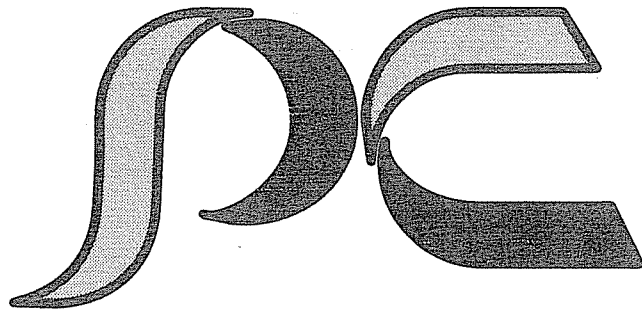


AIRMAN

INSTRUCTION MANUAL
SCREW COMPRESSOR

PDS375S-6A1
PDS375 -6A1



HOKUETSU INDUSTRIES CO., LTD.

Preface

- ◆ This manual explains and illustrates proper handling of the unit and the method of daily inspection and maintenance thereto to enhance the performance of AIRMAN's compressors.
- ◆ Before operating the unit, read the manual carefully and fully understand its operation and maintenance requirement. Then keep "SAFETY OPERATION AND PROPER MAINTENANCE OF THE UNIT".
- ◆ For details of handling, maintenance and safety of an engine, see the Engine Operation Manual.
- ◆ Keep the manual available at all times for the operator or safety supervisor.
- ◆ In case the manual is lost or damaged, place an order with your dealer for another copy.
- ◆ Make sure that the manual is included with the unit when it is handed over to another user.
- ◆ There may be some inconsistency in detail between the manual and the actual machine due to improvements of the machine. Ask your dealer if you have any questions or problems.
- ◆ If you need any inquiry about the unit, please inform us of the model and serial number of the unit too. A plate stamped with type of model and serial number is attached to side of the unit.

MODEL: _____

SER.NO.: _____

PORTABLE COMPRESSOR	
MODEL	<input type="text"/>
SER. NO.	<input type="text"/>
NORMAL OPERATING PRESSURE	<input type="text"/> MPa
NET DRY MASS	<input type="text"/> kg
AIRMAN MADE IN JAPAN HOKUETSU INDUSTRIES CO., LTD. 22-2, NISHI-SHINJUKU 1-CHOME, SHINJUKU-KU TOKYO JAPAN	

A990054

WARNING

Be sure to follow safety warnings and cautions given in the manual. Unsafe operation could cause serious injury or death.

Contents



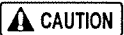

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1. Safety

1. Safety

This operation manual explains and illustrates general requirements for safety.

Please read these safety requirements carefully and fully understand the contents before starting the machine.

For your better recognition, according to the degree of potential danger, safety messages are classified into three hierarchical categories, namely, , , and  with a caution symbol  attached to each message.

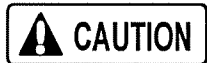
When one of these messages is found, please take preventive measures for safety to carry out “SAFETY OPERATION AND PROPER MAINTENANCE OF THE UNIT.”



DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.



WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



IMPORTANT indicates important caution messages for the performance or durability of the unit.

Follow warnings mentioned in this manual. This instruction manual does not describe all safety items. We, therefore, advise you to pay special attention to all items (even though they may not be described in the manual) for your safety.

1.Safety

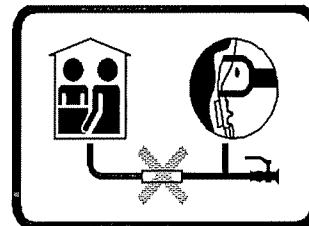
1.1 Caution before Operation



Air pressurized construction method prohibited.

- Never use the unit directly or indirectly for the following purposes:

- Never use the unit for respirator equipment by which compressed air is supplied for human consumption. The compressed air contains carbon monoxide and other contaminants, and such air may cause serious injury or even death if used by a person for respiration.



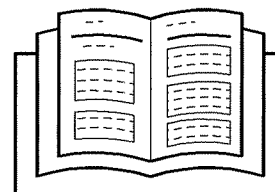
TR0201

- Never use compressor air for human consumption such as pressurizing diving air tanks. Consumption of compressor air can cause death while diving.



Follow the safety instructions

- Please read each instruction plate which is displayed in the manual or on the unit carefully, understand its content and follow the indications thereof.
 - Keep the Safety Warning labels clean. When they are damaged or missing, apply new ones.
- Do not modify the machine without prior approval. The safety may be compromised, functions may be deteriorated, or machine life may be shortened.
- Never use the unit for the purpose of compression of gases other than air, or as a vacuum pump. Otherwise, serious accidents may occur.



TR0086



Maintain both physical and mental health

- Do not operate the machine when you are tired or drunk or under the influence of drugs. Otherwise, a hasty conclusion or careless handling may cause unexpected injury or accident. Manage your physical and mental health and be cautious in handling the machine.

1.Safety

WARNING

Safety outfit

- When handling machine, do not wear:
 - loose clothes
 - clothes with unbuttoned sleeves
 - hanging tie or scarf
 - dangling jewelry

Such outfit could be caught in the machine or dragged in the rotating portion of the machine, and could cause a serious injury.



TR0084

WARNING

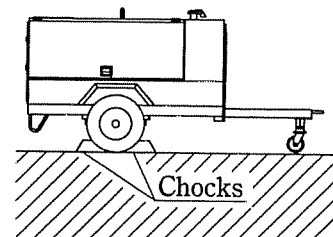
Transportation

- When towing or transporting the machine from a job site, securely fix it with tie-downs.
- Select a truck or a crane with capacity sufficient for weight and size of the unit by referring to the values shown in Chapter 8 "Specifications" of this manual.
- Only qualified personnel should operate a crane.
- Never lift the unit while it is running, or this will cause a very serious accident.
- Keep lower speed than 20 km/h, when towing or transporting.
(High speed model is below 80 km/h.)

WARNING

Installation

- The machine has to be parked horizontally on a level place.
- In case the machine has to be parked on a slope, place it across grade so that the machine does not tend to roll downhill.
 - Grade on a slope shall be within 15° degrees
 - Be sure to chock the wheels.
- The machine should be operated in following conditions:
 - Ambient temperature ... 5°F to 104°F (-15°C to +40°C)
 - Humidity Less than 90%
 - Altitude Lower than 4,921 ft (1,500 m) above sea level
- For details, see 4.1.



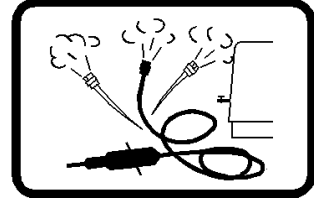
H970001

1.Safety

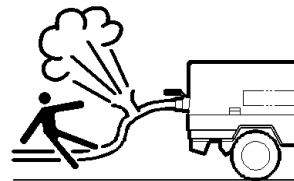
WARNING

Caution of hose attachment and removal

- Piping or the hose from this machine service valve should use what can be borne enough for the discharge pressure of this machine
- Please connect piping or a hose to this machine service valve firmly before operation and during operation. If the connection part is loosening, there is a possibility of piping or a hose separating and getting seriously injured.
- Please remove after closing a service valve and extracting pressure remained, in case piping or a hose is removed. If pressure remained should remain, a near thing blows away or there is a possibility of a hose whipping, causing a phenomenon and getting seriously injured.
- In order to use it safely, please read the handling of the work tools often used.



TR0088



TR0303A

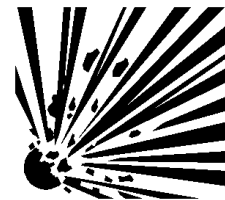
WARNING

Handling battery

- Keep flames away from battery.
- Battery may generate hydrogen gas and may explode.
- Therefore, recharging should be done in a well-ventilated place.
- Keep lit cigarettes or matches away from battery.
- Do not check the battery by short-circuiting the positive and negative terminals with a conductor.
- Do not charge a frozen battery. Otherwise it may explode. If the battery is frozen, warm it up until the battery temperature becomes 61 °F to 86 °F (16 to 30 °C).
- When you deal with a battery, please be sure to wear protection implements, such as protection glasses and a glove.
- Do not let electrolyte solution make contact with clothes or skin. It could damage your clothes and skin.
- When such electrolyte solution contacts your clothes or skin, wash it away with large amounts of water immediately.
- If the battery electrolyte solution gets into your eyes, wash it away immediately with plenty of water and see a doctor at once.
- For details on handling, see 6.3.



D004



W010



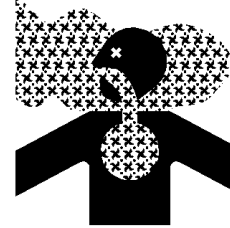
TR0093

1.Safety

WARNING

Ventilation

- Exhaust gas from the engine is poisonous, and could cause death when inhaled.
Avoid using the machine in an insufficiently ventilated building or tunnel.



PC002

CAUTION

Check and inspections before operation

- Check the machine every time before starting operation. (See 2.6)
When trouble is found, shut unit down and repair problem before re-starting.
- Inspect machine daily before operation. If inspection is neglected and a problem occurs during operation, it could result in damage to the unit or even cause a fire.

CAUTION

Protection equipments

- Please wear protection implements, such as a helmet, protection glasses, earplugs, safety shoes, a glove, and a protection-against-dust mask, according to the contents of work for safety.



TR0085

1.Safety

CAUTION

Safety fittings

- Have first-aid boxes and fire-extinguishers near the unit ready for emergency situations.
- It is advisable to have a list of phone numbers of doctors, ambulance and the fire department available in case of emergency.



TR0096

CAUTION

Safety around the machine

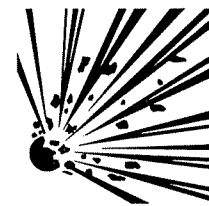
- Such things as unnecessary equipment and tools, cables, hoods, covers and pieces of wood which are a hindrance to the job, have to be cleaned and removed. This is because operators or personnel nearby may stumble on them and may be injured.
- Place safety enclosures at the entrance of and around working site to prevent children or outside people from entering the site.

1.2 Cautions during operation

WARNING

Do not replenish compressor oil during operation

- Do not, under any circumstance, open the oil filler cap of separator receiver tank while running or immediately after stopping operation. It is very dangerous because the oil filler cap could be blown off and high temperature compressed air and oil could jet out from the filler port and cause serious injury.



W010

WARNING

Draining during operation prohibited

- Do not, under any circumstance, open the portions below during operation:
 - Separator receiver tank drain valve
 - Coolant drain plug
 - Engine oil drain plug



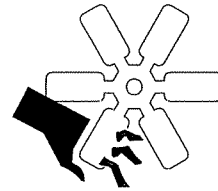
PK0028

1.Safety

WARNING

Beware of cooling fan

- Never put your hand near the engine cooling fan during operation. It could cause serious injury if a hand should be caught in it.

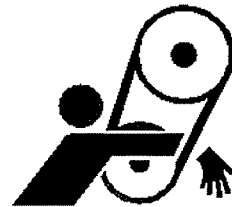


W009A

WARNING

Hands off from rotating parts and belts

- Do not touch belts or rotating parts while unit is running. It could cause serious injury.

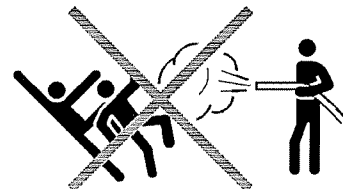


TR0304

WARNING

Never direct the compressed air to people and foods

- Never blow compressed air directly at people. Scattered impurities, dust, or foreign objects in the compressed air may cause skin and eyes to be seriously injured.
- Blowing compressed air on food is prohibited.



TR0092

CAUTION

Do not remove radiator cap during operation

- Do not, under any circumstance, open the radiator cap while running or immediately after stopping operation. Otherwise high temperature steam jets out and this could scald the operator.



H990432

1.Safety

CAUTION

Do not touch hot parts

- Never work nearby hot portions of the machine while the unit is running.
- Do not touch hot portions of the machine while inspecting the machine when running.
 - Such parts as engine, exhaust manifold, exhaust pipe, muffler, radiator, compressor, piping, separator receiver tank, and discharging pipe are especially hot, so never touch those parts, because it could cause scalding.
- Compressor oil, coolant water, and engine oil are also very hot and dangerous to touch. Avoid checking or refilling them while the unit is running.

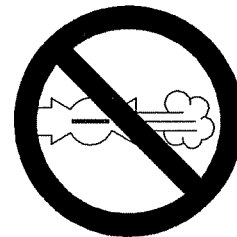


H990432

CAUTION

Operation with compressed air supply port opened is prohibited

- Do not operate the machine with service valve and relief valve open without air hoses and/or pipes connected. High-pressurized air blows out, blowing objects about and causing injury.
 - When the machine has to be unavoidably temporarily operated with its port open, be sure to mount a silencer for reducing sound and wear protective materials such as earplugs for preventing hearing damage.



D003

CAUTION

Fire prevention

- Do not, under any circumstance, bring lit cigarettes or matches near such oils as engine oil and compressor oil, etc. They are extremely flammable and dangerous, so be careful when handling.
- Refilling oils should be done in an outdoor well-ventilated place.
- Refuel after stopping the engine, and never leave the fuel nearby the machine. Do not spill. It may cause a fire. When it is spilt, wipe it up completely.
- Such parts as muffler and exhaust pipe can be extremely hot. Remove twigs, dried leaves, dried grass and waste paper, etc. from the exhaust outlet of the muffler.
- Keep a fire extinguisher available by the machine in case of a fire.



D004



H990433

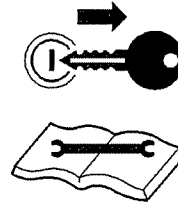
1.Safety

1.3 Cautions during inspection and servicing

WARNING

Hang a "Now Checking and under Maintenance" tag

- Remove the starter key from the starter switch before starting inspection, and hang up a "Now Checking and under Maintenance" tag where it can be easily seen. The checker must keep the key during checking and maintenance.
- Remove the negative (-) side cable from the battery. If the above procedure is neglected, and another person starts operating the machine during check or maintenance, it could cause serious injury or damage to the machine.

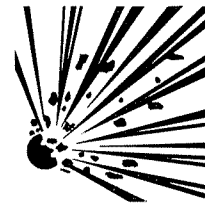


SY001

WARNING

Refilling of compressor oil

- When you refill the separator receiver tank with compressor oil, stop the engine, and make sure that the pressure gauge indicates 0 psi (0 bar) and there is no residual pressure in it, and then gradually loosen the oil filler cap for refilling oil.
- Note residual pressure in the receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.



W010

WARNING

Draining of compressor oil

- After stopping the engine, confirm that the pressure gauge indicates 0 psi (0 bar) and there is no residual pressure in it, then open the drain valve gradually to drain the compressor oil.
- Note residual pressure in the receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.

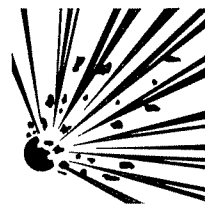


H990432

WARNING

Be careful of high-pressurized air blowout

- Even after the unit stops and the pressure gauge shows 0 psi (0 bar), open the service valve and make sure there is no residual pressure before subsequent operation.
- Residual air under pressure will blow-off and severely injure operator.



W010

1.Safety

WARNING

Adjusting tension of fan belt

- Be sure to stop the engine and remove the starter key whenever the tension of the fan belt is to be adjusted.
- Remove the negative (-) side cable from the battery.
- If the machine is running, it might catch the operator's hand into the fan belts, and this could cause a serious accident.

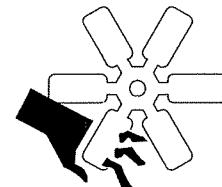


TR0304

WARNING

Hands off from cooling fan

- Be sure to stop the engine and remove the starter key whenever check or maintenance work is carried out near the cooling fan.
- If the cooling fan is rotating, it may catch the operator or part of his body into the fan, and it could cause a serious accident.



W009A

WARNING

Cleaning by air-blow

- When cleaning dust accumulated in such devices as the air-filter, by blowing compressed air, wear safety glasses, etc. to protect your eyes.

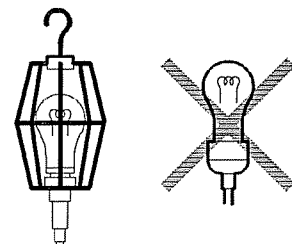


M003

CAUTION

Lighting apparatus

- It is recommended to install a lamp with safety guard where there is not enough light. Operating the machine gropingly or by relying on one's intuition could cause unexpected accidents and is dangerous.
 - Any lamps without safety guard are not recommended since they can be broken and they could ignite flammables such as fuel, etc.



TR0206

1.Safety

CAUTION

Taking off the radiator cap

- Be sure to stop the machine and loosen the radiator cap slowly, after the coolant water is sufficiently cooled and the inner pressure is released, then take the cap off.

If this procedure is neglected, its inner pressure can blow off the cap, and steam jetting out of the radiator could result in causing scalding. Follow the procedure under all circumstances.



H990432

CAUTION

Opening coolant water drain valve

- Be sure to stop the engine, and let the coolant water sufficiently cool down before draining it.
- If the drain valve is opened before the coolant water is cooled enough, hot water could jet out, and it could scald the operator.



H990432

CAUTION

Refilling or draining of engine oil

- After stopping the engine, wait for 10 to 20 minutes until the engine oil cools off. Then check the level of the engine oil, or refill or drain the oil.
- During operation or immediately after the engine stops, its oil is extremely hot and pressurized, so it may jet out when the cap is loosened. Be careful not to scald yourself from it.



H990432

CAUTION

Fear of fire

- Securely perform the periodical check of compressor oil and oil separator.
- Neglecting checks could cause overheat of the oil, resulting in a fire.



H990433

CAUTION

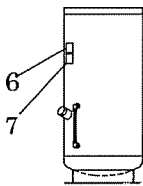
Disposal of waste liquid, etc.

- Waste water from the machine contains harmful material. Do not drain it onto the ground or into the river, lake or sea. Such material will contaminate the environment.
- Be sure to use a container to hold the waste water from the machine.
- Be sure to follow the designated regulations when disposing of oil, fuel, coolant (anti-freeze), filter, battery or other harmful materials.

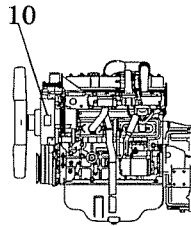
1.Safety

1.4 Safety warning labels

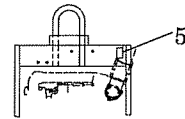
- Following labels are attached to the machine.
Keep them clean all the time. If they are damaged or missing, apply a new one.
But if there are nothing, immediately give an order to the Airman selling shop
with part No. of the label what is printed low right corner.



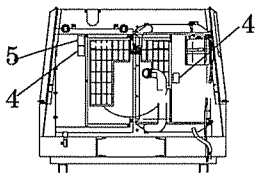
Separator Receiver Tank



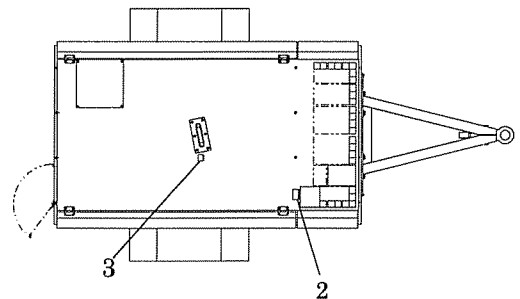
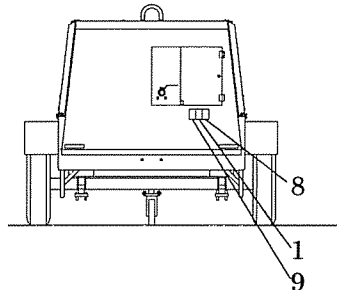
Engine



Lifting bail



Fan shourud



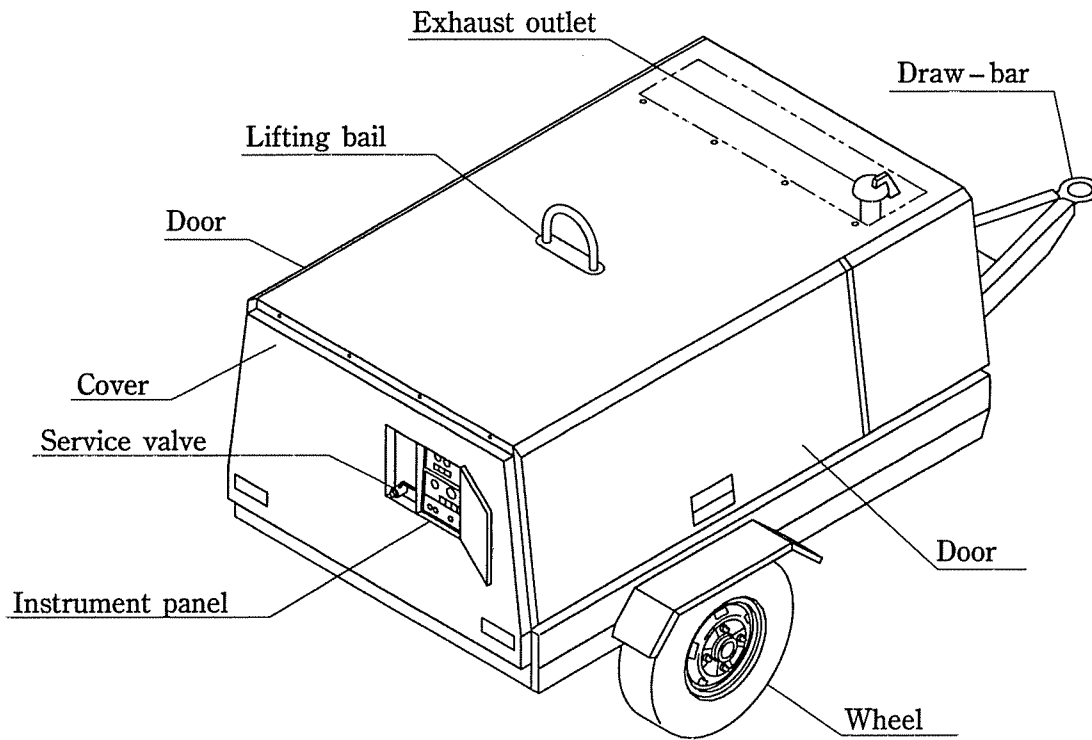
A010277

- | | |
|--|--|
| 1. Caution, exhaust gases
(39176 73300) | 6. Caution, Fire
(39176 69700) |
| 2. Caution, radiator cap(hot water)
(39176 69600) | 7. Caution, residual pressure
(39176 69800) |
| 3. Lifting bail
(39176 69300) | 8. Caution, hose whipping
(39176 73400) |
| 4. Caution, cooling fan
(39176 73500) | 9. Caution, Do not inhale
(39176 73600) |
| 5. Caution, high temp.
(39176 69500) | 10. Caution, V-belt
(39176 73800) |

2. Operation

2. Operation

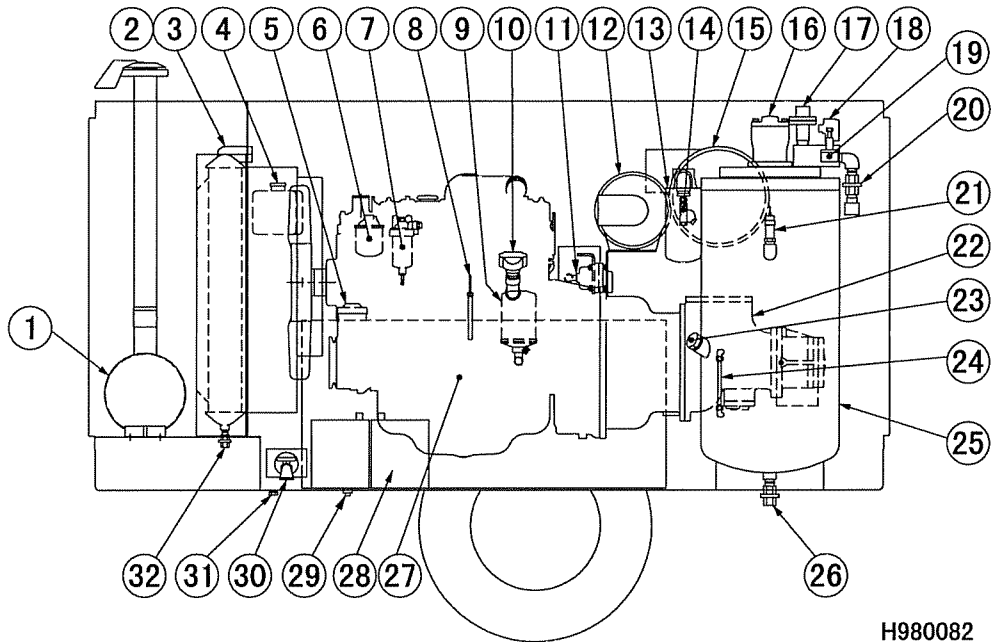
2.1 Unit Appearance and Part Names



H970003

2. Operation

2.2 Main Components and Part Names

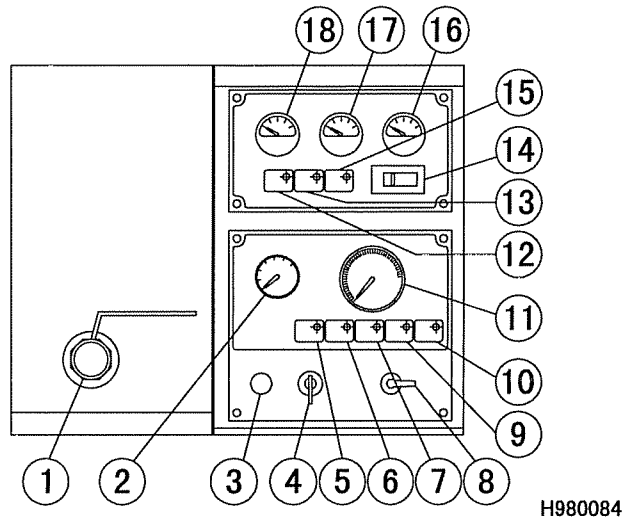


- | | |
|------------------------------|---------------------------------------|
| ① Exhaust muffler | ⑰ Vacuum relief valve |
| ② Oil cooler | ⑱ Auto-relief valve |
| ③ Radiator | ⑲ Pressure regulator |
| ④ Reserve tank | ⑳ Relief valve |
| ⑤ Fuel filler port | * ㉑ Safety valve |
| ⑥ Fuel filter | ㉒ Air-end |
| ⑦ Water sedimenter | ㉓ Compressor oil filler port |
| ⑧ Engine oil level gauge | ㉔ Compressor oil level gauge |
| ⑨ Engine oil filter | ㉕ Separator receiver tank |
| ⑩ Engine oil filler port | ㉖ Separator receiver tank drain valve |
| ⑪ Speed regulator | ㉗ Engine |
| ⑫ Engine air filter | ㉘ Battery |
| ⑬ Compressor oil filter | ㉙ Fuel tank drain plug |
| ⑭ Compressor oil line filter | ㉚ Engine oil drain valve |
| ⑮ Compressor air filter | ㉛ Coolant drain plug |
| ⑯ Pressure control valve | ㉜ Oil cooler drain valve |

* : Safety valve and its location vary depending upon specifications of separator receiver tank. (refer to 2.7.5)

2. Operation

2.3 Instrument Panel



H980084

- | | |
|--|--|
| ① Service valve | ⑨ Warning lamp for engine speed |
| ② Discharge pressure gauge | ⑩ Preheating lamp |
| ③ Stop button | ⑪ Tachometer (with hour-meter) |
| ④ Starter switch | OPTIONAL GAGES |
| ⑤ Warning lamp for low engine oil pressure | ⑫ Warning lamp for charging |
| ⑥ Warning lamp for high cooling water temperature | ⑬ Warning lamp for engine air filter |
| ⑦ Warning lamp for high discharged air temperature | ⑭ Separator indicator |
| ⑧ Starting unloader valve | ⑮ Warning lamp for compressor air filter |
| | ⑯ Thermometer for discharge air |
| | ⑰ Thermometer for cooling water |
| | ⑱ Fuel gauge |

Emergency Display

- Compressor stops when the emergency lamp goes on. Be sure to follow the measures shown below before starting the unit again.

Item	Trouble	Measures	Reference
Discharge air temperature	Lamp goes on when the air temperature at the outlet of the compressor reaches 239° F(115°C).	See Troubleshooting.	See 6.4
Engine oil pressure	Lamp goes on when working pressure of the engine oil decreases below 15 psi (0.98 bar).		
Coolant temperature	Lamp goes on when coolant temperature reaches 221° F (105°C.)		
Engine speed slow down	Engine run on with lower than 900 min ⁻¹ (900 rpm) when it's slow down abnormally.		

Warning Display (option parts)

- When the warning lamp is on, be sure to take appropriate measures to correct the situation immediately.

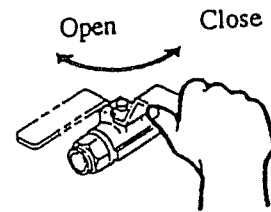
Item	Trouble	Measures	Reference
Charging	Lamp goes on when alternator is not charging.	Check Check alternator	—
Air filter of Engine	Lamp goes on when filter is clogged.	Check Clean air filter	See 5.8.2
Air filter of Compressor	Lamp goes on when filter is clogged.	Check Clean air filter	See 5.8.2

2. Operation

2.4 Compressed Air Service Valve

2.4.1 Service Valve 1 1/4" (32A)

- Close the valve by turning the handle clockwise, and open it by turning the handle counterclockwise.



TR0213

2.5 Door

2.5.1 Open/Close the Door.

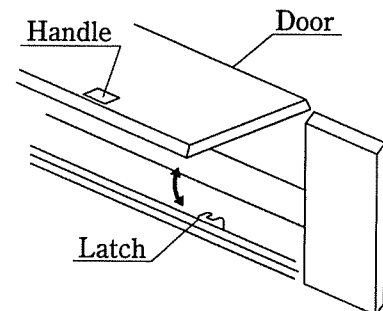
WARNING

- Keep the doors closed and locked while running the unit. (Do not lock the cover of the instrument panel.)
- When the door has to be opened, be careful not to touch portions that are rotating or very hot. Careless touch may cause serious injury to the operator.
- Be sure to engage the stay into the slot of the door receptacle, so that it is firmly held against wind or vibration.



PK0028

- Pull the handle forward to open the door.
- Be sure to close the door tightly so that its latch is firmly caught.



H970004

2. Operation

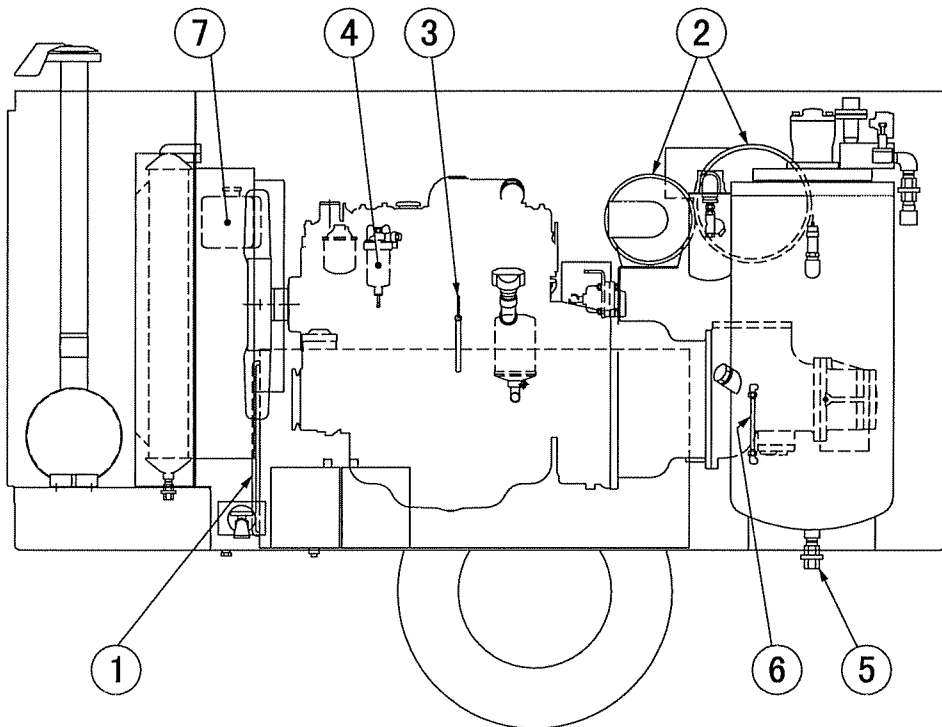
2.6 Check before Starting the Unit



Check before starting the unit

- Be sure to check the unit before operation.
When any abnormality is found, be sure to repair it before restarting the unit.
- Be sure to make daily checks before operation. If the unit is operated without prior check and without noticing its abnormality, such operation could cause seizure of air compressor or may even cause fire.

2.6.1 Check Items and Places



H980085

- | | |
|--|------------------------------|
| ① Check fuel | ⑥ Check compressor oil level |
| ② Check clogging of air filter element | ⑦ Check coolant level |
| ③ Check engine oil level | • Check wiring of each part |
| ④ Drain water sediment | • Check piping of each part |
| ⑤ Drain compressor oil | |

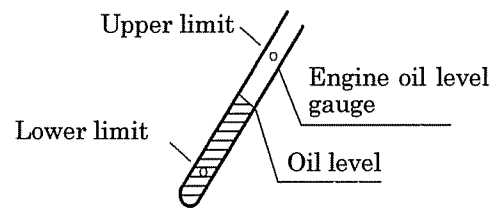
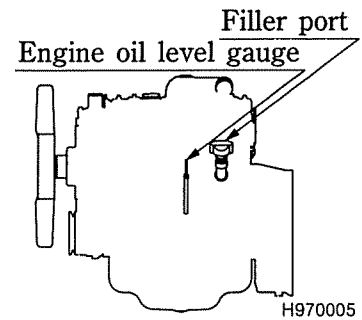
2. Operation

2.6.2 Check Engine Oil Level

- Unit should be level before checking oil levels.
- Wait 10 minutes after stopping engine, before checking the oil levels.

(Procedure)

- ① Pull the engine oil level gauge (dipstick) out of engine, and wipe it with a clean cloth.
 - ② Then, re-insert the gauge and pull it out again. If the oil level shows between upper and lower limits on the gauge, it is normal.
 - ③ When the oil level is below its lower limit, add engine oil. (See 5.5.1.)
- While checking oil level, check and locate cause for contamination, if the oil shows contamination, change the oil. (See 5.5.1.)



2.6.3 Check Coolant Level

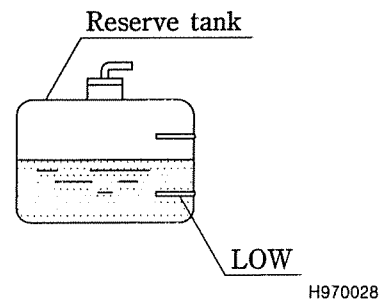
CAUTION

Taking off the radiator cap

- After stopping operation and making sure that the coolant water is sufficiently cooled and the inner pressure is released, then take the cap off. If this procedure is neglected, its inner pressure can blow off the cap, and steam jetting out of the radiator could result in scalding. Follow the procedure under any circumstances.



- Check the quantity of the coolant left in the reserve tank, and open the cap of the tank and replenish it if it is lower than the limit. (Level must be kept above the LOW mark)
- If no coolant is left in the reserve tank, replenish the radiator and reserve tank. (See 5.9.5.)



2. Operation

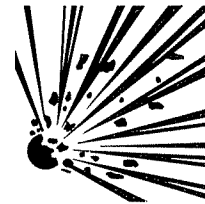
2.6.4 Check Compressor Oil Level



WARNING

Refilling of compressor oil

- When you refill the separator receiver tank with compressor oil, stop the engine, and make sure that the pressure gauge indicates 0 psi (0 bar) and there is no residual pressure in it, and then gradually loosen the oil filler cap for refilling oil.
- Note residual pressure in the receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.



W010

- Place the machine on level ground when checking the oil level.
- Check the oil level of the compressor. Correct oil level is between upper and lower limit of the gauge, when the unit stops. If the gauge shows lower than the middle level, replenish oil. (See 5.8.1.)



H970006

2.6.5 Drain Compressor Oil



WARNING

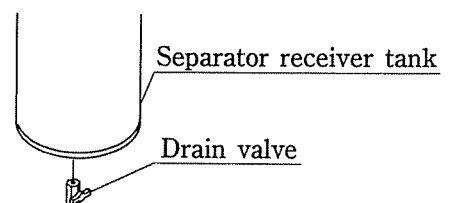
Draining of compressor oil

- After stopping the engine, confirm that the pressure gauge indicates 0 psi (0 bar), then open the drain valve gradually to drain the compressor oil. Note residual pressure in the receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.



H990432

- Open the drain valve at the bottom of the separator receiver tank little by little to drain the oil.
- Be careful not to fully open the valve. Otherwise, oil will be drained too fast.
- After draining the oil completely, close the drain valve firmly.
- Dispose of the waste oil according to the designated regulations.



H970007

2. Operation

2.6.6 Check Fuel



Fire prevention

- Do not, under any circumstance, smoke cigarettes or light matches during fueling.
- Fuel is extremely flammable and dangerous. It is, therefore, very easy to start a fire when you handle fuel around flames.
- Refuel only after stopping the engine, and never leave open fuel can near the machine. Do not spill. It could cause a fire. When it is spilt, wipe it up completely.
- Refilling fuel tank should be done in an outdoor well-ventilated place.



D004

IMPORTANT

Choose appropriate fuel

- Be sure to use diesel fuel oil for diesel engine use.
(Using other oil will cause low power or damage to the engine.)
 - Capacity of the fuel tank: 43.5gal (165L)
-
- Check fuel gauge before operation. Replenish fuel if it is low.
 - Be sure to fasten the cap firmly to the fuel tank after replenishment. If fuel is spilt, wipe it up completely.

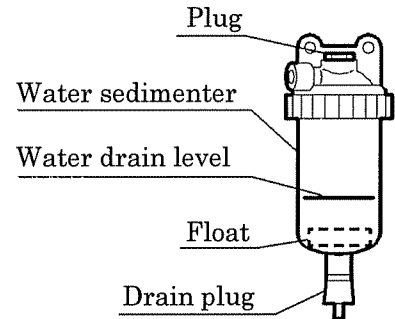
2. Operation

2.6.7 Drain Water Sedimenter

- Check if the red float in the water sedimenter rises up to the water drain level mark. Drain water if it is near the drain level.

(Procedure)

- ① Loosen the drain plug to drain water from inside.
- ② After drainage, fasten the plug firmly.



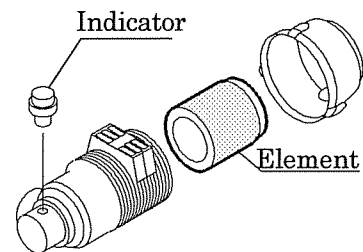
TR0318

2.6.8 Check Clogging of Air Filter Element

IMPORTANT

Be sure to properly clean air filter element

- When an element that is clogged, or has holes or cracks is used, dust or foreign material will get in the engine or compressor. This causes accelerated wear in each sliding part of the unit. Be sure to make daily checks and cleaning so that the life of the engine or compressor will not be shortened.
-
- When the air-filter clogging indicator turns red, take the element out and clean it.
 - When it can not be cleaned, replace the element with a new one. (See 5.8.2.)



TR0319

2. Operation

2.6.9 Check the belt tension

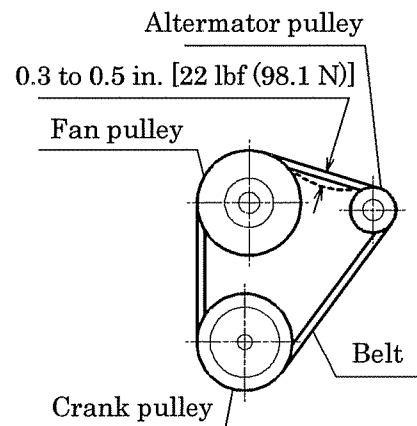
IMPORTANT

- If the belt tension is too tight, it will cause shaft breakage or shorten the life of bearings.
If too loose, the belt and pulley will slip and will cause early breakage or damage to the belt.
- When replacing the belt, change all the belts at the same time, instead of changing only the damaged one.

- Follow the procedure below to adjust tension of the cooling fan belt and the belt for alternator.

(Procedure)

- ① Adjust the tension by gradually loosening the fastening bolt of the alternator.
- ② Visually check if there are any cracks or tears in the belt.
- ③ Loosen the fastening belt or the alternator until the play of the belt reaches 0.3 to 0.5 inch (8 to 12 mm), when pushed by fingers and adjust it.
- ④ Be careful not to leave any grease or LLC on a belt while changing it.
If any such material is left, wipe it off completely.



TR0554

2.6.10 Check Wiring of Each Part

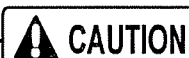
- Check wiring for looseness in the connecting part, damage to the insulating cover, disconnected, or electric short circuits.

2.6.11 Check Piping of Each Part

- Check piping for loose connections, tear in hose or tube, or leakage of air or oil from the piping.

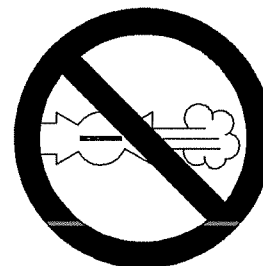
2. Operation

2.7 Machine Operation



Operation with compressed air supply port opened is prohibited.

- Do not operate the machine with service valves and relief valve open unless air hoses and/or pipes are connected.
High-pressurized air blows out and its air pressure could cause injury to the people nearby.
- When the machine has to be unavoidably temporarily operated with its port open, be sure to mount a silencer to reduce noise and wear protective materials such as earplugs to prevent damage to hearing.



D003

Quick Glow System

- Since this equipment is provided with a quick glow system (quick preheating device), you do not have to turn the starter switch counterclockwise from STOP position.
- Turn the starter switch to the “Operation” position, and the preheating will be completed in several seconds and the preheating lamp will go out. Then, turn the Starter switch to “Start” position to start up the engine.
- When the engine is already warm, the preheating operation is automatically omitted. Even though the preheating lamp lights up momentarily, ignore the lamp status, and start up the engine.

WARNING - Because of the quick glow system, never use ether to start engine.

2. Operation

2.7.1 Procedure to start the unit

IMPORTANT

Be sure to warm-up

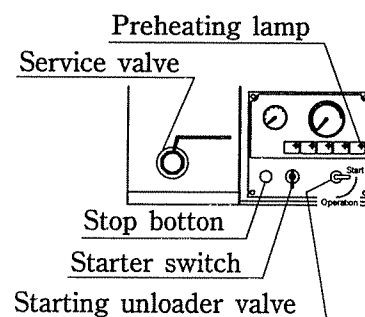
- Be sure to let unit warm-up after starting for smooth operation of the engine and the compressor.
Do not operate the engine at full load immediately after it starts up. This will shorten the equipment life.
- During the warm-up operation, examine the different parts of the equipment for any looseness, leakage of water, oil, fuel, and other irregularities.
- Also, make sure that the alarm lamps are off.

(Procedure)

- ① Fully close the service valve.
- ② Set the starting unloader valve to “Start.”
- ③ Turn to clockwise enough the starter switch with pushing the stop button.
And then do cranking twice each 4~5 sec.

CAUTION

Be sure to operate this works, as it sending engine oil to every part for lubricant, and send to the separator of receiver tank from cylinder of compressor.



H970009

- ④ Preheating lamp goes on when the starter switch is set to starting position after turning to the stop position.
- ⑤ As soon as the preheating lamp has gone out, turn the starter switch fully clockwise to start up the engine.
- ⑥ Once the engine has started up, leave it running to warm up for five minutes. The discharge air pressure in this condition ranges from 57 to 100 psi (3.9 to 6.9 bar).
- ⑦ After warming up of the unit, put the starting unloader valve back to its “Operation” position, and open the service valve. The unit is now ready to operate.
 - Be sure to turn the starting unloader valve to “Operation” position prior to work. The discharge pressure does not increase as long as the starting unloader valve stays at “Start” position.

2. Operation

2.7.2 Operating procedures when engine fails to start up on first attempt

- When the engine fails to start up even after performing Steps ① to ⑤ of the startup procedures, do not continue cranking, but set the starter switch back to Stop and wait about 30 seconds. Then, repeat the startup procedure once again.
- If the repeated procedure does not allow the engine to run, the following causes are suspected. Therefore check the following:
 - No fuel.
 - The fuel filter and/or filter inside the fuel air-bleeding electromagnetic pump are clogged.
 - The battery is flat (low cranking speed).

2.7.3 How to Start the Unit at Low Temperature

- When temperature is very low and it is difficult to start engine, follow the procedure shown below to start the unit.

(Procedure)

- ① Fully open the service valve.
- ② Follow the regular starting procedure to start the engine. By watching how the engine rotates, gradually close the service valve as the engine speeds up. Beware of the compressed air discharged from the service valve.
- ③ When the valve is completely closed, keep the unit running in this way for a while to warm-up.

Note: Never use ether as a starting aid.

IMPORTANT

Operation under Cold Weather Conditions below 23° F (-5°C)

- Use SAE10W-30 (CD class) for the engine oil.
- Use antifreeze. Use correct amount to provide freeze protection, according to the ambient temperature.
- Battery should always be kept fully charged.

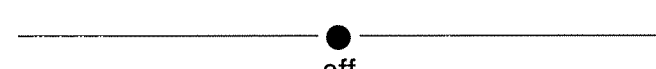
2. Operation

2.7.4 Gauge Indication while Operating

IMPORTANT

- Minimum discharge air pressure is 57 psi (3.9 bar) during operation.
- Continuing equipment operation at a lower pressure than the above pressure may cause overheating, since it affects the separation of lubricating oil inside the oil separator and reduces the oil flow to the compressor air end.

- Be sure to periodically check to see if gauges, for each component of the unit, are properly working, and also if there is any air-leak, oil-leak, water-leak or fuel-leak etc.
- During normal operation, each indication of instruments is shown in the table

		Alarm lamp							
		Engine oil pressure	Cooling water temperature	Discharge air temperature	Engine speed down	Preheating	Battery charge	Engine air filter	Compressor air filter
Before start up	Starter switch set to "Operation" position	● off	● off	● off	● off	※ ● off	☀ on	● off	● off
In Operation		 off							

		Air Pressure Gauge
In Operation	Unload	102 to 114 psi (7.1 to 9.6 bar)
	Full load	57 to 100 psi (3.9 to 6.9 bar)

below. (Refer to the table for daily checks.)

mark※ : Lamp is gone out when the preheating is completed.

Following lamps are optional parts : Battery charge, Engine air filter, Compressor air filter

- The table below gives standard values. They may vary slightly depending on the operating conditions and other factors.

2. Operation

2.7.5 Check safety valve performance

WARNING

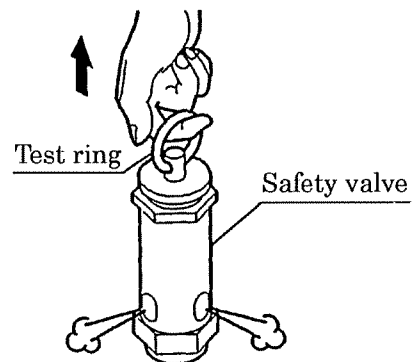
- Keep face or hand away from the discharging outlet of safety valve. It is very dangerous because high-pressure compressed air jets out.

IMPORTANT

CAUTION - Wear safety glasses.

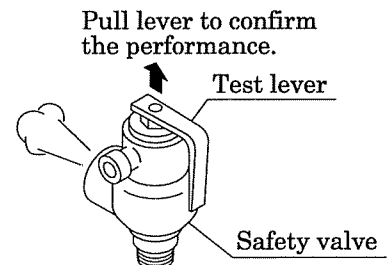
- Be sure to check the safety valve performance once a day.
- Close the service valve completely and pull the test ring or lever of the safety valve to check the performance. Discharge pressure gauge should be between 102 to 140 psi (7.1 to 9.6 bar) when you check the performance. It is performing normally when the pressure inside the safety valve jets out with a little pull at a discharge pressure between 102 to 140 psi (7.1 to 9.6 bar).
- Pressure setting for safety valve is 150 psi (10.3 bar).

ASME TYPE



TR0064

QUASI-ASME TYPE



H980087

2.8 Stopping procedures

- (1) Close the service valve completely and operate the equipment about five minutes, until it cools down.
- (2) Turn the starter switch to "Stop" position to stop the engine.
- (3) Remove the key from the compressor every time when you stop the operation. Keep the key and be careful not to lose it.

3. Hauling and Pulling the Unit

3. Hauling and Pulling the Unit

3.1 Hauling



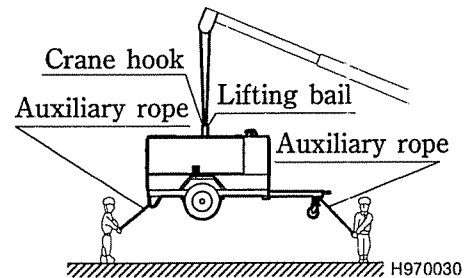
WARNING

Cares required while hauling the unit

- When hauling the unit on a truck bed, fasten it firmly to the bed with ropes.
- Select a truck or a crane with capacity sufficient for weight and size of the unit by referring to the values shown in Chapter 8 “Specifications” of the manual.
- Never lift the unit while it is running, or this could cause a serious accident.

(1) Lifting

- Before lifting the unit, check if any crack or loose bolt is found in lifting bail or their mounting points.
- Hook shackles of the crane to the lifting bail at the center top surface of the unit. After confirming there is no other person near the working area, lift the unit by the crane.
- Use an auxiliary rope and communicate with the other personnel using signs and signals while lifting operation, so that no swinging motion or twisting happens to the lifted unit.



(2) Pulling down

- Pull the unit down onto a level place which can sustain the weight of the unit.
- After placing the unit down, put wheel chocks to lock the wheels before unfastening the crane's hook.

3. Hauling and Pulling the Unit

3.2 Traction

 **WARNING**

- Keep traction speed lower than 20 km/h.
(High speed model is lower than 80 km/h)
- Select a tractor with capacity sufficient for weight and size of this unit.
- It is 60 psi (4.2 bar) what is standard air pressure of tire.
- Replace the defaced or damaged tire
- Don't change the size and kind of this machine's tire.
- Check the tractor and draw-bar of this unit, and check whether they are deformed or damaged.
- When setting or off setting of the tractor and this machine, do not put hands and fingers into the connecting portion.
- Confirm that the tractor and the unit are firmly connected.
- Confirm that there are nobody and not any obstacles at the back and front.
- Do not tow the unit without unfastening tool, equipment and tools.
- Do not enter or walk through between the tractor and this machine.
- Be sure to follow the safety warning and cautions.
Unsafe operation could cause serious injury or death to the personnel.

- After making sure that there is not any behind the tractor, move the unit back.
So that it can be connected by coupler.
- Connect completely the joint at the draw bar of the unit and tractor, while towing could not happen loosen or disconnecting.
- Take out chocks from the tires of the unit.
- When towing, do not drive roughly and carefully drive, avoiding dangerous rough areas.

3.3 Pulling the Unit

 **WARNING**

- Before towing the unit, check the following points and be sure to repair failures, if any:
 - Air-pressure in the tires.
 - Loose wheel bolts or nuts.
 - Abnormal wear or damage to the tires.
 - Damage of draw-bar.
- Be sure to use a vehicle with tractive ability heavier than the weight of compressor.
- Do not tow the unit without unfastening tool, equipment, and hoses.
Keep hands and fingers clear during hook-up or unhooking draw-bar.
- Be sure to follow the above instructions. Otherwise, such improper operation will cause serious injury or even death to the personnel.

4. Installation

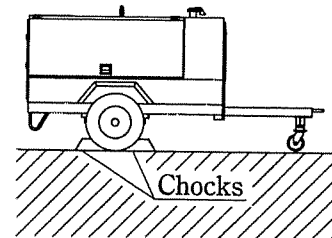
4. Installation

4.1 Place and Condition of Installation



Installation

- The machine has to be parked horizontally on a level place.
- In case the machine has to be parked on a slope, place it across grade so that the machine does not tend to roll downhill.
 - Grade on a slope shall be within 15° degrees
 - Be sure to chock the wheels.
- The machine should be operated in following conditions:
 - Ambient temperature ... 5°F to 104°F (-15°C to +40°C)
 - Humidity Less than 90%
 - Altitude Lower than 4,921 ft (1,500 m) above sea level



H970001

- Park the machine in a place with good ventilation, lower temperature and with surroundings as dry as possible.
- If more than two machines are placed parallel in operation, keep enough distance so that exhaust air from one machine does not effect the other one.
- Also, a machine has to be parked in an environment where fresh air is always available.
- Keep enough space around the unit for inspection and maintenance access.
- Do not position the exhaust gas outlet in the direction of a person or a house.

5. Periodic Inspection/Maintenance

5. Periodic Inspection and Maintenance

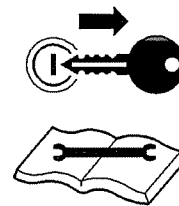
5.1 Important Items at Periodic Inspection and Maintenance or after Maintenance

- The manual shows typical interval for periodic inspection and maintenance for a unit under normally operating conditions. Under extremely harsh condition, inspection and maintenance should be performed more often.

WARNING

Hang a "Now Checking and under Maintenance" tag

- Remove the starter key from the starter switch before starting inspection, and hang up a "Now Checking and under Maintenance" tag where it can be easily seen. The checker must keep the key during checking and maintenance.
- Remove the negative (-) side cable from the battery. If the above procedure is neglected, and another person starts operating the machine during check or maintenance, it could cause serious injury or damage to the machine.

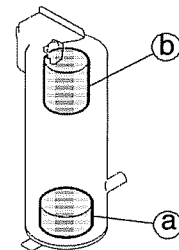


SY001

CAUTION

For protecting oil separator from fire accident

- Be sure to completely change compressor oil at its first change, after 300 hours, and every 500 hours thereafter. Use designated oil.
- Be sure to perform following periodic inspection and maintenance:
 - Ⓐ Check and change the compressor oil.
 - Ⓑ Change the oil separator.



TR0326

IMPORTANT

Precautions for check and maintenance

- Be sure to use appropriate tools for inspection and maintenance work. Inappropriate tools could cause unexpected injury to the operator.
- If a large quantity of drained compressor oil is expected, due to disassembling or cleaning of the unit, drain the oil before such operation.
- Place a container or a pan underneath the oil drain valve to receive waste liquid or compressor oil, so that such liquid cannot be wasted inside the unit.
- Be sure that no waste liquid is thrown on the ground. Such waste oil left on the ground, river or lake will cause serious environmental contamination. Be sure to follow the local code. If harmful material such as oil, antifreeze solution or filters are disposed of incorrectly, the responsible person will be punished by the authority.

5. Periodic Inspection/Maintenance

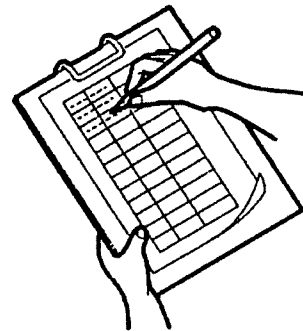
- Be sure to use designated fuel, oil, grease or antifreeze.
- Do not disassemble or adjust engine, compressor or part(s) for which inspection or maintenance is not referred to in this manual.
- Use genuine parts for replacement.
- Any breakdown, caused by using non-designated replacement techniques or by wrong handling, will be out of the scope of “warranty.”
- Do not pour water or steam on electrical components.
- Replace the safety warning plate with new one if it is damaged or missing. Keep warning plate clean so that it can be clearly recognized.

5.2 Daily Inspection and Keeping Operation Log

- Be sure to carry out daily inspection every morning before operation. See Chapter 2 “Operation” of the manual for the details of inspection.
- Pay attention to and carefully observe the following points during daily operation or inspection and maintenance work. If any trouble or abnormality is found, immediately investigate its cause and make repairs. If the cause is unknown or not traceable, or if the trouble involves a part or component not described in the manual, ask your nearest dealer for information.

Points which require attention are:

- (a) Operation equipment and gauges.
- (b) Quantity of oil, leaks, and its level of contamination.
- (c) Appearance, abnormal noise or excessive heat.
- (d) Loose bolt or nut.
- (e) Damage, wear or missing parts.
- (f) Appropriate performance of each part or component.

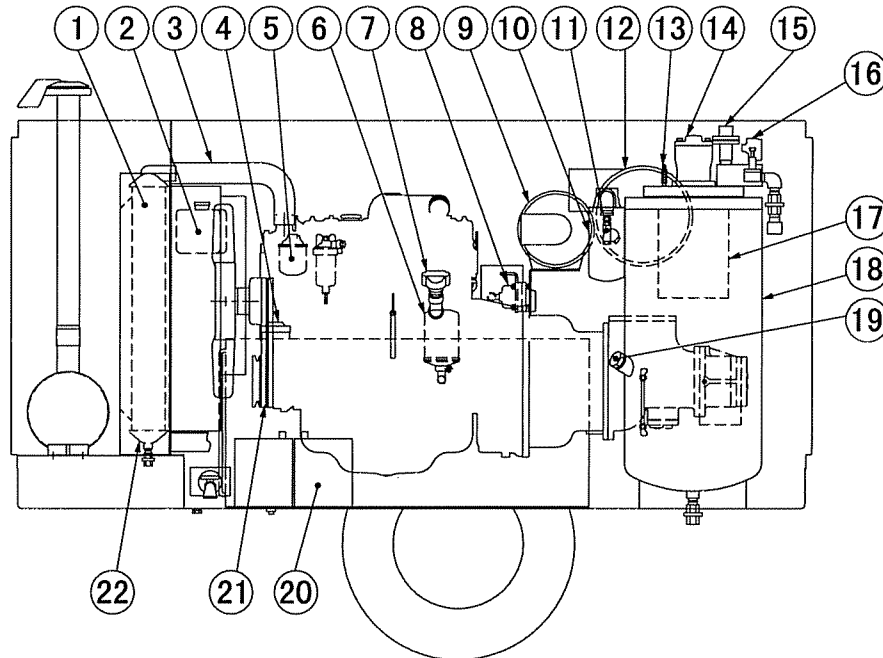


TR0049

- Keep the operation log to record constant inspection of each component, so that trouble can be easily discovered and preventive measures can be taken. It is very useful to record information such as discharge pressure, oil level, as well as running hour, maintenance items and replenishment of lubricants on a daily maintenance log.

5. Periodic Inspection/Maintenance

5.3 Item and Place of Inspection



H980086

- | | |
|--|---|
| ① Clean inside the radiator | ⑭ Change O-ring in the pressure control valve |
| ② Change coolant | ⑮ Change diaphragm & O-ring of vacuum relief valve |
| ③ Change radiator hose | ⑯ Change diaphragm & O-ring of auto-relief valve |
| ④ Clean inside fuel tank | ⑰ Change oil separator |
| ⑤ Change fuel filter | ⑱ Independent inspection of separator receiver tank |
| ⑥ Change engine oil filter | ⑲ Change compressor oil |
| ⑦ Change engine oil | ⑳ Check battery |
| ⑧ Change diaphragm of speed regulator | ㉑ Check fan belt tension |
| ⑨ Change engine air filter | ㉒ Clean outside of radiator and oil cooler |
| ⑩ Change compressor oil filter | • Change nylon tube |
| ⑪ Clean compressor oil line filter | • Change rubber hose and pipe |
| ⑫ Change compressor air filter | |
| ⑬ Clean strainer in the scavenging orifice | |

5.4 Independent Inspection on Separator Receiver Tank

IMPORTANT

Periodic inspection of separator receiver tank

- Be sure to carry out the following cleaning and inspection of the separator receiver tank at least once every year.
 - (1) Any damage found on the unit.
 - (2) Any excessive wear found to fastening bolts on the cover.
 - (3) Any damage found to pipes and valves etc.

5. Periodic Inspection/Maintenance

5.5 First Maintenance at Initial 50 Hours

5.5.1 Change Engine Oil

(At 50 hours for the first change and at every 250 hours thereafter)



Caution in filling or discharging engine oil

- Be sure to check, replenish and drain engine oil 10 to 20 minutes after engine stops.
- Engine oil is very hot and highly pressurized during or just after the operation. Hot oil could blow out of the tank and can cause injury to the operator.



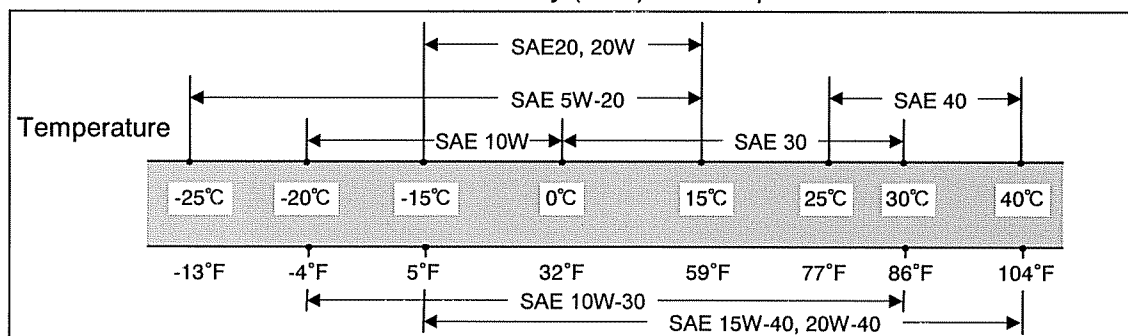
H990432

IMPORTANT

How to choose engine oil

- Be sure to use oil equivalent or superior to CD class engine oil. (Using engine oil with poor quality may shorten the life of the engine).
- Viscosity of engine oil greatly affects startability, performance, oil consumption of the engine, as well as wear of the moving parts.
- Choose appropriate oil based upon the table below according to the outside air temperature.

Relation between viscosity (SAE) and temperature

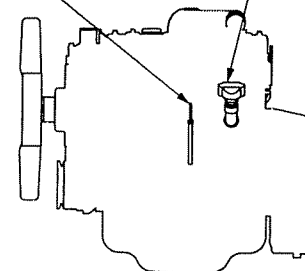


- When two or more different brands of oil are mixed, its performance can be deteriorated. Do not mix oils.
Engine oil capacity: 3.7 gal (14L)

(Procedure)

- ① Open the drain valve on the inside of the frame.
- ② When the oil is drained completely, fasten the drain valve firmly and refill new engine oil from the filler port.

Engine oil level gauge
Replenish port



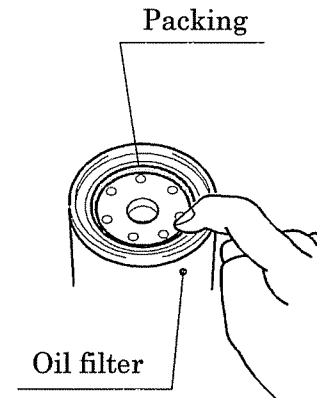
H970024

5. Periodic Inspection/Maintenance

5.5.2 Change Engine Oil Filter

(At 50 hours for the first change and at every 500 hours thereafter)

- ① When installing new oil filter, spread oil on the surface of the packing, and tighten it.
- ② After the oil filter is assembled, check if there are any oil leaks during operation.



TR0329

Part No.
Isuzu Motors genuine
894321-2190

5.5.3 Check Fan Belt Tension

(At 50 hours for the first check and at every 250 hours thereafter)

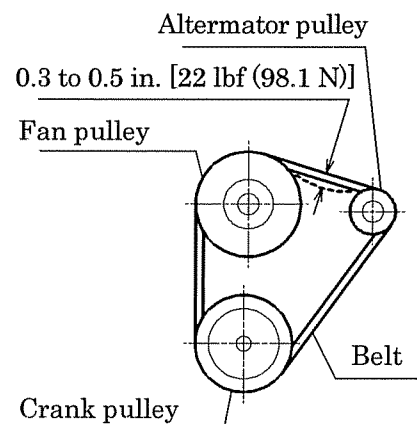
IMPORTANT

If V-Belt tension is too tight, it can cause shaft breakage or shorten the life of a bearing. If too loose, the belt may slip and will cause early breakage or damage to the belt. When changing a belt, change all the belts at the same time, instead of changing only the damaged one.

- Follow the procedure below to adjust tension of fan belt and V-belt for alternator.

(Procedure)

- ① Adjust the tension by gradually loosening the fastening bolt of the alternator.
- ② Visually check if there are any cracks or tears in the belt.
- ③ Loosen the fastening bolt of the alternator until the play of the belt reaches 0.3 to 0.5 in. (8 to 12 mm) when pushed by fingers, and adjust it.
- ④ Be careful not to leave any grease or LLC on a belt while changing it. If any such material is left, wipe it off completely.



TR0554

5. Periodic Inspection/Maintenance

5.6 Maintenance at Every 250 Hours

5.6.1 Battery Check



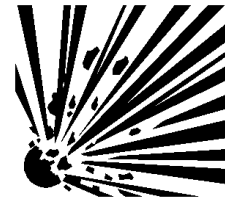
WARNING

Handling battery

- Keep flames away from battery.
- Battery may generate hydrogen gas and may explode.
- Therefore, recharging should be done in a well-ventilated place.
- Keep sparks and flames away from the battery. Do not light a match, bring a lit cigarette close to the battery.
- Do not check the battery by short-circuiting the positive and negative terminals with a conductor.
- Do not charge a frozen battery, otherwise it may explode. If the battery is frozen, warm it up until the battery temperature becomes 61 °F to 86 °F (16 °C to 30 °C).
- When you deal with a battery, please be sure to wear protection implements, such as protection glasses and a glove.
- Do not let electrolyte solution make contact with clothes or skin. It could damage your clothes and skin.
- Should electrolyte solution contact your clothes or skin, wash it away with large amounts of water immediately.
- If the battery electrolyte solution gets into your eyes, wash it away immediately with plenty of water and see a doctor at once.
- Dispose of battery according to the designated regulations.



D004



W010



TR0093



CAUTION

- Never reverse the cable connections! - When a booster-cable is used (for lack of an alternative) or when a set of cables is connected after a battery change, be sure to correctly connect the electric terminals (+) and (-). Reversely-connected cables will cause sparks or damage components.

If there seems to be a problem in starting an engine due to a discharged battery, carry out the checks by following the procedures below:

(1) Enclosed type battery:

Check the indicator on top surface of the battery.

If the indicator shows that charge is needed, recharge the battery immediately.

(2) Ordinary type battery:

Measure specific gravity of battery liquid, and if it shows below 1.24, recharge the battery immediately.

- Refer to 6.3. for method of specific gravity measurement and recharging the battery.

5. Periodic Inspection/Maintenance

5.6.2 Change Engine Oil

Follow the same procedure for engine oil change as in 5.5.1.

5.6.3 Check Fan Belt Tension

Follow the same procedure of checking the fan belt tension as in 5.5.3.

5.7 Maintenance at Initial 300 Hours

5.7.1 Change Compressor Oil

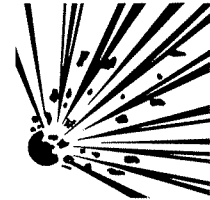
(At 300 hours for the first change and at every 500 hours thereafter)



WARNING

Refilling of compressor oil

- When you refill the separator receiver tank with compressor oil, stop the engine, and make sure that the pressure gauge indicates 0 psi (0 bar) and there is no residual pressure in it, and then gradually loosen the oil filler cap for refilling oil.
- Note residual pressure in the receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.



W010

IMPORTANT

Do not mix compressor oil

- Be sure to use our genuine oil (**AIRMAN** Compressor Oil All Seasons) for replacement of compressor oil. If it is difficult for you to obtain genuine oil, choose one from the recommended oils listed below: (Genuine oil is filled at shipment.)

Manufacturer and brand name of
recommended oils

[At a temperature of 23°F to 104°F (-5°C to
+40°C)]

Maker	Brand
HULS	ANDEROL 3032
MOBIL	RARUS SHC 1024
TEXCO	SYN-STER DE32

Oil capacity is 12.2 gal. (46 L)

- Viscosity of the oil varies depending on the temperature and other environmental conditions. For recommended oils to use in a different temperature range, call your nearest dealer.

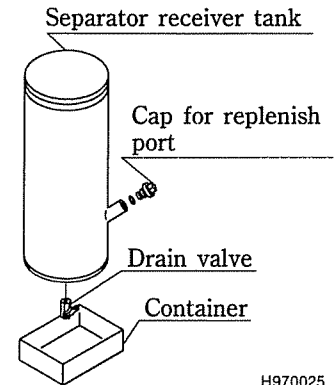
- Oil can not recover its original state by replenishing new oil into old. Be sure to change all the oil at the time specified in the manual.
- Do not mix different brand oil, or it will cause poor performance and shorten the life of the compressor oil.

Running the unit with old oil and deteriorated compressor oil will cause damage to bearings, or a serious accident like ignition in a separator receiver tank. Be sure to follow periodic inspection and maintenance.

5. Periodic Inspection/Maintenance

(Procedure)

- ① Remove the cap from the oil filler port on the separator receiver tank.
- ② Open drain valve to drain waste oil from the tank.
- ③ In case of replacement, completely drain out all the oil left in the compressor body, separator receiver tank, pipes and oil cooler. If waste oil is left in the unit, this residual oil will greatly shorten the life of the newly replenished oil.
- ④ Be sure to close drain valve after the waste oil is completely drained.
- ⑤ Fill the designated quantity of new oil into the filler port.
- ⑥ After oiling, secure the cap in its place while paying attention not to let dust get in the tank.
- ⑦ Start the engine for a short while, then replenish the oil to fill shortage. Repeat this procedure for 2 to 3 times to check if the oil level has reached its appropriate point. Be careful not to overfill the oil.



H970025

5.7.2 Change Compressor Oil Filter

(At 300 hours for the first change and at every 1,000 hours thereafter)

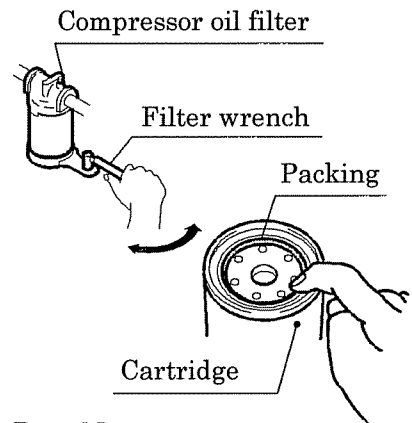
IMPORTANT

Use our genuine oil filters

- Poor quality oil filters do not trap dust sufficiently and will cause damage to the bearings in a short period of use.

(Procedure)

- ① Use filter wrench to take the cartridge off.
- ② Spread oil thinly on packing in new cartridge, and screw it into the housing.
- ③ When the packing touches the sealing surface, tighten the cartridge by turning it 2/3 revolution by using a filter wrench.
- ④ After the oil filter is completely reassembled, check for any oil leak while running the unit.



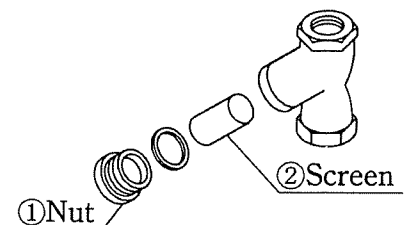
Part No.
AIRMAN genuine
37438 02700

TR0332

5.7.3 Clean compressor oil line filter

(At 300 hours for the first clean and at every 1,000 hours thereafter)

Loosen the nut ① and take out the screen ②, and then clean inside the body with diesel fuel oil.



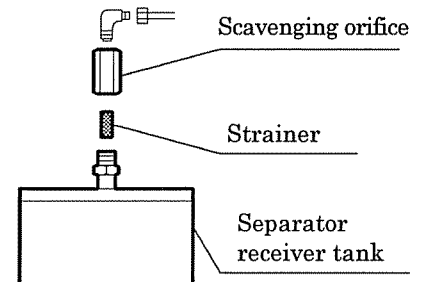
H970011

5. Periodic Inspection/Maintenance

5.8 Maintenance at Every 500 Hours

5.8.1 Clean Strainer in the Scavenging Orifice

Clean the strainer removed from the orifice with light oil and then blow dirt from it with high-pressure air.



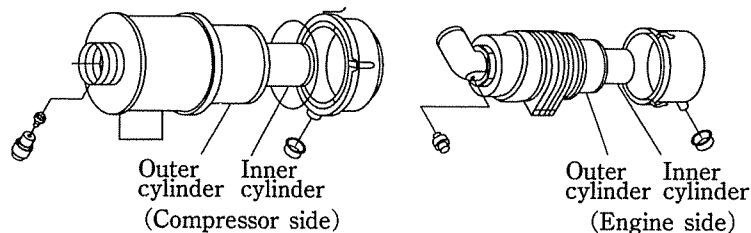
TR0333

5.8.2 Change Air Filter Element

IMPORTANT

Use our genuine elements

- Air filter is a very important component, crucial to the performance and the life of a unit. Use genuine part for replacement.
- Even before 500 hours, if the indicator for air filter shows RED, take the element out, check and clean it, or replace it with new one if it cannot be serviced.



H970012

Part No. AIRMAN genuine

	Inner cylinder	Outer cylinder
Engine side	32143 12600	32143 12700
Compressor side	32143 12400	32143 12500

5. Periodic Inspection/Maintenance

5.8.3 Change Compressor Oil

IMPORTANT

- Even before 500 hours, compressor oil may become dirty when the unit is used continuously. Change the oil as soon as it becomes dirty.

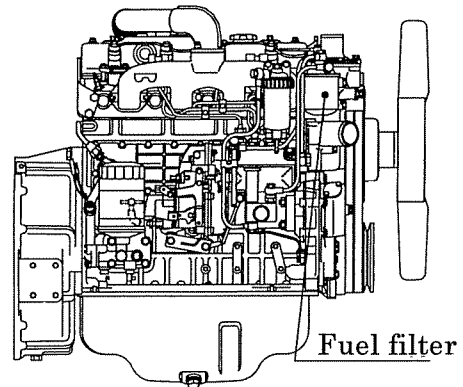
- Follow the same procedure of compressor oil change as in 5.8.1.

5.8.4 Change Fuel Filter

- ① Spread fuel thinly on packing in new fuel filter cartridge, and screw it into the housing.

When the packing touches the sealing surface, tighten the cartridge by turning it 2/3 revolution by using a filter wrench.

- ② After the fuel filter is completely reassembled, check for any oil leak while running the unit.



Part No.
Isuzu Motor genuine
894151-7451

H970013

5.8.5 Change Engine oil Filter

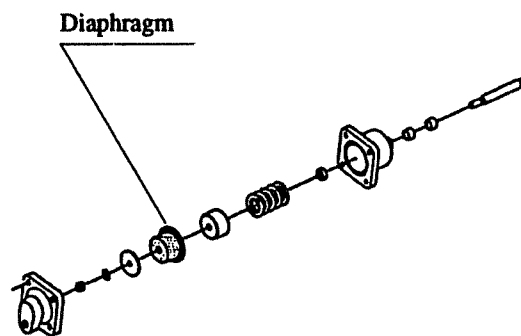
Follow the same procedure for engine oil filter change as in 5.5.2.

5. Periodic Inspection/Maintenance

5.9 Maintenance at Every 1000 Hours

5.9.1 Change Diaphragms of Speed Regulator

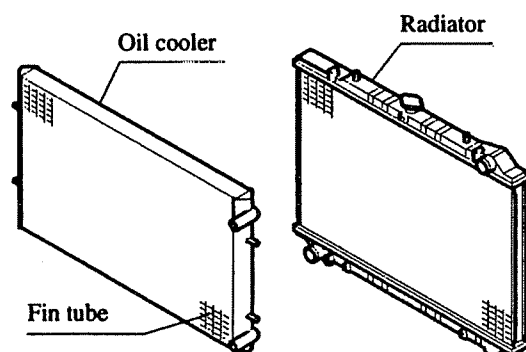
- When installing diaphragms, be sure to use the special purpose jigs.
- Before installing diaphragms, be sure to apply the Molybdenum disulfide (paste spray) to both sides of the diaphragms.
- Install it so that the outside of the diaphragm is the rubber side and inside is the cloth side.



Part No.
AIRMAN genuine
36437 01300

5.9.2 Clean outside of Radiator and Oil Cooler

- When fin tubes of a radiator and an oil cooler are clogged by dust or other foreign materials, its heat exchange rate deteriorates and this will raise coolant temperature and discharge air temperature. Cleaning of these tubes is required depending on the state of filth inside the tubes even before 1000 hours maintenance schedule.
- Do not use high pressure washer for washing to protect fin tubes from possible damage.



TR0302

5.9.3 Clean inside of Radiator

- When the inside of a radiator or water conduits of an engine are dirty with scale and rust, its cooling efficiency will be deteriorated. Clean inside such components periodically.
- Ask your nearest dealer for such inner cleaning.

5.9.4 Change Compressor Oil Filter

Follow the same procedure of compressor oil filter change at 5.7.2.

5. Periodic Inspection/Maintenance

5.9.5 Change Coolant

CAUTION

Taking off the radiator cap

- Be sure to stop the machine and allow time to cool. Then loosen the radiator cap one notch. After the coolant water is sufficiently cooled and the inner pressure is released, take the cap off. If this procedure is neglected, the inner pressure can blow off the cap. Steam jetting out of the radiator could result in causing scalding. Follow this procedure under all circumstances.



H990432

WARNING

How to handle LLC (Antifreeze)

- LLC (Antifreeze) is a toxic material.
 - When a person has drunk LLC by accident, make him vomit and see a doctor immediately.
 - When a person gets LLC in his eye, wash the eye with clean running water and make him see a doctor immediately.
 - When LLC (Antifreeze) is stored, put it in a container with an indication saying "LLC (Antifreeze) inside" and seal it up, then keep it in a place away from children.
 - Beware of flames.
 - Follow the designated regulations to dispose of LLC.

IMPORTANT

Quality of coolant and antifreeze

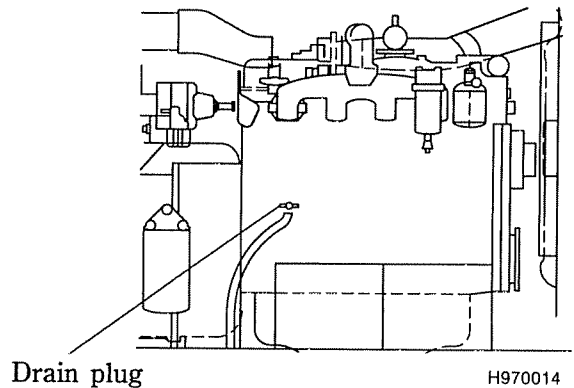
- Use soft water of good quality such as tap water for coolant.
 - The table below shows coolant capacity.
Coolant capacity 4.8gal (18L)
 - When dirty, or hard water is used, this will cause deposits inside radiator or on cylinder head, and will cause engine overheat due to poor flow of coolant.
 - When the unit is used in a cold region and possible freezing is expected, it is recommended to use LLC (Antifreeze) for the coolant.
 - Adjust mixing ratio of LLC with water according to the temperature.
 - Use LLC within the range of its mixing ratio between 35 and 60%.
 - If LLC in the water exceeds more than 60%, it may decrease its antifreezing effect.

Temperature	Mixing ratio
-4°F (-20°C) and up	35%
-40°F (-40°C) and up	55%

5. Periodic Inspection/Maintenance

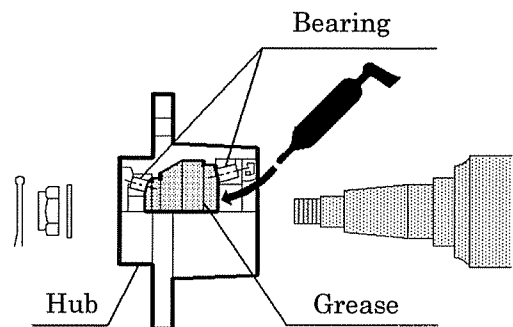
(Procedure) [Engine cooled]

- ① To drain coolant, first unfasten and take off the cap of the radiator, then remove the drain plug to drain.
- ② Do not forget to unfasten drain valve or plug of the engine.
- ③ When the condensate has been completely drained, fasten drain plug and drain valve again, and fill coolant into the radiator through its filler port.
- ④ After replacing coolant, operate the compressor with no load for 2 to 3 minutes, then stop the compressor. Check the coolant level again and replenish if necessary.



5.9.6 Greasing to the trailer hub bearing

- When you need the greasing to the trailer hub bearings, please contact your dealer.
Using grease : Chassis grease

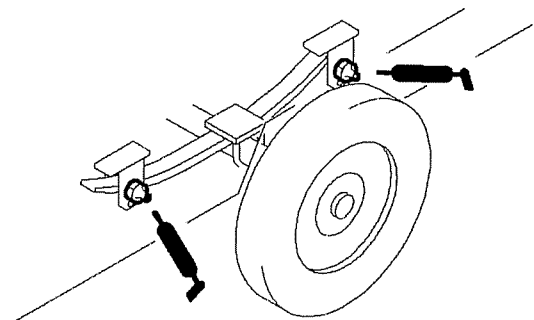


NIHON SEKIYU Chassis grease No.1

TR0260

5.9.7 Greasing to other port of the trailer

- Greasing to the grease nipple what is under part of the chassis.
Using grease : Chassis grease



NIHON SEKIYU Chassis grease No.1

TR0260B

5. Periodic Inspection/Maintenance

5.10 Maintenance at Every 2000 Hours

5.10.1 Clean inside of Fuel Tank

- Ask your nearest dealer for inner cleaning of the fuel tank.

5.10.2 Change Oil Separator

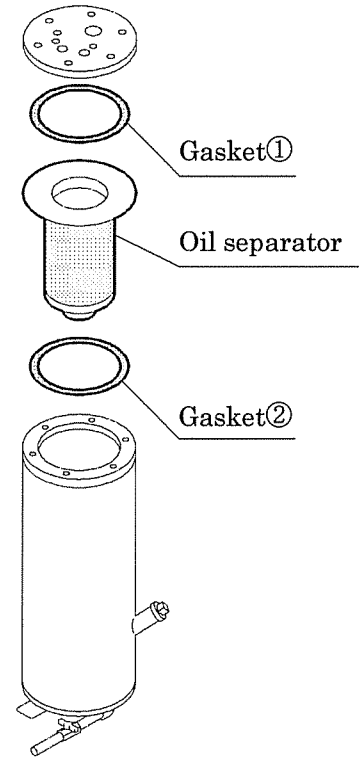
- If consumption of compressor oil is unusually high, and if some oil particles are found in the discharge air, replace the oil separator even before the 2000 hours scheduled maintenance.
- Ask your nearest dealer for the replacement of oil separator.

Part No. AIRMAN genuine

Oil separator	34220 10100
Gasket ①	34215 04000
Gasket ②	34215 04000

5.10.3 Change Nylon Tube

- Replace nylon tubes used for the oil and air pipings.
- Ask your nearest dealer for the replacement.



TR0340

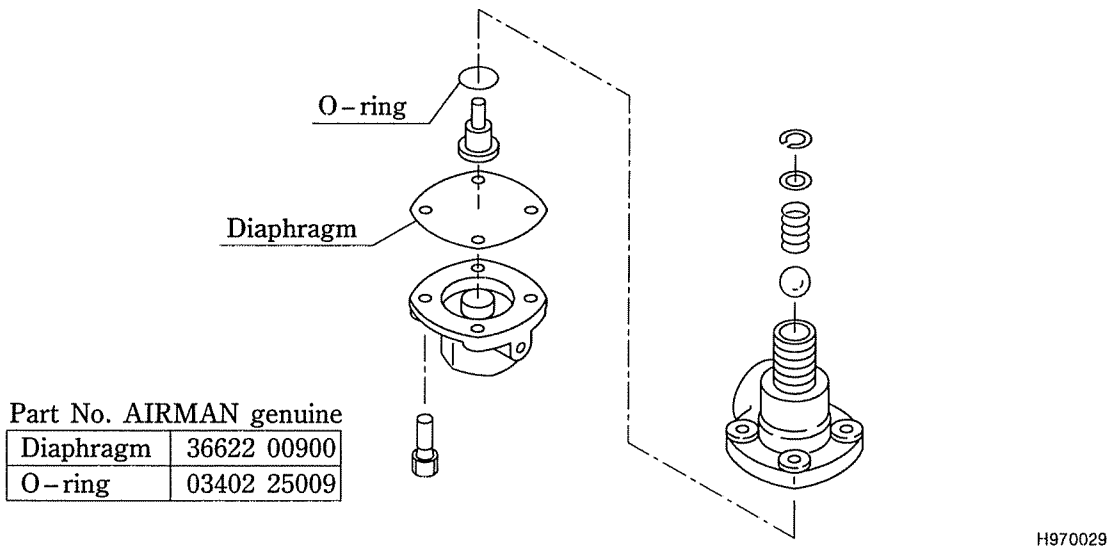
5. Periodic Inspection/Maintenance

5.11 Maintenance at Every 3000 Hours

5.11.1 Check Hose

- Check hoses used for oil piping for any crack or tear, and replace them when an abnormality is found.
- Ask your nearest dealer for replacement of hoses.

5.11.2 Change Diaphragm and O-ring of Auto Relief Valve

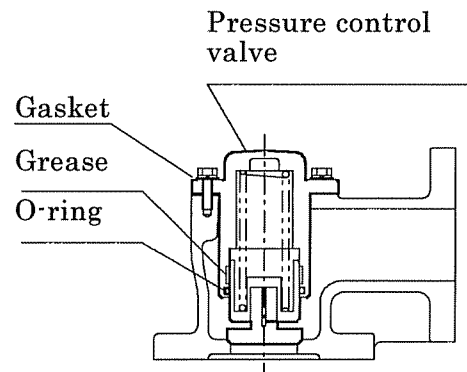


5.11.3 Change Gasket and O-ring of pressure control valve

- If discharge pressure drops below 50 psi (3.4 bar) during operation, O-ring of pressure control valve may be deteriorated and hardened. In such case, replace the O-ring, even before its scheduled replacement.

(Procedure)

- ① Disassemble the upper part of the pressure control valve and replace O-ring and gasket with a new one.
- ② Check its performance while running the unit after replacement.



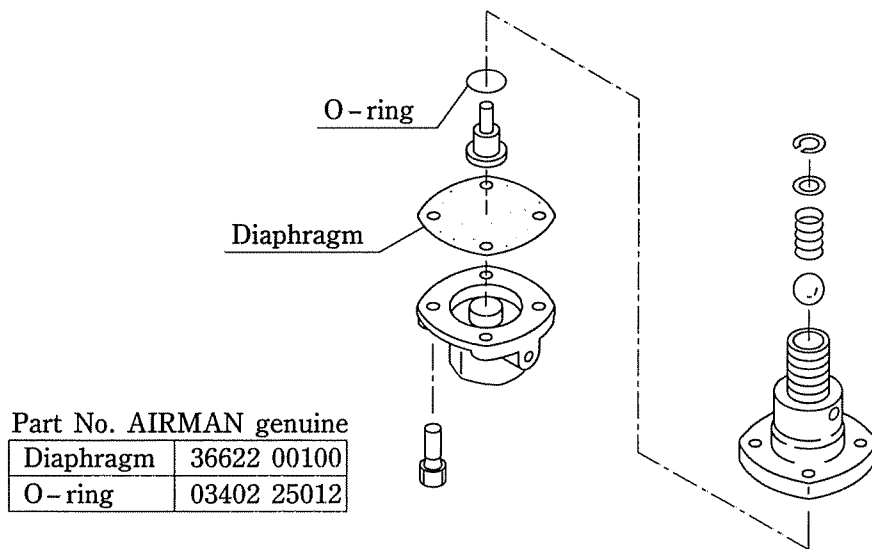
〈Caution on replacement of O-ring〉

- Spread grease thinly on O-ring and body when replacing with a new one.

Part No. AIRMAN genuine	
Gasket	03737 11202
O-ring	03402 25048

5. Periodic Inspection/Maintenance

5.11.4 Change Diaphragm and O-ring of vacuum relief valve



H970015

5.11.5 Change Radiator Hoses

- If any crack or tear is found on the radiator hose, be sure to replace it even before 3,000 hours operation.
- Ask your nearest dealer for replacement.

5. Periodic Inspection/Maintenance

5.12 Periodic Inspection List

○ means Replacement. △ means Inspection/Cleaning/Adding grease

Maintenance	Schedule	Daily	50 hrs	Every 100 hrs	Every 250 hrs	300 hrs	Every 500 hrs	Every 1,000 hrs	Every 2,000 hrs	Every 3,000 hrs	6,000 hrs	12,000 hrs	
Compressor	Check compressor oil level.	Daily inspection	△										
	Drain compressor oil.	Daily inspection	△										
	Check clogging of air filter element.	Daily inspection	△										
	Check looseness of pipe connectors, and wear and tear to pipes.	Daily inspection	△										
	Check oil, water, fuel and air leak.	Daily inspection	△										
	Check performance of gauge and indication lamps.	Daily inspection	△										
	Check safety valve performance.	Daily inspection	△										
	Change compressor oil.	First time : 300 hrs Next time : every 500 hrs					○ First time	○ After First time					
	Change compressor oil filter.	First time : 300 hrs Next time : every 1,000 hrs					○ First time		○ After First time				
	Clean strainer in the scavenging orifice.	500 hrs						△					
	Change air filter element.	500 hrs						○					
	Change diaphragms of speed regulator.	1,000 hrs						○					
	Clean outside of oil cooler.	1,000 hrs						△					
	Greasing to the trailer hub bearing.	1,000 hrs						△					
	Greasing to other part of the trailer.	1,000 hrs						△					
	Change oil separator.	2,000 hrs							○				
	Change nylon tube.	2,000 hrs							○				
	Check hose.	3,000 hrs									○		
	Change diaphragm and O-ring of auto-relief valve.	3,000 hrs									○		
	Change gasket and O-ring of pressure control valve.	3,000 hrs									○		
Change diaphragm and O-ring of vacuum relief valve.	3,000 hrs									○			
Change gum coupling.	12,000 hrs (at over haul)											○	
Check and change oil seal.	12,000 hrs (at over haul)											△	
Engine	Check clogging of air filter element.	Daily inspection	△										
	Discharge drain from fuel tank. (Including sedimentor)	Daily inspection	△										
	Check fuel level.	Daily inspection	△										
	Check engine oil level.	Daily inspection	△										
	Check coolant level.	Daily inspection	△										
	Check looseness in pipe connector terminals and tear in wiring.	Daily inspection	△										
	Change engine oil.	First time : 50 hrs Next time : every 250 hrs		○ First time		○ After First time							
	Change engine oil filter.	First time : 50 hrs Next time : every 500 hrs		○ First time				○ After First time					
	Check fan belt tension.	First time : 50 hrs Next time : every 250 hrs		△ First time		△ After First time							
	Check battery.	250 hrs				△							
	Change air-filter element.	500 hrs						○					
	Change fuel filter.	500 hrs						○					
	Change coolant and clean inside of radiator.	1,000 hrs							△·○				
	Clean outside of radiator.	1,000 hrs							△				
Clean inside of fuel tank.	2,000 hrs							△					
Change radiator hose.	3,000 hrs									○			
Change wire harness.	6,000 hrs										○		

Refer to engine operation manual for Inspection and maintenance of an engine.

6. Maintenance/Adjustment

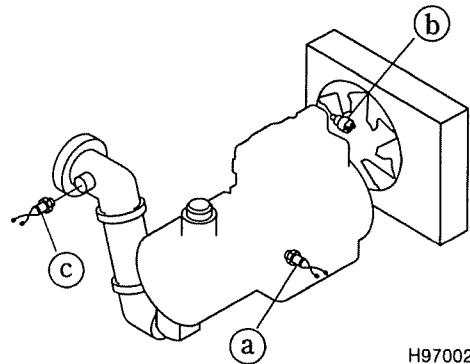
6. Maintenance/Adjustment

6.1 Automatic Shut-Down System

6.1.1 Location of sensors

(a)	Engine oil pressure switch
(b)	Coolant temperature switch
(c)	Discharge air temperature switch

- Ask your nearest dealer for checking the performance of or changing each sensors.



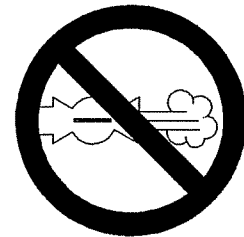
H970027

6.2 Adjustment of Regulator



Do not run the compressor with compressed air supply port open.

- When adjusting the regulator, be sure to mount a silencer at the discharge opening to eliminate sound. Wear protective materials such as earplugs to prevent hardness of hearing.



D003

- Regulator is pre-adjusted prior to delivery ex factory. Avoid unnecessary adjustment to the component's bolt and rod.
- Be sure to follow the procedure below when the component is required to be re-adjusted (such as when the unit has been disassembled).

(Procedure)

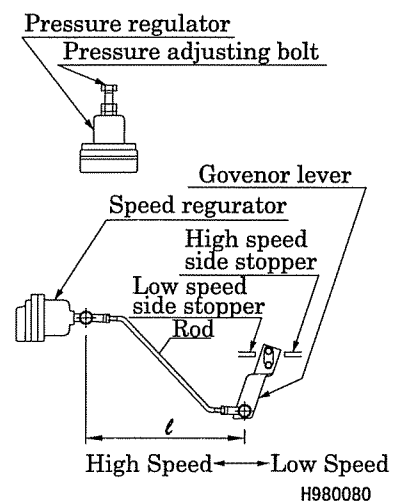
- ① Stop the compressor. Adjust the length of the rod which is connected with speed regulator, so that the engine governor may be pulled fully to the high speed side. (When the length of the rod is adjusted shorter, the engine speed becomes higher.)

If engine governor lever does not touch the high speed side stopper, it is impossible to get the specified speed at full load.

Further, it is not necessary to adjust the unload speed.

- ② Adjust the pressure regulator by turning the pressure adjusting bolt, so that the speed regulator may actuate to lower the engine speed, when the pressure exceeds 100 psi (6.9 bar). (When the bolt is screwed-in the pressure increases. When the bolt is loosened the pressure is lowered.)

If you have any questions, ask your nearest dealer.



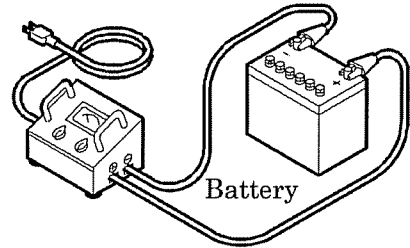
H980080

6. Maintenance/Adjustment

6.3 Maintenance of Battery

6.3.1 Battery Charging

- Disconnect the cable between battery and the unit, and charge the battery with a 12V battery charger. Do not charge two batteries at the same time.
- Be sure not to connect (+) and (-) terminals backwards.
- Be sure to read the operation manual of the battery charger to know if it is applicable, before using it.



Battery charger (12 V)

TR0272

6.3.2 How to Use Booster Cable

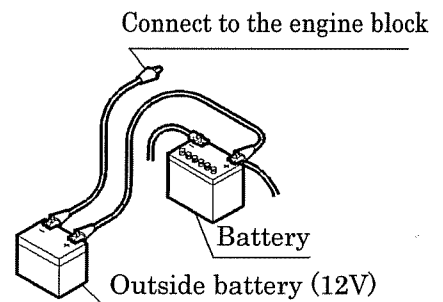


Do not connect the cable reversely

- If a booster cable has to be used or when cables are connected at battery replacement, be careful not to connect (+) and (-) terminals backwards. Such a miss-connection will cause a spark or damage each component.

(How to use a booster cable)

- ① Stop the unit.
- ② Connect (+) end of the cable to (+) terminal of the battery of the unit.
- ③ Connect the other end of the (+) cable to (+) terminal of the battery outside.
- ④ Connect (-) end of the cable to (-) terminal of the battery outside.
- ⑤ Connect the other end of the (-) cable to the engine block of the unit.
- ⑥ Start the engine.
- ⑦ Disconnect the booster cable by following the procedure in the reverse order.



TR0345

6. Maintenance/Adjustment

6.4 Troubleshooting

- Should a breakdown occur during operation, do not leave it. Investigate the cause and take appropriate measures.
- Read the manual carefully and fully understand what to do in case of trouble.
- The better you understand the construction and function of the unit, the faster you can find a problem and solution.
- This chapter describes the state, cause and countermeasures of important breakdowns in detail:

Symptom	Cause	Countermeasures
Low starter revolution speed	Battery malfunction	Battery check→ Charging, Replacement
Starter rotates but engine does not start.	<ul style="list-style-type: none"> ● Fuel filter clogging, filter clogging in Automatic Air Bleeder. ● Malfunction of fuel cut solenoid. 	<ul style="list-style-type: none"> ● Disassemble, clean or replace ● Fuse check ● Replace solenoid ● Check connector
Engine oil pressure lamp glows.	<ul style="list-style-type: none"> ● Shortage of engine oil. ● Engine oil filter clogging. ● Oil pressure switch malfunction. ● Loosened or disconnected wiring or connector. 	<ul style="list-style-type: none"> ● Replenish oil ● Change ● Change ● Check/Fasten
Discharge air pressure does not reach 100 psi (0.9 bar).	<ul style="list-style-type: none"> ● Pressure regulator adjustment. ● Start unloader valve is left at its start position. 	<ul style="list-style-type: none"> ● Re-adjustment (fasten) ● Switch it to operation.
Engine does not reach its maximum speed.	<ul style="list-style-type: none"> ● Improper length in speed regulator rod. ● Unloader orifice clogging. ● Speed regulator malfunction. ● Engine breakdown. 	<ul style="list-style-type: none"> ● Re-adjustment (elongate) ● Disassemble/Clean ● Disassemble/Inspect ● Disassemble/Replace
Revolution decreases before discharge air pressure reaches 100 psi (0.9 bar).	<ul style="list-style-type: none"> ● Speed regulator miss adjustment. ● Speed regulator's needle valve insufficiently performing. ● Unloader orifice clogging. 	<ul style="list-style-type: none"> ● Re-adjustment (fasten) ● Disassemble/Inspect ● Disassemble/Inspect
Engine does not reach minimum revolution at no load.	<ul style="list-style-type: none"> ● Improper length in speed regulator rod. ● Speed regulator malfunction. 	<ul style="list-style-type: none"> ● Re-adjustment (shorten) ● Disassemble/Inspect

6. Maintenance/Adjustment

Symptom	Cause	Countermeasures
Safety valve relieves.	<ul style="list-style-type: none"> ● Pressure regulator incorrect adjustment. ● Speed regulator diaphragm damaged. ● Unloader diaphragm damaged. ● Safety valve malfunction. 	<ul style="list-style-type: none"> ● Re-adjust ● Change ● Change ● Change
Coolant temp. lamp glows.	<ul style="list-style-type: none"> ● Radiator clogged. ● Thermostat malfunction. ● Coolant temp. switch malfunction. ● Low coolant level. ● Fan belt slipping. ● Loosened or disconnected wiring or connector. 	<ul style="list-style-type: none"> ● Clean ● Change ● Change ● Replenish ● Adjust tension ● Check/Fasten
Discharge air temp. lamp glows.	<ul style="list-style-type: none"> ● Oil cooler clogged. ● Oil filter clogged. ● Discharged air temp. switch malfunction. ● Loosened or disconnected wiring or connector. ● Fan belt slipping. ● Shortage of compressor oil. 	<ul style="list-style-type: none"> ● Clean ● Change ● Disassemble/Check ● Check/Fasten ● Adjust tension ● Replenish oil
Oil mixes in Air (Poor oil separation)	<ul style="list-style-type: none"> ● Recovery orifice strainer clogged. ● Too much oil in tank. ● Discharge pressure set too low. ● Oil separator deteriorated. 	<ul style="list-style-type: none"> ● Disassemble/Clean ● Discharge until oil reaches its proper level. ● Check pressure control valve's O-ring. ● Disassemble/Replace
Insufficient air.	<ul style="list-style-type: none"> ● Air filter element clogged. ● Unloader valve cannot fully open. ● Engine does not reach rated speed. 	<ul style="list-style-type: none"> ● Clean element replace ● Disassemble/Check ● See 6.2.

- Please ask your dealer if you find your repairing difficult.
- Please refer to the operation manual of the engine for trouble concerning the engine.

7. Storage of the Unit

7. Storage of the Unit

7.1 Preparation for long-term storage

- When the unit is to be kept unused in storage for a long time, be sure to follow the preparations below and put the unit in a dry and less dusty place:
 - (1) Put the unit in a temporary cabin if it is stored outside. Avoid leaving the unit outside with a cover directly on the paint for a long time, or this will cause rust to the unit.
 - (2) Run the unit at least once every week to circulate oil to each part of the unit.
 - (3) When the unit is stored in a place where it is difficult to run it once a week, be sure to follow procedures below:

(Procedure)

- 1 Drain out residual lubricant from the engine oil pan. Pour new lubricant in the engine to clean its inside. After running it for a while, drain it again.
- 2 Spread lubricant on moving parts like speed regulator and rod end.
- 3 Completely charge the battery and disconnect grounding wire. Remove the battery from the unit, if possible, and store it in a dry place. (Charge the battery at least once every week.)
- 4 Drain coolant and fuel from the unit.
- 5 Seal the engine, air-intake port and other openings like the muffler with a vinyl sheet, packing tape, etc., to prevent moisture and dust from getting in the unit.
- 6 Be sure to repair any breakdowns and maintain the unit so that it will be ready for the next operation.
Be sure to replenish the coolant, engine oil and fuel and run the unit at least once every 3 months, even in this case.

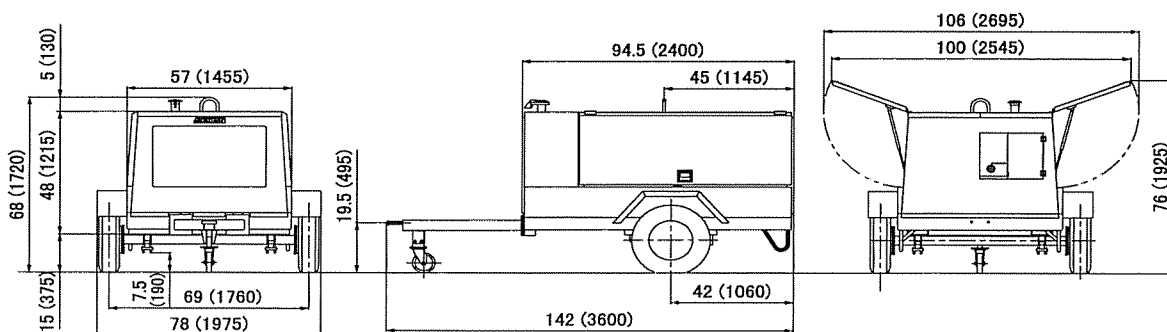
8. Specifications

8. Specifications

Length	in.(mm)	142(3,600)	Compressor	Type		Rotary twin-screw, single-stage oil-cooled	
Length (draw-bar excluded)	in.(mm)	94.5(2,400)		Free air delivery	cfm(m ³ /min)	375 (10.6)	
Width	in.(mm)	78(1,975)		Working pressure	psi(bar)	100 (6.9)	
Height	in.(mm)	68(1,720)		Maximum pressure	psi(bar)	150 (10.3)	
Dry weight	lb(kg)	4,035(1,830)		Lubricating system		Forced Lubrication by compressed pressure.	
Weight in operating condition	lb(kg)	4,475(2,030)		Driving system		Direct driving with gear coupling.	
Fuel tank capacity	gal.(L)	43.5(165)		Receiver tank capacity	cu in.(m ³)	6,102 (0.100)	
				Lubrication oil capacity	gal.(L)	11.9 (45)	
				Engine	Model		ISUZU A-4BGI-T
					Type		Water-cooled four-cycle direct-injection with turbo charger.
			Number of cylinders, bore × stroke		in. (mm)	4-4.1 × 4.9 (4-105 × 125)	
			Total displacement		cu in.(L)	264 (4.329)	
			Rated output		hp/rpm (kW/min ⁻¹)	98.2/2,300 (73.2/2,300)	
			Lubricating oil capacity		gal.(L)	3.7 (14)	
			Coolant capacity (including radiator)		gal.(L)	4.8 (18)	
			Battery		80D26RMF × 2		

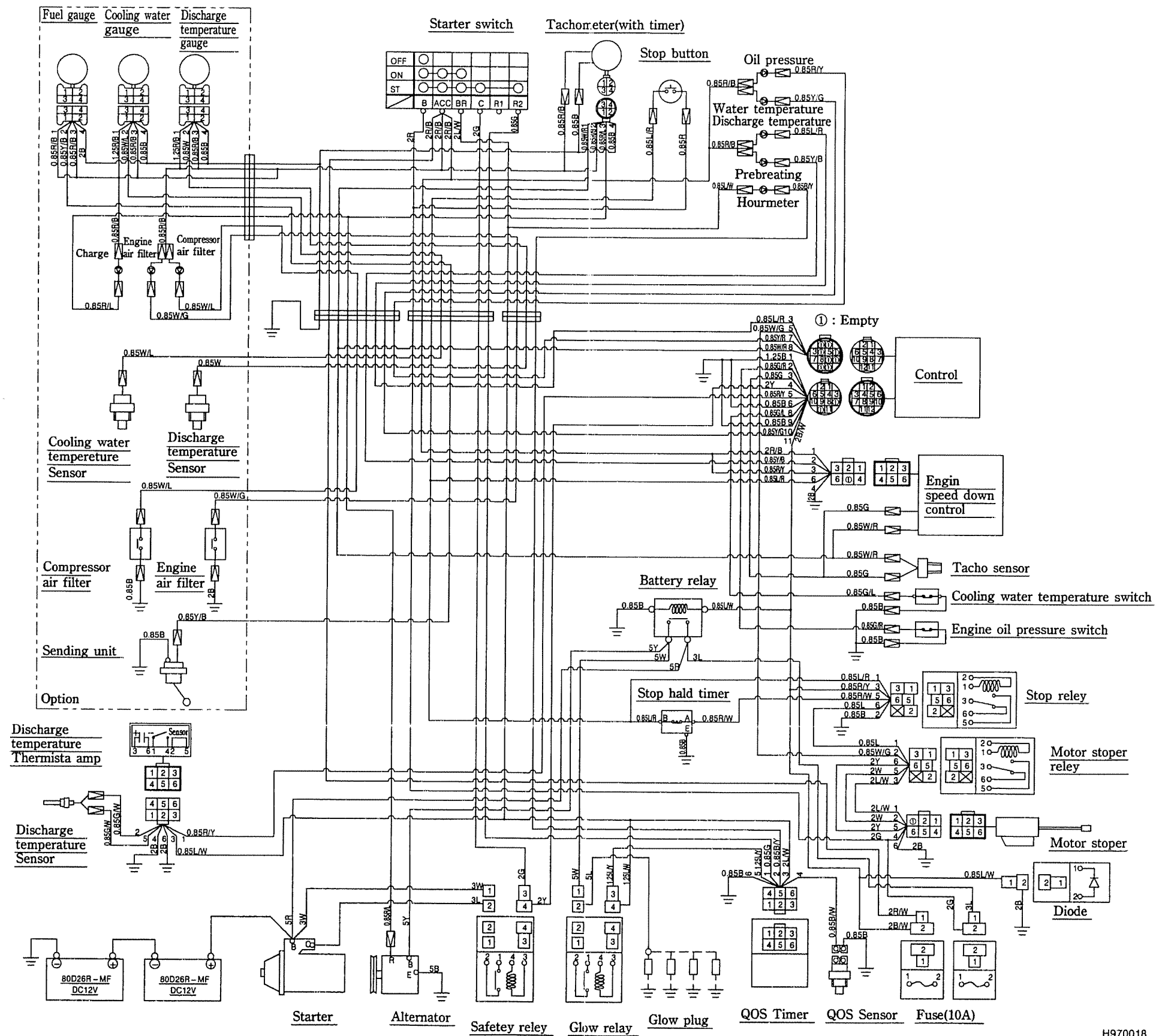
Outline drawing

Unit : in.(mm)



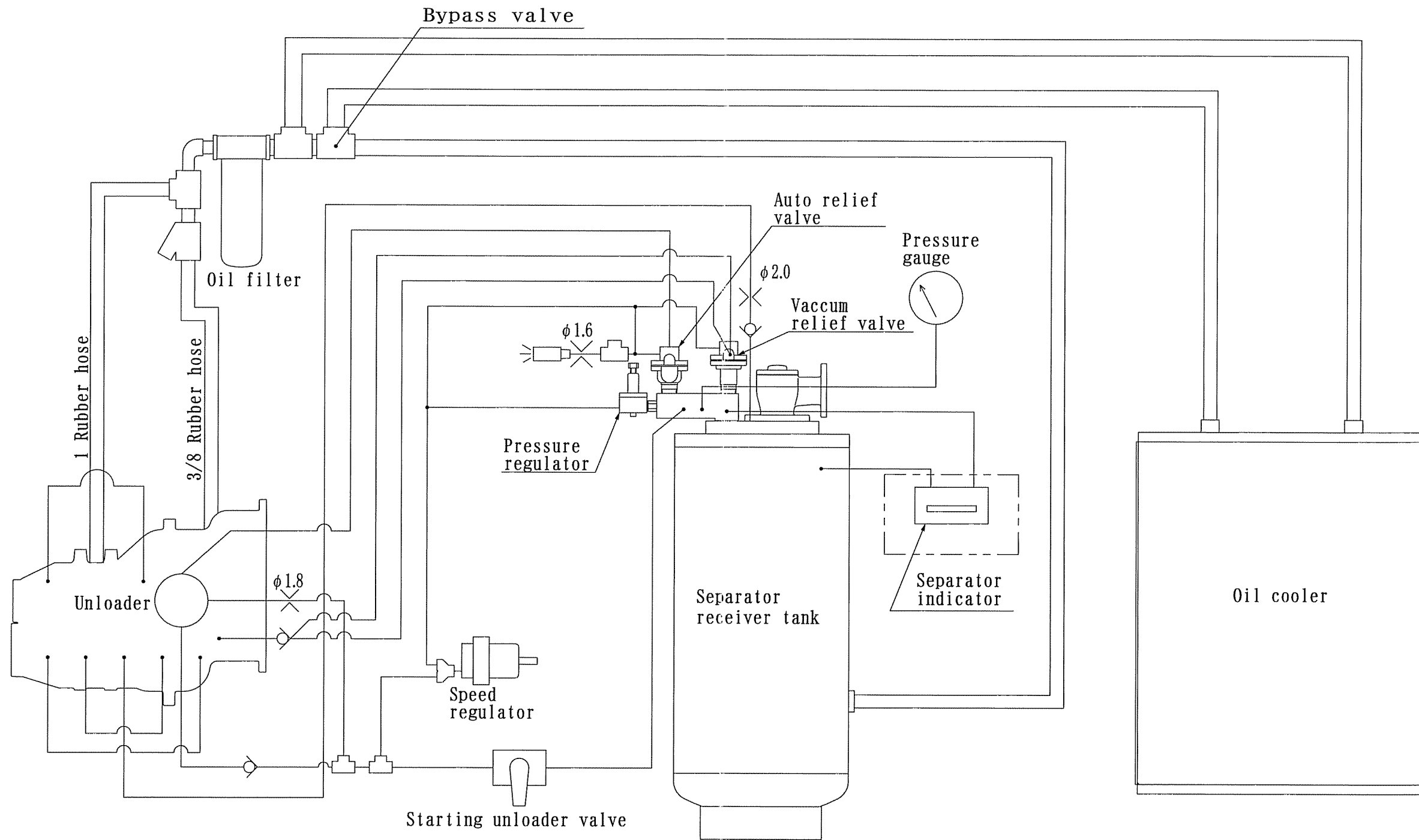
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9. Wiring Diagram



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10. Piping Diagram



H980081

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