator could rupture and cause excessive downstream lubricant carry over.

The element uses a scavenger tube to return the captured lubricant back to the air end. The tube is adjustable up and down and should be positioned ¼” off the internal bottom of the element. A check valve is placed in line between the filter and air end. This allows the scavenged lubricant to return to the compressor under normal operation. When the compressor changes to the “unload” state, the check valve stops the oil that is under high pressure from entering the dry side of the element. If the check valve is removed this will cause a high amount of lubricant to enter the air lines and could possibly permanently damage the element.

Lubricant

The compressor is initially filled with one of Kobelco’s “Kobelube” lubricants.

To help maintain the warranty, this lubricant is highly recommended and should be tested according to “Maintenance Guidelines” section in rear of manual.

DO NOT MIX DIFFERENT GRADES OR TYPES OF LUBRICANTS.

When lubricant is changed, it is best to drain the unit when the lubricant is warm. This will prevent varnishing deposits and carry away as many impurities as possible. This will give you maximum lubrication life. Remember, any contamination left in the system from the old lubricant will instantly contaminate the new lubricant and could possibly reduce the life of the lubricant. Lubrication sampling will give you a clear understanding of how your lubricant is performing.

As is the case in all lubricated machinery that operates under conditions of elevated temperature and pressure, solid or semi-solid deposits may occur. Proper lubrication and change intervals will greatly reduce the possibility of deposit formation. However for larger deposits, disassembly and mechanical cleaning will be required. This should only be done by authorized service personnel and is not covered under normal warranty. Therefore it is very important to maintain the lubricant.

Model	Lubricant Capacity in Gallons
KA15	3.5
KA20	3.5
KA25	3.5
KA30	3.5
KA40	5.5
KA50	5.5

Cooling System

The cooling system consists of the following components:

- Fan
- Bar and plate heat exchanger
- Thermostat

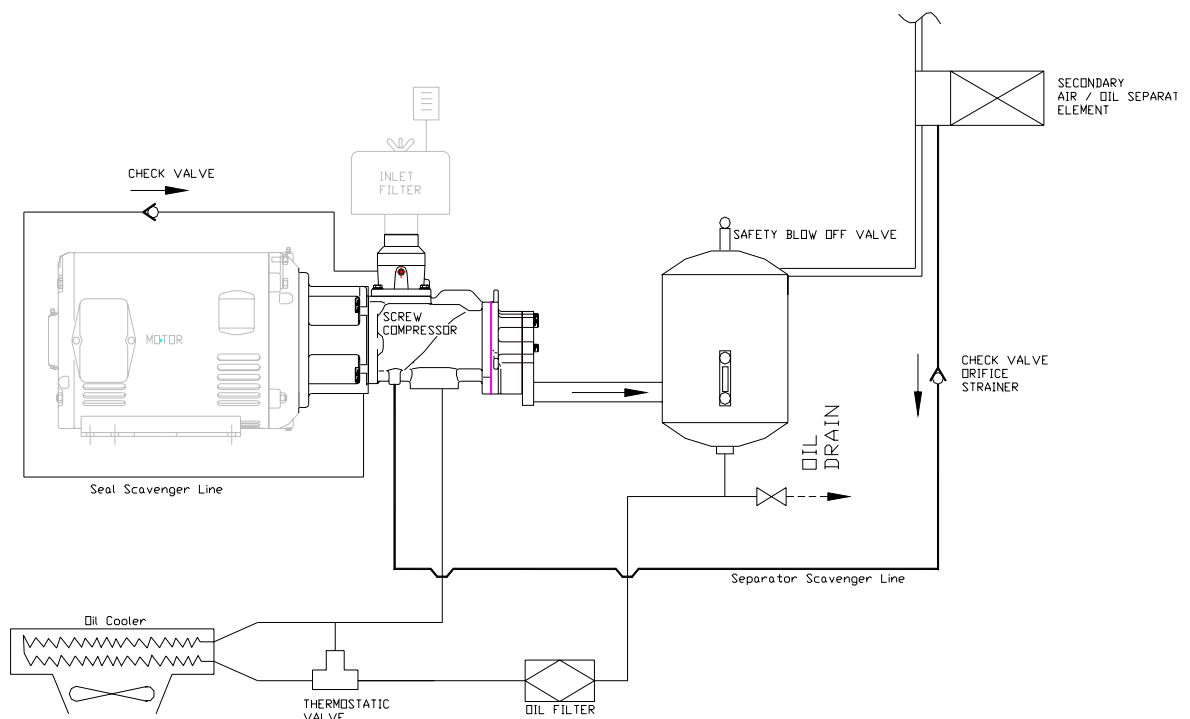
- Lubricant Filter
- Connecting tubing
- Primary separation tank

Pressure from the primary oil reserve tank causes the lubricant to flow through the system to the lower pressure injection point in the compressor.

During normal operation the compressor lubricant passes from the primary reserve tank thru the lubricant filter then into the thermostat housing. During cold starts and warm up the thermostat opens a bypass port in the thermostat housing and will cause the lubricant to partially bypass the heat exchanger. This brings the lubricant up to operating temperature quicker. Once the lubricant is up to operating temperature the thermostat closes the bypass port and causes the lubricant to have full flow through the heat exchanger.

The lubricant filter is of the spin on type and should be serviced in accordance to the “Maintenance Guidelines” section in the rear of the manual.

A drain valve is supplied for periodic fluid sampling, draining accumulated condensate and drainage of lubricant for maintenance.



Cooling System

Analog / Digital Electrical Cabinet

The KA Series is designed to have two (2) running modes; one is “Automatic” and the other is “Run” mode.

Automatic Mode

In this mode the compressor will start compressing air until the line pressure reaches the pressure set by the main operating pressure switch. Once pressure switch has been triggered, three operations occur simultaneously.

The unload solenoid valve de-energizes and allows line pressure to enter the pressure regulator. Once the line pressure is regulated to 40 PSIG the air then enters the inlet valve which causes the air for the rotors to be “cut off” thus the compressor can no longer produce compressed air.

The sump blow down solenoid valve is de-energized which allows the sump cavity to “blow down” to atmospheric pressure (0 PSIG). This reduces the amount of back pressure the screw rotors have on them. Energy consumption is reduced to about 20% of full load. The unique design of the Kobelco Air End allows oil flow to occur even without sump pressure.

Shut down timer is activated (This determines the amount of time after system reaches unload condition for the motor to shut off.).

If there is no demand on the line and system maintains “unload” condition for the amount of time set on the shut down timer, then the power to the motor(s) will be cut off. Once there is a demand on the system and the pressure is reduced to the set load setting point, three operations occur simultaneously.

1. The unload solenoid valve is re-energized and line pressure is terminated at solenoid valve body. The air trapped inside the inlet valve is then released to atmosphere, allowing the inlet valve to return to load condition.

2. The sump blow down solenoid valve is re-energized which closes the open port and will cause the system to start building pressure.
3. The shut down timer is reset.

This cycle will continue as long as the mode is in the “Auto” mode.

Run Mode

In this mode the compressor will start compressing air until the line pressure reaches the pressure set by the main operating pressure switch. Once pressure switch has been triggered, two operations occur simultaneously.

The unload solenoid valve de-energizes and allows line pressure to enter the pressure regulator. Once the line pressure is regulated to 40 PSIG the air then enters the inlet valve which causes the air for the rotors to be “cut off” thus the compressor can no longer produce compressed air.

The sump blow down solenoid valve is de-energized which allows the sump cavity to “blow down” to atmospheric pressure (0 PSIG). This reduces the amount of back pressure the screw rotors have on them. Energy consumption is reduced to about 20% of full load. The unique design of the Kobelco Air End allows oil flow to occur even without sump pressure.

The motor(s) will continue to run without shutting down. Once there is a demand on the system and the main operating pressure switch reaches the low setting point two operations occur simultaneously.

1. The unload solenoid valve is re-energized and line pressure is terminated at solenoid valve body. The air trapped inside the inlet valve is then released to atmosphere, allowing the inlet valve to return to load condition.
2. The sump blow down solenoid valve is re-energized which closes the open port and will cause the system to start building pressure.

This cycle will continue as long as the main switch is placed in the “Run” mode.

Instrumentation

Line Pressure Gauge

Line pressure refers to the pressure AFTER the minimum pressure check valve. This pressure is continuously monitored. This is the pressure the main operating pressure switch / transducer monitors.

Sump (oil reservoir) Pressure gauge

Sump pressure refers to the pressure that is BEFORE the minimum pressure check valve. This pressure is continuously monitored. This is the pressure the sump safety start switch / transducer monitors.

Typically this is not equal to the line pressure gauge.

Air / lubricant temperature gauge

Lubricant temperature is continuously indicated. The sensing location of the temperature gauge is in the sump tank on analog models and in the airend discharge stream on digital models.

Normal operating temperature of the air compressor is regulated from 170° ~ 190° F, however it may go higher depending on ambient temperature. The maximum operating temperature (shut down) of the air compressor is 230° F.

NOTE: When lubrication temperature exceeds 190°F, the lubricant life decreases by 50% for every additional 10°F. Lubrication changes need to be adjusted accordingly. Pay close attention to your lubricant sample reports. They will be your indication of lubrication life and performance.

Installation

General

Upon receipt of the compressor, be sure to completely inspect machine for any signs of possible shipping damage. The carrier should be immediately notified of damage or missing parts. Care must be exercised when transporting or moving the compressor to avoid damage to the unit.

Handling

The compressor base is equipped with slots for forklifts. These slots should also be used when moving the compressor with an overhead crane. Use spacers and spreader bars to avoid damage to the compressor and to keep it balanced.

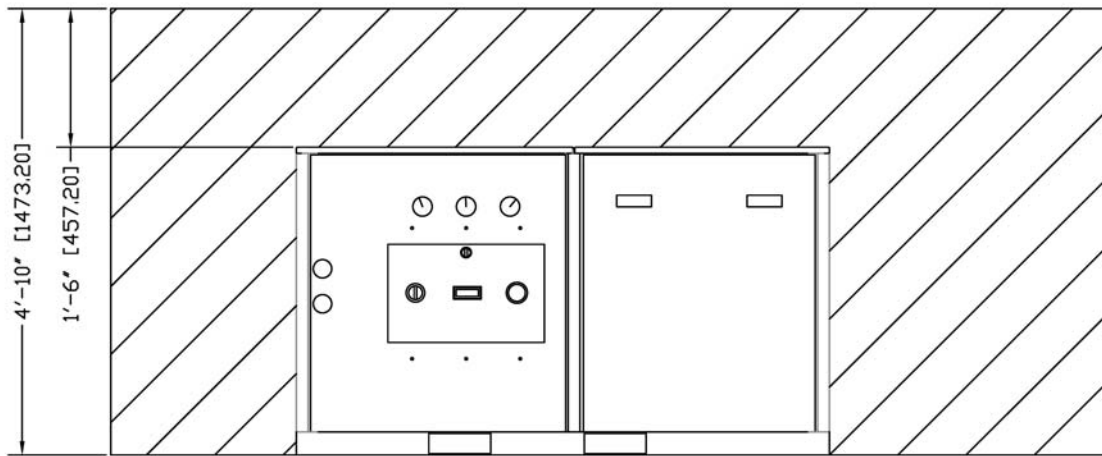
Location

The unit should be installed indoors in a clean, dust free, moisture free, and well ventilated environment.

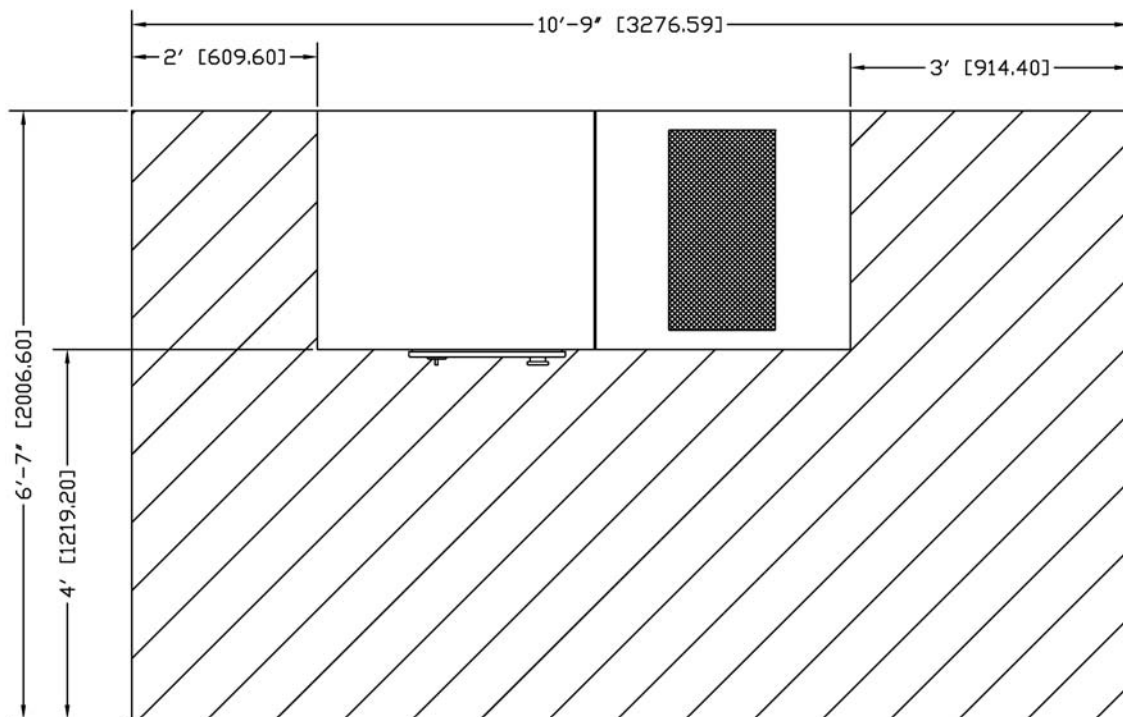
Process gasses or chemicals ingested in the compressor may react with the lubricant or materials in compressor and significantly reduce life. Avoid placing compressor anywhere near non-air vapors.

The unit must be protected against freezing and excessive ambient temperatures. Failure to properly protect the machine may result in catastrophic failure of components.

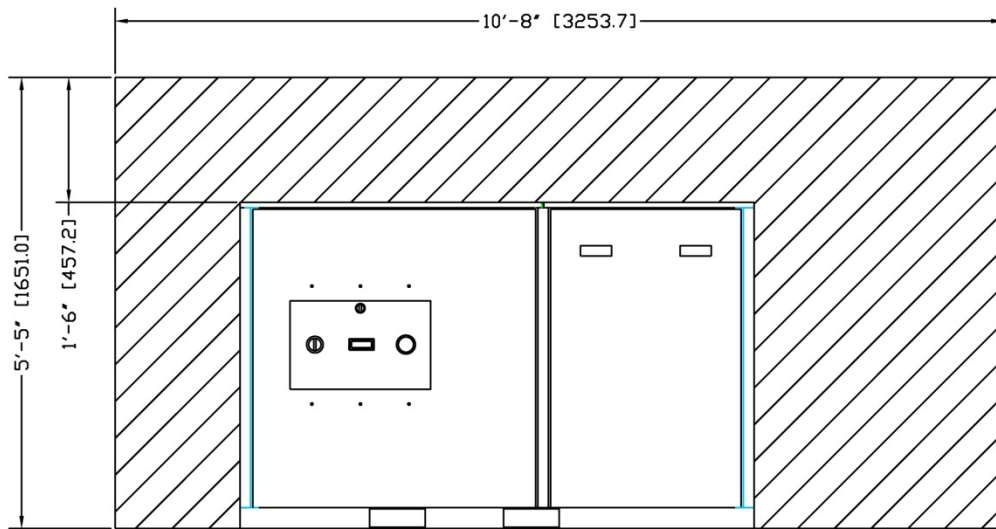
For ease of maintenance provide ample clearance around the compressor that is clutter free. It is recommended to have at least four feet in front of the compressor and a minimum of three feet on both sides and rear. See the following illustrations for specific minimum work envelopes.



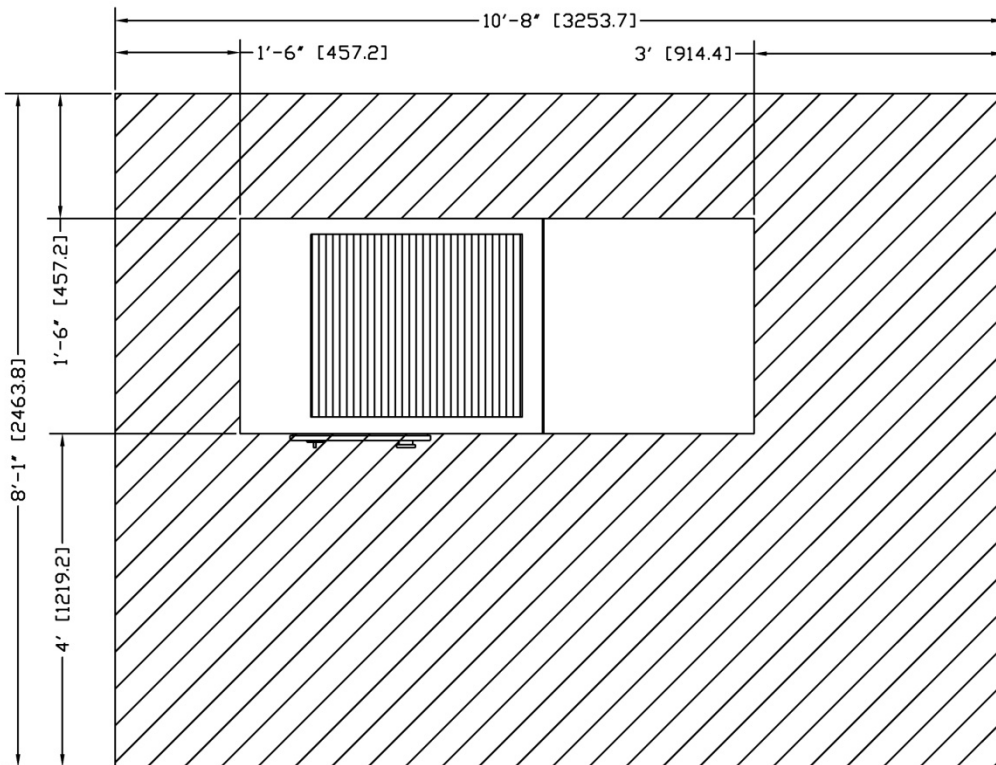
Front View (KA15, KA20, KA25, KA30)



Top View (KA15, KA20, KA25, KA30)



Front View (KA40, KA50)



Top View (KA40, KA50)

Foundation

The compressor does not require a heavy foundation. To prevent vibration the compressor should be supported at all base bolt locations on a level surface. The mounting bolts must be carefully mounted to prevent distortion of the compressor base. Do not weld on compressor, cabinet, or base as it could cause damage to bearings, electrical and other mechanical components and will void warranty.

Ventilation

The compressor must be located in a clean, cool and dry source of air for the inlet filter and cooler. Since the compressor is air-cooled it requires a large amount of cooling air to reject the heat loads. The compressor must not be operated at full load for extended periods of time in ambient temperature greater than 100° F (38° C).

If required, contact your distributor for air flow and heat rejection numbers of your model.

Aftercooler

Moisture is removed from the compressed air by the Aftercooler, which is installed between the minimum pressure check valve and the air receiver or plant air system piping.

(If equipped) A moisture separator with an automatic moisture drain is installed between the aftercooler and receiver tank. It is recommended that the drain condensate be recovered and processed to clean or recycled.

(If equipped) An automatic drain system is supplied on Kobelco receiver tanks. If a drain is not installed the air capacity of the receiver tank will decrease as it fills with water.

Do not dispose of compressor condensate in any manner other than that approved by your local regulations.

Receiver

The compressor must be installed with an air receiver tank. It can either be base mounted or a separate tank. Without an air receiver tank the compressor will experience short cycle times with a higher amount of oil carry over and may cause shorter motor life.

See specifications in the rear of this manual for recommended pipe and air receiver sizes for your model.

DO NOT connect the KA SERIES compressor on the same line as a reciprocating air compressor without an inline check valve on the discharge of the Kobelco machine. This includes the air receiver tank. The pulsations generated by the reciprocating compressor will cause erratic behavior of the KA series compressor.

Air Piping

A minimum of schedule 40 pipe size is recommended for the KA series compressors. See specifications in the rear of this manual for recommended diameters.

Care must be taken to avoid placing a strain or bind in the piping when connecting. If piping is subject to vibration from an external source, flexible connections must be used.

NEVER USE PVC, PLASTIC, RUBBER HOSE OR SOLDERED JOINTS IN THE AIR SYSTEM.

Electrical

General

A properly sized fusible disconnect is to be provided and sized by a qualified electrician.

All internal control wiring has been done at the factory. A qualified electrician should do all additional wiring in compliance with OSHA, NEC and any other applicable local electrical code.

Before connecting main power, be sure to check the transformer primary voltage to make sure it is wired for the correct line voltage.

The KA Series control is design to meet the requirements of the compressor. No attempt should be made to add additional load to the electrical system.

Motor Wiring

After the electrical wiring has been completed, it is necessary to check the rotation of the main motor and fan motor (if equipped). This can be done by intermittently jogging the run / off switch on the control cabinet. There is a directional arrow riveted to the coupling cover that indicates the direction of the shaft rotation. Fan should already be set from the factory to follow correct motor rotation, however the fan should always blow in the up (updraft models) direction or out (inline models)direction.

Maintenance

How to decode the Model Number

	(*1)	(*2)		(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
KA	30	X	-	X	X	X	X	X	X	X	X	
	HP	Encl.		PSI	Mount	Volt	Motor	NEMA	CONTROL	Start	Lubricant	Options
Group	Description				Description							
1	Horse Power											
				15	Motor HP							
				20								
				25								
				30								
				40								
				50								
2	Sound Enclosure											
				B	Bare. Open Model No Sound Enclosure							
				E	Sound Enclosure, Optional							
3	Pressure Rating											
				125	125 PSIG Unload Pressure							
				175	175 PSIG Unload Pressure							
4	Mount											
				BASE	Base Mount, Standard							
				120G	120 Gal Horizontal Tank Mount. Available ONLY 15 - 30HP							
				200G	200Gal Horizontal Tank Mount. Available for all HP							
				240G	240Gal Horizontal Tank Mount. Available for all HP							
				PLTFM	Riser Platform							
5	Voltage											
				200	200 Volt 3 phase 60hz							
				208	208 Volt 3 phase 60hz							
				230	230 Volt 3 phase 60hz							
				460	460 Volt 3 phase 60hz							
				T208	Tri Voltage wired for 208 Volt 3 Phase 60hz							
				T230	Tri Voltage wired for 230 Volt 3 Phase 60hz							
				T460	Tri Voltage wired for 460 Volt 3 Phase 60hz							
6	Motor Enclosure											
				D	ODP, Open Drip Proof Motor, Standard							
				T	TEFC, Totally Enclosed E2 Premium Efficiency,							
7	NEMA											
				1	NEMA 1 STD Enclosure							
				4	NEMA 4 Outdoor Enclosure.							
8	Controls											
				M	Standard Microprocessor Control							
				A	Analog Control							
9	Motor Starter											
				X	Clossline Starter							
				V	Variable Speed Drive							
10	Lubricant											
				46	Synthetic Lubricant "Kobe Lube46" 8000 Hour							
				32	Polyglycol (PAG) "Kobelube 32"							
				FG	Kosher, Food Grade lubricant " Kobe Lube46 FG"							
				10K	10000 Hour Synthetic Lubricant							
11	Options											
				Blank	No Options							
				1	Cold Weather Package							
				2	Moisture Separator Unmounted							
				3	Moisture Separator Mounted							

Schedule

DAILY INSPECTION / SERVICE

- Check lubricant level
 - Add lubricant if required
- Check condition of inlet air filter
 - Change air inlet filter if required.
- Check operating temperatures and pressures
- Change lubricant filter if required
- Change Coalescing filter if required

WEEKLY SERVICE

- Open the safety release valves at least once a week to make sure there is no blockage or obstruction that could cause this safety feature not to properly function.

MONTHLY INSPECTION / SERVICE

- Test high temp shutdown switch

EVERY 1000 HOURS OF OPERATION

- Sample compressor lubricant
- Change lubricant filter
- Change air filter
- Clean Scavenger Valve / Check Valve / Orifice
- Clean Inlet Control Condensate Filter.
 - Replace if required.

EVERY 3000 HOURS OF OPERATION

- Complete 1000 hour service
- Change Secondary (safety) Air Filter
- Change separator element

(Continued on Next Page)

EVERY 6000 HOURS OF OPERATION

- Complete 3000 Hour service
- Change compressor lubricant
- Check motor instruction manual regarding motor lubrication
- Check Shaft Lip Seal Condition

EVERY 12000 HOURS OF OPERATION

- Complete 6000 hour service
- Check / change unloading valve
- Check / change blow down valve
- Check / change coupling spider

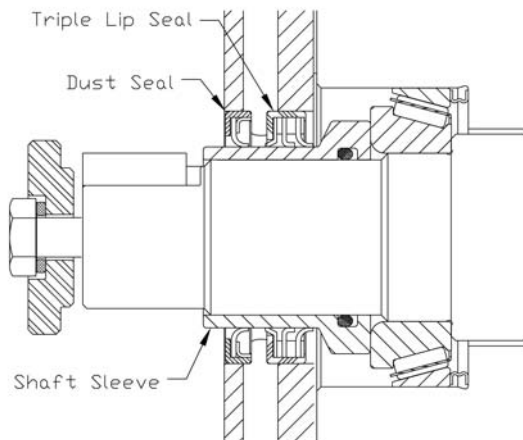
Inlet valve unload pressure regulator

The inlet valve is capable of operating at full system pressure, but is not recommended. By reducing the pressure introduced to the inlet valve, you will have extended life on the sealing Teflon seat. The pressure to the inlet valve should NOT BE below 45psig during the unload condition. This pressure is indicated by the pressure gauge on the side of the regulator. If the pressure setting is too low the compressor will continue to build pressure while the system is releasing pressure from the sump.



To increase the pressure simply pull the knob out on the pressure regulator, turn clockwise until you reach the desired pressure and push the knob back in. Turn the knob counter clockwise to decrease the pressure.

Shaft Lip Seal / Shaft Wear Sleeve



The KA Series air end is designed with two separate shaft seals. There is one triple lip seal and one dust seal. There is a scavenging area between the triple and dust seal area. This is to return any lubricant that bypasses the triple lip seal back to the compressor inlet, where it is returned to circulation.

Both the triple lip and dust seal are wearable items and should be checked

for wear / leakage every 1 year of service. It is strongly recommended that the shaft sleeve and shaft sleeve o-ring are replaced when the lip seals are replaced. This will prevent premature wear on the new lip seals being installed.

When to Replace Shaft Sleeve:

- Surface of sleeve has cracks, rust, wear grooves or any other visual defects.
- Lip seals are replaced
- There is lubricant around the drive shaft which would indicate either a lip seal failure or a shaft sleeve o-ring failure.

Consult Kobelco when it is time to replace the seals for replacement manual.

Replacement parts needed for lip seal and shaft sleeve replacement are as follows:

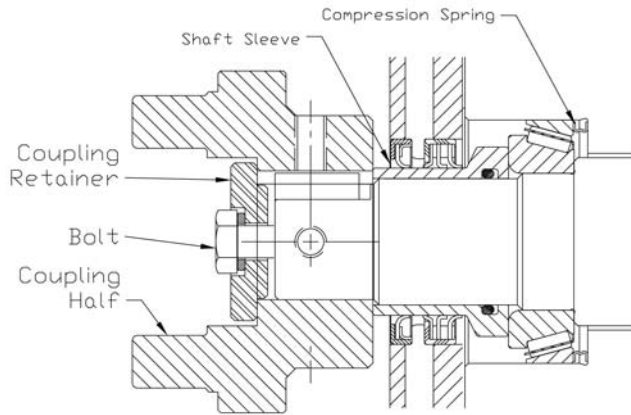
20 Hp & 40 Hp Air End		
Part Number	QTY	DESCRIPTION
K55320088	1	KA10L FLANGE COVER GASKET
K55340015	1	10L OIL SEAL (F2.1 & F1.6) TRIPLE
K55340018	1	10L OIL SEAL (F2.1 & F1.6) SINGLE
K55310078	1 (optional)	FEMALE DRIVE SHAFT SLEEVE
K55320099	1 (optional)	ROTOR SHAFT SLEEVE O-Ring
15 Hp & 30 Hp Air End		
Part Number	QTY	DESCRIPTION
K55320088	1	KA10L FLANGE COVER GASKET
K55340016	1	10L OIL SEAL (M1.95) TRIPLE
K55340019	1	10L OIL SEAL (M1.95) SINGLE
K55310079	1 (optional)	MALE DRIVE SHAFT SLEEVE
K55320099	1 (optional)	ROTOR SHAFT SLEEVE O-Ring
25 Hp & 50 Hp Air End		
Part Number	QTY	DESCRIPTION
K55320088	1	KA10L FLANGE COVER GASKET
K55340015	1	10L OIL SEAL (F2.1 & F1.6) TRIPLE
K55340018	1	10L OIL SEAL (F2.1 & F1.6) SINGLE
K55310078	1 (optional)	FEMALE DRIVE SHAFT SLEEVE
K55320099	1 (optional)	ROTOR SHAFT SLEEVE O-Ring



When replacing motor coupling refer to the motor coupling section of this manual. If the coupling replacement procedures are not followed correctly, pre-mature bearing failure will occur.

Motor Coupling Installation

The motor coupling installation must be followed according to the following directions or bearing damage could occur.



Air End Side:

- Remove any dirt and debris from the drive shaft of the air end and center bore of the compressor side drive coupling.
- Remove any burrs from drive shaft and center bore of compressor coupling.
- Apply a thin layer

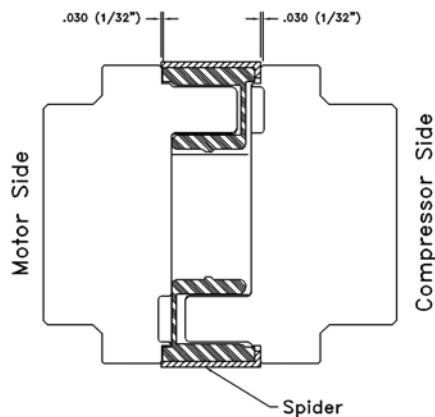
of anti-seize lubricant on both the drive shaft and on the inner bore of the motor coupling.

- Place shaft key on drive shaft.
- Align the keyways of the motor coupling and drive shaft.
- Gently slide the motor coupling onto the drive shaft of the compressor.
 - Note: If coupling does not slide on easily, remove and re-check for contamination. Do not use a hammer or similar tool to force the coupling onto the shaft. This could cause galling on shaft and coupling, which will impede future assembly and may damage the bearings and bearing pre-load spring.
- Hand tighten the coupling retainer, lock washer and bolt (See above Illustration) to the compressor shaft.
 - Do not reuse lock washers.
- **Using a 17mm socket and torque wrench, tighten the coupling bolt to 35 Ft/lbs of torque. This step will apply the correct amount of preload on the drive rotor bearing.**
- Apply a small amount of thread locking compound (Loctite 242 or similar) on the two compressor coupling setscrews.
- Tighten the two setscrews on the coupling hand tight.

Motor Side

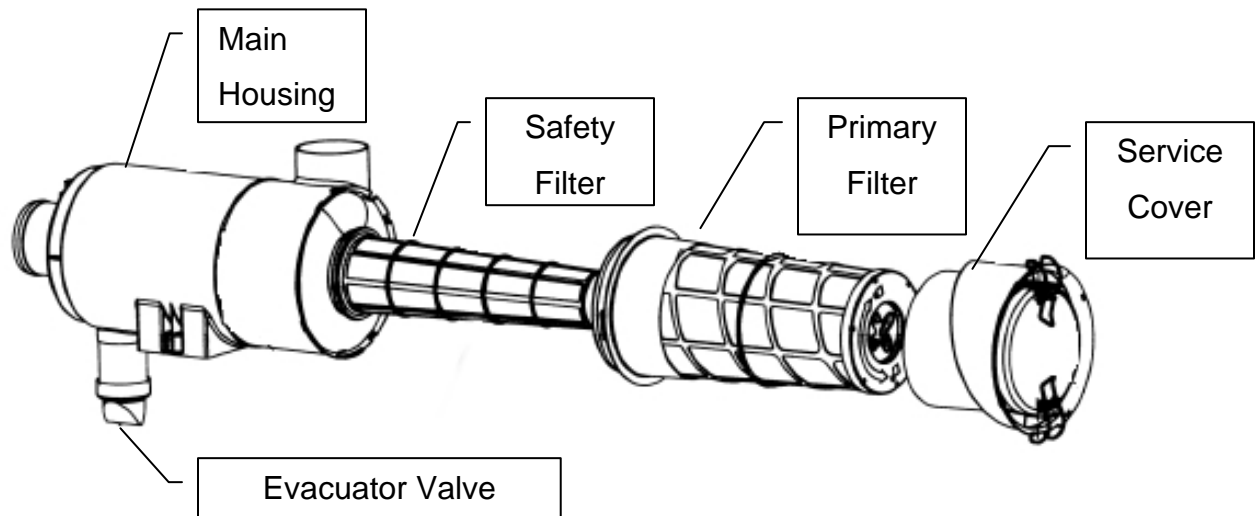
- Remove any dirt and debris from the drive shaft of the motor and center bore of the motor side drive coupling.
- Remove any burrs from motor shaft and center bore of motor coupling.

- Apply a thin layer of anti-seize lubricant on both the motor shaft and on the inner bore of the motor coupling.
- Place shaft key on drive shaft.
- Align the keyways of the motor coupling and motor shaft.
- Gently slide the motor coupling onto the motor shaft. (Do not tighten bolts)
 - Note: If coupling does not slide on easily, remove and re-check for contamination. Do not use a hammer or similar tool to force the coupling onto the shaft. This could cause galling on shaft and coupling, which will impede future assembly.
- Attach motor coupling spider to the compressor side of the coupling.
- Reattach the compressor onto the c-face of the motor using the (4) – ½-13 bolts & (4) lock washers tightened to a torque of 70-90 Ft/lbs.



- Apply (1) 0.030" shim between the coupling spider and coupling on both the compressor and motor side of the coupling (see illustration) for a total of 0.060" of clearance. This prevent the coupling from operating in a bound state.
- Slide the motor side coupling toward the compressor coupling / spider assembly with the shims in place.
- Apply a small amount of thread locking compound (Loctite 242 or similar) on the two motor coupling setscrews.
- Tighten the two setscrews on the coupling hand tight.
- Confirm that there is at least 0.060" clearance between the motor coupling and spider.
- Reinstall both motor coupling guards.
 - **COMPRESSOR SHOULD NOT BE OPERATED WITH THE SAFETY GUARDS REMOVED. BYPASSING SAFETY FEATURES COULD RESULT IN SERIOUS INJURY OR DEATH.**

Replacing Air Filter



- Turn compressor off
- Unlatch and remove the air filter service cover.
- Remove the primary filter.
 - The primary filter makes such a tight seal, that you will encounter some initial resistance when trying to remove it.
 - 40 & 50 HP Models- Grab the end of the filter and gently move the filter back and forth and pull it out of the housing.
 - 15, 20, 25 & 30HP Models- Grab the end of the filter and gently turn in a counter clockwise direction until the filter unlocks. Pull it out of the housing.
 - NOTE – AVOID DISLODGING CONTAMINATION FROM THE FILTER OR KNOCKING IT AGAINST THE HOUSING.
- Using a soft rag, remove all the dust and debris from the inside surface of the housing. Be careful not to introduce contamination into the outlet tube.

NOTE – FAILURE TO DO SO MAY CAUSE CONTAMINATION TO BE INTRODUCED TO THE SEAL AREA OF THE PRIMARY FILTER DURING REINSTALLATION, CAUSING A LEAK. LEAKS RESULT IN HIGHER RESTRICTION OF THE SAFETY FILTER AND SHORTEN FILTER LIFE.

- The safety filter should be changed every 3rd primary filter change out.

NOTE – IF THE SAFETY IS NOT INSTALLED PROPERLY, IT MAY ATTACH ITSELF TO THE PRIMARY FILTER UPON REMOVAL.

- Dust from the primary filter may be evident on the safety filter. This is normal. At each 1st and 2nd primary filter change, check safety filter for damage. If damaged, replace. Also check to ensure the safety filter is properly seated in the housing. It should fit snugly inside the outlet tube.

Continue pushing the filter into the outlet tube until it stops.

- Before installing a new primary or safety filter, inspect it carefully. Visually check for any voids, cuts, tears or indentations in the urethane-sealing surface. If your check reveals damage, do not install the filter.
- Install new primary filter
 - 40 & 50hp – The critical sealing area will compress slightly, adjust itself and distribute the sealing pressure evenly. To complete a tight seal, apply pressure by hand at the outer rim of the filter, not the center.
 - 15, 20, 25 & 30Hp – Twist the filter in a clockwise direction until the filter stops. The service cover will not reinstall if filter is not fitted correctly.
- Replace the service cover.
 - The cover for this air filter fits only one way and when in the proper position will fit snugly against the housing. The cover should go on easily with no extra force. If cover does not seem to fit, the filter is not properly seated in the housing.

NOTE – NEVER USE THE SERVICE COVER TO PUSH THE FILTER INTO PLACE! USING THE COVER TO PUSH THE FILTER COULD CAUSE DAMAGE TO THE HOUSING AND WILL VOID THE WARRANTY.

TIP – IF THE SERVICE COVER HITS THE FILTER BEFORE IT IS FULLY IN PLACE, REMOVE THE COVER AND PUSH THE FILTER FURTHER INTO THE HOUSING AND TRY AGAIN. THE COVER SHOULD GO ON WITH NO EXTRA FORCE.

- Refasten latches to secure cover. Make sure that latches penetrate the slots in both the body and the cover.

- Inspect and tighten all clamps, bolts and connections in the entire air intake system. Check for holes in tubing, and repair if needed. If the Vacuator Valve is damaged, replace.
- Restart the compressor.

Replacing Lubricant (Oil) Filter



Hot fluid under pressure will cause death or serious injury. Shut down compressor and relieve pressure before attempting any service.

Replacement of the lubrication filter should be done when one or more of the following conditions are met, whichever comes first.

- Every 1000 hours of operation
- Every Full Lubricant Change (6000 Hours)
- When pressure differential across coalescing is greater than 1.5 bar
- When indicated on service gauge (if equipped)

Procedure for replacing filter

- Stop the compressor (motor).
- Disconnect power and lock out service area.
- Remove all air pressure from compressor / receiver tank.
- Remove contaminants from around the lubricant filter.
- Remove lubricant filter.
- Examine new lubricant filter for and visible damage.
 - Examine o-ring gasket for damage. If damaged do not install on compressor.
- Apply a light layer of compressor lubricant to the gasket end.
- Install new lubricant filter.
- Tighten $\frac{3}{4}$ of a turn past initial gasket contact.
- Lubricant filter is now ready for operation.

Lubricant Filter Part Number	Horsepower	
	15, 20 & 25 Hp	30, 40 & 50 Hp
	KP-CE-022	KP-CE-024

Lubricant Sampling

Tools Required:

- *Kobelco Oil Sample Kit*
- *Small drip pan*
- *3/8" Hex wrench*

To ensure the five-year warranty, the compressor lubricant must be sampled and tested every 1,000 hours of operation or every year depending on what comes first.

How to Sample

- Bring compressor to a stabilized operating temperature
- Remove pressure from system lines
- Slowly loosen and remove vented lubricant fill cap to insure pressure is removed from separator vessel.
- Remove any dirt / contaminations that are around the drainpipe.
- Remove Hex pipe plug from separator drain line.
- Slowly open ball drain valve on bottom of separator to drain a small amount (approx. 1/4 cup) of lubricant into your drip pan to prevent contamination of the lubricant sample and to drain possible condensate.
- Carefully fill the lubricant sample bottle with lubricant .

The sample can be taken when the lubricant filter is changed. The technique to sample the oil is the key to successful analysis. With lubricant analysis you will have insight to both the condition of the lubricant and the compressor. **Do not sample while compressor is running.**

- It is important that proper sampling techniques be followed.
- Ensure the system is warm. Bring the compressor to operating temperature just before sampling.

- Take the sample from the same location and in the same manner each time.
This will insure repeatability of the test results.
- Fill the sample bottle with lubricant from the center of the reservoir by removing the oil fill cap and using a vacuum gun and tubing.
- Be careful not to contaminate the sample with airborne dust particles. Carefully and quickly cover the lubricant sample bottle.

Sample kits can be obtained from your authorized Kobelco distributor or directly from Kobelco Compressors (America), INC.

Be sure to supply the following information with the lubricant sample.

- Customer name, phone number, fax number and address.
- Customer contact name.
- Compressor model number and serial number.
- Lubricant information. Kobelube 46 or Kobelube FG.
- Sample date and hours on lubricant.
- Hours on machine.
- Any additional relevant comments.

Fill out information data sheet as completely as possible. Mail both completed data sheet and filled sample bottle in the provided mailer. Fill out return address on mailer and send to the address on the mailer with the appropriate postage affixed. When the testing is finished, a lubricant analysis report will be sent to you. There may be a nominal charge for this service.

Replacing Coalescing (Separator) Filter



Air under pressure will cause death, serious injury or property damage. Confirm all air pressure has been removed from compressor prior to performing ANY maintenance.

Replacement of the lubrication filter should be done when one or more of the following conditions are met, whichever comes first.

- Every 3000 hours of operation
- Every Full Lubricant Change (6000 Hours)
- When pressure differential is greater than 0.9 bar
- When indicated on service gauge (if equipped)

Procedure for replacing filter

- Stop the compressor (motor).
- Disconnect power and lock out service area.
- Remove all air pressure from compressor / receiver tank.
- Remove contaminants from around the coalescing filter.
- Remove coalescing filter.
- Examine scavenger tube for signs of damage. Confirm end of tube is clear of contamination.
- Examine new coalescing filter for and visible damage.
 - Examine o-ring gasket for damage. If damaged do not install on compressor.
- Apply a light layer of compressor lubricant to the gasket end.
- Install new coalescing filter.
- Tighten $\frac{3}{4}$ of a turn past initial gasket contact.
- Coalescing filter is now ready for operation.

Coalescing Filter Part Number	Horsepower	
	15, 20 & 25 Hp	30, 40 & 50 Hp
	KP-CE-018	KP-CE-020

Replacing Lubricant (Oil)



Lubricants are not cross compatible. Mixing of lubricants **WILL** cause damage to filters, coolers and compressor components and void warranty. Lubricant flushing procedure must be followed prior to changing lubricant types and should only be attempted by experienced service personnel.

Depending on the environment, temperature, choice of lubricant and amount of compressor loading time will vary the life of the lubricant. Kobelco offers a lubricant sampling program free of charge, when you use Kobelco OEM lubricant. This will help you and the customer determine the optimum time to change the lubricant.

Below is a basic guideline for lubricant life:

Type	Maximum Hours
Kobelube 46	8000
Kobelube 32	8000
Kobelube FG	3000
Kobelube Extra	10000

NOTE: The above time are based @ 190° F lubricant temperature. For every 10°F temperature rise, the lubricant life is reduced by 2000 hours.

Procedure for replacing lubricant

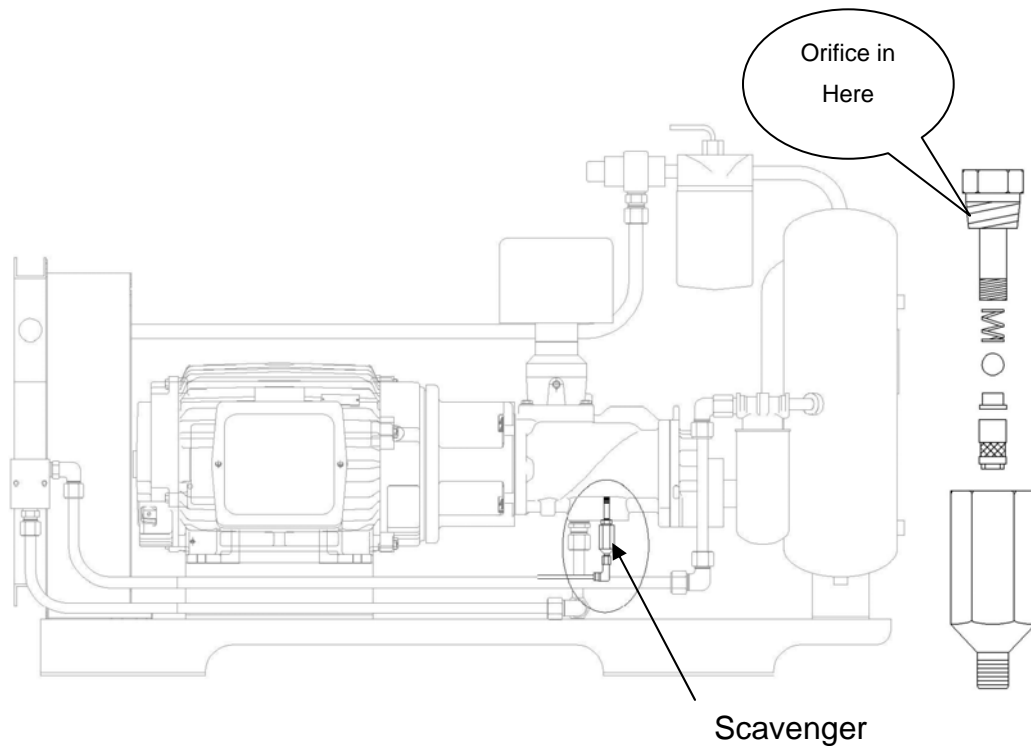
Note: Lubricant filter should be replaced every full lubricant change. This will prevent contamination of the new oil, which greatly reduces lubricant life.

- Stop the compressor (motor).
- Disconnect power and lock out service area.
- Remove all air pressure from compressor / receiver tank.
- Remove contaminants from around the oil drain plug, lubricant filter and lubricant fill plug.
- Slowly remove the lubricant fill cap.

- Note: The fill cap has a pressure relief hole. If there is pressure in the separator, you will feel or hear the air escaping once the cap is loose. If you feel or hear the air, immediately retighten the cap and wait for the pressure to finish bleeding to atmosphere. If the pressure does not drop, examine the compressor to determine the problem and fix prior to changing lubricant.
- Confirm ball valve is closed on the drain line of the separator.
- Remove the pipe plug from the drain valve.
- Connect a flexible drain hose with a ½" M-NPT fitting on the end, to the drain ball valve.
 - If a tube is not available install a drain pan under valve.
- Slowly open drain valve.
- Allow oil to drain.
- Replace lubricant filter.
- Remove drain tube / pan.
- Close Drain ball valve.
- Re-install drain pipe plug.
- Fill receiver tank with new lubricant
- Install and retighten the lubricant fill cap.
- Confirm all fittings, plugs and caps are tight.
- Restart Compressor.
- Confirm lubricant level.

Note: Lubricant level must be visible in the indicator tube during loaded operation. If lubricant level is not visible, immediately stop the compressor and add appropriate lubricant.

Servicing Scavenger Return Valve



The scavenger return valve should be cleaned (or replaced if needed) every 1000 hours of operation. This will help insure low lubricant carry over.

- Turn compressor off.
- Make sure all pressure has been removed from the connecting air lines and sump tank.
- Lock machine power out at main power source according to OSHA, NEC and local codes.
- Remove the Teflon tubing from the return valve.
- Remove valve assembly from compressor at the brass nipple extension.
- While holding the top hex (that has the pipe nipple going into the compressor) with a wrench loosens the lower body with another wrench.
- Separate the main body of the valve from the internals.
- With the wrench still on the top hex of the fitting attach a wrench to brass sleeve just below the filter screen of the valve.
- Remove brass screen end piece.

- CAUTION- This is spring loaded and contains small parts. Care must be taken when this unit is disassembled to prevent losing parts.
- Clean screen with a soft brush and mild solvent / detergent.
- Clean ball bearing and Viton bearing seat with soft cloth.
- Clean orifice (in top part of illustration) with a mild solvent and compressed air.
- Make sure orifice and main assembly are free of contamination.
- Reassemble scavenger assembly using a small amount of thread sealant where needed.
 - Caution – Over-use of thread sealant can clog screen and permanently damage valve. Use caution when applying sealant.

Lubricating the Motor

Note: If lubrication instructions are shown on the motor nameplate, they will supersede this general instruction.

Motors are pre-greased with a mineral oil polyurea NGLI grade 2 type grease unless stated otherwise on the motor nameplate. Some compatible brands of mineral polyurea base type greases are: Chevron SRI #2, Rykon Premium #2, Shell Oil Dolium R, Texaco Polystar RB, or Polyrex EM.

Motors are properly lubricated from the factory. It is not necessary to lubricate at the time of installation unless the compressor has been in storage for a period of 12 months or longer.

LUBRICATION PROCEDURES

- Stop the compressor (motor).
- Disconnect power and lock out service area.
- Remove contaminants from grease inlet area.
- Remove filler and drain plugs.
- Check filler and drain holes for blockage and clean as necessary.
- Add proper type and amount of grease. See the relubrication time intervals table for service schedule and relubrication amounts table for volume and grease required.
- Wipe off excess grease and replace filler and drain plugs.
- Motor / compressor is ready to restart.



If motor is name plated or installed in a hazardous location, do not operate motor without all of the grease or drain plugs installed.

<i>Time Intervals</i>	Horsepower	
Service Condition	15, 20, 25HP	30, 40, 50HP
Standard	2 years	6 Months
Severe	1 year	3 Months

Standard Condition: Up to 16 hours of operation per day, indoors, 100° F maximum ambient.

Severe Condition: Greater than 16 hours of operation per day. Continuous operation under high ambient temperatures (above 100° F) and or any of the following: dirty, moist locations, high vibration or heavy shock loading.

<i>Lubricant Amounts</i>	Horsepower	
	15, 20, 25, 30, 40HP	50HP
Volume cu. In. (fluid oz.)	1.25 (0.69)	1.50 (0.83)

Adjusting Modulation

It is very important that this valve does not get painted or covered with any foreign substance. There is a pilot hole near the screw adjustment that **MUST NOT BE TAMPERED** with or modified.

The modulation valve must be adjusted whenever the unload pressure is modified.

The valve is designed to operate in a 6 psi band. This means the valve will modulate the inlet for 6 psi before the inlet valve is completely closed and no longer allowed to build pressure.

For most efficient operation, the modulation range should be set to start 5 psi before the set unload pressure (See MOD1).

If modulation range is set too high, the compressor will not operate as efficiently as

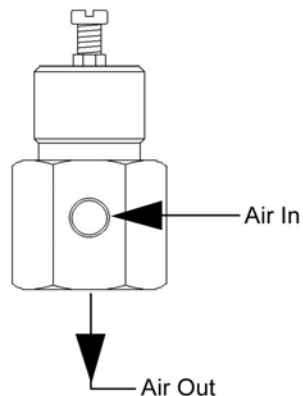
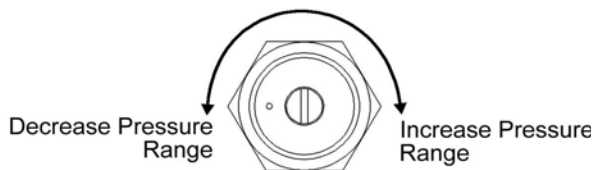
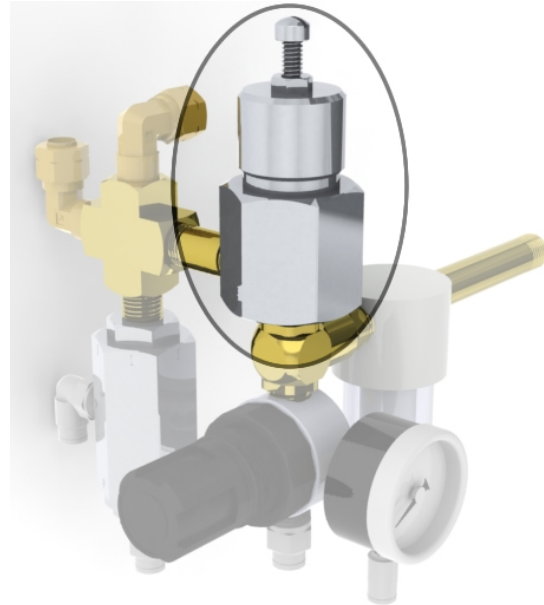
possible or will operate as a load/unload compressor (See MOD2).

If modulation is set too low, the compressor will not unload and will have excessive noise and vibration (See MOD3).

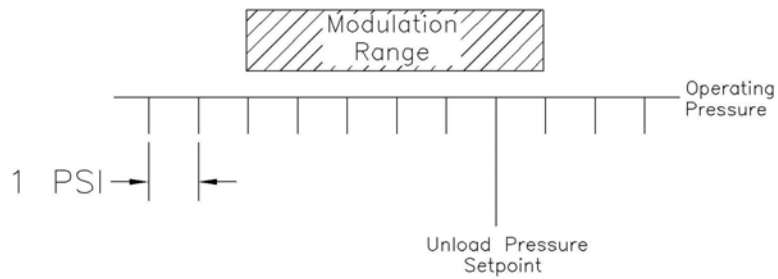
To increase modulation range, turn the adjustment screw clockwise.

To reduce modulation range, turn the adjustment screw counter-clockwise.

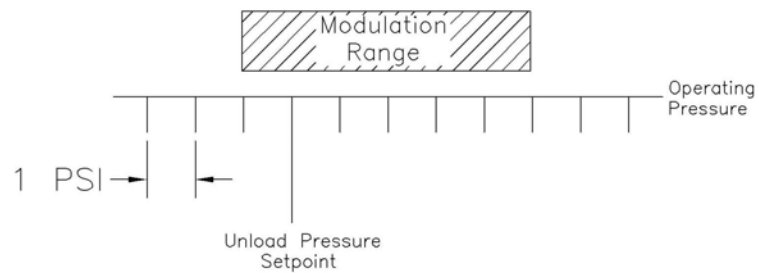
NOTE: LOCKNUT MUST BE TIGHTENED AFTER ADJUSTMENT.



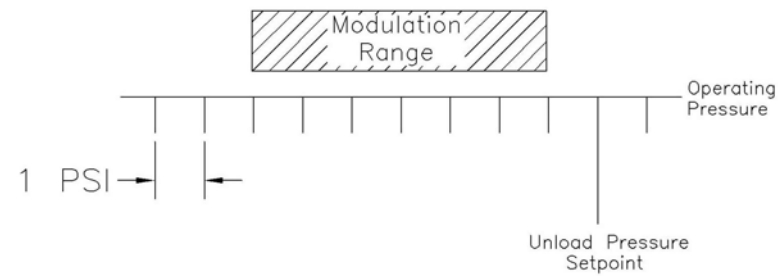
IF THIS IS NOT DONE THE MODULATION WILL LOSE ADJUSTMENT AFTER OPERATION.



MOD 1 – Correct Setting



MOD2 – Modulation Set Too High



MOD3 – Modulation Set Too Low

Microprocessor Error Codes

General Alarms	
Er:0010	Emergency Stop button pressed.
Er:0080	Motor fault (fault relay contact, overload device contact or PTC thermistor)
Er:2118	Delivery Pressure High. Line pressure is higher than the unload set point in the microcontroller.
Er:2128	Delivery (Dicharge) Temperature High.
Er:2138	Internal (Sump) Pressure High.
Er:3123	Delivery temperature Td below the set low temperature run inhibit level, controller will allow motor start when temperature increases above the set level.
Er:3137	Internal pressure PI higher than the set run inhibit pressure level, controller will allow motor start when pressure decreases below the set level.

Service Alarms	
Er:4804	General service alarm (Timer H3)
Er:4814	Oil change service alarm (Timer H4)
Er:4824	Oil filter service alarm (Timer H5)
Er:4834	Air/Oil separator (Coalescing) service alarm (H6)

Transducer Fault Alarms	
Er:0115	Delivery (Line) pressure sensor fault.
Er:0125	Delivery temperature sensor fault.
Er:0135	Internal (Sump) pressure sensor fault.

Microprocessor Reference

PASS CODE: 0009



Menu up / Plus



Menu Down / Minus



Return / Enter



Escape / Clear



Start



Stop



Clear / Reset

How to Enter Pass Code

Press both the plus and minus buttons at the same time. Use the plus or minus buttons to increase or decrease the pass code value. When you have the desired value, press “Return” to move to next digit.

Hour Meters

H1 = Total Running Hours

H2 = Loaded Hours

H3 = General Service Hours

H4 = Lubricant Service Timer

H5 = Lubricant Filter Service Timer

H6 = Coalescing Filter Service Timer

Reset Service Timers (P04)

1. Enter pass code
2. Press “Return” Button
3. Press “Menu Down” to Menu P04
4. Press “Return” Button
5. Press the “Menu Down” until you see the timer you would like to reset.
6. To reset the timer, press “Return” twice.

- If you need to reset another timer, repeat step 4 and 5
7. Press the “Escape” Button twice to exit the control menus.

Setting Time of Day (P11)

1. Enter pass code
2. Press “Return” Button
3. Press “Menu Down” to Menu P11
4. Press “Return” Button
5. Using the “Plus” and “Minus” buttons adjust the values for time and date.
 - Time is in 24 hour
6. Press the “Escape” Button three times to return to main operating screen.

Setting Pressures (P01)

1. Enter Pass Code
2. Press “Return” Button
3. Press Down Arrow to Menu P01
4. Press “Return” Button
5. Press the “Menu Down” button until the Pressure you wish to adjust is displayed.
 - Pu = Unload Pressure
 - Pl = Load Pressure
6. Press “Return” Button
7. Using the “Plus” and “Minus” Buttons, adjust the set pressure.
 - Do not exceed the maximum operating pressure of the unit.
8. Press the “Escape” Button three times to return to main operating screen.

To Check Error Log (P02)

1. Enter pass code
2. Press “Return” Button
3. Press “Menu Down” to Menu P02
4. Press “Return” Button
5. Use the “UP” and “Down” arrow to scroll through the list of errors.
 - Each fault item consists of the following: 1) The fault Code Number 2) The Running Hours when Fault Occurred 3) The Pressure 4) The Temperature 5) Real time Clock data. The Display will automatically alternate between these values.
6. Press the “Escape” Button twice to return to main operating screen.

Diagnostics Menu (P06)

D1: Digital Input 1 (Emergency Stop)
D2: Digital Input 2
D3: Digital Input 3
D4: Digital Input 4
D5: Digital Input 5
D6: Digital Input 6
D7: Digital Input 7 (Fan Motor Overload)
D8: Digital Input 8 (Main Motor Overload)
R1: Relay Output 1 (Main Motor Starter)
R2: Relay Output 2
R3: Relay Output 3
R4: Relay Output 4 (Blowdown / Unload Solenoid)
A1: Analog Input 1 (Delivery Pressure)
A2: Analog Input 2 (Temperature Sensor)
A3: Analog Input 3 (Internal Pressure)

Electric Schematic

An electrical schematic was shipped with your machine. Consult the document packet that was shipped with your machine.

If required, contact the factory for a replacement.

Specifications

Data / Dimensions

Model		KA15	KA20	KA25	KA30	KA40	KA50
Motor HP		15	20	25	30	40	50
Capacity (@ 100PSIG)	ACFM	55	83	98	126	172	205
Capacity (@ 120PSIG)	ACFM	55	82	96	126	169	203
High Pressure Model							
Capacity (@ 150PSIG)	ACFM	-	54	81	95	118	167
Capacity (@ 175PSIG)	ACFM	-	53	80	93	116	164
Open Model (Standard, Base Mount)							
L	Inches	63	63	63	63	65	65
W	Inches	32.5	32.5	32.5	32.5	34	34
H	Inches	37.7	37.7	37.7	37.7	45.25	45.25
Weight	Lbs.	775	775	775	775	995	995
Sound Enclosed Model (Optional, Base Mount)							
L	Inches	69	69	69	69 (81*)	74	74
W	Inches	33.5	33.5	33.5	33.5	33.5	33.5
H	Inches	39.5	39.5	39.5	39.5	46.5	46.5
Weight	Lbs.	1070	1070	1070	1070	1550	1550
Tank Mount Model (Optional)							
Tank Volume	Gal.	120** / 200**				200	
L* / L**	Inches	69 / 79	69 / 79	69 / 79	69 / 79 (81*)	79	79
W* / W**	Inches	34	34	34	34	34	34
H* / H**	Inches	67.7 / 75.5	67.7 / 75.5	67.7 / 75.5	67.7 / 75.5	81.25 / 82.5	81.25 / 82.5

* L=81 Inches for 30HP Standard Pressure Model Only.

** For Open Model.

*** For Enclosed Model

Recommended Pipe and Receiver Sizes

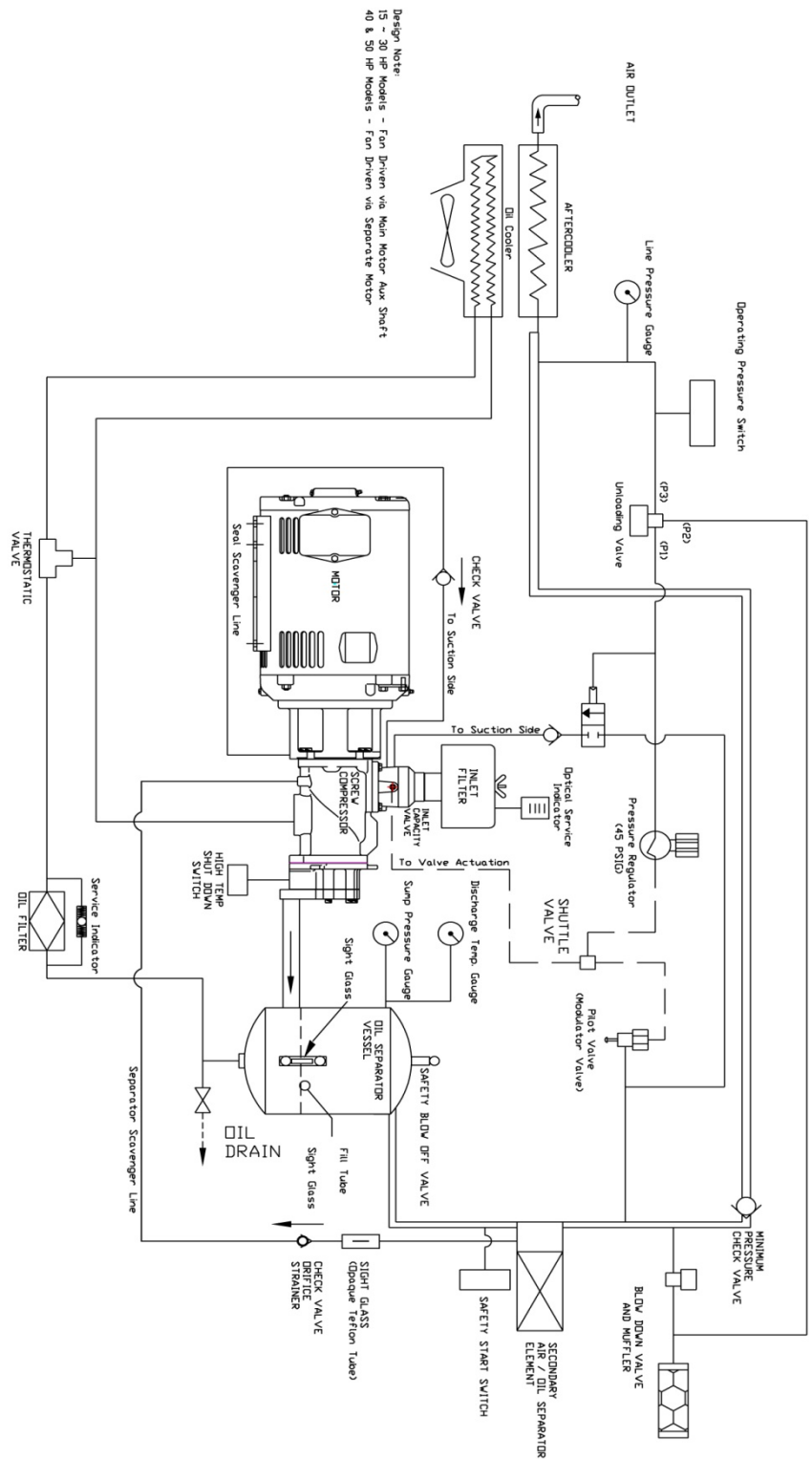
Model	Minimum Receiver Size	J525 Hydraulic Tube	SCH40 PIPE SIZE
KA15	120	1"	1 ½"
KA20	120	1"	1 ½"
KA25	120	1 ¼"	2"
KA30	120	1 ½"	2"
KA40	200	2"	2½"
KA50	200	2"	2 ½"

This sizing is based on .5psi pressure drop per 100 feet of pipe at 100 psig operating pressure.

Bolt Torque Specs

Size	Grade	Torque DRY / Lubricated
10	-	30/23
1/4	5	96/75
5/16	5	17/13
3/8	5	30/23
1/2	5	75/55

Flow Diagram



Troubleshooting

Machine Will Not Start	
<i>Cause</i>	<i>Correction</i>
Main Disconnect Open	Close main disconnect switch.
Line fuse blown	Replace fuse.
Motor overload tripped	Reset overload.
High Temp Switch Tripped	Determine cause, replace if necessary.
Faulty selector switch	Check for faulty connection.
	Check for faulty switch.
Power failure	Check power supply.
Loose wire connections	Check all terminals for contact and tightness.
Faulty Transformer	Check secondary voltage on transformer.
Unit locked up	Replace air end / check for motor damage.
Defective sensor	Check pressure switch and control relays, replace as necessary.
Low Voltage	Determine cause of source. Contact power company if necessary.
Thermal overloads tripped	Correct cause and press the reset button. (See section below)

Unscheduled Shutdown	
<i>Cause</i>	<i>Correction</i>
Power failure	Check power supply.
Faulty high temp switch	Replace.
Loose wire connections	Check all terminals for contact and tightness.
Thermal overloads tripped	Correct cause and press the reset button. Check operating line pressure. (See section below)
High air discharge temperature	Check cooling system.
Thermal overloads tripping	Correct cause of the overload condition and press the reset button.
Low Voltage	Determine cause of source. Contact power company if necessary.

Thermal Overload Relays Tripping

<i>Cause</i>	<i>Correction</i>
High discharge pressure	Lower full load pressure setting.
Low voltage or power factor	Check voltage, amperage and power factor while operating the unit at full load and full pressure.
Loose overload connection	Tighten mounting screws on thermal overload
Faulty motor	Remove motor and have tested at authorized motor manufacturer repair center
Loose motor or starter wiring	Check all connections for tightness
Incorrect thermal overload setting	Check motor name plate and set overloads accordingly
Dirty separator element	Replace separator element, lubricant filter and change lubricant

Excessive Lubricant Consumption

<i>Cause</i>	<i>Correction</i>
Too high of level in primary lubricant separator	Drain lubricant to recommended level
Clogged scavenger line	Clean orifice and strainer, lines, fitting and tubing. Replace Check valve / orifice if necessary
Damaged or faulty separator	Change separator element
Leak in lubricant lines	Check all pipes, connections and components
Shaft seal failure	Replace necessary component of the seal or the complete seal as necessary
Incorrect Lubricant	Use recommended lubricant only- See lubricant section of this manual
Faulty minimum pressure check valve - Operating below 60 psig	Repair or replace minimum pressure check valve

Frequent Separator Element Clogging

<i>Cause</i>	<i>Correction</i>
Faulty air filter	Replace element. Make sure filter seals against inlet valve.
Faulty lubricant filter	Replace lubricant filter element.
Incorrect separator element	Use OEM Kobelco elements only. Do not attempt to clean elements.
Lubricant breakdown	Follow free lubricant sample analysis program. Change lubricant as required and at prescribed intervals. Possible chemical attack to lubricant.
Water in lubricant.	Usually due to compressor running too lightly loaded. Operate compressor in "Manual" mode. If needed, change thermostatic element to 190° F. Strictly follow changing lubricant every 3,000 hours if discharge temperature is consistently 200 °F or above.
Contaminated lubricant	Promptly change separator element, lubricant filter, air filter and lubricant. If problem persists, check for possible contamination of the lubricant supply, such as rain water, sleet, humidity, dust, sand, ect...
Mixing different grades or types of lubricant.	DO NOT mix different grades or types of lubricant. DO NOT mix lubricants from different manufacturers.

Lubricant Coming Out Through The Blowdown Muffler

<i>Cause</i>	<i>Correction</i>
Too high of level in primary lubricant separator	Drain lubricant to recommended level
Clogged scavenger line	Clean orifice and strainer, lines, fitting and tubing. Replace Check valve / orifice if necessary
Damaged or faulty separator	Change separator element
Excessive lubricant foaming	Water in lubricant. Change lubricant and increase operating temperatures or percent loaded.
Cycling too often between load and unload or start/ stop	See " Too Rapid Cycling" section of this trouble shooting guide.

Low System Pressure / Low Air Delivery

<i>Cause</i>	<i>Correction</i>
Excessive leaks in service lines	Check lines for leaks
Plugged air filter	Replace air filter element. Do not clean element
Differential pilot valve not set correctly.	Readjust differential pilot valve.
Inlet valve not fully open	See "Inlet valve not opening or closing in relation to air demand" section of this troubleshooting guide.
Main Air pressure switch not set correctly	Readjust main air pressure switch to desired pressure.
Faulty blowdown solenoid valve	Repair or replace
Excessive Demand	Add additional air compressor / reduce air consuming equipment
Restriction in system	Check separator element, aftercooler, dryer and filters for restrictions. Replace if necessary.
Plugged separator element.	Replace element.

High System Pressure

<i>Cause</i>	<i>Correction</i>
Main Air pressure switch not set correctly or defective	Readjust main air pressure switch to desired pressure. Replace if defective.
Blowdown valve not releasing primary lubricant separator	Check blowdown solenoid valve. Clean valve, blowdown muffler and line. Replace if needed.
Inlet valve not functioning properly	See "Inlet valve not opening or closing in relation to air demand" section of this troubleshooting guide.
Leak in control tubing	Find leak and replace tube.

High Discharge Lubricant Temperature

<i>Cause</i>	<i>Correction</i>
Inadequate circulation of cooling air to the cooler	Check the location of cooler to make sure that there is no restriction to free circulation of cooling air through core. Be sure the discharge cooling air is not being recirculated into either the compressor inlet or the cooling core.
Low lubricant level in reservoir	Add lubricant to recommended level
Clogged lubricant filter	Replace element
Clogged or blocked lubricant cooler passages	Check lubricant cooler for varnishing and deposits. If this condition exists, then clean cooler thoroughly. Contact local distributor.
Restricted air passage across lubricant cooler.	Clean air passages on lubricant cooler to allow free air flow from fan.
Faulty or damaged fan	Replace fan assembly
Incorrect fan rotation	Correct rotation. The fan should be pushing air through the cooler.
Faulty cooling fan installation.	Cooling fan should be 2/3 in and about 1/3 out of the fan shroud. (more toward cooler)
Excessive ambient temperature	Maximum ambient temperature for proper cooling is 100°F. Ventilate room or relocate compressor if needed.
Improper lubricant	Use recommended lubricants only - See lubricant section of installation manual.
Faulty Thermal Valve	Replace Valve
Faulty gauge,	Check and replace.
Air end failure	Contact a authorized Kobelco distributor.

Frequent Lubricant Filter Clogging

<i>Cause</i>	<i>Correction</i>
System Contamination	Check and clean system, Replace lubricant
Faulty service indicator	Replace indicator.
Incorrect lubricant filter	Use only specified Kobelco replacement filters.
Lubricant breakdown	See "Frequent Separator Clogging" section of this troubleshooting guide.
Faulty air filter	Replace element. Check for possible filter bypass leaks.

Frequent Air Filter Clogging

<i>Cause</i>	<i>Correction</i>
Compressor operating in contaminated environment.	Use remote air intake to air filter.

Safety Valve Blows

<i>Cause</i>	<i>Correction</i>
Main Air pressure switch not set correctly or defective	Readjust main air pressure switch to desired pressure. Replace if defective.
Inlet valve not functioning properly	See "Inlet valve not opening or closing in relation to air demand" section of this troubleshooting guide.
Plugged separator element.	Determine cause of contamination. Replace separator element.
Damaged pressure gauge	Check gauge for accuracy and replace if necessary. Lower switch settings.
Faulty safety valve	Check valve for correct setting. Only replace with Kobelco replacement.

Compressor Does Not Revert To Load When Service Line Pressure Drops To Low Limit of Main Pressure Setting

<i>Cause</i>	<i>Correction</i>
Main Air pressure switch not set correctly or defective	Readjust main air pressure switch to desired pressure. Replace if defective.
Loose wiring connection.	Check and tighten wire terminals.
Damaged air inlet valve assembly	Check and repair air inlet valve
Faulty Solenoid	Check and repair or replace as needed.
Faulty differential pilot valve.	Orifice on valve is plugged. Clean or replace as needed.
Hydraulic lock on control line if inlet valve	Remove water from line, repair or replace inlet condensate bowl as needed.

Excessive Modulation

<i>Cause</i>	<i>Correction</i>
Faulty inlet valve	Check for a "Sticky" valve. Repair or replace as needed.
Too small of volume in service line	Provide increased volume by adding an air receiver tank.

Rapid Load / Unload Cycling

<i>Cause</i>	<i>Correction</i>
Too small of volume in service line	Provide increased volume by adding an air receiver tank.
Leaks in control lines.	Check and repair any leaks.
Main Air pressure switch not set correctly or defective	Readjust main air pressure switch to desired pressure. Replace if defective.
Water in control system.	Drain lines, service filters, check differential pilot valve orifice.
Restriction in air lines.	Check filters, dryers and valves in lines.

Excessive Vibration

<i>Cause</i>	<i>Correction</i>
Base not properly supported.	Shim and support base as required.
Loose mounting bolts.	Tighten or replace as needed.
Defective motor bearing.	Check and replace as needed. Should be performed by authorized service center.
Defective compressor bearing.	Check and replace as required. Should be performed by authorized service center.
Defective motor coupling.	Check spider and coupling. Replace as needed.
Vibration caused from other machines	Compressor should not vibrate while shut down. Isolate machines as needed.
Faulty Pilot Operated Valve	Replace Valve

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