

# OPERATION MANUAL



## **MODEL DIS100SSK4F AIR COMPRESSOR (KUBOTA D1005-E4B DIESEL ENGINE)**

INSTRUCTION MANUAL NO. E2844201504

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**THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.**

## PROPOSITION 65 WARNING

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### NOTICE

Specifications are subject to change without notice.

## SAFETY DECALS

Safety decals are attached to the air compressor as shown in Figure 1. Keep these safety decals clean at all times. When the safety decals become worn or damaged, contact your nearest dealer or the Multiquip Parts Department.

### NOTICE

For safety decal part numbers, refer to the associated parts manual.

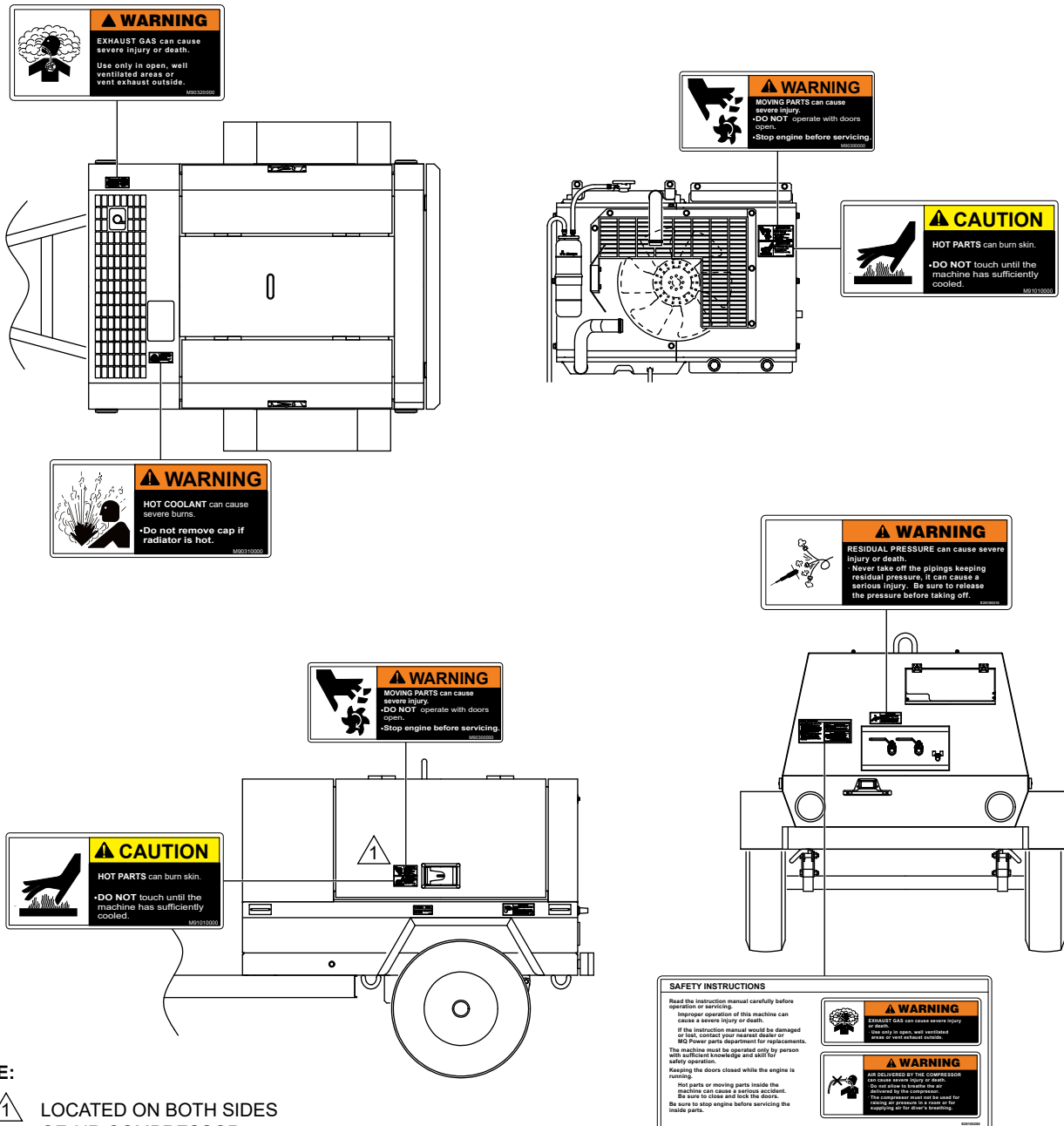


Figure 1. Safety Decals

## SAFETY INFORMATION

**DO NOT** operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.

### SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION**, or **NOTICE**.

### SAFETY SYMBOLS

#### **DANGER**

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

#### **WARNING**

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.








#### **CAUTION**

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

#### **NOTICE**

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Overspeed hazards
	Rotating parts hazards
	Pressurized fluid hazards
	Electric shock hazards

# SAFETY INFORMATION

## GENERAL SAFETY

### CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots, or other protective devices required by the job or city and state regulations.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when on medication.
- **NEVER** operate this equipment under the influence of drugs or alcohol.



- **ALWAYS** check the equipment for loosened threads or bolts before starting.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

### NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age or older.
- Whenever necessary, replace nameplate, operation, and safety decals when they become difficult to read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by MQ Power for this equipment. Damage to the equipment and/or injury to the user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance**, **doctor**, and **fire department**. This information will be invaluable in the case of an emergency.



## AIR COMPRESSOR SAFETY

### DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result, causing **severe bodily harm or even death**.
- Keep the towing vehicle or equipment carrier, compressor hoses, tools, and all personnel at least 10 feet (3 meters) from power lines and buried cables.
- **DO NOT** use air from this air compressor for respiration (breathing).
- Stay clear of the compressor during electrical storms! It can attract lightning.
- **DO NOT** engage in horseplay with air hoses as death or serious injury may result.
- **NEVER** use the air compressor for respirator equipment by which compressed air is supplied for human consumption. The compressed air contains carbon monoxide and other contaminants. Such air may cause serious injury or death if used by a person for respiration.
- This compressor is not designed for air-pressurized construction methods or underwater diving jobs.
- **NEVER** use compressed air for human consumption such as pressurizing diving air tanks. Consumption of compressed air can cause death while diving.



## SAFETY INFORMATION

### WARNING

- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause **severe injury, bodily harm or even death**. Disconnection of any of these devices will void all warranties.
- If the air compressor is operated indoors, discharge engine exhaust fumes outdoors.
- Locate the air compressor so that exhaust fumes are not apt to be carried towards personnel.
- **NEVER** blow compressed air directly at people. Scattered dust or foreign debris in the compressed air may cause serious injuries.
- Blowing compressed air on food is prohibited.
- **NEVER**, under any circumstances, open the oil filler cap on the oil chamber tank while the air compressor is running or immediately after stopping operation. It is very dangerous and may cause serious injury.
- Residual air pressure can cause severe bodily injury.
- Residual air pressure in the oil chamber tank could cause both extremely hot compressed air and oil to jet out, causing scalding or severe bodily harm.
- **ALWAYS** ensure the air compressor and trailer are parked on hard, level ground before use. Placement of equipment on an inclined location may result in unintended movement which can cause injuries.

### CAUTION

- **ALWAYS** close the doors and lock them during operation.
- Moving parts within the enclosure can cause severe injury.
- Hot surfaces within the enclosure can burn skin.
- This machine generates large amounts of noise while operating with the doors open, which may cause hearing loss.
- **NEVER** lubricate components or attempt service on a running machine.



- Fuels, fluids, coolants, lubricants, and battery electrolyte used in the air compressor are typical of the industry. Care should be taken to avoid accidental ingestions and/or skin contact.
- Keep personnel away from the discharge opening of hoses, tools, or other points of compressed air.
- Select tools, air hoses, pipes, valves, filters, and other fittings accordingly. **DO NOT** exceed the manufacturer's rated safe operating pressures for these items.
- **DO NOT** use air at pressures higher than 30 psi (207 kPa, 2.1 kgf/cm<sup>2</sup>) for cleaning purposes.
- When refilling the oil chamber tank with oil, stop the engine, make sure that the pressure gauge indicates **zero** psi, and that there is no residual pressure. Then gradually loosen the oil filler cap.
- Make sure the air pressure reads zero before performing any maintenance.
- When removing dust and debris that have accumulated in devices such as air filters by blowing compressed air, wear safety glasses, etc. to protect eyes.
- When the air compressor has to be unavoidably operated (temporarily) with its port open, be sure to mount a silencer to reduce noise and wear protective materials such as ear plugs to prevent damage to hearing. For service testing only.

### NOTICE

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to the machine and replace any broken parts immediately.
- **NEVER** operate the air compressor with the service valves open unless air hoses and/or pipes are connected.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.
- **DO NOT** use pneumatic air tools that are rated above the maximum psi rating of the compressor.

# SAFETY INFORMATION

## ENGINE SAFETY

### DANGER

- The engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



### WARNING

- **DO NOT** place hands or fingers inside the engine compartment while the engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- Keep fingers, hands, hair, and clothing away from all moving parts to prevent injury.
- **DO NOT** remove the radiator cap while the engine is hot. High-pressure boiling water will gush out of the radiator and severely scald any persons in the general area of the air compressor.
- **DO NOT** remove the coolant drain plug while the engine is hot. Hot coolant will gush out of the coolant tank and severely scald any persons in the general area of the air compressor.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the air compressor.



### CAUTION

- **NEVER** touch the hot exhaust manifold, muffler, or cylinder. Allow these parts to cool before servicing the equipment.



## NOTICE

- **NEVER** run the engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service the air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.
- Wet stacking is a common problem with diesel engines which are operated for extended periods with light or no load applied. When a diesel engine operates without sufficient load (less than 40% of the rated output), it will not operate at its optimum temperature. This will allow unburned fuel to accumulate in the exhaust system, which can foul the fuel injectors, engine valves, and exhaust system, including turbochargers, and reduce the operating performance.



In order for a diesel engine to operate at peak efficiency, it must be able to provide fuel and air in the proper ratio and at a high enough engine temperature for the engine to completely burn all of the fuel.

Wet stacking does not usually cause any permanent damage and can be alleviated if additional load is applied to relieve the condition. It can reduce the system performance and increase maintenance. Applying an increasing load over a period of time until the excess fuel is burned off and the system capacity is reached usually can repair the condition. This can take several hours to burn off the accumulated unburned fuel.

## FUEL SAFETY

### DANGER

- **DO NOT** start the engine near spilled fuel or combustible fluids. Diesel fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.



## SAFETY INFORMATION

- **DO NOT** overfill the fuel tank, as spilled fuel can ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.



### TOWING SAFETY

#### ⚠ CAUTION

- Check with your local, county, or state safety towing regulations, in addition to meeting **Department of Transportation (DOT) safety towing regulations**, before towing your air compressor.
- Refer to the MQ Power trailer manual for additional safety information.
- In order to reduce the possibility of an accident while transporting the air compressor on public roads, **ALWAYS** make sure the trailer that supports the air compressor and the towing vehicle are mechanically sound and in good operating condition.
- **ALWAYS** shut down the engine before transporting.
- Make sure the hitch and coupling of the towing vehicle are rated equal to or greater than the trailer gross vehicle weight rating.
- **ALWAYS** inspect the hitch and coupling for wear. **NEVER** tow a trailer with defective hitches, couplings, chains, etc.
- Check the tire air pressure on both towing vehicle and trailer. **Trailer tires should be inflated to 50 psi cold.** Also check the tire tread wear on both vehicles.
- **ALWAYS** make sure the trailer is equipped with a **safety chain**.
- **ALWAYS** properly attach the trailer's safety chains to the towing vehicle.
- **ALWAYS** make sure the vehicle and trailer directional, backup, brake, and trailer lights are connected and working properly.



- DOT requirements include the following:
  - Connect and test electric brake operation.
  - Secure portable power cables in cable tray with tie wraps.
- The maximum speed for highway towing is **55 MPH** unless posted otherwise. Recommended off-road towing is not to exceed **15 MPH** or less depending on type of terrain.
- Avoid sudden stops and starts. This can cause skidding or jackknifing. Smooth, gradual starts and stops will improve towing.
- Avoid sharp turns to prevent rolling.
- The trailer should be adjusted to a level position at all times when towing.
- Raise and lock the trailer wheel stand in the up position when towing.
- Place **chock blocks** underneath the wheels to prevent **rolling** while parked.
- Place **support blocks** underneath the trailer's bumper to prevent **tipping** while parked.
- Use the trailer's swivel jack to adjust the trailer height to a level position while parked.

### BATTERY SAFETY

#### ⚠ DANGER

- **DO NOT** drop the battery. There is a possibility that the battery will explode.
- **DO NOT** expose the battery to open flames, sparks, cigarettes, etc. The battery contains combustible gases and liquids. If these gases and liquids come into contact with a flame or spark, an explosion could occur.



#### ⚠ WARNING

- **ALWAYS** wear safety glasses when handling the battery to avoid eye irritation. The battery contains acids that can cause injury to the eyes and skin.
- Use well-insulated gloves when picking up the battery.
- **ALWAYS** keep the battery charged. If the battery is not charged, combustible gas will build up.



## SAFETY INFORMATION

- **ALWAYS** recharge the battery in a well-ventilated environment to avoid the risk of a dangerous concentration of combustible gases.
- If the battery liquid (dilute sulfuric acid) comes into contact with **clothing or skin**, rinse skin or clothing immediately with plenty of water.
- If the battery liquid (dilute sulfuric acid) comes into contact with **eyes**, rinse eyes immediately with plenty of water and contact the nearest doctor or hospital to seek medical attention.

### CAUTION

- **ALWAYS** disconnect the **NEGATIVE** battery terminal before performing service on the air compressor.
- **ALWAYS** keep battery cables in good working condition. Repair or replace all worn cables.

## ENVIRONMENTAL SAFETY/DECOMMISSIONING

### NOTICE

Decommissioning is a controlled process used to safely retire a piece of equipment that is no longer serviceable. If the equipment poses an unacceptable and unrepairable safety risk due to wear or damage, or is no longer cost effective to maintain (beyond life-cycle reliability) and is to be decommissioned (demolition and dismantlement), be sure to follow the rules below:

- **DO NOT** pour waste or oil directly onto the ground, down a drain or into any water source.
- Contact your country's Department of Public Works or a recycling agency in your area and arrange for proper disposal of any electrical components, waste, or oil associated with this equipment.
- When the life cycle of this equipment is over, remove the battery and bring it to an appropriate facility for lead reclamation. Use safety precautions when handling batteries that contain sulfuric acid.



- When the life cycle of this equipment is over, it is recommended that the frame and all other metal parts be sent to a recycling center.

Metal recycling involves the collection of metal from discarded products and its transformation into raw materials to use in manufacturing a new product.

Recyclers and manufacturers alike promote the process of recycling metal. Using a metal-recycling center promotes energy cost savings.

## EMISSIONS INFORMATION

### NOTICE

The diesel engine used in this equipment has been designed to reduce harmful levels of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) contained in diesel exhaust emissions.

This engine has been certified to meet US EPA evaporative emissions requirements in the installed configuration.

Any attempt to modify or make adjustments to the engine emission system by unauthorized personnel without proper training could damage the equipment or create an unsafe condition.

Additionally, modifying the fuel system may adversely affect evaporative emissions, resulting in fines or other penalties.

### Emission Control Label

The emission control label is an integral part of the emission system and is strictly controlled by regulations.

The label must remain with the engine for its entire life.

If a replacement emission label is needed, please contact your authorized engine distributor.

## NOTES

[illegible]

# SPECIFICATIONS

**Table 1. Compressor Specifications**

<b>Model</b>	DIS100SSK4F
<b>Type</b>	Single-stage, oil-cooled, screw-type rotary compressor
<b>Actual Free Air Delivery</b>	95 cfm (2.7 m <sup>3</sup> /min)
<b>Rated Operating Pressure</b>	100 psi (0.69 MPa)
<b>Minimum Operating Pressure</b>	73 psi (0.50 MPa)
<b>Maximum Operating Pressure</b>	120 psi (0.83 MPa)
<b>Lube Oil Capacity</b>	3.3 gallons (12.5 liters)
<b>Oil Chamber</b>	5.3 gallons (20 liters)
<b>Compressor Lube Oil</b>	Chevron CETUS PAO 32 or Shell Corena S2 RJ32 (XHVI)
<b>Air Service Connections</b>	Two 3/4" NPT
<b>Cooling System</b>	Oil cooler
<b>Air Cleaner</b>	2-stage filter
<b>Sound Level, Full Load @ 23 Feet</b>	70 dB(A)
<b>Dry Weight</b>	1,521 lb. (690 kg)
<b>Wet Weight</b>	1,631 lb. (740 kg)

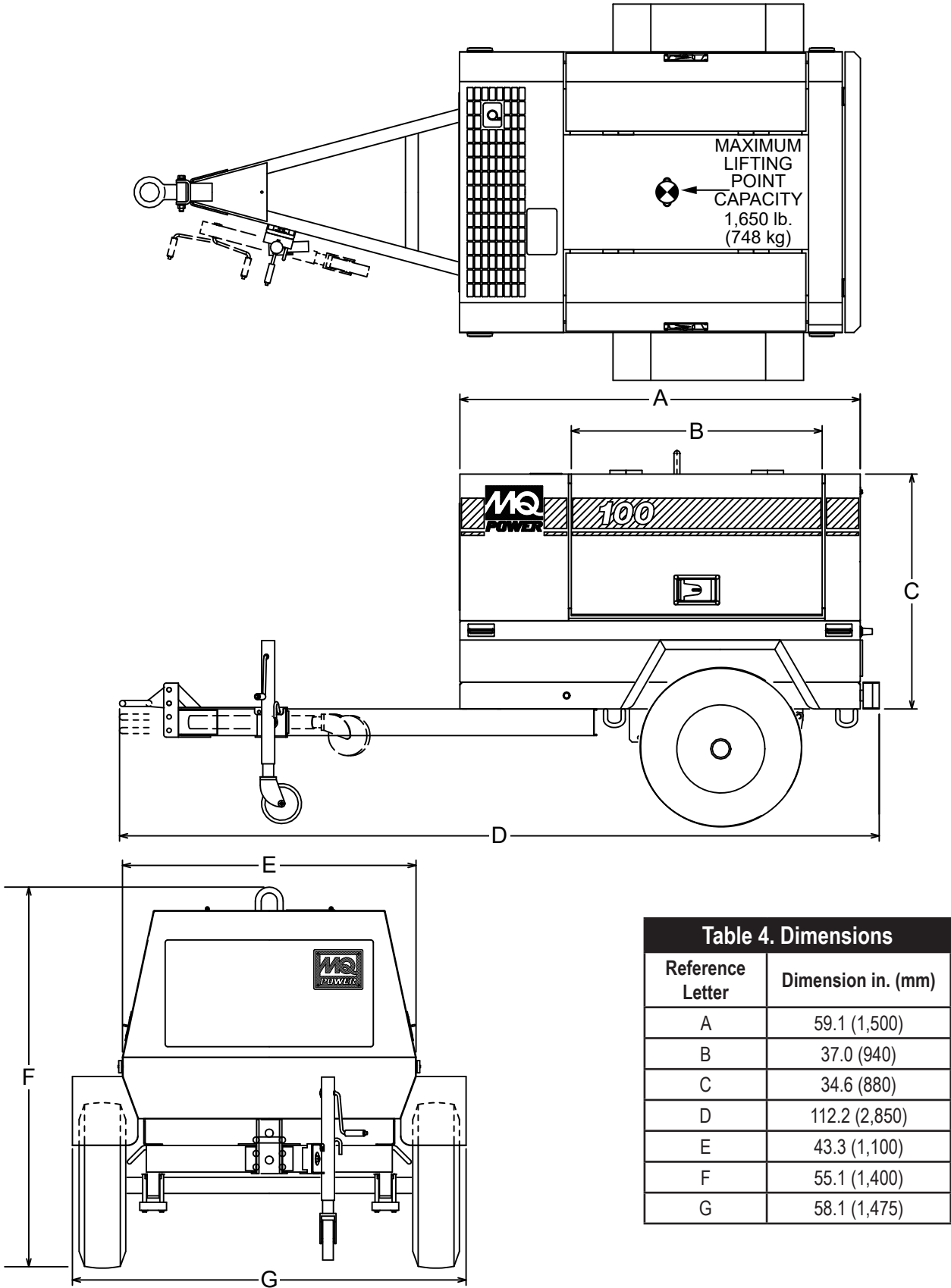
**Table 2. Engine Specifications**

<b>Model</b>	Kubota D1005-E4B
<b>Emission Regulation</b>	EPA Final Tier 4
<b>Type</b>	4-cycle, water-cooled, direct injection, diesel engine
<b>Bore × Stroke</b>	2.99 in. × 2.90 in. (76.0 mm × 73.6 mm)
<b>Displacement</b>	61.1 cu. in. (1.001 liters)
<b>Rated Output</b>	23.2 hp (17.3 kW)
<b>Rated Engine Speed</b>	3,200 rpm
<b>Engine Idle Speed</b>	2,000 rpm
<b>Starting</b>	Electric
<b>Coolant Capacity</b>	1.1 gal. (4.0 liters)
<b>Lube Oil Capacity</b>	1.4 gal. (5.1 liters)
<b>Lube Oil Type</b>	API service class CJ-4 or JASO DH-2
<b>Fuel Tank Capacity</b>	10.6 gal. (40.0 liters)
<b>Fuel Type</b>	#2 diesel fuel (ultra-low sulfur diesel fuel only)
<b>Fuel Consumption</b>	1.61 gal. (6.1 L)/hr. at <b>full load</b>   1.16 gal. (4.4 L)/hr. at <b>1/2 load</b>
<b>Battery</b>	24 (CCA 0°F 650 A) × 1

## SPECIFICATIONS

**Table 3. Specifications (Trailer/A-Frame)**

<b>Trailer and Frame</b>	Material	Formed steel channel frame
	Number of Axles	1
	Gross Axle Weight Rating (GAWR)	2,500 lb. (1,334 kg)
	Tires	ST175/80D13 LR-C
	Certifications	DOT
	Tow Bar	Bolt-on A-frame
	Adjustable Channel/Coupler Options	2" ball coupler, 10,000 lb. (4,536 kg)
		2-5/16" ball coupler, 14,000 lb. (6,350 kg)
		3" pintle eye, 25,000 lb. (11,340 kg)
	Tongue-Mounted Swivel Jack with Caster Wheel Weight Capacity	1,000 lb. (453.6 kg)
	Tail, Stop, Turn Signal, and Side Marker Lamps	DOT approved
	Suspension	Leaf spring



**Figure 2. Dimensions**

## AIR COMPRESSOR

The Multiquip DIS100SSK4F is a 95 cfm, screw-type rotary air compressor designed as a supplemental power source for pneumatically operated power tools.

## CONTROL AND INSTRUMENT PANEL

The control and instrument panel is provided with the following:

- Air Pressure Gauge
- Hour Meter
- Hour Meter Select Switch
- Hour Meter Check Switch
- Fuel Level Gauge
- Preheat Lamp
- Engine Lube Oil Pressure Warning Lamp
- Water Temperature Warning Lamp
- Charging Warning Lamp
- Engine Low Speed Warning Lamp
- Discharge Air Temperature Warning Lamp
- Residual Tank Pressure Starting Lamp
- Starter Switch
- Unloader Valve

## ENGINE

The air compressor is powered by a four-cycle, water-cooled, Kubota D1005-E4B diesel engine. This engine is designed to meet every performance requirement for the air compressor. Refer to Table 2 for engine specifications.

## ELECTRIC GOVERNOR SYSTEM

An electric governor system controls the RPM of the engine. When the engine demand increases or decreases, the governor system regulates the frequency variation to  $\pm 0.25\%$ .

## AIR OUTLET VALVES

The compressor is equipped with two air outlet valves equipped with quick-disconnect (QD) fittings for easy coupling with pneumatic tools.

## TRAILER

This compressor is trailer-mounted for easy transport by a towing vehicle. The trailer is equipped with an adjustable four-hole channel that accepts either a ball or pintle coupler. All tail-stop, turn-signal, and side-marker lamps are DOT approved.

## APPLICATIONS

This air compressor can be used for a variety of pneumatic applications (Figure 3), such as a concrete pump (shotcrete), vibratory screed, jackhammer, nail gun, spray paint gun, impact wrench, or pressure washer, just to name a few.

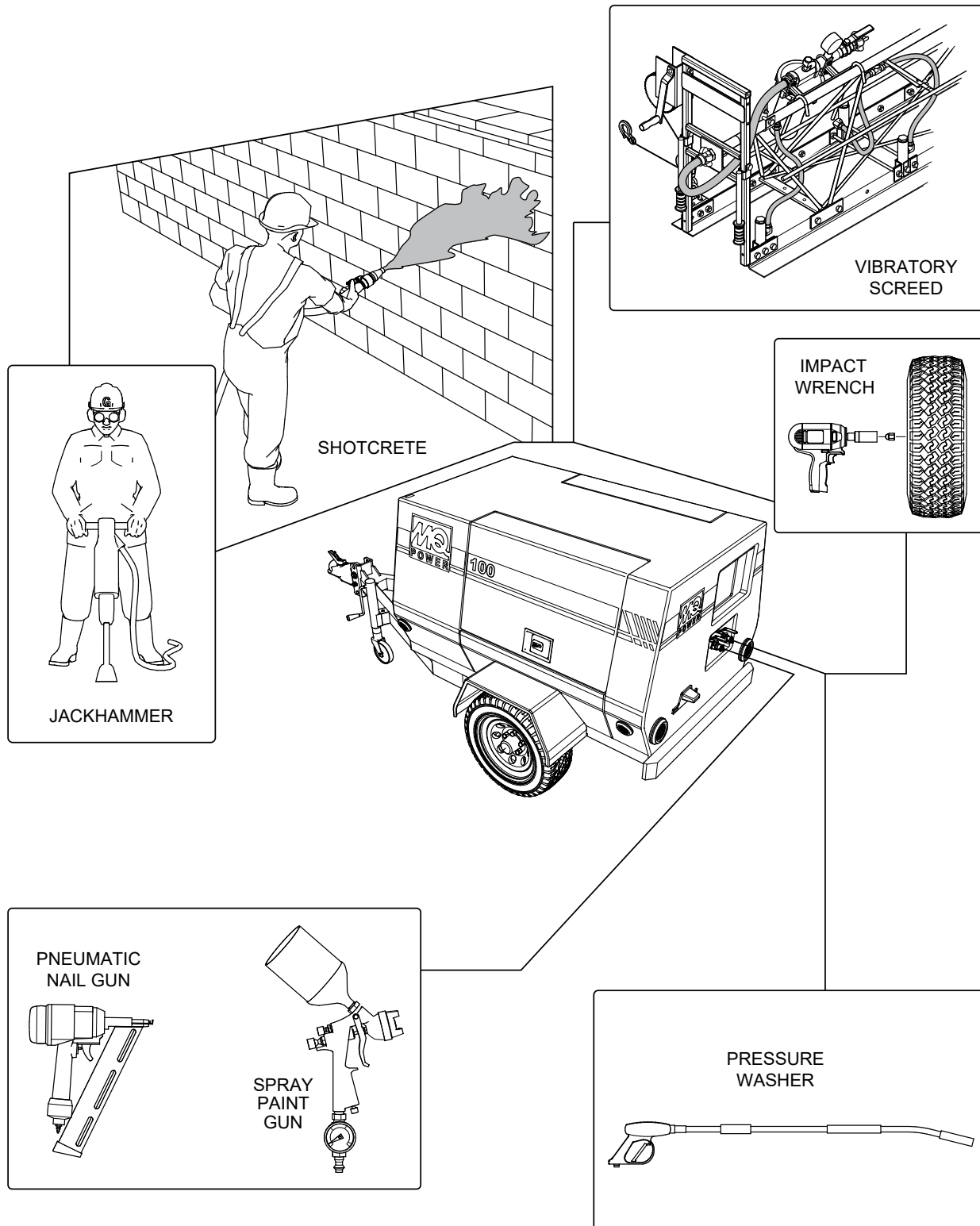
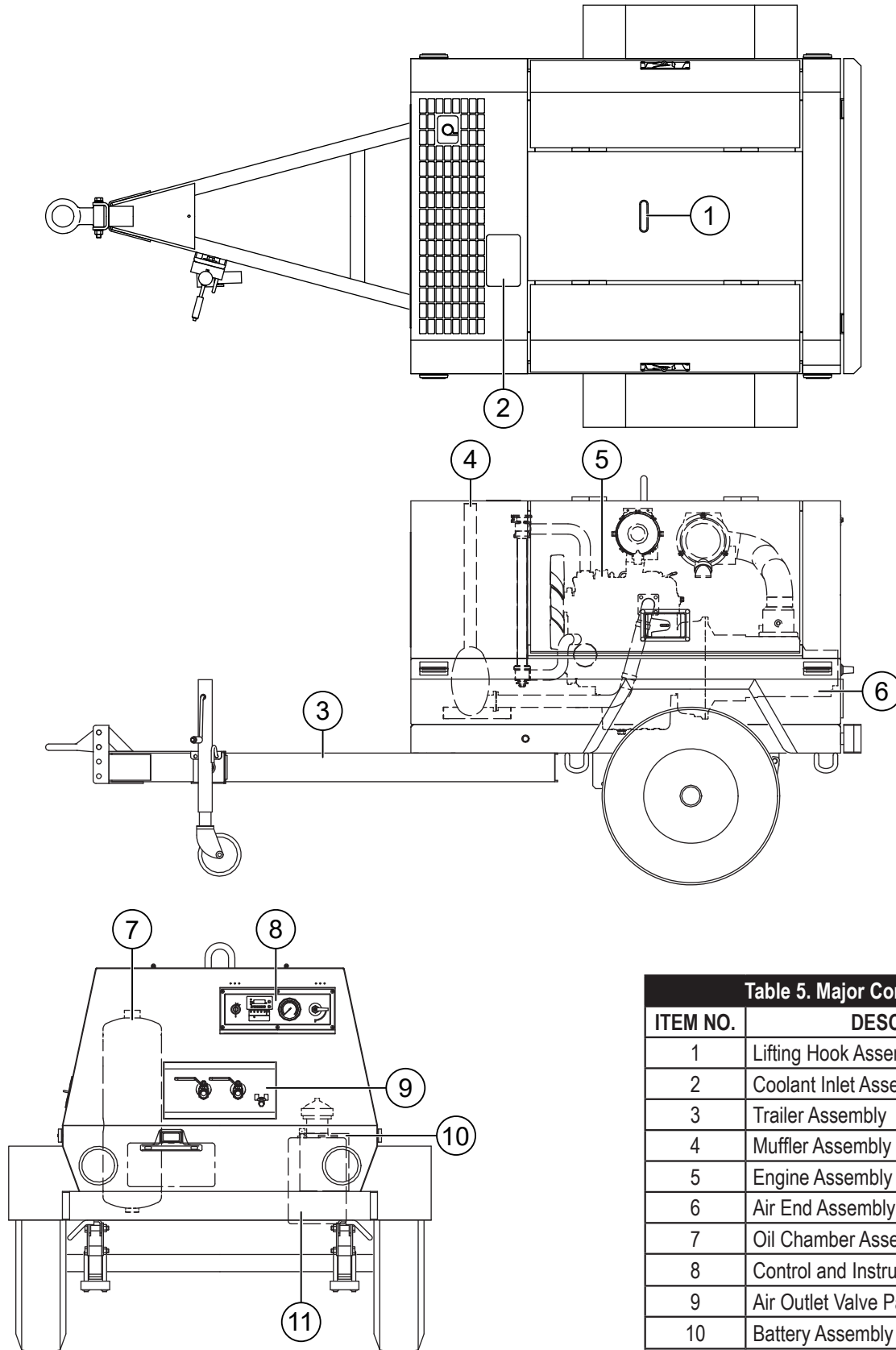


Figure 3. Air Compressor Applications



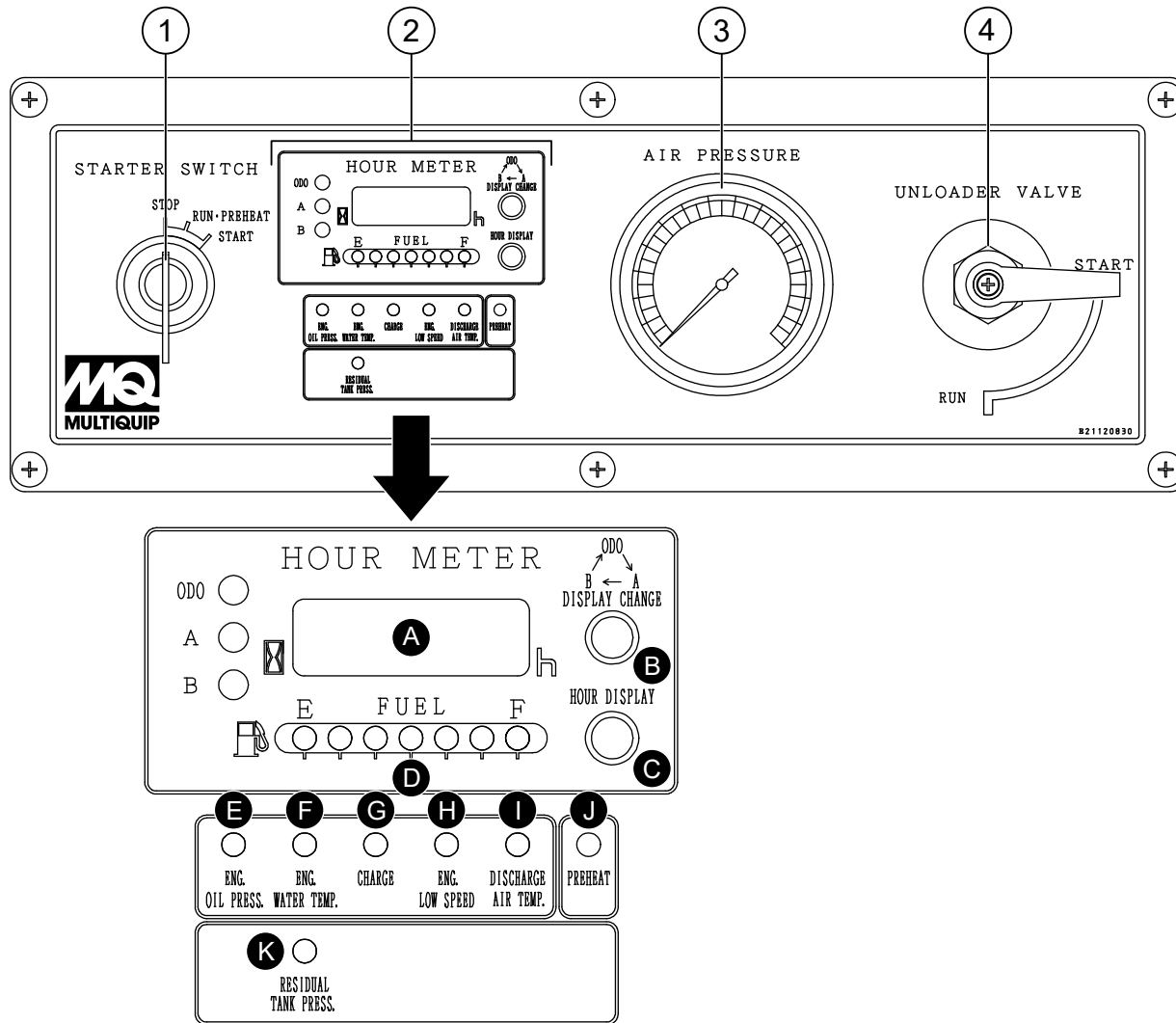
# MAJOR COMPONENTS



**Figure 4. Major Components**

Table 5. Major Components	
ITEM NO.	DESCRIPTION
1	Lifting Hook Assembly
2	Coolant Inlet Assembly
3	Trailer Assembly
4	Muffler Assembly
5	Engine Assembly
6	Air End Assembly
7	Oil Chamber Assembly
8	Control and Instrument Panel Assembly
9	Air Outlet Valve Panel Assembly
10	Battery Assembly
11	Fuel Tank Assembly

# CONTROL AND INSTRUMENT PANEL



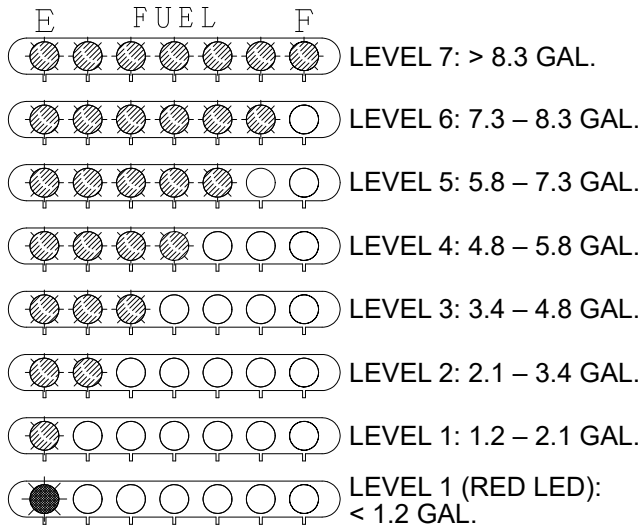
**Figure 5. Control And Instrument Panel**

The definitions below describe the controls and functions of the **control and instrument panel** (Figure 5).

- 1. Starter Switch** — Three-position switch: **STOP**, **RUN**, and **PREHEAT/START**. The ignition key can only be inserted or removed while in the **STOP** position.
- 2. Instrument Monitor** — Houses various instruments and warning lamps: fuel level, run hours, engine oil pressure, water temperature, battery charge, engine speed, discharge air temperature, engine preheat, and residual tank pressure.
  - A. Hour Meter** — Indicates the operational hours of the air compressor.
  - B. Hour Meter Select Switch** — Press to cycle the hour meter display between ODO (total run hours), A (trip hours), and B (trip hours). Press and hold while Trip A or Trip B is selected to reset the trip time. This function can be used as a timer for regular inspection and maintenance to be made at the time of oil replacement.
  - C. Hour Meter Check Switch** — Press and hold to view the hour meter and fuel gauge readings while the Starter switch is in the **STOP** position.

## CONTROL AND INSTRUMENT PANEL

- D. **Fuel Gauge** — Indicates the level of fuel in the fuel tank:



- E. **Engine Oil Pressure Warning Lamp** — Turns on when the engine oil pressure drops below 14.2 psi (98 kPa). This condition will cause the engine to shut down.
- F. **Engine Water Temperature Warning Lamp** — Turns on when the cooling water temperature rises above 239°F (115°C). This condition will cause the engine to shut down.
- G. **Battery Charging Warning Lamp** — Turns on when there is a battery charging error (e.g. the fan belt breaks while the engine is running). This condition will cause the engine to shut down.
- H. **Engine Low Speed Warning Lamp** — Turns on when the engine speed drops below 1,900 rpm. This condition will cause the engine to shut down.
- I. **Discharge Air Temperature Warning Lamp** — Turns on when the discharge air temperature rises above 230°F (110°C). This condition will cause the engine to shut down.
- J. **Preheat Lamp** — Turns on when the engine has been started and the Starter switch is in the **RUN** position. Turns off when engine preheating is completed.

- K. **Residual Tank Pressure Starting Lamp** — Flashes for 5 seconds if engine starting is attempted while pressure remains in the air compressor. The Starter switch cannot be rotated at this time. Wait until the air pressure gauge indicates 0 psi, then start the engine.

3. **Air Pressure Gauge** — Indicates the pressure of the air delivered by the compressor.
4. **Unloader Valve** — Releases trapped air from inside the tank, enabling the engine to start. Place in the **START** position when starting the engine. After the engine warms up, place in the **RUN** position to allow air delivery from the compressor.

## ENGINE OIL CHECK

1. Place the air compressor on secure, level ground with the engine stopped.
2. Remove the **engine oil dipstick** from its holder (Figure 6) and wipe it clean.

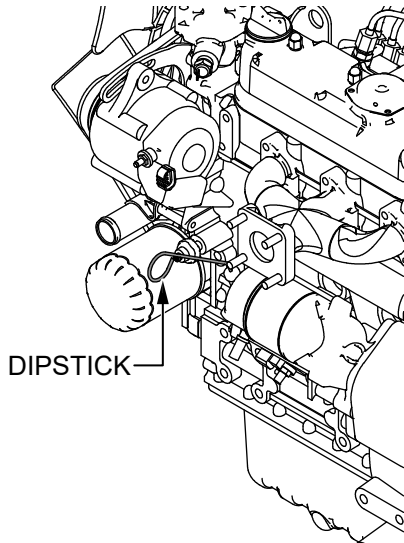


Figure 6. Engine Oil Dipstick Location

3. Reinsert the dipstick, then remove the dipstick from its holder. Check the oil level shown on the dipstick (Figure 7).

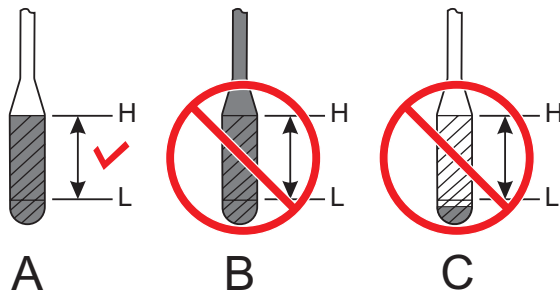


Figure 7. Engine Oil Level

4. Verify that the engine oil level is maintained between the **H** and **L** markings on the dipstick as shown in Figure 7A.

5. If the engine oil level is low (Figure 7C), remove the **oil filler cap** (Figure 8) and fill to a safe operating level (max) as indicated by the dipstick (Figure 7A). Recommended oil viscosity is SAE 10W-40, all-season type. Refer to Table 6 for appropriate oil viscosity based on ambient temperature. Maximum oil capacity is **1.4 gallons (5.1 liters)**.

### NOTICE

When adding engine oil, **DO NOT** overfill (Figure 7B).

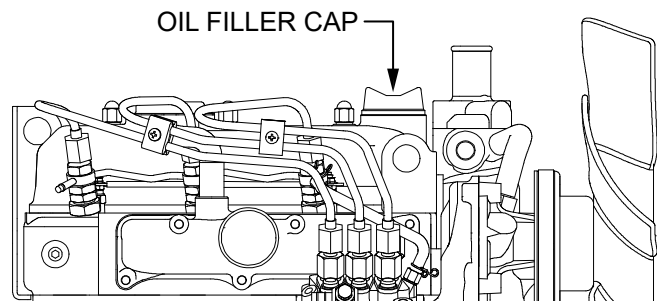
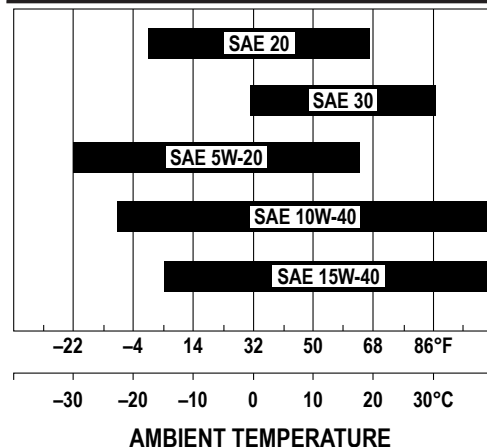


Figure 8. Engine Oil Filler Cap

Table 6. Recommended Motor Oil



6. Allow enough time for any added oil to make its way to the oil pan before rechecking.
7. When checking the engine oil level, be sure to check if the oil is clean. If the oil is not clean, drain the oil as described in the **Maintenance** section of this manual.

## OIL CHAMBER WATER DRAINAGE

Water that has accumulated within the oil chamber must be removed from the oil chamber before the air compressor can be placed into operation.

1. Place a suitable container underneath the **oil chamber drain valve** (Figure 9).
2. Open the oil chamber drain valve slightly and drain the contents until oil is visible. Once oil is visible, close the drain valve immediately.

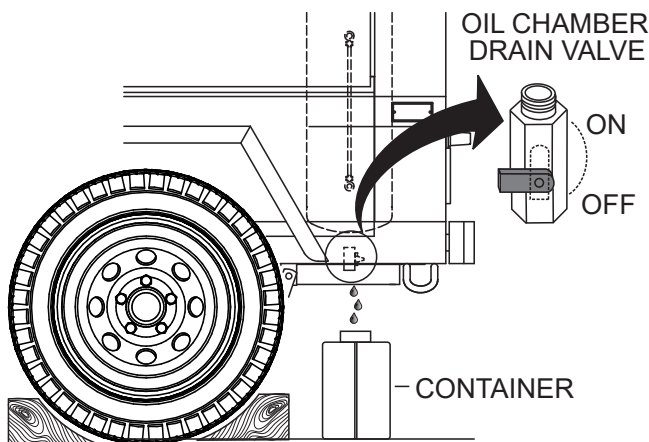


Figure 9. Oil Chamber Water Drainage

## COMPRESSOR OIL CHECK

1. Place the air compressor on secure, level ground with the engine stopped.
2. Verify that the compressor oil level is maintained between the **H** and **L** markings (Figure 10A) on the **oil level gauge** (clear plastic tube) located on the side of the **oil chamber**.

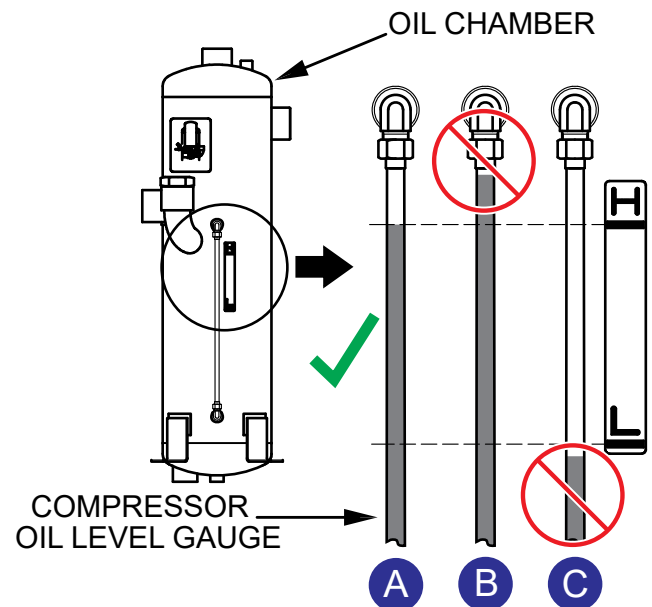


Figure 10. Compressor Oil Level

3. If the compressor oil level is low (Figure 10C), you must fully drain the old oil before adding fresh oil. Refer to **Compressor Oil Replacement** in the **Maintenance** section.

### NOTICE

**NEVER** mix different brands of compressor oils, and **NEVER** mix fresh compressor oil with old oil in the oil chamber. Such mixing occasionally produces insoluble glue, lacquer, or shellacs, which may cause the oil filter to become clogged and break down or cause abnormal wear of the rotor or bearings, resulting in serious damage to the equipment.

### NOTICE

**ALWAYS** fully drain the old compressor oil before adding fresh compressor oil.

## COOLANT CHECK (ANTIFREEZE / SUMMER COOLANT / WATER)

Kubota recommends long-life coolant (LLC) for use in this engine, which can be purchased in concentrate (and mixed with distilled, mineral-free water) or pre-diluted. See the **Kubota engine owner's manual** for further details.

### ! WARNING



When adding coolant/antifreeze to the radiator, **DO NOT** remove the radiator cap until the unit has completely cooled. The possibility of **hot** coolant exists which can cause **severe burns**.

Day-to-day addition of coolant is done from the reserve tank. When adding coolant to the radiator, **DO NOT** remove the radiator cap until the unit has completely cooled. See Table 7 for engine, radiator, and reserve tank coolant capacities.

### NOTICE

Normally, only the coolant level in the reserve tank needs to be checked. However, the radiator cap should be opened once a week to verify that coolant is visible (full) inside the radiator.

1. Verify the coolant level in the **coolant reserve tank** is between the **FULL** and **LOW** markings as shown in Figure 11.

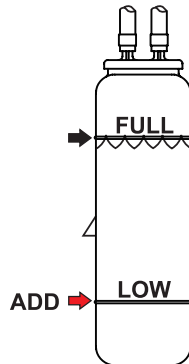


Figure 11. Coolant Reserve Tank

Table 7. Coolant Capacity

Engine and Radiator	1.1 gal. (4.0 liters)
Reserve Tank	See markings

2. If the coolant level is low, add coolant immediately and fill to the **FULL** marking on the coolant reserve tank.

## Operation In Freezing Weather

When operating in freezing weather, be certain the proper amount of antifreeze (Table 8) has been added.

Table 8. Antifreeze Operating Temperatures

Vol. % Antifreeze	Ambient Temperature	
	°C	°F
30	-10	14
40	-20	-4
50	-30	-22

### NOTICE

When the antifreeze is mixed with water, the antifreeze mixing ratio must not be greater than 50%.

## FAN BELT TENSION

A slack fan belt may contribute to overheating, or to insufficient charging of the battery. Inspect the fan belt for damage and wear and adjust it in accordance with the **Kubota engine owner's manual**.

The **fan belt tension** is proper if the fan belt bends **0.28–0.35 in. (7–9 mm)** when pressed with the thumb as shown in Figure 12.

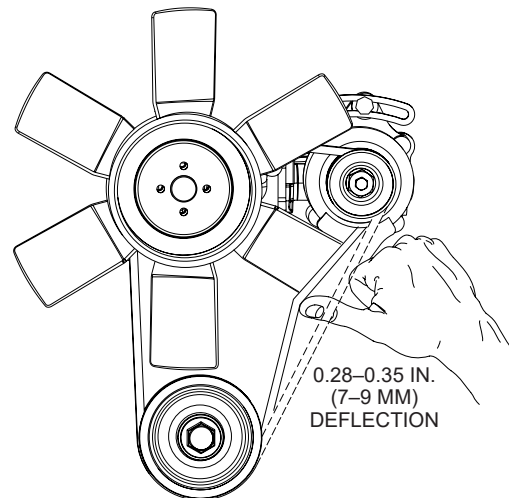


Figure 12. Fan Belt Tension

### ! CAUTION



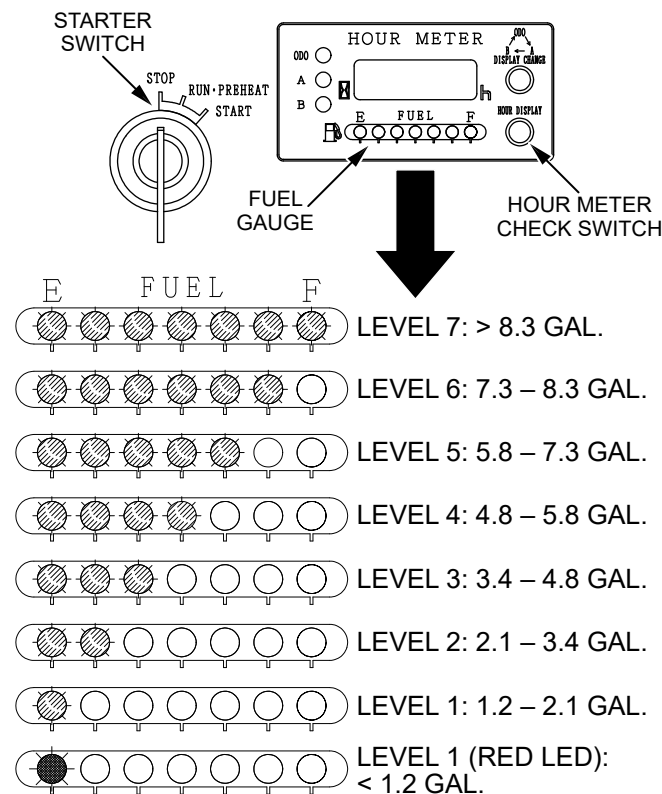
**NEVER** place hands near the belts or fan while the air compressor is running.

## FUEL CHECK

**DANGER**

Fuel spillage on a **hot** engine can cause a **fire** or **explosion**. If fuel spillage occurs, wipe up the spilled fuel completely to prevent fire hazards. **NEVER** smoke around or near the air compressor. **ALWAYS** shut down the engine prior to cleaning up any spilled fuel.

1. Place the air compressor on secure, level ground with the engine stopped.
2. With the **Starter switch** in the **STOP** position (Figure 13), press and hold the **Hour Meter Check switch** to read the **fuel gauge**.



**Figure 13. Fuel Level Check**

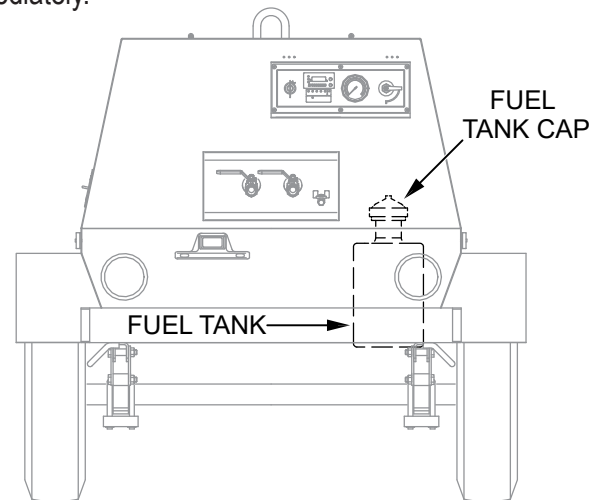
## Refilling The Fuel System

### NOTICE

**DO NOT** refuel while the engine is running.

**ALWAYS** fill the **fuel tank** (Figure 14) with clean, fresh **#2 diesel fuel**. **DO NOT** fill the fuel tank beyond its capacity.

Pay attention to the fuel tank capacity when replenishing fuel. The fuel tank cap must be closed tightly after filling. Handle fuel in a safety container. If the container does not have a spout, use a funnel. Wipe up any spilled fuel immediately.



**Figure 14. Fuel Tank**



## Refueling Procedure

### ! WARNING



**Diesel fuel** and its vapors are dangerous to your health and the surrounding environment. Avoid inhalation of fumes and contact with skin.

1. **Level Tank** — Make sure the fuel tank is level with the ground. Failure to do so will cause fuel to spill from the tank before reaching full capacity (Figure 15).

### ! CAUTION

**ALWAYS** place the air compressor on firm, level ground before refueling to prevent spilling and to maximize the amount of fuel that can be pumped into the tank.

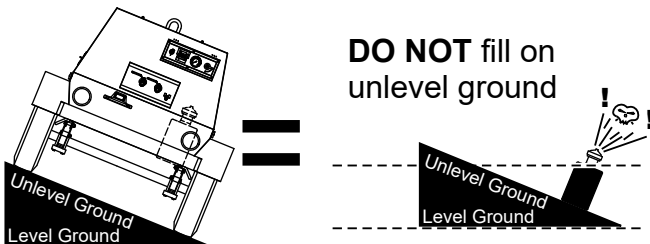


Figure 15. Only Fill On Level Ground

### NOTICE

**ONLY** use **#2 diesel fuel** (ultra-low sulfur diesel fuel) when refueling. If other kinds of fuel are used or the fuel being used contains water or impurities, it will deteriorate engine performance.

2. Open the enclosure door as shown in Figure 16, remove the **fuel tank cap**, and fill the fuel tank. Fuel tank capacity is **10.6 gallons (40.0 liters)**.

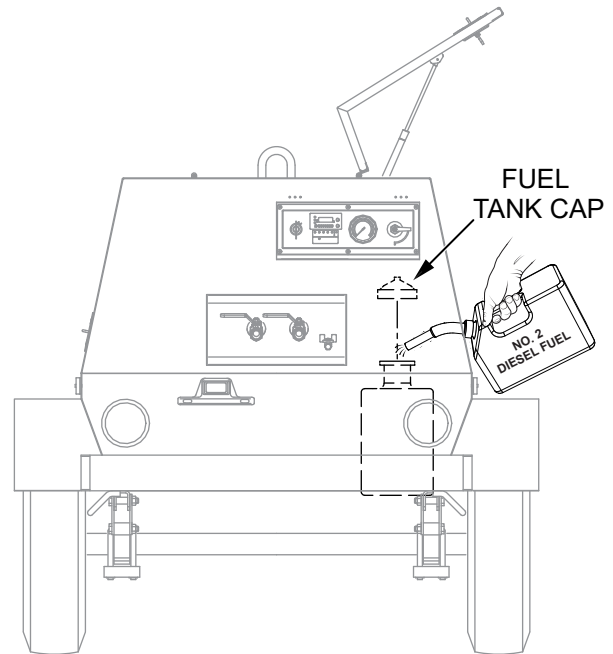


Figure 16. Fueling The Air Compressor

### ! CAUTION

**DO NOT OVERFILL** the fuel system. Leave room for fuel expansion. Fuel expands when heated (Figure 17).

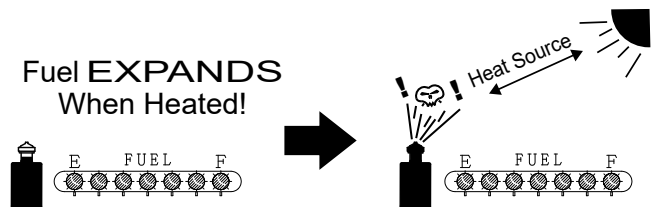


Figure 17. Fuel Expansion



## BATTERY FLUID CHECK

### CAUTION

Battery acid is dilute sulfuric acid. Improper handling will cause unexpected burns.

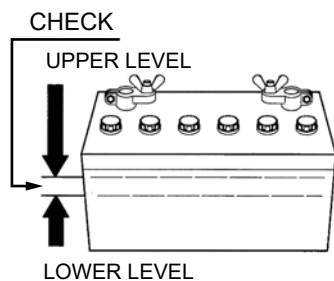
### CAUTION

If battery acid gets on your clothes or skin, wash it off immediately with a large volume of water.

### CAUTION

If battery acid gets in your eyes, wash it out with a large volume of water and seek medical attention immediately.

Always maintain the **battery fluid level** between the specified marks (Figure 18). Remove the battery acid plug (cap) and check the liquid level (0.39–0.47 in. / 10–12 mm above the electrodes). Battery life will be shortened if proper fluid levels are not maintained. Add only distilled water when replenishment is necessary. **DO NOT** overfill.



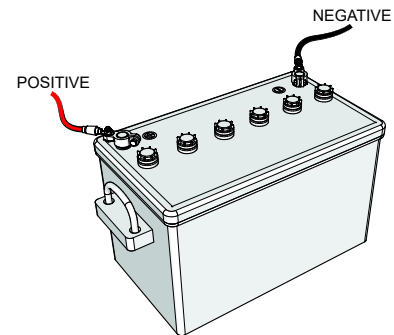
**Figure 18. Battery Fluid Level**

## BATTERY CABLE INSTALLATION

**ALWAYS** be sure the **battery cables** (Figure 19) are properly connected to the battery terminals as shown below. The **red cable** is connected to the **positive** terminal of the battery, and the **black cable** is connected to the **negative** terminal of the battery.

### CAUTION

**ALWAYS** disconnect the negative terminal **FIRST** and reconnect the negative terminal **LAST**.



**Figure 19. Battery Connections**

When connecting the battery do the following:

1. **NEVER** connect the battery cables to the battery terminals while the **Starter switch** is in the **RUN** position. **ALWAYS** make sure that this switch is in the **STOP** position when connecting the battery.
2. Place a small amount of battery terminal treatment compound around both battery terminals. This will ensure a good connection and will help prevent corrosion around the battery terminals.

### NOTICE

If the battery cables are connected incorrectly, electrical damage to the alternator will occur. Pay close attention to the polarity of the battery when connecting.

### CAUTION

Inadequate battery connections may cause poor starting of the air compressor or other malfunctions.

## ALTERNATOR

The polarity of the alternator is negative grounding type. When an inverted circuit connection takes place the circuit will be in short circuit instantaneously resulting in alternator failure.

**DO NOT** put water directly on the alternator. Entry of water into the alternator can cause corrosion and damage the alternator.

## WIRING

Inspect the entire air compressor for bad or worn electrical wiring or connections. If any wiring or connections are exposed (insulation missing), replace wiring immediately.

## LOOSE PARTS

Inspect the entire air compressor for loose fastening nuts and bolts. Loose parts (nylon pipe unions, rubber hose joints, air cleaner and muffler fittings, etc.) should be tightened firmly.

## FOREIGN OBJECTS

Make sure tools and cleaning materials are not left in the machine. Remove if necessary.

Check the surroundings of the muffler and engine for the presence of dust or flammable objects. Remove if necessary.

Make sure the engine cooling air inlet and cooling air outlet are not clogged with dust or other objects. Remove if necessary.

## PIPING AND HOSE CONNECTIONS

Make sure any pipes or hoses connected to the machine can sufficiently endure the discharge pressure. Check pipe connections for looseness and hoses for wear. Replace if necessary.



### CAUTION

**MAKE SURE** to release the pressure remaining within the pipe or hose before disconnecting from the machine.

Inspect all oil and fuel hose and piping connections for wear and tightness. Tighten all hose clamps and check hoses for leaks.

If any fuel or oil lines are defective (rust, wear, degradation, or any other abnormality), replace them immediately.



### WARNING



Fuel leakage (from each pipe and hose connection included) may cause fire, thus posing great danger. If leakage is found, replace the gasket at each connection, or retighten the connections.

## PREPARATION

Make sure the **enclosure doors** are both **CLOSED** (Figure 20) before operating the air compressor. **DO NOT** operate the air compressor with the doors open.

### CAUTION

**MAKE SURE** to close the doors and lock them during operation:



- Moving parts within the enclosure can cause severe injury.



- Hot surfaces within the enclosure can burn skin.



- This machine generates large amounts of noise while operating with the doors open, which may cause hearing loss.

### NOTICE

US federal law prohibits operation of the compressor with either of the enclosure doors open.

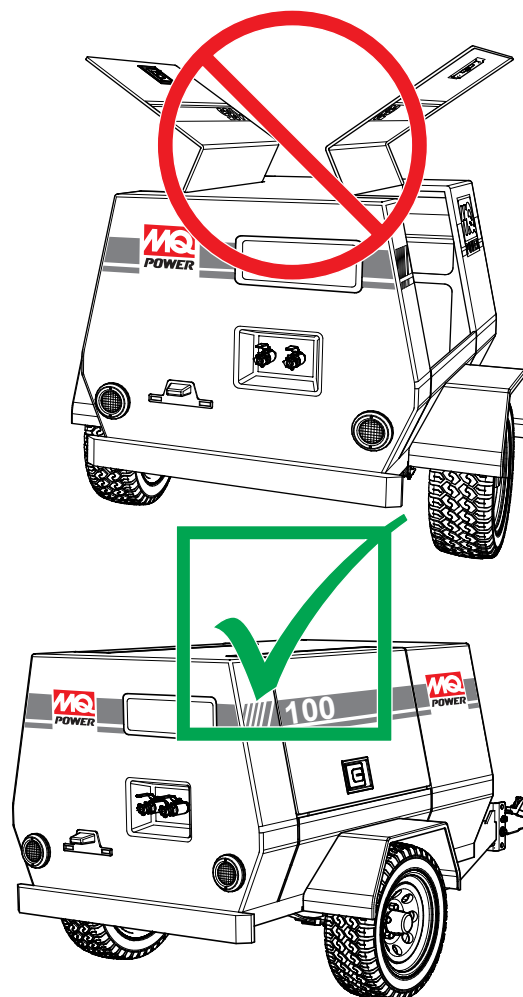


Figure 20. Doors Closed

## AIR HOSE CONNECTION

1. Connect the load **air hose** to an **air outlet valve** as shown in Figure 21.

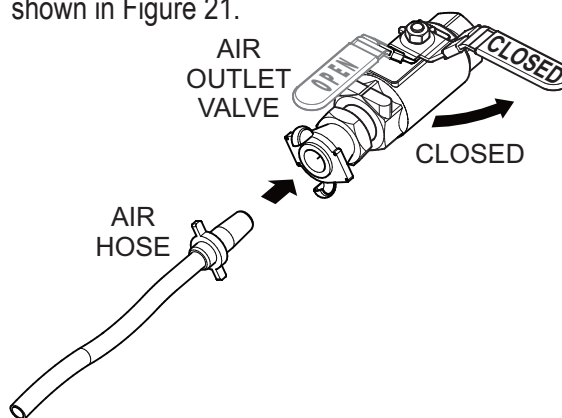


Figure 21. Air Hose Connection

2. Make sure that both air outlet valves are placed in the **CLOSED** position (Figure 21).

## START-UP

1. If starting the engine in cold weather conditions, place the **cold start-run valve** in the **OPEN** position (Figure 22).

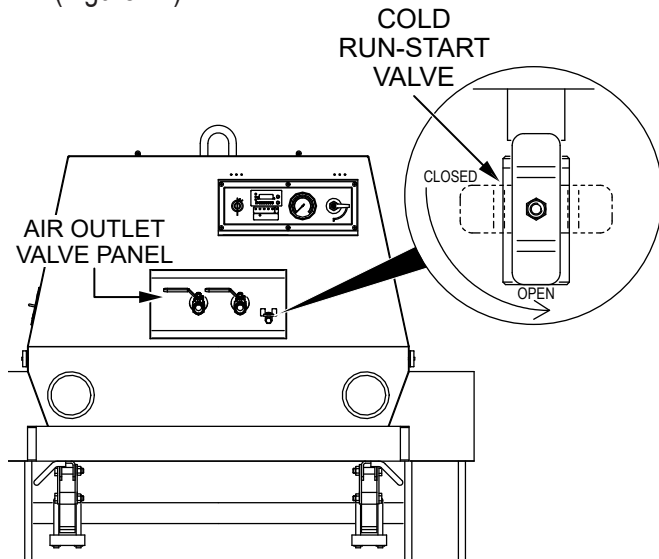


Figure 22. Cold Start-Run Valve (OPEN)

### NOTICE

The cold start-run valve is for **starting only**. **DO NOT** attempt to use the cold start-run valve for any purpose other than starting.

2. Place the **unloader valve** in the **START** position (Figure 23).

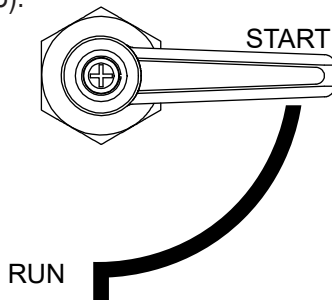


Figure 23. Unloader Valve (START)

### CAUTION

Starting the engine with the unloader valve set to the **RUN** position will shorten the life of the machine and may cause hazards to the operator and neighboring persons. **MAKE SURE** the unloader valve is in the **START** position before starting the engine.

3. Insert the ignition key and turn the **Starter switch** clockwise to the **RUN/PREHEAT** position (Figure 24), and wait for the **Preheat lamp** (Figure 25) to turn **OFF**.

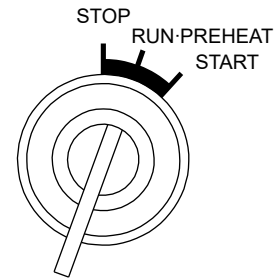


Figure 24. Starter Switch (RUN/PREHEAT)



Figure 25. Preheat Lamp

4. After the Preheat lamp turns off, turn the **Starter switch** clockwise to the **START** position (Figure 26) to start the engine. When the engine starts, release the key switch. The key will automatically return to the **RUN** position (Figure 24).

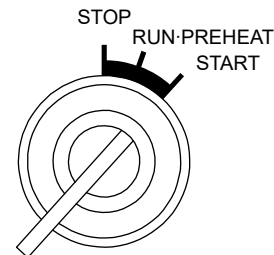


Figure 26. Starter Switch (START)

5. Let the engine run for 5–10 minutes to warm up. During the warmup period, check for any abnormal noise, vibration, or fluid leakage. If any abnormalities exist, shut down the engine and correct the problem.
6. After the engine has warmed up, slowly close the **cold start-run valve** (Figure 27).

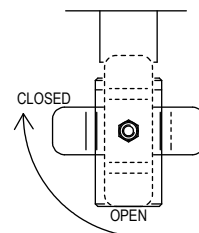
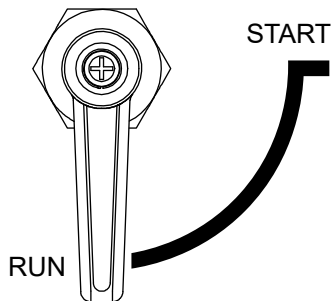


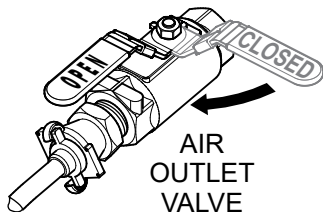
Figure 27. Cold Start-Run Valve (CLOSED)

7. Place the **unloader valve** in the **RUN** position (Figure 28).



**Figure 28. Unloader Valve (RUN)**

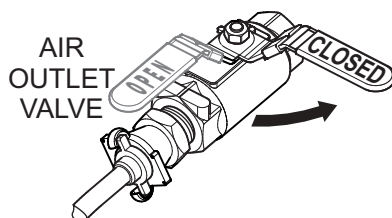
8. Place the **air outlet valve(s)** in the **OPEN** position to deliver compressed air. Verify that the engine speed increases steadily as the valve is opened, and decreases steadily as the valve is closed.



**Figure 29. Air Outlet Valve (OPEN)**

## SHUTDOWN

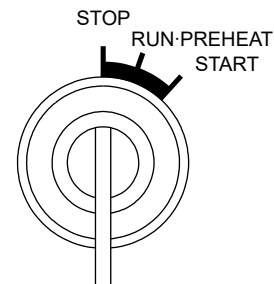
1. Place the **air outlet valve(s)** in the **CLOSED** position (Figure 30) to stop the flow of compressed air.



**Figure 30. Air Outlet Valve (CLOSED)**

2. The engine speed will decrease automatically to idle speed. Let the engine idle for approximately 5 minutes to cool down.

3. Turn the **Starter switch** counterclockwise to the **STOP** position (Figure 31). The engine will stop and the compressed air remaining in the compressor will be automatically discharged. Remove the ignition key and place it in a safe location.



**Figure 31. Starter Switch (STOP)**

### **WARNING**

**NEVER** discharge the compressed air via the air outlet valves or the cold start-run valve. Oil may be mixed with the discharged air. This discharged air (residual pressure) can cause **severe bodily injury**. Allow the compressed air to dissipate completely (approximately 50 seconds) before disconnecting air hoses from the air outlet valves.

### **WARNING**

Be careful when disconnecting air compressor hose lines. Residual pressure can cause severe injury. Be sure to release (bleed) residual pressure before removing hose lines.

### **NOTICE**

The residual air pressure inside the compressor tank must be zero before the engine can be restarted. The residual air will be discharged in about 50 seconds after stopping the engine. Restart the engine only after confirming that the pressure gauge reads 0 psi. If there is residual pressure inside the compressor tank when the engine is restarted, the Residual Tank Pressure Starting lamp will turn on, and the engine will not start.

# MAINTENANCE

Table 9. Inspection/Maintenance		Daily	Every 100 Hr.	Every 200 Hr.	Every 250 Hr.	Every 400 Hr.	Every 500 Hr.	Every 1,000 Hr.	Every 2,000 Hr.	Every 4,000 Hr.	Other
Common	Check water, oil, fuel leakage	X									
	Check bolts and nuts for looseness	X									
	Check meters and warning lamps	X									
	Check exhaust color, sound and vibration	X									
	Clean air cleaner element		X								
	Clean radiator and oil cooler							X			
	Check rubber suspension							X			
	Check acoustic sheeting							X			
	Check nylon and rubber hoses								X		or 3 yr.
	Check and replace coupling element									X	
Engine	Check oil level and stain of oil	X									
	Check cooling water	X									
	Check fan belt tension and elongation, adjust if necessary	X									
	Check fuel level	X									
	Check fuel filter (pre and main)	X									
	Check battery fluid level	X									
	Clean engine fuel filter element (pre)		X								
	Replace engine oil			X							first 50 hr.
	Replace engine oil filter cartridge			X							
	Check battery specific gravity				X						
	Replace engine fuel filter element (main)					X					
	Replace air cleaner element						X				
	Clean inside fuel tank							X			
	Replace long-life coolant								X		or 2 yr.
Compressor	Check compressor oil level	X									
	Drain through oil chamber drain	X									
	Lubricate speed regulator		X								
	Check and clean oil return filter orifice						X				first 50 hr.
	Check safety valve operation						X				
	Replace compressor oil							X			
	Replace compressor oil filter cartridge							X			
	Replace air cleaner element							X			
	Replace diaphragm in speed regulator							X			
	Replace inlet valve seal							X			
	Replace diaphragm in pressure regulator valve							X			
	Replace O-ring in minimum pressure valve							X			
	Replace O-ring in compressor oil filler port							X			
	Replace O-ring in discharge pipe flange							X			
	Check oil separator cartridge								X		or 2 yr.

## GENERAL INSPECTION

Prior to each use, the air compressor should be cleaned and inspected for deficiencies. Check for loose, missing or damaged nuts, bolts, or other fasteners. Also check for fuel, oil, and coolant leaks. Use Table 9 as a general inspection and maintenance guideline. For more detailed engine maintenance instructions, refer to the Kubota engine owner's manual.

## ENGINE AIR CLEANER

This Kubota diesel engine is equipped with a replaceable, high-density, paper **air cleaner element** (Figure 32). Check the air cleaner daily or before starting the engine. Replace the air cleaner as needed.

### NOTICE

If the engine is operating in very dusty or dry grass conditions, a clogged air cleaner will result. This can lead to a loss of power, excessive carbon buildup in the combustion chamber, and high fuel consumption. Change the air cleaner more frequently if these conditions exist.

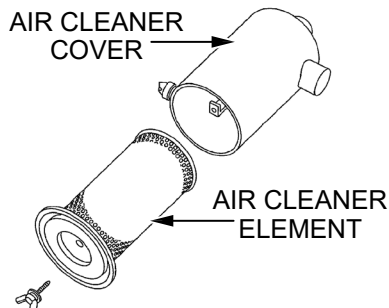


Figure 32. Engine Air Cleaner

### Air Cleaner Element

Every 100 hours of operation, remove the **air cleaner element** (Figure 32) and clean it with a light spray of compressed air, not to exceed 30 psi (205 kPa, 2.1 kgf/cm<sup>2</sup>). Wipe off the **air cleaner cover** before reinstalling the air cleaner element.

### CAUTION



Wear protective equipment such as approved safety glasses or face shields and dust masks or respirators when cleaning air filters with compressed air.

### NOTICE

Operating the engine with loose or damaged air cleaner components could allow unfiltered air into the engine causing premature wear and failure.

### NOTICE

**DO NOT** run the engine with the air cleaner removed or without an element.

## ENGINE FUEL FILTER

Inspect all fuel lines every 50 hours of operation.

### Cleaning The Fuel Prefilter Element

Clean the fuel prefilter every 100 hours of operation.

1. Place the **fuel valve** in the **CLOSED** position (Figure 33).

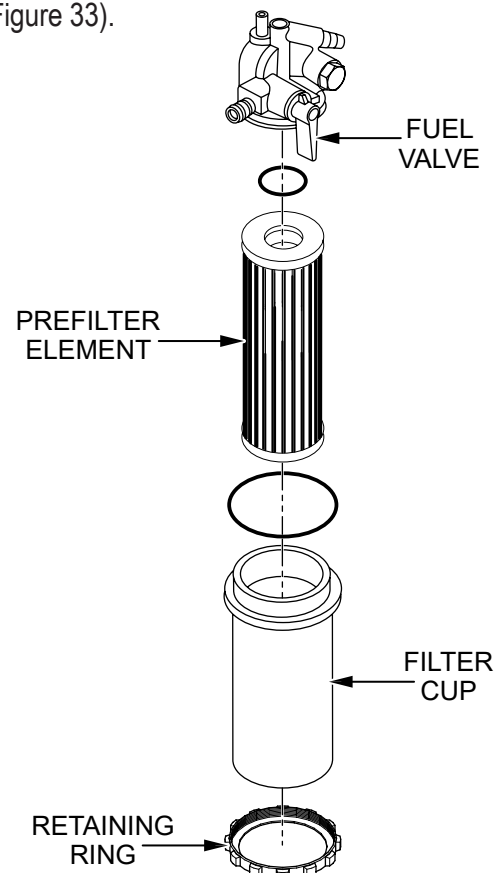


Figure 33. Fuel Prefilter Maintenance

2. Unscrew the **retaining ring** and remove the **filter cup** and **prefilter element** (Figure 33).
3. Rinse the inside of the filter cup with diesel fuel.

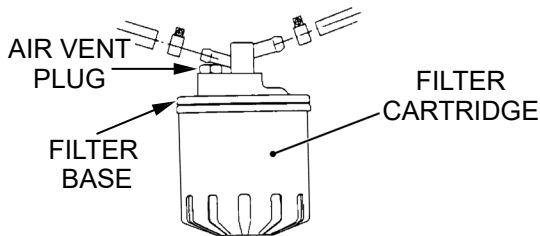


4. Rinse the prefilter element with diesel fuel.
5. Reassemble the fuel prefilter, keeping out dust and dirt.
6. Air bleed the fuel system. Refer to **Air Bleeding the Fuel System** in the Kubota engine owner's manual.

## Main Fuel Filter Element Replacement

Replace the main fuel filter element every 400 hours of operation.

1. Using a filter wrench, remove the used **filter cartridge** (Figure 34).



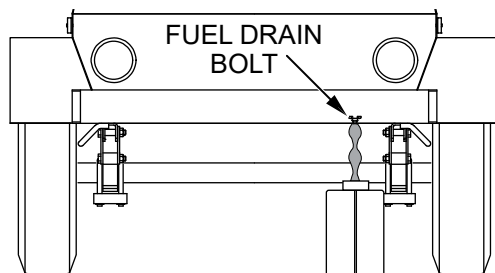
**Figure 34. Main Fuel Filter Element Replacement**

2. Clean the **filter base** (Figure 34).
3. Apply a thin film of fuel to the surface of the new filter cartridge gasket.
4. Install the new filter cartridge by hand until it contacts the sealing surface of the filter base. Tighten it by hand another 1/2 to 1 turn.
5. Loosen the **air vent plug** (Figure 34) to vent the air.
6. Start the engine and check for fuel leakage.

## CLEANING INSIDE THE FUEL TANK

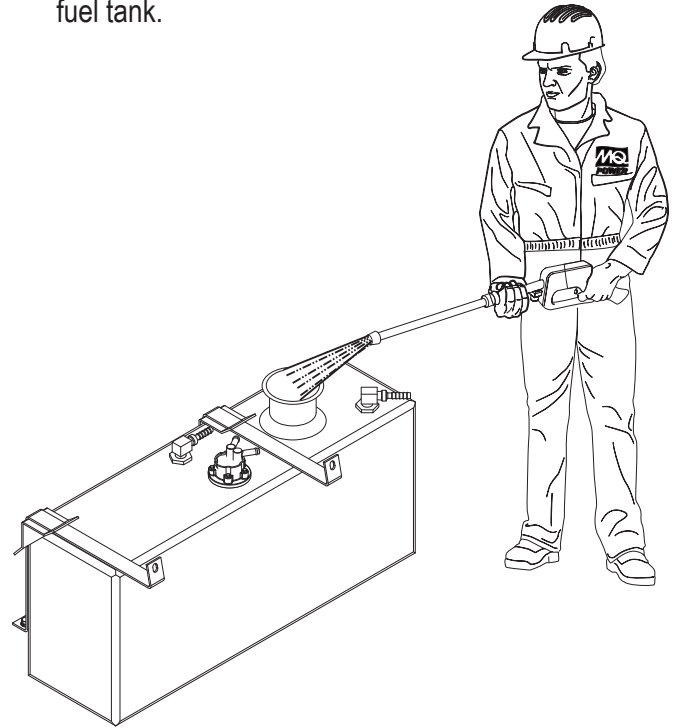
Clean the inside of the fuel tank every 1,000 hours of operation.

1. Remove the **fuel drain bolt** (Figure 35) and allow the fuel to drain into a suitable container.



**Figure 35. Draining The Fuel Tank**

2. Using a pressure washer (Figure 36), wash out any deposits or debris that have accumulated inside the fuel tank.



**Figure 36. Cleaning The Fuel Tank**

## FUEL TANK INSPECTION

In addition to cleaning the fuel tank, inspect the following components for wear:

- **Rubber Suspension** — Look for signs of wear or deformity due to contact with oil. Replace the rubber suspension if necessary.
- **Fuel Hoses** — Inspect nylon and rubber hoses for signs of wear, deterioration, or hardening.
- **Fuel Tank Lining** — Inspect the fuel tank lining for signs of excessive amounts of oil or other foreign matter.



## ENGINE OIL

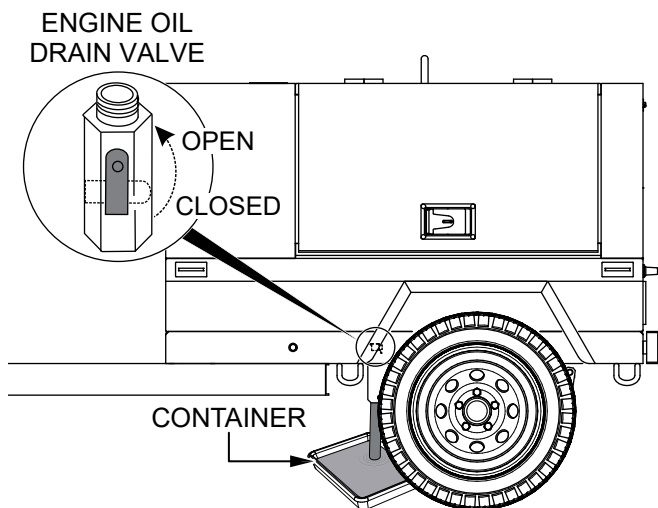
Replace the engine oil and oil filter cartridge after the first 50 hours of operation, then every 200 hours thereafter.

### Draining The Engine Oil

#### NOTICE

**ALWAYS** drain the engine oil while the oil is **warm**.

1. Start the engine and let it warm up for approximately five minutes.
2. Turn the engine **OFF**.
3. Place the **oil drain valve** in the **OPEN** position and allow the oil to drain into a suitable container (Figure 37).



**Figure 37. Draining Engine Oil**

4. After the engine oil has been completely drained, place the oil drain valve in the **CLOSED** position.
5. Remove the cap from the oil filler port and fill to a safe operating level (max) as indicated by the dipstick. Recommended oil viscosity is SAE 10W-40, all-season type. Refer to Table 6 for appropriate oil viscosity based on ambient temperature. Maximum engine oil capacity is **1.4 gallons (5.1 liters)**.

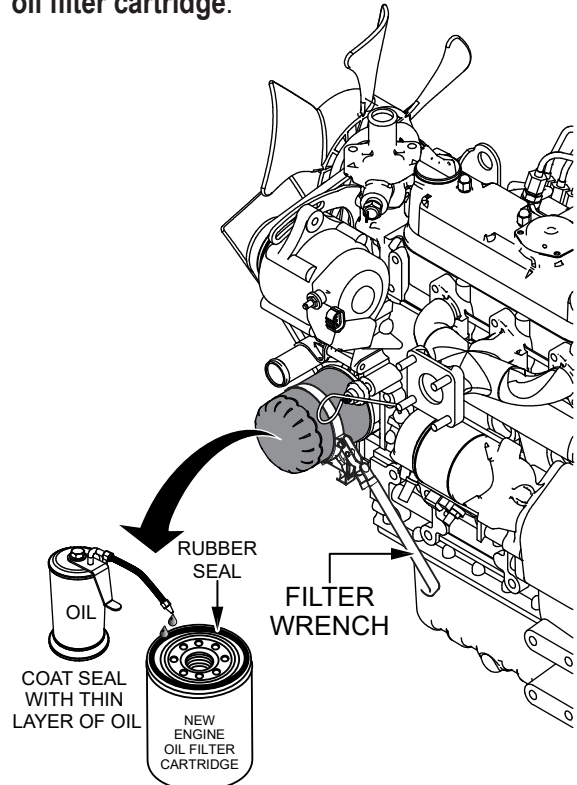
#### NOTICE

When adding engine oil, **DO NOT** overfill (Figure 7B).

6. Run the engine for several minutes. Watch for oil leakage. Shut the engine down and allow it to sit for several minutes. Top off the oil to the upper limit on the dipstick.

### Engine Oil Filter Replacement

1. Using a **filter wrench** (Figure 38), remove the **engine oil filter cartridge**.



**Figure 38. Engine Oil Filter Replacement**

2. Clean the sealing surface where the oil filter mounts.
3. Coat the **rubber seal (gasket)** surface of the new oil filter cartridge with a thin layer of clean 15W-40 engine oil (Figure 38).
4. Install the new oil filter cartridge by hand until it makes contact with the filter head surface, then tighten it another 1/2 to 1 turn.

#### NOTICE

**DO NOT** use a filter wrench to tighten the oil filter cartridge. Overtightening may cause deformation of the rubber gasket.

## ENGINE COOLANT

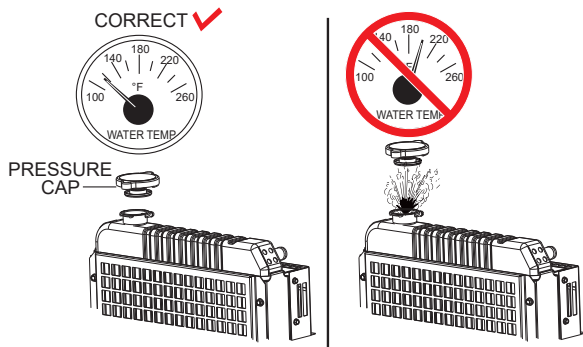
Replace the engine coolant every 2,000 hours or two years of operation.

### Draining The Engine Coolant

#### ! WARNING

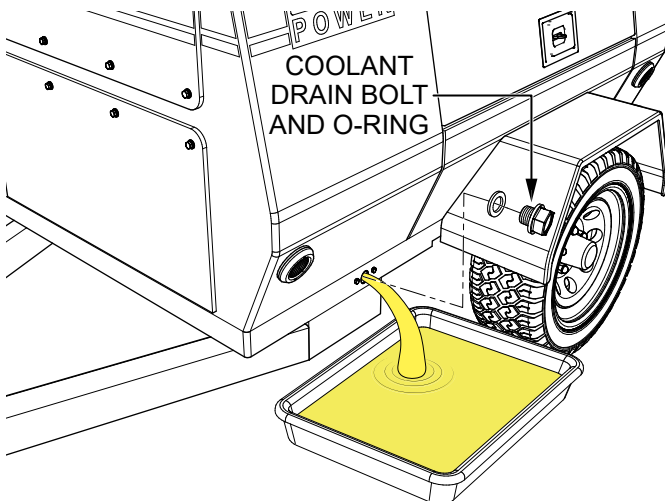
**DO NOT** remove the pressure cap from the radiator while the engine is hot! Wait until the coolant temperature is below 120°F (50°C) before removing the pressure cap. Heated coolant spray or steam can cause severe scalding and personal injury.

1. Remove the **radiator pressure cap** (Figure 39) only when the coolant temperature is below 120°F (50°C).



**Figure 39. Radiator Pressure Cap Removal**

2. Remove the **coolant drain bolt and O-ring** (Figure 40) and allow the coolant to drain into a suitable container.



**Figure 40. Draining Engine Coolant**

3. After the coolant has completely drained, reinstall the coolant drain bolt and O-ring.

4. Reinstall the radiator pressure cap and tighten securely.

### Flushing Out The Radiator And Replacing Coolant

#### ! WARNING



**Allow the engine to cool** before flushing out the radiator. Flushing the radiator while it is hot could cause serious burns from water or steam.

- Open the radiator drain valve and drain the coolant. Open the radiator cap while draining. Remove the overflow tank and drain.
- Check hoses for softening and kinks. Check clamps for signs of leakage.
- Tighten the radiator drain valve and replace the overflow tank.
- Fill the radiator with clean water and cooling system cleaner. Follow the cooling system cleaner instructions.
- Replace coolant as recommended by the engine manufacturer.
- Close the radiator cap tightly.

### RADIATOR CLEANING

The **radiator** (Figure 41) should be sprayed clean with a high-pressure washer every 1,000 hours of operation or whenever excessive amounts of dirt and debris have accumulated on the cooling fins or tube. When using a high-pressure washer, stand at least 5 feet (1.5 meters) away from the radiator to prevent damage to the fins and tube.



**Figure 41. Radiator Cleaning**

## DRIVE BELT

### Drive Belt Tension

A slack drive belt may contribute to overheating or insufficient charging of the battery. Check the drive belt daily and adjust it in accordance with the Kubota engine owner's manual.

### Drive Belt Inspection

Inspect the **drive belt** (Figure 42) for damage and wear. Horizontal cracks (across the belt) are acceptable. Vertical cracks (direction of belt ribs) that intersect with horizontal cracks are not acceptable.

Also, examine the belt and determine if it is **oil soaked** or **glazed** (a hard shiny appearance on the sides of the belt). Either of these two conditions can cause the belt to run hot, which can weaken it and increase the danger of it breaking.

If the drive belt exhibits any of the above wear conditions, replace the drive belt immediately.

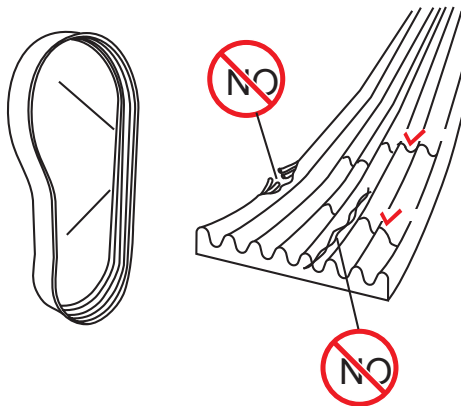


Figure 42. Drive Belt Inspection

## BATTERY

To determine if the battery requires charging, measure the specific gravity of the battery every 250 hours of operation.

### Measuring Specific Gravity

The battery is sufficiently charged if the specific gravity of the battery fluid is 1.28 at 68°F (20°C). Refer to Table 10 for the relationship between charge condition (charging rate) and specific gravity. If the specific gravity should fall to 1.23 or lower (charging rate below 75%), the battery is dead and needs to be recharged or replaced.

Table 10. Battery Specific Gravity			
Charging Rate	Liquid Temperature		
	68°F (20°C)	32°F (0°C)	14°F (−10°C)
100%	1.28	1.29	1.30
90%	1.26	1.27	1.28
80%	1.24	1.25	1.26
75%	1.23	1.24	1.25

Each value has a deviation of  $\pm 0.01$ .

## SPEED REGULATOR

Every 100 hours of operation, apply grease to the sliding portion of the **governor rod** (Figure 43).

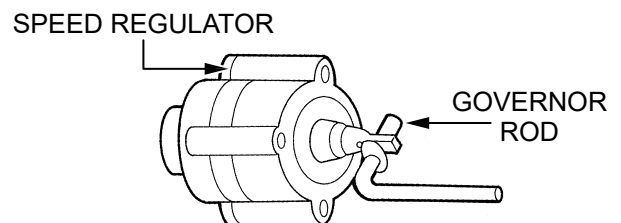
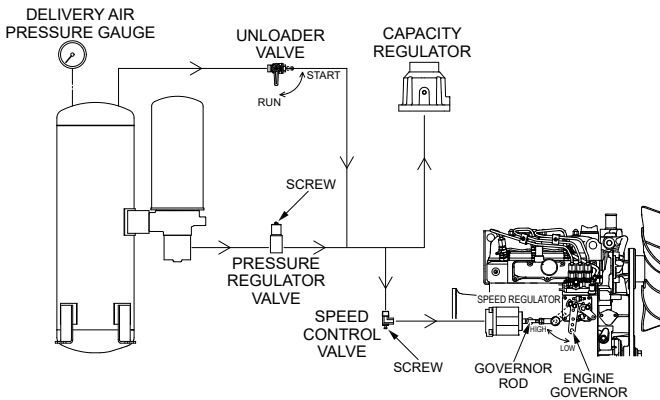


Figure 43. Speed Regulator (Governor Rod)

## Air Pressure And Speed Control Adjustment

The compressor has been factory adjusted prior to shipment, and rarely requires further adjustment, if ever. However, should it ever require adjustment as a result of replacement or any other reason, perform the following procedure:

1. Prior to starting the engine, make sure the **engine governor lever** (Figure 44) is set to the **HIGH SPEED** position. Otherwise, the engine will not run at maximum speed during a full-load condition.



**Figure 44. Air Pressure And Speed Control Adjustment**

2. Start the engine only after confirming that the **unloader valve** (Figure 44) is set to the **START** position. Should the engine stop running immediately after starting, restart it only after confirming that the **delivery air pressure gauge** indicates **0 psi**.
3. Warm up the engine for a few minutes. When the engine has sufficiently warmed, place the **unloader valve** in the **RUN** position. The engine will run at idle speed with no load.
4. Place one of the air outlet valves in the **OPEN** position. Engine speed will increase to full speed.
5. Slowly close the air outlet valve.
6. Adjust the **screw** on the **pressure regulator valve** (Figure 44) until the **delivery air pressure gauge** indicates **between 90 and 100 psi**.

### NOTICE

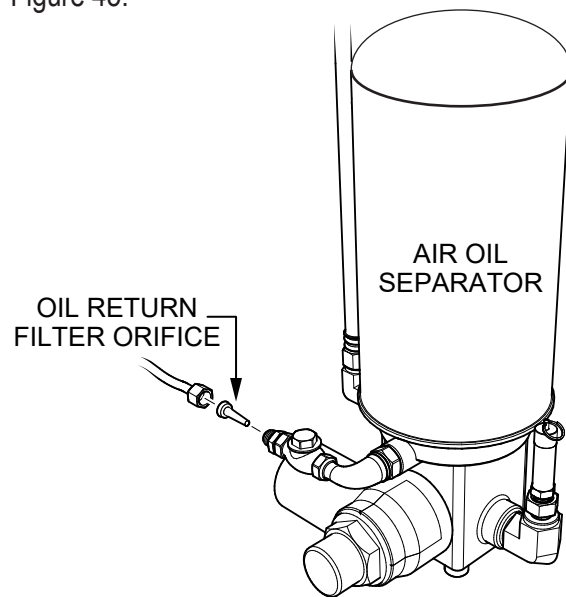
**ALWAYS** set the working pressure within the range of **90–100 psi**.

7. Adjust the **screw** on the **speed control valve** (Figure 44) so that the **engine governor lever** shifts to the **LOW SPEED** position as soon as the air pressure exceeds **100 psi**.
8. Repeat opening and closing the air outlet valves and confirm that the regulators work smoothly.

## OIL RETURN FILTER ORIFICE

Check and clean the oil return filter orifice after the first 50 hours of operation, then every 500 hours thereafter.

1. Remove the **oil return filter orifice** as shown in Figure 45.



**Figure 45. Oil Return Filter Orifice**

2. Clean the oil return filter orifice and check it for wear or damage. Replace the orifice if necessary.

## COMPRESSOR AIR CLEANER

Clean the compressor air cleaner element every 100 hours of operation. Replace the compressor air cleaner element every 1,000 hours of operation. Follow the same procedure as outlined in the **Engine Air Cleaner Maintenance** section.

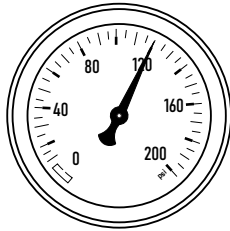
## COMPRESSOR SAFETY VALVE

The compressor safety valve is factory adjusted to 140 psi and sealed prior to shipment of the air compressor. **DO NOT** remove the seal or try to adjust the pressure safety valve.

## Safety Valve Check

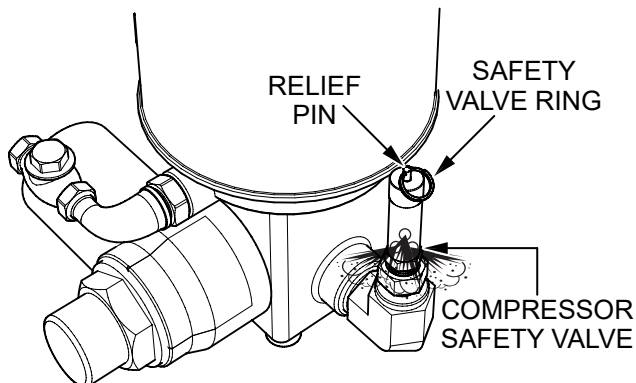
Every 500 hours of operation, make sure the compressor safety valve is functioning correctly.

1. Start the engine and let it run under no load for at least five minutes to build up pressure in the air compressor tank.
2. Check the **air pressure gauge** to verify that the air pressure is approximately **120 psi (827 kPa)**. See Figure 46.



**Figure 46. Air Pressure Gauge (No Load)**

3. Using the **safety valve ring** (Figure 47), pull the **relief pin** upward and verify that the air pressure is released through the **compressor safety valve**.



**Figure 47. Pressure Relief**

4. If pressure is released when the ring is pulled, the compressor safety valve is working correctly. Release the relief pin to close the valve.
5. If pressure is not released when the ring is pulled, the compressor safety valve is not working correctly. Replace the compressor safety valve immediately.

## COMPRESSOR OIL

Replace the compressor oil and oil filter cartridge after the first 500 hours of operation, then every 1,000 hours thereafter. Shorten the interval to approximately 100 hours when the machine is operated under the following conditions:

- Operation in poorly ventilated locations where the ambient temperature rises excessively.
- Operation for a long duration of time, especially in a tunnel or in high humidity.
- Operation in dusty or sandy locations.

### NOTICE

Periodically check the compressor oil for degradation, discoloration, excessive viscosity, and impurities.

### NOTICE

**NEVER** mix different brands of compressor oils, and **NEVER** mix fresh compressor oil with old oil in the oil chamber. Such mixing occasionally produces insoluble glue, lacquer, or shellacs, which may cause the oil filter to become clogged and break down or cause abnormal wear of the rotor or bearings, resulting in serious damage to the equipment.

### NOTICE

**ALWAYS** fully drain the old compressor oil before adding fresh compressor oil.

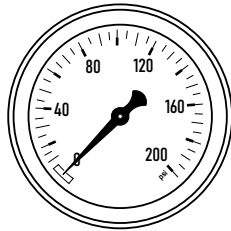


## Draining The Compressor Oil

### NOTICE

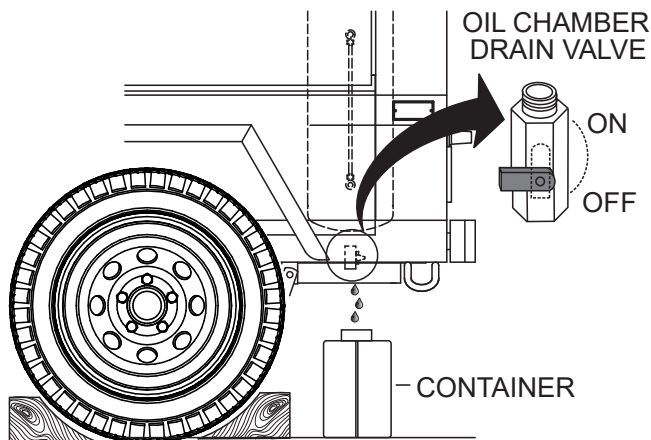
**ALWAYS** drain the compressor oil while the oil is **warm**.

1. Operate the air compressor for a few minutes to warm up the compressor oil.
2. Shut down the air compressor and verify that the air pressure has dropped to **0 psi** (Figure 48).



**Figure 48. Air Pressure Gauge (No Pressure)**

3. Place a suitable container underneath the **oil chamber drain valve** (Figure 49).



**Figure 49. Draining The Oil Chamber**

4. Place the oil chamber drain valve in the **OPEN** position (Figure 49) and allow the oil to fully drain. Disconnect the oil cooler pipe joints and drain the oil remaining in each pipe and in the oil cooler.
5. Place the oil chamber drain valve in the **CLOSED** position. Reconnect and securely tighten the oil cooler pipe joints.

6. Remove the **compressor oil fill plug** and fill the **oil chamber** (Figure 50) with fresh compressor oil until the oil level reaches the upper limit on the **oil level gauge** (clear plastic tube) located on the side of the oil chamber. See Figure 51A.

Recommended oil is Chevron CETUS PAO 32 or equivalent. Maximum compressor oil capacity is **3.3 gallons (12.5 liters)**.

### NOTICE

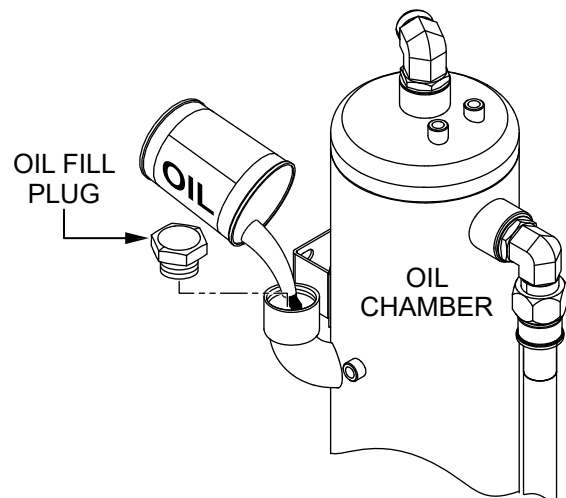
When adding compressor oil, **DO NOT** overfill (Figure 51B).

### NOTICE

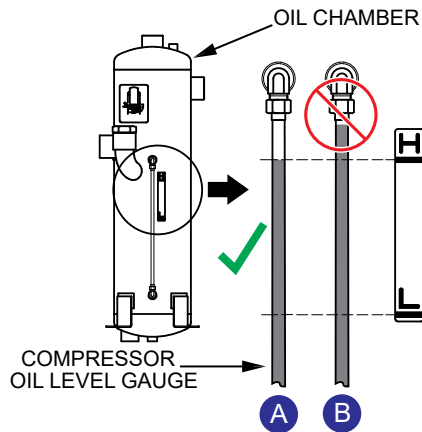
When in a high-temperature environment where the ambient air temperature may exceed 86°F (30°C), use ISO VG 46 compressor oil for continuous rated operation. VG 46 is to be used during summer season in high ambient temperatures **only**.

### NOTICE

The pour point of Chevron CETUS PAO 32 (provided with the compressor at the factory) is -51°F (-46°C). Always use compressor oil with a pour point of -51°F or lower when operating in ambient temperatures below 23°F (-5°C).



**Figure 50. Adding Compressor Oil**

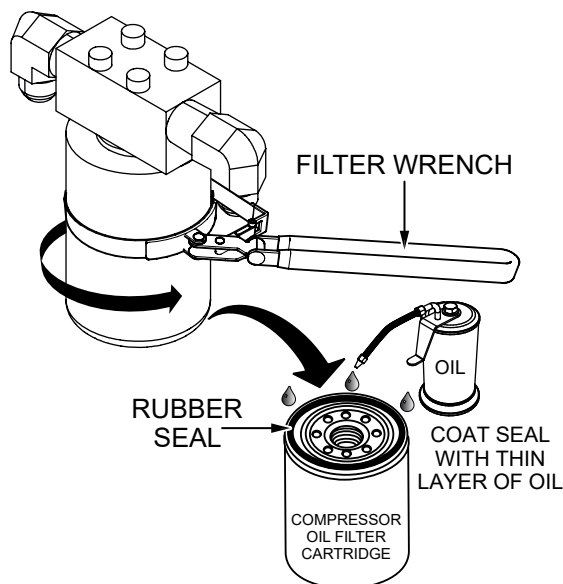


**Figure 51. Compressor Oil Level**

7. Operate the compressor and check thoroughly for any oil leakage.
8. Stop the engine. After verifying that the air pressure gauge indicates **0 psi** (Figure 48), check the compressor oil level. Make sure it is between the **H** and **L** markings on the compressor oil level gauge (Figure 51A). Add oil if necessary.

## Compressor Oil Filter Replacement

1. Using a **filter wrench**, remove the **compressor oil filter cartridge** (Figure 52).



**Figure 52. Compressor Oil Filter Replacement**

2. Clean the sealing surface where the oil filter mounts.

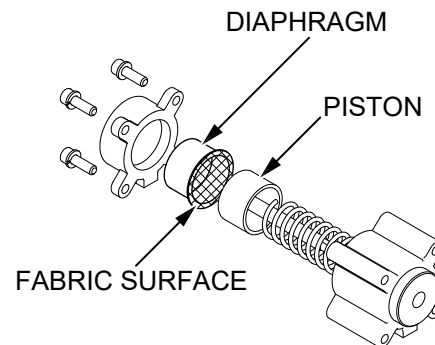
3. Coat the **rubber seal (gasket)** surface of the new oil filter cartridge with a thin layer of clean compressor oil (Figure 52).
4. Install the new oil filter first by hand until it makes contact with the filter head surface. Tighten it another 2/3 turn using a filter wrench.
5. Start the engine and let it run for a few minutes.
6. Stop the engine. After verifying that the air pressure gauge indicates **0 psi** (Figure 48), check the compressor oil level. Make sure it is between the **H** and **L** markings on the **compressor oil level gauge** (Figure 51A). Add oil if necessary.

## SPEED REGULATOR DIAPHRAGM REPLACEMENT

Every 1,000 hours of operation, replace the **speed regulator diaphragm** (Figure 53).

### NOTICE

The diaphragm is assembled so that the fabric surface is on the piston side.



**Figure 53. Speed Regulator Diaphragm**

## INLET VALVE SEAL REPLACEMENT

Every 1,000 hours of operation, replace the **inlet valve seal** (Figure 54).

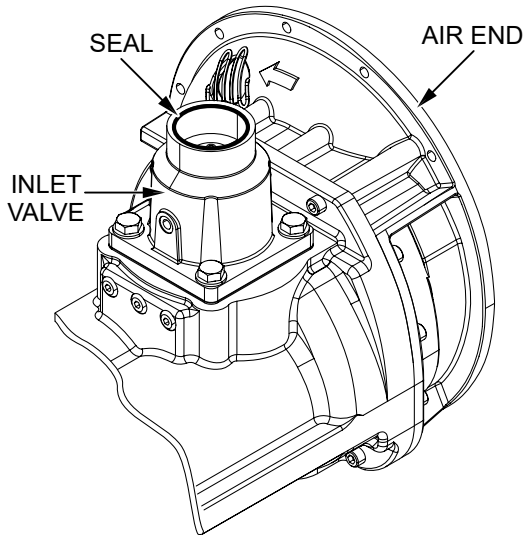


Figure 54. Inlet Valve Seal

## PRESSURE REGULATOR VALVE DIAPHRAGM REPLACEMENT

Every 1,000 hours of operation, replace the **pressure regulator valve diaphragm** (Figure 55). When assembling, apply Loctite 262 to the threads and torque to **1.475 lbf·ft (2.0 N·m)**.

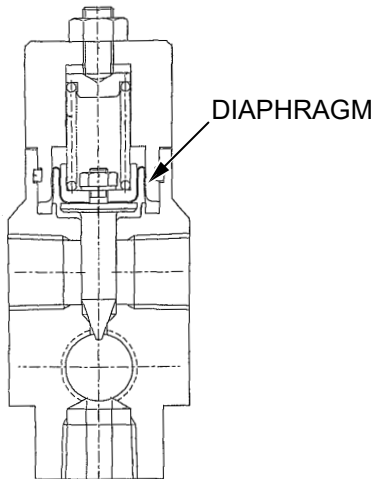


Figure 55. Pressure Regulator Valve Diaphragm

## MINIMUM PRESSURE VALVE O-RING REPLACEMENT

Every 1,000 hours of operation, replace the minimum pressure valve O-rings.

1. Remove the **minimum pressure valve** (Figure 56) from the **air oil separator**.

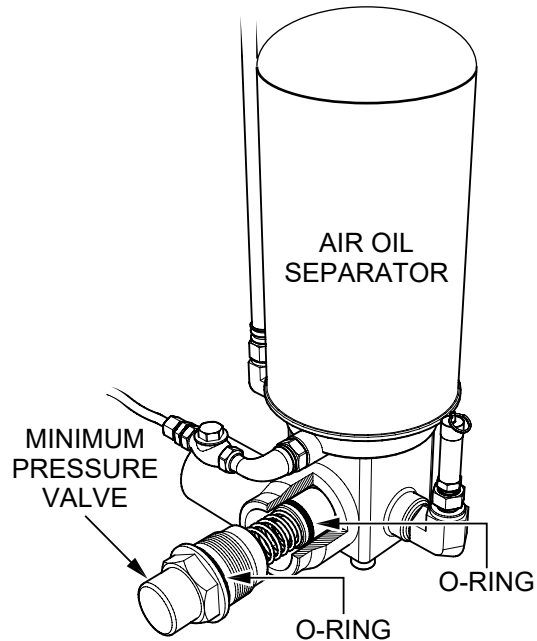


Figure 56. Minimum Pressure Valve O-Rings

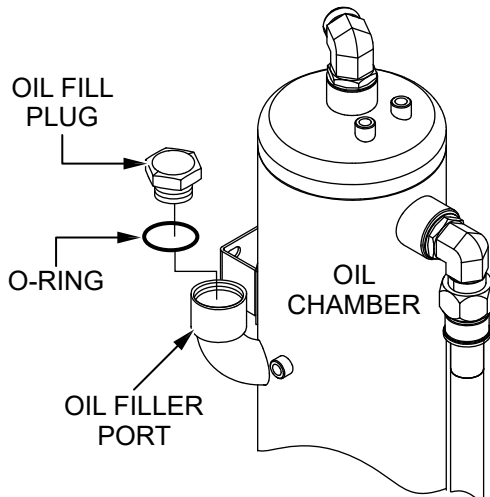
2. Clean or replace the minimum pressure valve.
3. Replace both **O-rings** (Figure 56).
4. Reinstall the minimum pressure valve with the new O-rings.



## COMPRESSOR OIL FILLER PORT O-RING REPLACEMENT

Every 1,000 hours of operation, replace the compressor oil filler port O-ring.

1. Remove the **oil fill plug** (Figure 57) from the **compressor oil filler port**.



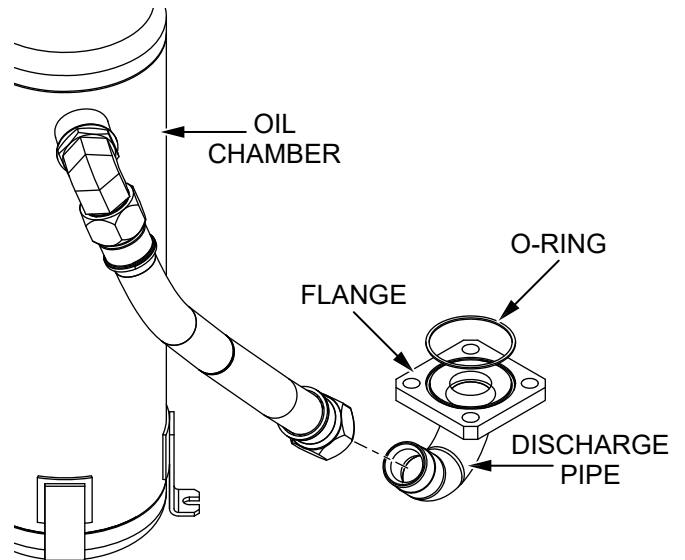
**Figure 57. Compressor Oil Filler Port O-Ring**

2. Remove the existing **O-ring** (Figure 57) from the oil fill plug.
3. Install a new O-ring onto the oil fill plug.
4. Reinstall the oil fill plug onto the oil filler port.

## DISCHARGE PIPE FLANGE O-RING REPLACEMENT

Every 1,000 hours of operation, replace the discharge pipe flange O-ring.

1. Remove the **discharge pipe** (Figure 58) from the compressor body.



2. Replace the **O-ring**.
3. Reinstall the discharge pipe onto the compressor body.

**Figure 58. Discharge Pipe Flange O-Ring**

## RUBBER SUSPENSION

Every 1,000 hours of operation, inspect the rubber suspension for damage or deformation. Replace if necessary.

## ACOUSTIC SHEETING

Every 1,000 hours of operation, inspect the acoustic sheeting for damage. Replace if necessary.

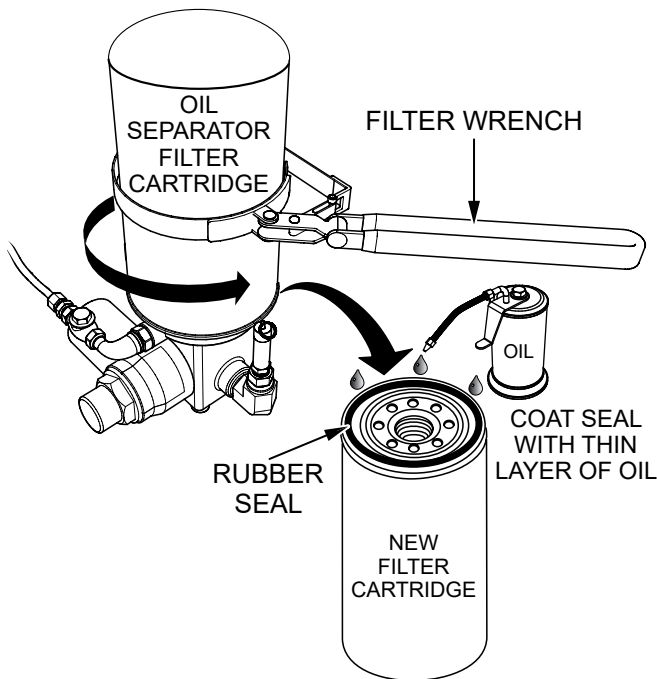
## OIL SEPARATOR FILTER CARTRIDGE REPLACEMENT

Replace the oil separator filter cartridge every 2,000 hours or two years of operation, or whenever oil is observed in the delivery air.

### NOTICE

The service life of the oil separator filter cartridge depends on the operating conditions of the air compressor. Replacement is overdue when oil is present in the delivery air valves.

1. Using a **filter wrench**, remove the **oil separator filter cartridge** (Figure 59).



**Figure 59. Oil Separator Filter Cartridge**

2. Clean the sealing surface where the filter cartridge mounts.
3. Coat the **rubber seal (gasket)** surface of the new oil filter cartridge with a thin layer of clean compressor oil (Figure 59).
4. Install the new filter cartridge first by hand until it makes contact with the filter head surface. Tighten it another 1/2 turn using a filter wrench.

## NYLON AND RUBBER HOSES

Inspect all nylon and rubber hoses for hardening or deterioration every 2,000 hours or two years of operation. Replace if necessary.

## COUPLING ELEMENT

Inspect the coupling element for hardening or deterioration every 4,000 hours of operation. Replace if necessary.

## AIR COMPRESSOR STORAGE

For long-term storage of the air compressor, the following is recommended:

- Clean the entire unit, internal and external. Repair any paint that has peeled off.
- Disconnect and remove the battery. Charge the battery completely before storing it. Recharge the battery once a month.
- Inspect the unit for defects and repair immediately.
- Refer to the Kubota engine owner's manual for engine storage recommendations.
- Cover the unit and store it in a clean, dry location.
- Jack the trailer up and place it on blocks so the tires do not touch the ground, or block and completely remove the tires.

## NOISE EMISSION

This section pertains only to air compressors distributed within the United States.

### **WARNING**

#### **TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED**

Federal law prohibits the following acts or the causing thereof:

- (1) The removal or rendering inoperative by any persons, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new compressor for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or
- (2) the use of the compressor after such device or element of design has been removed or rendered inoperative by any person.

Among those acts included in the prohibition against tampering are these:

- (1) Removal or rendering inoperative any of the following:
  - a. the engine exhaust system or parts thereof
  - b. the air intake system or parts thereof
  - c. enclosure or parts thereof
- (2) Removal of any of the following:
  - a. fan shroud
  - b. vibration mounts
  - c. sound absorption material
- (3) Operation of the compressor with any of the enclosure doors open.

### **Noise Emission Warranty**

The manufacturer warrants to the ultimate purchaser and each subsequent purchaser that this air compressor was designed, built, and equipped to conform at the time of sale to the first retail purchaser, with all applicable United States EPA noise control regulations.

This warranty is not limited to any particular part, component, or system of the air compressor. Defects in the design or assembly, or in any part, component, or system of the compressor which, at the time of sale to the first retail purchaser, caused noise emissions to exceed federal standards are covered by this warranty for the life of the air compressor. (40 CFR 204.58-1)

### **Noise Emission Maintenance Schedule**

The air compressor for which the following maintenance log is provided conforms to United States EPA Regulations for Noise Emissions, to Portable Compressors. The purpose of this section is to provide (1) the maintenance performance schedule for all required noise emission controls (Table 11), and (2) space for the purchaser or owner to record what maintenance has been performed, and by whom, where, and when (Table 12).

**Table 11. Noise Emission Maintenance Schedule**

Item	Interval
Compressed Air Leaks	As detected
Safety and Control Systems	As detected
Acoustic Materials	Daily
Fasteners	Daily
Enclosure Panels	Daily
Air Intake and Engine Exhaust	100 hours
Cooling Systems	1,000 hours
Isolation Mounts	1,000 hours
Engine Operation	See engine operator's manual
Fuels and Lubricants	See engine operator's manual

### **Noise Emission Maintenance Items**

#### **Compressed Air Leaks**

Correct all compressed air leaks during the first shutdown period after discovery. If severe enough to cause serious noise problems and efficiency loss, shut down immediately and correct the leak(s).

#### **Safety And Control Systems**

Repair or replace all safety and control systems or circuits as malfunctions occur. No compressor should be operated with either system bypassed, disabled, or nonfunctional.

## ***Acoustic Materials***

Check these materials daily. Maintain all acoustic material as close as possible to its original condition. Repair or replace all sections that have: (1) Sustained damage, (2) Have partially separated from panels to which they are attached, (3) Are missing, or have otherwise deteriorated due to severe operating or storage conditions.

## ***Fasteners***

All fasteners such as hinges, nuts, bolts, clamps, screws, rivets, and latches should be inspected daily for looseness. They should be retightened and/or repaired, or if missing, replaced immediately to prevent subsequent damage and an increase in noise emission.

## ***Enclosure Panels***

Enclosure panels should be inspected daily. All panels that are warped, punctured, torn, or otherwise deformed, such that their noise containment function is reduced, must be replaced. Doors, access panels, and hatch closures especially, should be checked and adjusted at this time to ensure continuous seating between gasket or acoustic material and the mating frame.

## ***Air Intake And Engine Exhaust***

Engine and compressor air intake and engine exhaust systems should be inspected after every 100 hours of operation for loose, damaged, or deteriorated components. Repairs or replacements should be made before the next period of use.

## ***Cooling Systems***

All components of the cooling system for engine water and compressor oil should be inspected every 1,000 hours of operation. Any discrepancies found should be corrected before placing the compressor back into operation. Unrestricted airflow over the radiator and oil cooler must be maintained at all times during operation.

## ***Isolation Mounts***

Engine air end isolation mounts should be inspected after every 1,000 hours of operation. Those mounts with cracks or splits in the molded rubber or with bent or broken bolts due to operation or storage in severe environments should be replaced with equivalent parts.

## ***Engine Operation***

Inspect and maintain engine condition and operation as recommended in the manuals supplied by the engine manufacturer.

## ***Fuels And Lubricants***

Use only the types and grades of fuels and lubricants recommended in the compressor operation manual and engine manual.

## MAINTENANCE

**Table 12. Maintenance Record For Noise Emission Control And Extended Warranty**

[illegible]

**Table 13. Unit Identification**

Compressor Model	DIS100SSK4F
Compressor Serial No.	
User Unit No.	
Purchaser or Owner	
Address	
Dealer or Distributor from Whom Purchased	
Date Purchased	
Engine Make and Model	Kubota D1005
Engine Serial No.	

# TROUBLESHOOTING

**Table 14. Troubleshooting (Compressor)**

Sympton	Possible Problem	Corrective Action
Engine does not start. (Starter does not rotate or only rotates slowly.)	Battery has been discharged?	Check electrolyte level and specific gravity.
	Disconnected, loosened, and/or degraded battery terminals?	Clean and securely connect.
	Grounding not sufficiently conducted?	Securely connect the grounding wire.
	Defective starter switch, main fuse, safety relay, and/or starter?	Call service shop.
	Defective engine controller (EG-3)?	Call service shop.
Engine does not start. (Starter rotates.)	No fuel?	Replenish.
	Closed fuel filter cock?	Open.
	Clogged fuel filter?	Clean or replace.
	Deteriorated or improper fuel used?	Use light oil.
	Air not fully extracted?	Fully extract air from fuel.
	Defective preheating system?	Call service shop.
	Solenoid not working?	Check fuse. If blown out, check for cause and replace it.
		Check and replace solenoid.
		Call service shop.
Engine does not start (cold weather).	Frozen fuel?	Use fuel for cold weather (such as ASTM No.1-D).
	Water accumulated in fuel system is frozen?	Warm the system to fully extract water contained in the fuel tank, filter, and pipes.
	Closed cold start-run valve?	Open.
	Engine oil is excessively viscous?	Replace with oil of appropriate viscosity
	Compressor oil is excessively viscous?	Use oil with pour point lower than -22°F.
	Battery not fully charged?	Charge.
Engine stops during operation.	Compressor oil is excessively viscous?	Replace with less viscous oil.
	Warmup time not sufficient in cold weather conditions?	Start the engine with the unloader valve set to the START position to fully warm the engine.
	Governor rod not correctly adjusted?	Readjust or repair.
Engine stops during operation. (Air pressure is too high.)	Pressure regulator not correctly adjusted?	Lower pressure setting of the pressure regulator.
	Frozen pressure regulator?	Check and repair.
	Defective pressure regulator?	Call service shop.
	Damaged inlet valve seal?	Check and repair.
	Air leaks from pressure regulator pipes?	Check and repair.
	Frozen air pressure control pipes?	Check and repair frozen parts.

# TROUBLESHOOTING

**Table 14. Troubleshooting (Compressor)**

Symptom	Possible Problem	Corrective Action
Engine stops during operation (problems in fuel system).	Empty fuel tank?	Replenish.
	Air not fully extracted?	Fully extract air from fuel.
	Clogged fuel filter?	Replace.
	Deteriorated or improper fuel used?	Use light oil.
	Defective fuel injection system?	Call service shop.
	Engine oil level higher than the upper limit?	Reduce to the upper limit.
	Engine oil is excessively viscous?	Replace with less viscous oil.
	Reduced engine oil pressure?	Replace engine oil and oil filter.
	Overheating?	Compressor sucks exhaust gas from other compressors operated in parallel.
Engine stops during operation (low engine oil pressure).	Insufficient engine oil?	Replenish.
	Defective oil pressure switch?	Replace.
	Clogged engine oil filter?	Replace.
Instrumentation is not working. (Emergency stop circuit is abnormal.)	Defective switch or sensor?	Check and repair.
	Disconnected wiring to water temperature sensor, oil pressure sensor, or discharge air temperature sensor?	Check and repair or call service shop.
	Defective engine control unit?	Check and repair or call service shop.
No air is delivered.	Closed service valve?	Open.
	Unloader valve set to START position?	Reset to RUN position.
	Abnormal minimum pressure valve?	Overhaul and clean.
	Abnormal pressure regulator valve?	Check and replace.
	Abnormal coupling element?	Check and replace.
Safety valve operates.	Pressure regulator not correctly adjusted?	Lower pressure setting of the pressure regulator.
	Frozen pressure regulator?	Check and repair.
	Defective pressure regulator?	Call service shop.
	Frozen pressure control piping?	Check and repair frozen parts.
	Air leaks from control pressure pipe?	Check and repair.
	Safety valve set to low value?	Replace.
	Air leaks from inlet valve seal?	Check and repair.
Unloader engine speed is high.	Governor rod not correctly adjusted?	Readjust or repair.
	Frozen pressure control piping?	Check and repair frozen parts.
	Air leaks from control pressure pipe?	Check and repair.
	Defective speed regulator diaphragm?	Replace.
	Speed control valve not correctly adjusted?	Readjust or replace.
Unloader engine speed is low.	Air not fully extracted?	Fully extract air from fuel.
	Clogged fuel filter?	Check filter element and replace.
	Deteriorated or improper fuel used?	Use light oil.
	Clogged engine air cleaner?	Clean air cleaner element or replace.
	Governor rod not correctly adjusted?	Readjust or repair.
	Abnormal engine fuel system?	Call service shop.



# TROUBLESHOOTING

Table 14. Troubleshooting (Compressor)

Sympton	Possible Problem	Corrective Action
Engine speeds down before air pressure reaches 100 psi.	Air not fully extracted?	Fully extract air from fuel.
	Clogged fuel filter?	Check filter element and replace.
	Deteriorated or improper fuel used?	Use light oil.
	Clogged engine air cleaner?	Clean air cleaner element or replace.
	Pressure regulator not correctly adjusted?	Raise pressure setting of the pressure regulator.
	Defective pressure regulator?	Call service shop.
	Governor rod not correctly adjusted?	Readjust or repair.
	Abnormal engine fuel system?	Call service shop.
	Defective engine?	Call service shop.
Delivery air volume is low. (Pressure is insufficient.)	Engine does not reach selected speed?	See previous symptom. <b>(Engine speeds down before air pressure reaches 100 psi.)</b>
	Clogged compressor air cleaner?	Clean air cleaner element or replace.
	Clogged oil separator element cartridge?	Replace.
	Too much air consumed by load?	Recheck air consumption by the load.
	Air leaks from a load-side pipe?	Check the pipe.
	Clogged compressor oil filter?	Replace filter.
	Inlet valve not working correctly?	Check and repair the regulator.
Unit is overheating.	Re-confirm surrounding conditions?	Reduce suction of exhaust gas.
	Empty or low cooling water?	Check and replenish cooling water. Check and replace radiator cap.
	Loose fan belt?	Check and retighten.
	Clogged radiator and oil cooler cores?	Clean.
	High delivery pressure?	Check and repair pressure regulator valve.
	Abnormal engine thermostat?	Check and replace.
Oil is mixed in delivered air (oil not fully separated).	Machine not installed on level ground?	Install it on level ground. (Allowable inclination is 10° forward/backward and left/right directions.)
	Low delivered air pressure?	Set the minimum pressure valve to 65 – 80 psi.
	Compressor oil level higher than the upper limit?	Confirm that the level is within the specified range when the engine is stopped.
	Drainage larger than usual?	Open the drain valve to extract drainage in the oil chamber.
	Clogged oil return pipe filter orifice?	Check and clean the orifice.
	Service valve(s) or cold start-run valve opened soon after engine stopped?	Do not attempt to discharge through the air outlet valve(s) or cold start-run valve soon after the engine has stopped.
	End of life for oil separator?	Replace.
Compressor air temperature is high	Re-confirm surrounding conditions?	Reduce suction of exhaust gas.
	Clogged compressor oil filter?	Check and replace.
	Loose fan belt?	Check and retighten.
	Clogged oil cooler cores?	Check and clean.
	Compressor oil is low?	Replenish.
	Bypass valve not working correctly?	Check and replace thermostat valve.

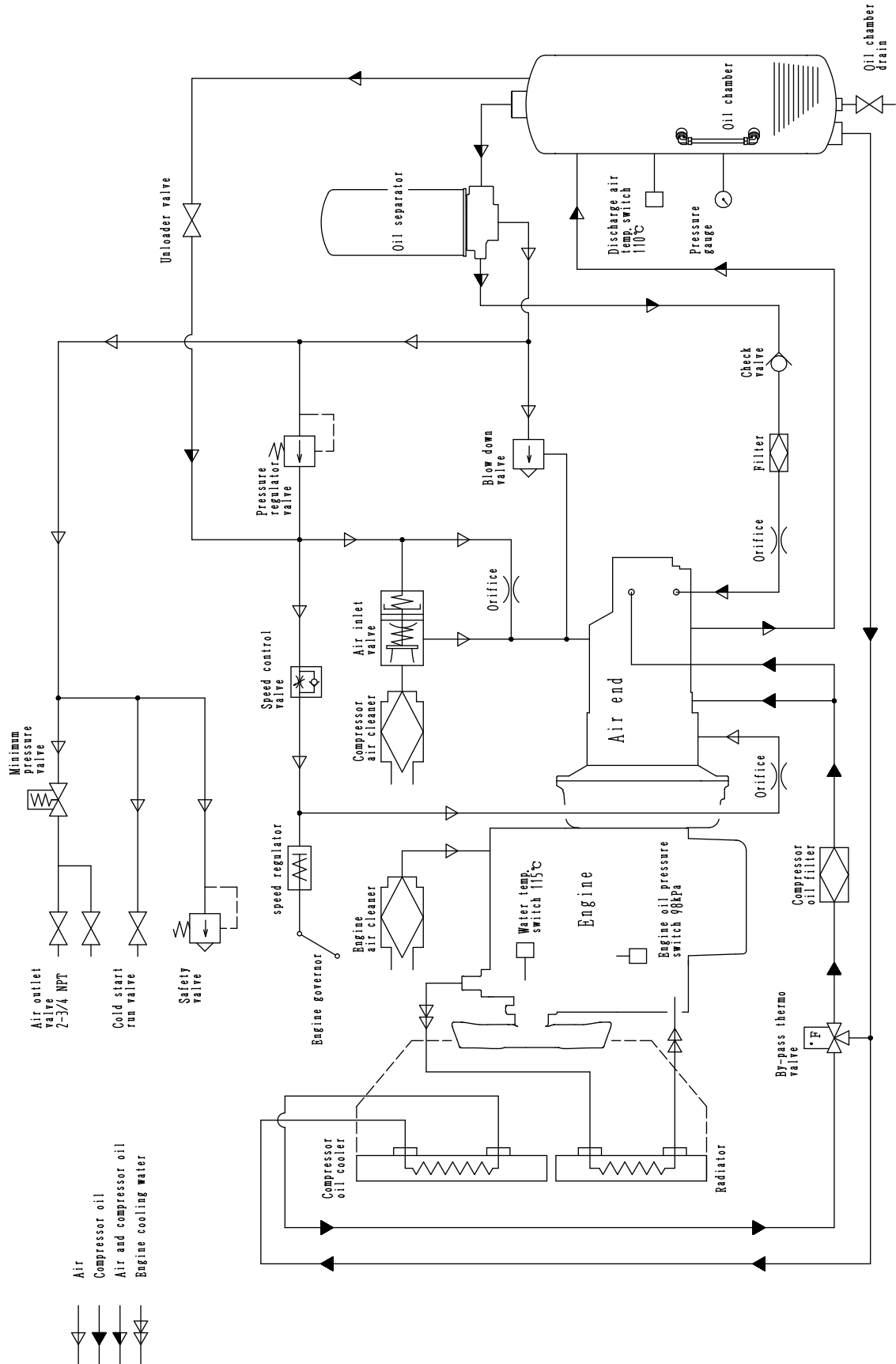
# TROUBLESHOOTING

Troubleshooting (Engine)		
Symptom	Possible Problem	Solution
Engine will not start or start is delayed, although engine can be turned over.	No fuel reaching injection pump?	Add fuel. Check entire fuel system.
	Defective fuel pump?	Replace fuel pump.
	Fuel filter clogged?	Replace fuel filter and clean tank.
	Faulty fuel supply line?	Replace or repair fuel line.
	Compression too low?	Check piston, cylinder and valves. Adjust or repair per engine repair manual.
	Fuel pump not working correctly?	Repair or replace fuel pump.
	Oil pressure too low?	Check engine oil pressure.
	Low starting temperature limit exceeded?	Comply with cold starting instructions and proper oil viscosity.
	Defective battery?	Charge or replace battery.
	Air or water mixed in fuel system?	Check carefully for loosened fuel line coupling, loose cap nut, etc.
At low temperatures engine will not start.	Engine oil too thick?	Refill engine crankcase with correct type of oil for winter environment.
	Defective battery?	Replace battery.
Engine fires but stops as soon as starter is switched off.	Fuel filter blocked?	Replace fuel filter.
	Fuel supply blocked?	Check the entire fuel system.
	Defective fuel pump?	Replace fuel pump.
Engine stops by itself during normal operation.	Fuel tank empty?	Add fuel.
	Fuel filter blocked?	Replace fuel filter.
	Defective fuel pump?	Replace fuel pump.
	Mechanical oil pressure shutdown sensor stops the engine due to low oil?	Add oil. Replace low oil shutdown sensor if necessary.
Low engine power, output and speed.	Fuel tank empty?	Add fuel.
	Fuel filter clogged?	Replace fuel filter.
	Fuel tank venting is inadequate?	Ensure tank is adequately vented.
	Leaks at pipe unions?	Check threaded pipe unions. Tape and tighten unions as required.
	Speed control lever does not remain in selected position?	See engine manual for corrective action.
	Engine oil level too full?	Correct engine oil level.
	Injection pump wear?	Use No. 2-D diesel fuel only. Check the fuel injection pump element and delivery valve assembly and replace as necessary.

## TROUBLESHOOTING

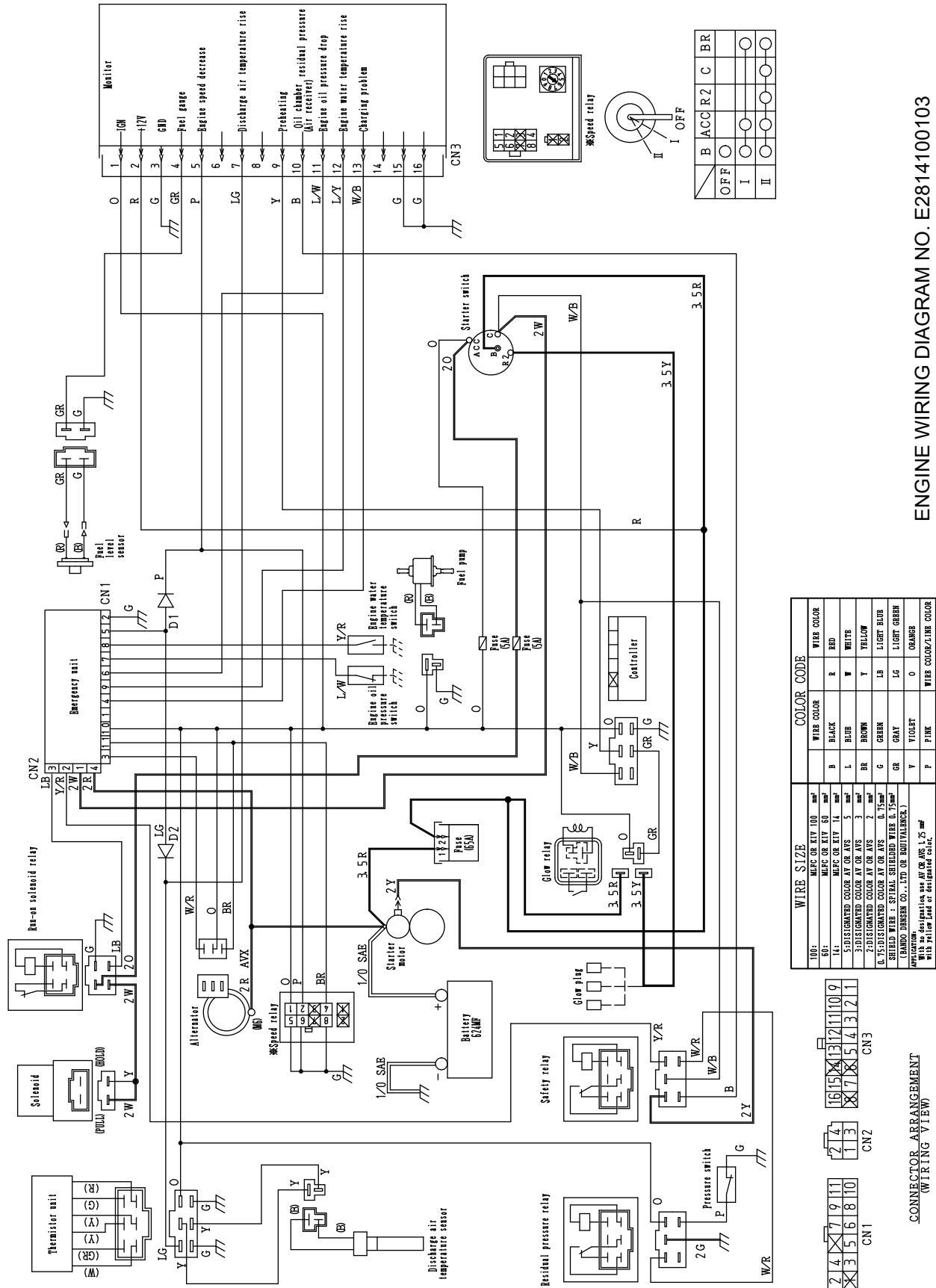
Troubleshooting (Engine) - continued		
Symptom	Possible Problem	Solution
Low engine power output and low speed, black exhaust smoke.	Air filter blocked?	Clean or replace air filter.
	Incorrect valve clearances?	Adjust valves per engine specification.
	Malfunction at injector?	See engine manual.
Engine overheats.	Too much oil in engine crankcase?	Drain off engine oil down to upper mark on dipstick.
	Entire cooling air system contaminated or blocked?	Clean cooling air system and cooling fin areas.
	Fan belt broken or elongated?	Change belt or adjust belt tension.
	Coolant insufficient?	Replenish coolant.
	Radiator net or radiator fin clogged with dust?	Clean net or fin carefully.
	Fan, radiator, or radiator cap defective?	Replace defective part.
	Thermostat defective?	Check thermostat and replace if necessary.
	Head gasket defective or water leakage?	Replace parts.

# COMBINED PIPING DIAGRAM (E2834100103)



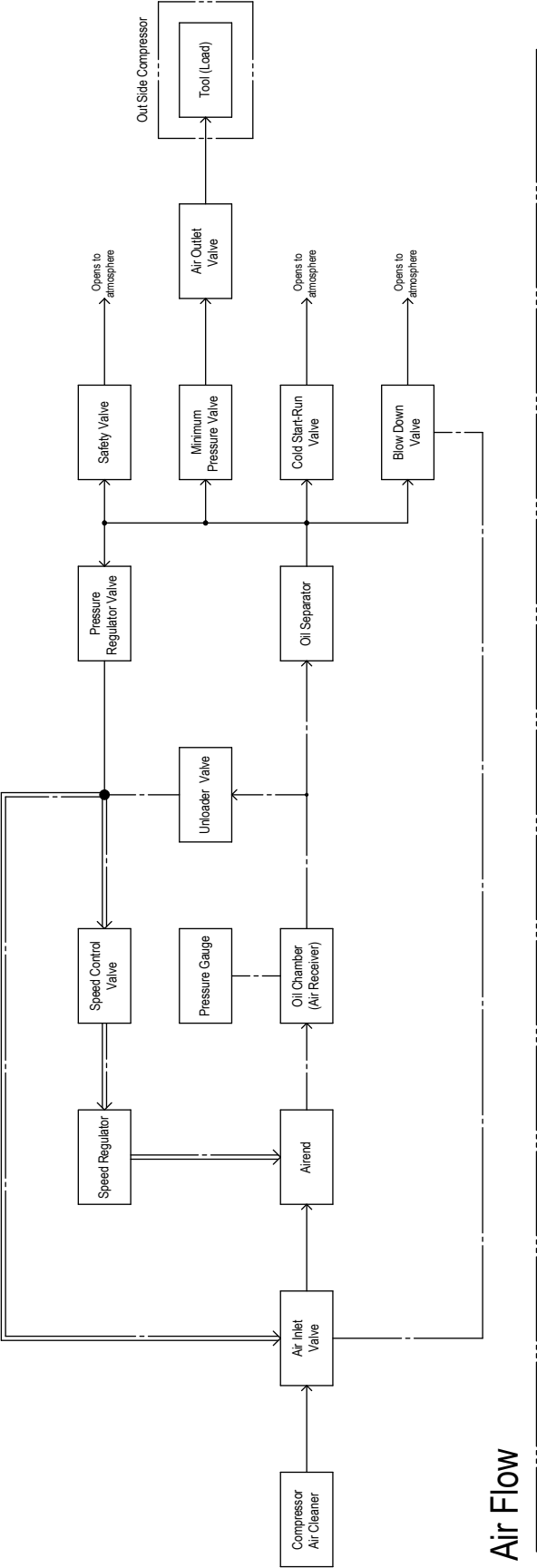
COMBINED PIPING DIAGRAM NO. E2834100103

# ENGINE WIRING DIAGRAM (E2814100103)

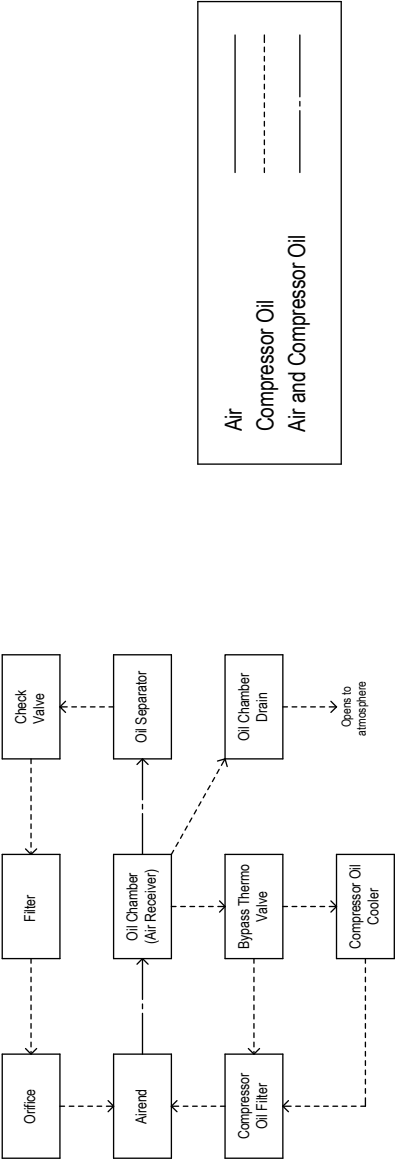


ENGINE WIRING DIAGRAM NO. E2814100103

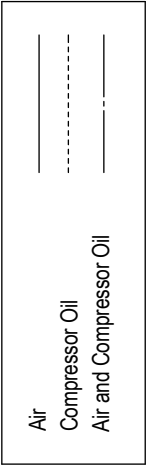
AIR AND OIL FLOW DIAGRAM (E2892000103)



Air Flow



Compressor Oil Flow



AIR AND OIL FLOW DIAGRAM NO. E2892000103

## NOTES

[illegible]

# OPERATION MANUAL

## HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL  
NUMBER ON HAND WHEN CALLING

### UNITED STATES

#### ***Multiquip Inc.***

(310) 537- 3700  
6141 Katella Avenue Suite 200  
Cypress, CA 90630  
E-MAIL: [mq@multiquip.com](mailto:mq@multiquip.com)  
WEBSITE: [www.multiquip.com](http://www.multiquip.com)

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### CANADA

#### ***Multiquip***

(450) 625-2244  
4110 Industriel Boul.  
Laval, Quebec, Canada H7L 6V3  
E-MAIL: [infocanada@multiquip.com](mailto:infocanada@multiquip.com)

### UNITED KINGDOM

#### ***Multiquip (UK) Limited Head Office***

0161 339 2223  
Unit 2, Northpoint Industrial Estate, Globe Lane,  
Dukinfield, Cheshire SK16 4UJ  
E-MAIL: [sales@multiquip.co.uk](mailto:sales@multiquip.co.uk)

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