



# INSTRUCTION MANUAL

PORTABLE  
SCREW COMPRESSOR

**FAC-28B**

**FAC-28BC**

Please be sure to read this manual  
before using this machine.



# Preface / Table of Contents

Thank you for having selected our "FSCURTIS" product.

- ◆ Keep this manual at hand to refer to it always when necessary.
- ◆ When this manual is missing or damaged, order it from our office nearby or distributor.  
Make sure that the manual is included with the machine when it is handed over to another user.
- ◆ The contents of this manual sometimes may be different from this machine because it has been improved. When you have anything unclear or you want to advise us, contact our office nearby or distributor.


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# Safety

This section explains safety cautions for safety work for operation, inspection, maintenance, installation, movement and transportation. Read these safety requirements carefully and fully understand the contents before starting the machine.

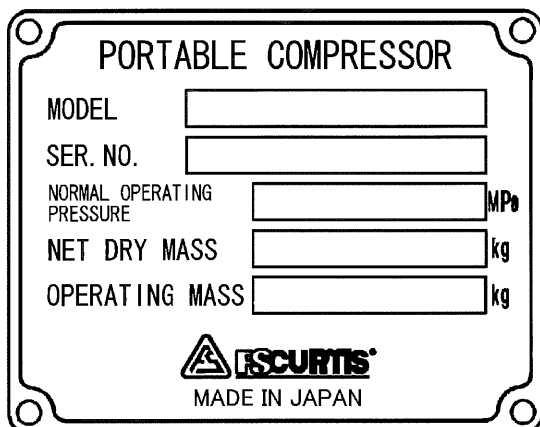
For your better understanding of the precautions in this manual and on this machine, safety precautions are classified into "DANGER", "WARNING" and "CAUTION" message with a warning symbol  marked, according to the degree of hazards.

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

 <b>DANGER</b>	DANGER indicates an imminently hazardous situation which, if not avoided by any user, will result in death or serious injury. This signal word is to be limited to the most extreme situations.
 <b>WARNING</b>	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to a user.
 <b>CAUTION</b>	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.
<b>IMPORTANT</b>	IMPORTANT indicates important caution messages for the performance or durability of the machine, which has no concern to injury or accident of or to a human body.

This 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.

- 
- ◆ Please tell us a MODEL /SER.No. on the plate of the machine when you inquiry.  
A plate stamped with the model and serial number is attached to side of the machine.



A090188

Each illustrated figure (Fig.) has a number (for instance, A090188) at the right bottom. This number is not a part number, but it is used only for our reference number.

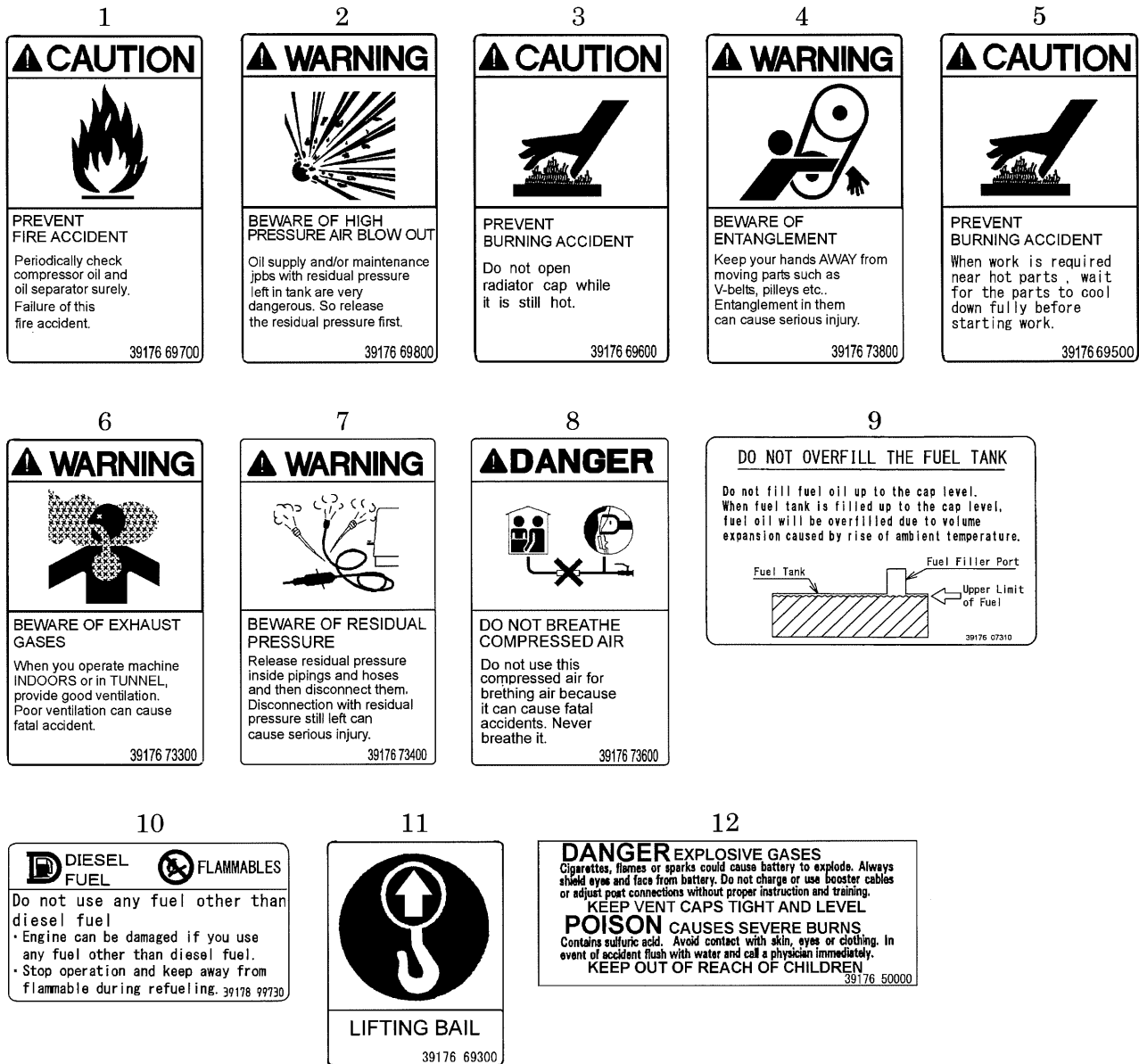


# Safety

## [Safety Warning Labels]

Following labels are attached to the machine.

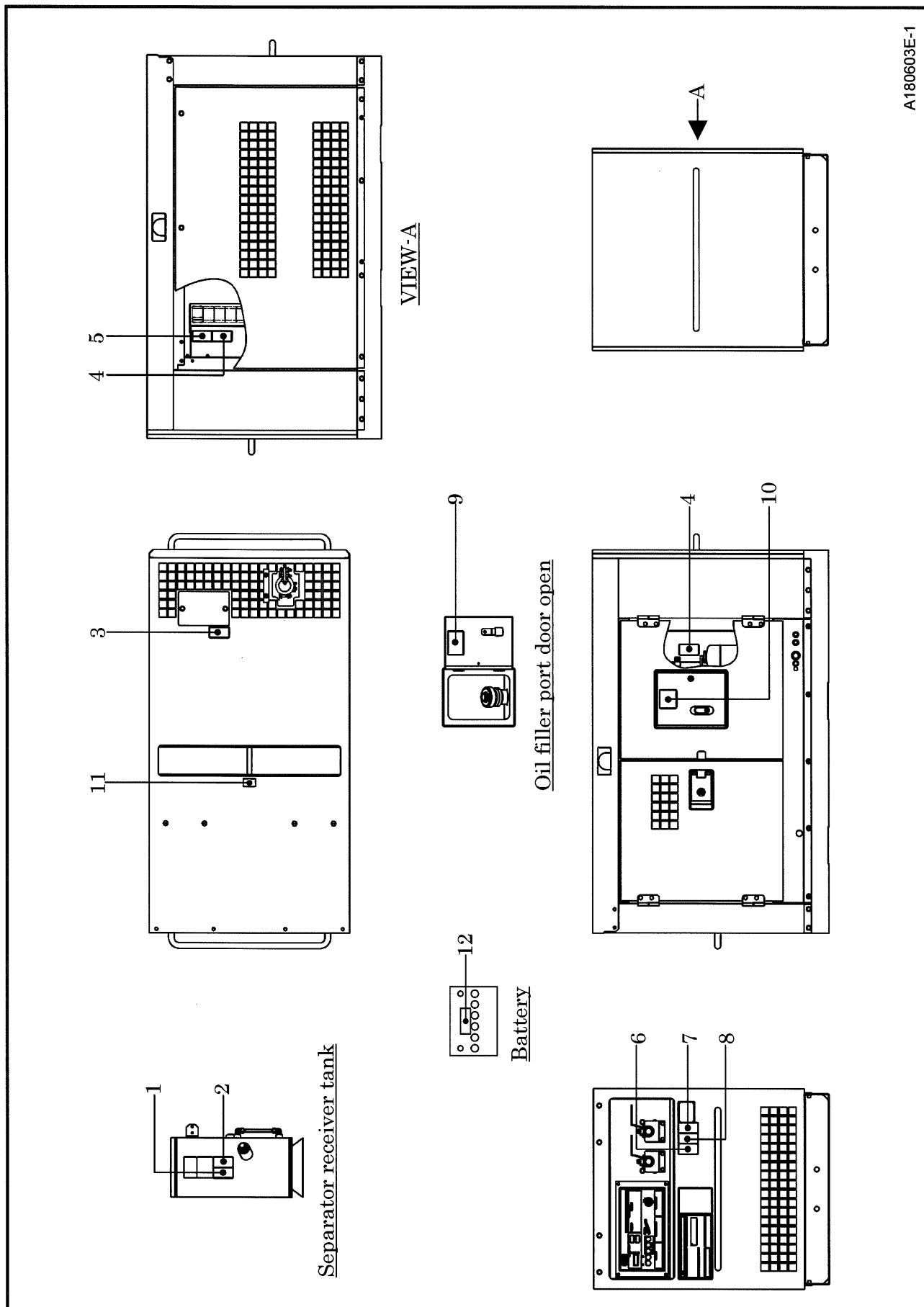
When they are found damaged or peeled off, order them from our office nearby or distributor and attach them again.





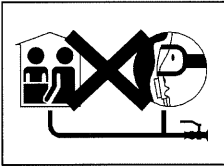
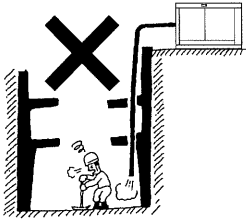
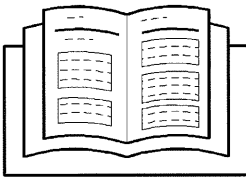
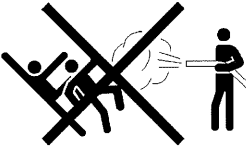

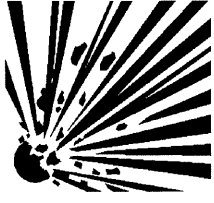
# Safety

- The pasting position of safety warning labels is as follows.






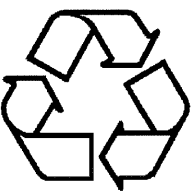


# Safety

<p><b>DANGER</b></p>	<div data-bbox="352 297 662 524">  <p>TR0201-1</p> </div> <div data-bbox="352 551 662 831">  <p>A080001</p> </div>	<ul style="list-style-type: none"> <li>● Compressed air from this machine contains poisonous materials. Absorption of the compressed air can cause serious injury. Never provide this compressed air for human respiration.</li> <li>● This machine is not designed to be used for working chambers pressurized by compressed air such as respiratory air provided to persons working inside wells and tunnels such as pneumatic engineering method and pneumatic caisson method. Should this machine stop operation due to trouble, it can cause death and serious injury to the working persons. Refrain from using the compressed air for such pneumatic engineering method or pneumatic caisson method.</li> </ul>
<p><b>WARNING</b></p>	<div data-bbox="352 891 662 1137">  <p>TR0086</p> </div>	<ul style="list-style-type: none"> <li>● Read each instruction plate which is displayed in the manual or on the machine carefully, understand its content and follow the indications thereof.</li> <li>● Do not modify the machine without prior approval. The safety may be compromised, functions may be deteriorated, or the machine life may be shortened.</li> <li>● Never use the machine for the purpose of compression of gases other than air, or as a vacuum pump. Otherwise, serious accidents may occur.</li> </ul>
	<div data-bbox="352 1261 662 1473">  <p>TR0092</p> </div>	<ul style="list-style-type: none"> <li>● 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.</li> <li>● As compressed air contains toxic gas etc., compressed air should not be used to be blown or sprayed against food etc.</li> </ul>
	<div data-bbox="352 1541 662 1776">  <p>TR0304</p> </div>	<ul style="list-style-type: none"> <li>● Keep hands off from the rotating portion or belts while running. It could cause serious injuries if hands should be caught in.</li> </ul>
	<div data-bbox="352 1827 662 2074">  <p>W011</p> </div>	<ul style="list-style-type: none"> <li>● When you refill the separator receiver tank with compressor oil, stop the engine, and make sure that the pressure gauge indicates 0MPa and there is no residual pressure in it, and then gradually loosen the oil filler cap for refilling oil.</li> <li>● Note residual pressure in the separator receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.</li> </ul>



# Safety

<p><b>WARNING</b></p>	 <p>M003</p>	<ul style="list-style-type: none"> <li>● When cleaning dust accumulated in such devices as the air-filter, by blowing compressed air, wear safety glasses, etc. to protect your eyes.</li> </ul>
<p><b>CAUTION</b></p>	 <p>H990432</p>	<ul style="list-style-type: none"> <li>● Be sure to stop the engine, and let the coolant water sufficiently cool down before draining it.</li> <li>● If the drain valve is opened before the coolant water is cooled enough, hot water could jet out, and it could cause scalding.</li> </ul>
	 <p>W004-1</p>	<ul style="list-style-type: none"> <li>● Be sure to perform the periodic checks of compressor oil and oil separator.</li> <li>● Neglecting checks could cause overheat of the oil, resulting in a fire.</li> </ul>
	 <p>A100285</p>	<ul style="list-style-type: none"> <li>● Waste liquid from the machine contains harmful material. Do not discharge it onto the ground or into the river, lake or sea. Such material will contaminate the environment.</li> <li>● Be sure to use a container to hold the waste liquid from the machine.</li> <li>● Be sure to follow the designated regulations when disposing of oil, fuel, coolant (antifreeze), filter, battery or other harmful materials.</li> </ul>
	<ul style="list-style-type: none"> <li>● The engine of this machine and electrical parts many electronic devices have been installed. If you perform welding work, remove the connector of the electronic control equipment. Application of excessive current to electronic controls can cause equipment malfunction.</li> </ul>	

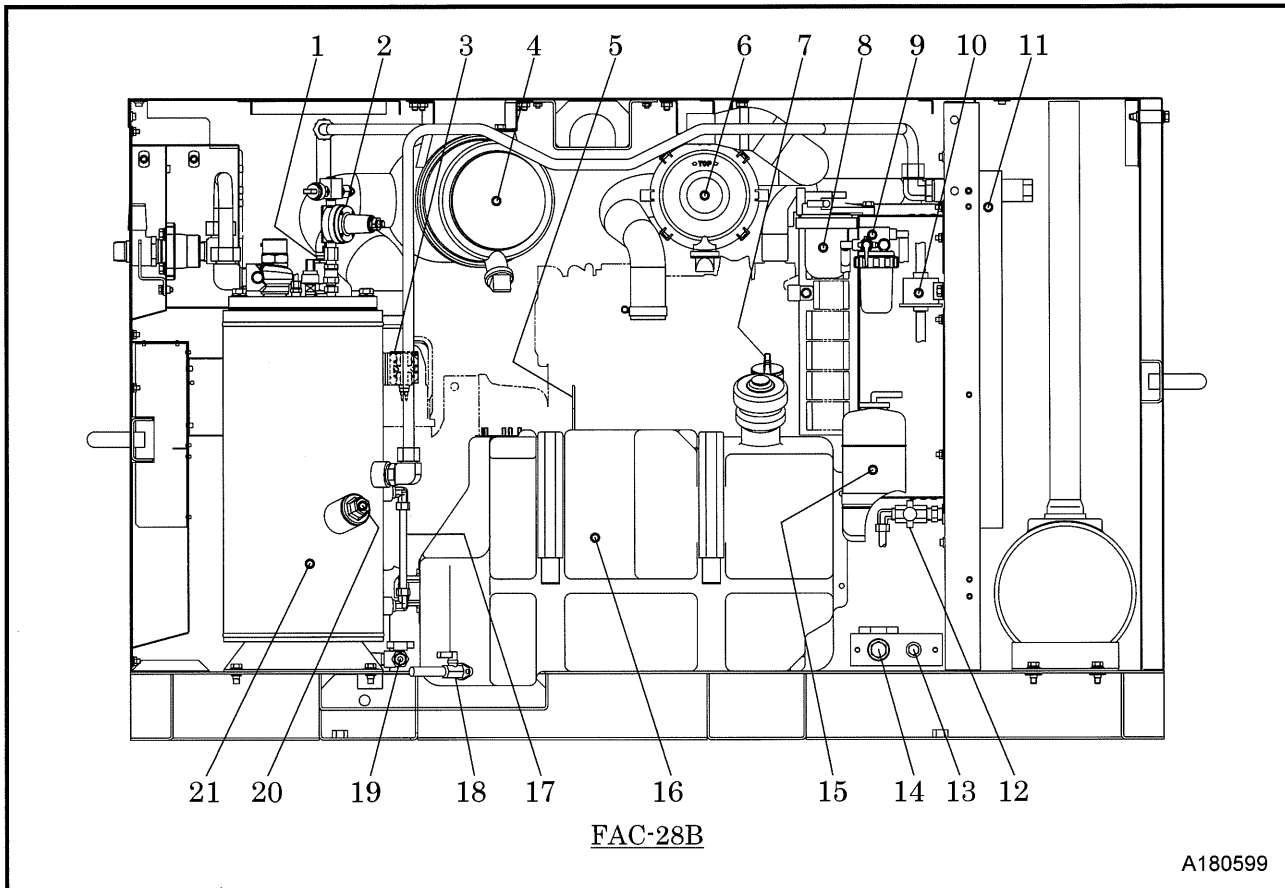


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# 1.Part Names

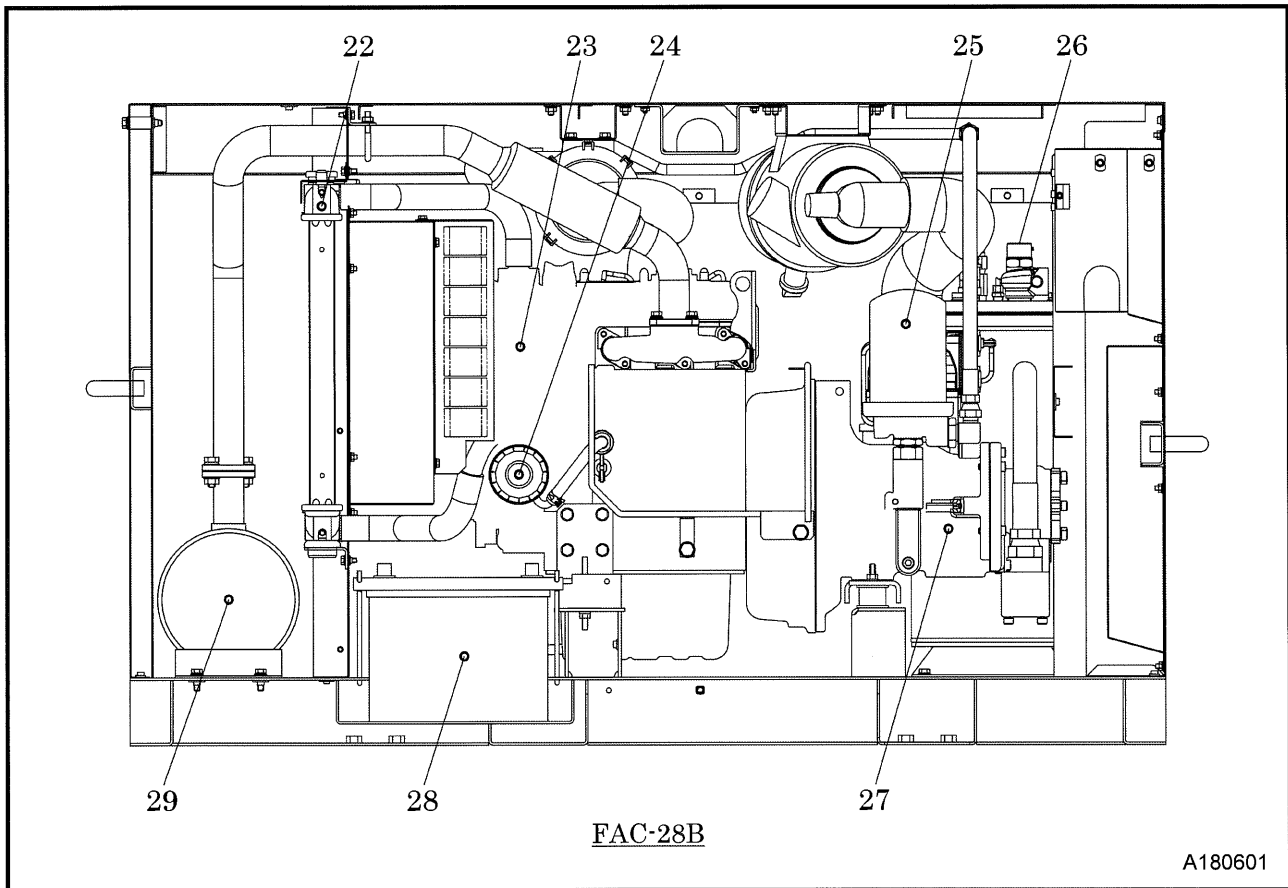
## 1.1 Internal Components and Part Names



No.	Description	Function
1	Safety valve	For releasing compressed air to the atmosphere when the pressure rises higher than the rated pressure in the system.
2	Pressure regulator	For regulating the compressor pressure in the system.
3	Solenoid valve for starting unload	For reducing loads during start-up.
4	Air filter (For compressor air-end)	Filtering device for filtering dust floating in intake air.
5	Engine oil level gauge	For checking quantity and impurity of engine oil.
6	Air filter (For engine)	Filtering device for filtering dust floating in intake air.
7	Engine oil filler port	For supplying and replenishing engine oil to engine.
8	Fuel filter	For filtering foreign matter and dust mixed in fuel.
9	Sedimenter	For separating coolant from fuel in the system.
10	Fuel air-bleeding electromagnetic pump	For automatically bleeding air from fuel pipes in the system.
11	Oil cooler	For cooling compressor oil in the system.
12	Oil cooler drain valve	For draining compressor oil from oil cooler and oil line.
13	Radiator drain plug	For draining engine coolant.
14	Engine oil drain plug	For draining engine oil.
15	Reserve tank	For checking coolant level and supplying it.
16	Fuel tank	For storing fuel.
17	Compressor oil level gauge	For checking quantity and impurity of compressor oil.
18	Fuel tank drain valve	For draining condensates from fuel tank.
19	Separator receiver tank drain valve	For draining condensed water from separator receiver tank.
20	Compressor oil filler port	For supplying or adding compressor oil.
21	Separator receiver tank	For separating air and oil from compressed air in the system.



# 1.Part Names



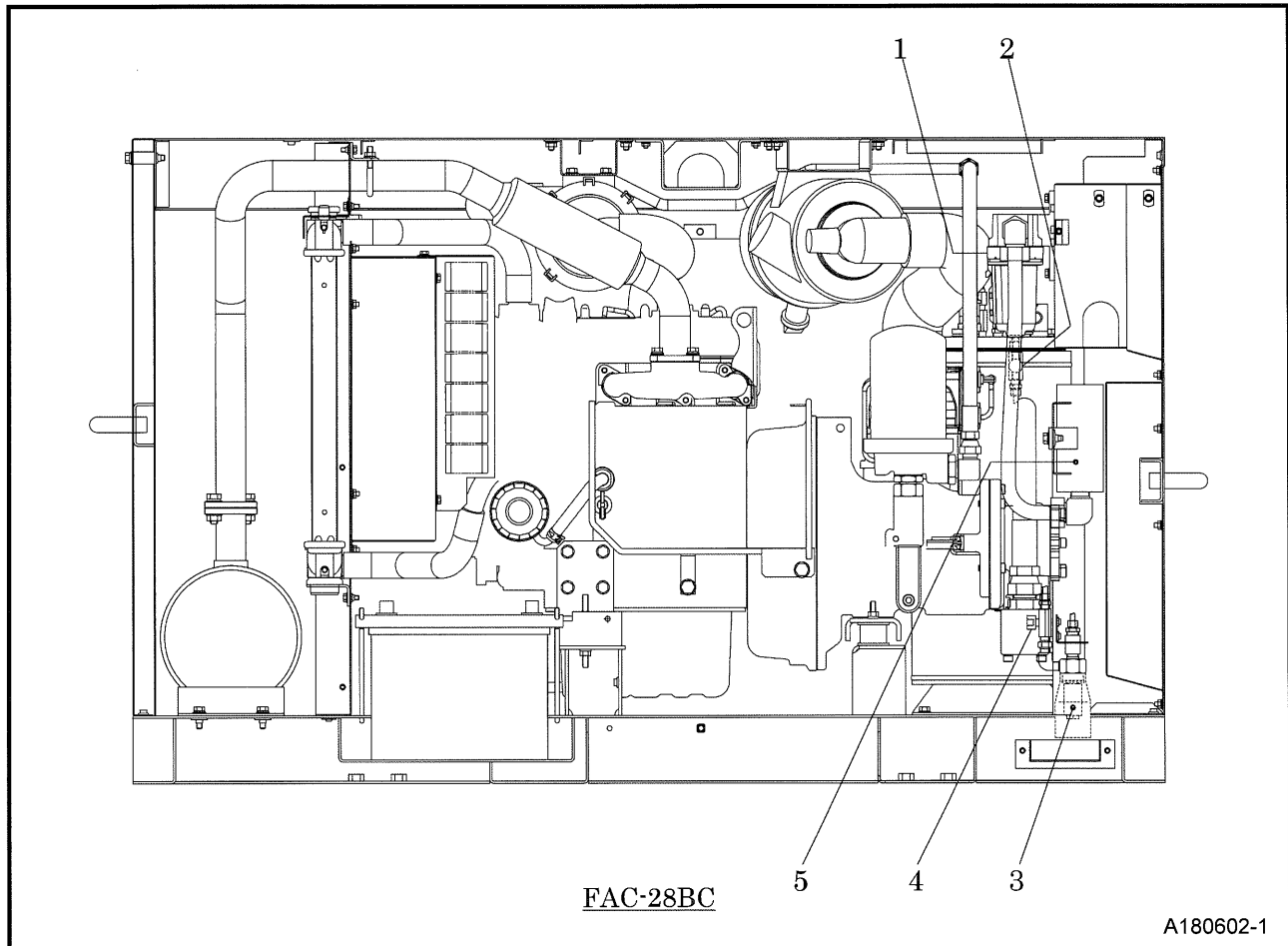
No.	Description	Function
22	Radiator	For cooling the coolant for engine in the system.
23	Engine	For driving the compressor air-end in the system.
24	Engine oil filter	For filtering engine oil in the system.
25	Compressor oil filter	For filtering compressor oil in the system.
26	Pressure control valve	For keeping the pressure in receiver tank constantly higher than a certain level in the system.
27	Compressor air-end	For compressing air in the system.
28	Battery	For electrically starting engine.
29	Exhaust muffler	For silencing the noise caused before discharging the air.



# 1.Part Names

## [After cooler type]

Only the special devices additionally or optionally attached to the standard unit are shown in the following figure. For the details of the other standard devices, refer to page 1-1, 1-2.



No.	Description	Function
1	Drain separator	For separating water from compressed air cooled in after-cooler in the system.
2	Drain valve	Valve for discharging water separately by the drain separator (normal open)
3	Drain port of after-cooler	For draining condensed water filtered by drain separator
4	Drain warming valve	For preventing air pipe outlet port from getting frozen
5	After cooler	For cooling compressed air in the system.

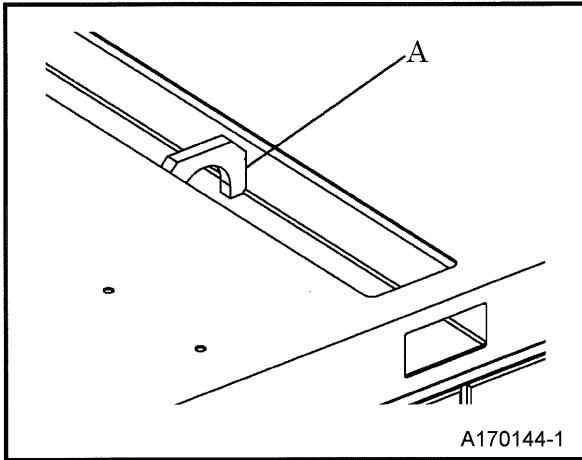


## 2.Installation

### 2.1 Transportation

When loading and unloading the machine, be sure to use the lifting bail provided on the center of the machine top.

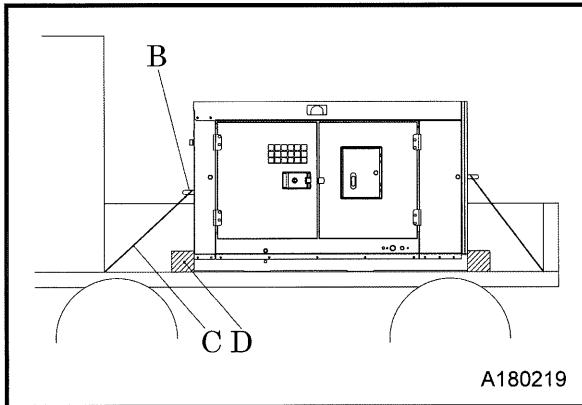
#### 2.1.1 Lifting up



##### <Procedure>

1. Before lifting the machine up, make sure to check the lifting bail [A] for any crack or loosened bolts.
2. Connect the hook of the crane or shackle with lifting bail eye fitted at the top center of the machine, and make sure that there is no person standing around the machine. Then perform the hoisting operation.
3. Select a truck or a crane with a capacity sufficient for the size and weight of the machine by referring to the values shown in Chapter 7 "Specifications" of the manual.
4. Any crane operations must be performed by a qualified crane operator.

#### 2.1.2 Mounting the machine on the truck bed



- When moving the machine from working site, load it to truck, and fix it by the rope [C] with using the handles [B] on front/back side of bonnet, and be sure to place the block [D].

### Transportation



- Never get under the machine which is lifted up, because it is very dangerous.
- Never lift the machine which is still in operation, or it could cause critical damage to each component or lead to serious accident.



## 2.Installation

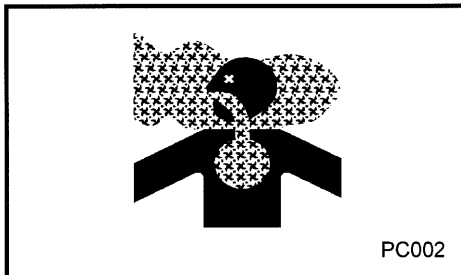
### 2.2 Installation conditions

The machine has to be parked horizontally on a level place.

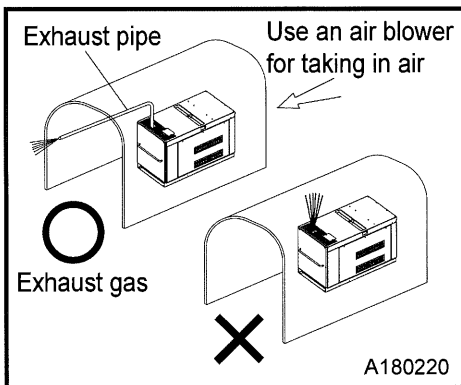
- The machine has to be parked right-angled on a slope.
  - The machine has to be parked on a slope within an angle of 5°
  - The machine should be operated in following conditions:
    - **Ambient temperature**----- **-15°C to +35°C**
    - **Humidity**----- **Lesss than 80%**
    - **Altitude**----- **Lower than1,500m above sea level**
- ※ If you use the machine not in the conditions stated above, it may causes serious breakdown.

- The machine has to be installed in the environment where fresh air is always available, temperature is low and ambient air is dry as much as possible.
- If more than two machines are placed parallel in operation, keep enough distance so that exhaust air from one machine does not affect the other one.
- Also, a machine has to be installed in the environment where fresh air is always available.
- Keep enough space around the machine for inspection and maintenance access.

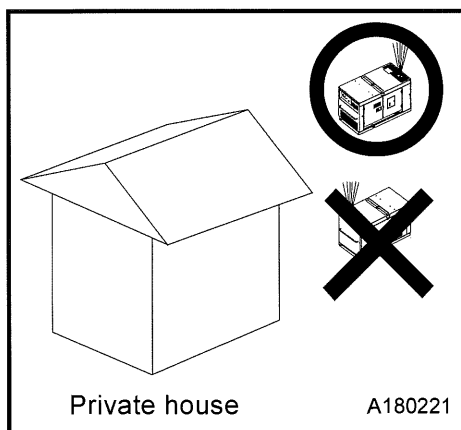
**WARNING**



- Exhaust gas from the engine is poisonous. It could cause death or serious injury if inhaled. Avoid using the machine in an insufficiently ventilated building or tunnel.
- Do not position the exhaust gas outlet in direction of a person or a house.



- When installing the machine in a tunnel or the like, ensure a supply of fresh air and provide adequate ventilation.
- Be sure to place the exhaust pipe in an outdoor location, so that no exhaust gas will be leaked from any pipe seam.

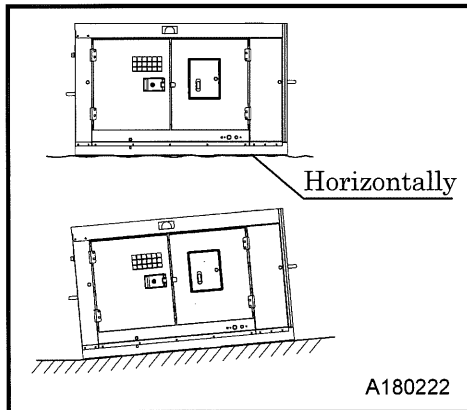


- Do not position the exhaust gas outlet in the direction of a house.
- Because the exhaust gas from the engine is poisonous, avoid positioning it in the direction of passers-by.

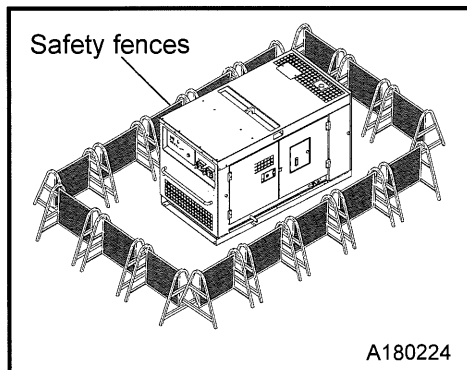
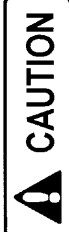


## 2.Installation

### Installation notes



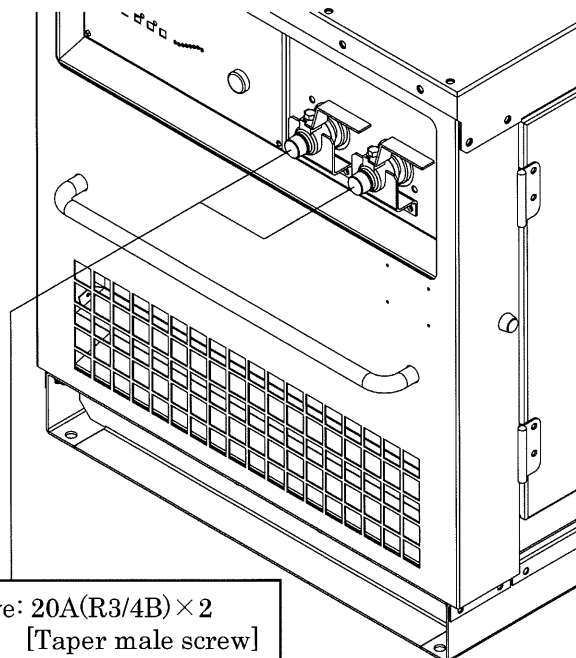
- The machine should be installed within 5° degree inclination.
- If installation site is not flat, put square bar under the machine in order to install it horizontally.
- When installing the machine in a sandy place, make sure that exhaust from the generator or radiator does not blow the sand up in the air, or into the machine.



### Placing safety fence in position

- Be sure to place the safety fence around the machine in order to prevent other people than those involved in construction work from entering the construction site or from accessing the machine

### 2.2.1 Service valve



Bore of service valve: 20A(R3/4B) × 2  
[Taper male screw]

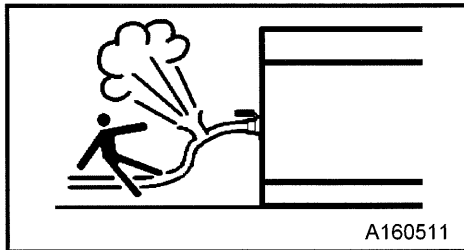
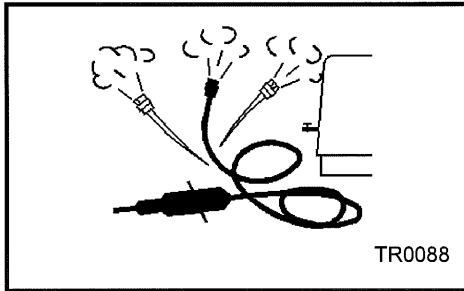
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## 2.Installation

### ***Cautions of hose attachment and removal***

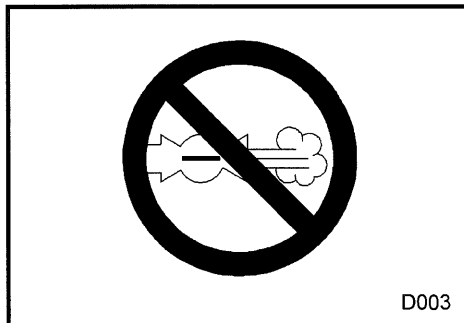
**WARNING**



- Piping or the hose from this machine service valve should use what can be borne enough for the safety valve setting 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.

### ***Operation with discharge port (compressed air supply port) opened is prohibited***

**CAUTION**



- 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.

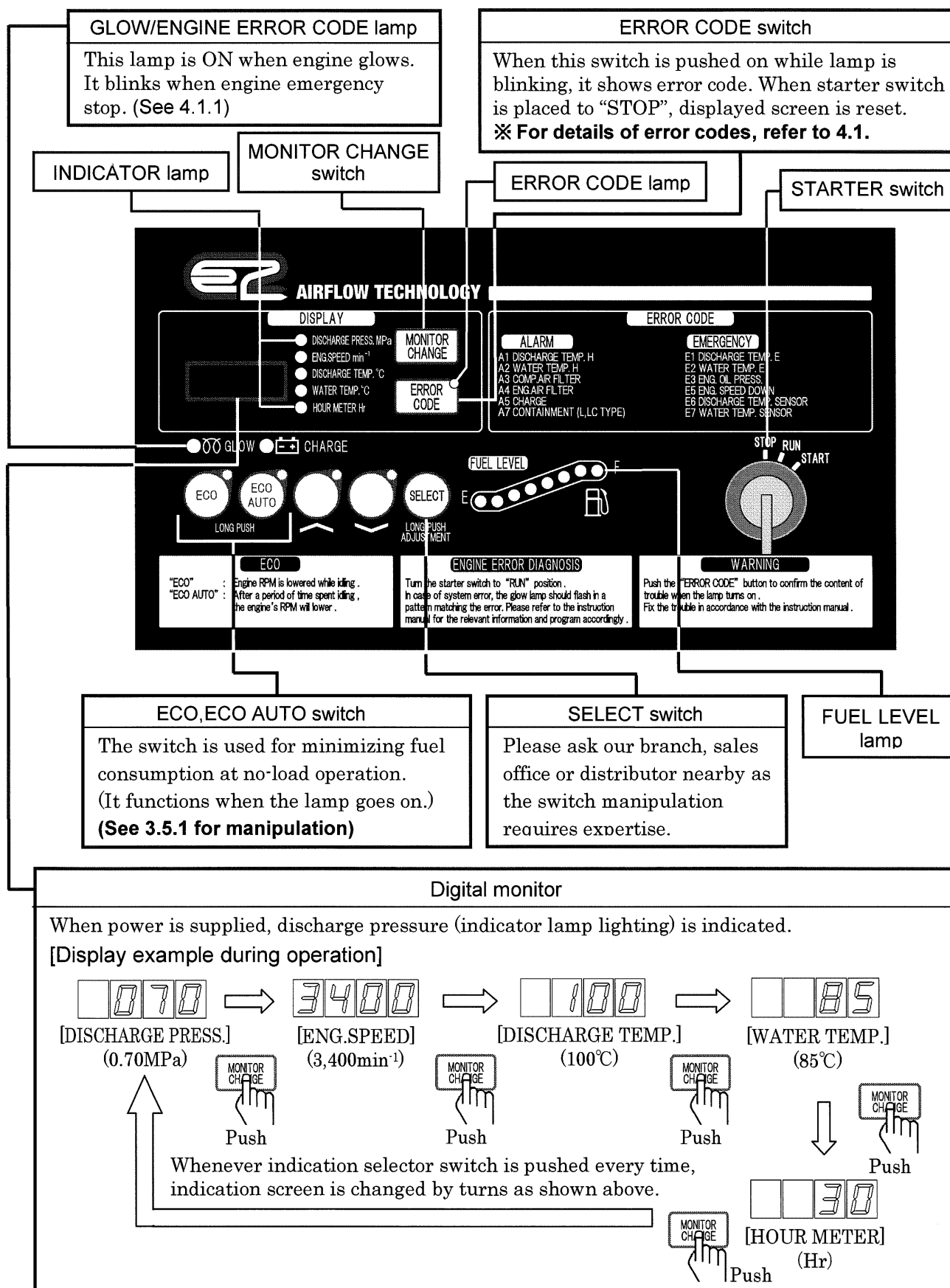


# 3.Operation

## 3.1 Instrument Panel

Each display of the operation panel is illustrated as follows.

Read and fully understand the explanations and be sure to operate safely:





## 3.Operation

### 3.2 Lubricating oil · Coolant · Fuel

#### 3.2.1 Engine oil

Use engine oil recommended by us.

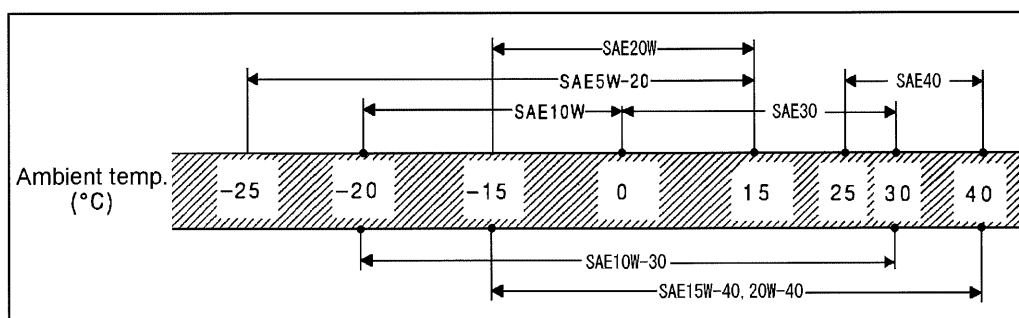
(Using engine oil with poor quality may shorten the life of the engine).

Classification	API service classification CF class or higher
Viscosity	SAE10W-30 (as ex-factory)

**IMPORTANT**

- Viscosity of engine oil greatly affects startability, performance, oil consumption of the engine, as well as wear of the moving parts.

#### Ambient temperature range and oil viscosity (SAE)



A100293E

- When two or more different brands of oil are mixed, its performance can be deteriorated. Do not mix oils.
- Follow the designated regulations to dispose of engine oil.

#### 3.2.2 Compressor oil

Be sure to use recommended oil listed below.

Even continuous oil replenishment cannot improve its deteriorated condition. Be sure to change the oil completely at every scheduled interval.

#### Maker and Brand of Recommended Oil

Maker	Brand
SHELL	SHELL CORENA S3R (VG32)
JX NIPPON OIL & ENERGY CORPORATION	FAIRCOL RA32

**IMPORTANT**

- Mixture of different brands compressor oil could cause an increase of viscosity and make compressor oil sticky. In the worst case, it could cause sticking trouble of compressor air-end "Compressor air-end will not turn". Also repairing of such air-end needs expensive cost. Therefore, be sure to avoid mixing different brands oil. In case compressor oil brand in use has to be unavoidably changed, it is absolutely necessary to completely clean up the interior of compressor air-end. In such a case, contact "AIRMAN" dealer or us directly.
- Follow the designated regulations to dispose of compressor oil.



## 3.Operation

### 3.2.3 Coolant

Coolant freezing could cause cracks of cylinder and radiator. Be sure to always use mixture of LLC (antifreezing solution) and soft water like tap water which quality is good.

**IMPORTANT**

- When water with dirt, sand, and/or dust contained, or hard water such as well water (ground water) is used, this will cause deposits inside radiator or on cylinder head, and will cause engine overheat due to poor flow of coolant.
- Adjust mixing ratio of LLC (Antifreeze) with water according to the temperature. (When the machine is delivered from factory, it is filled with the oil of density 35%) Use LLC (Antifreeze) within the range of its mixing ratio between 30 and 60%. (If LLC (Antifreeze) in the water exceeds more than 60%, it may decrease its antifreezing effect.)

Mixing ratio of LLC (antifreeze) (reference)

Outside temperature (°C)	-15	-20	-25	-30	-35	-40	-45
Mixing ratio (%)	30	35	40	45	50	55	60

- Follow the designated regulations to dispose of LLC (Antifreeze).

### 3.2.4 Fuel

- As for fuel, use diesel fuel oil (having higher than 45 cetane number).
- Use of diesel fuel oil having lower than 45 cetane number will cause inferior function to engine and, what is worse, it will cause serious accident to the engine.

**IMPORTANT**

- You will be punished if you use mixture of light oil and heavy oil/coal oil or fuel other than light oil in region there is regulation for illegal light oil.
- Follow the designated regulations to dispose of fuel.



## 3.Operation

### 3.3 Check before starting 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 components or may even cause fire.

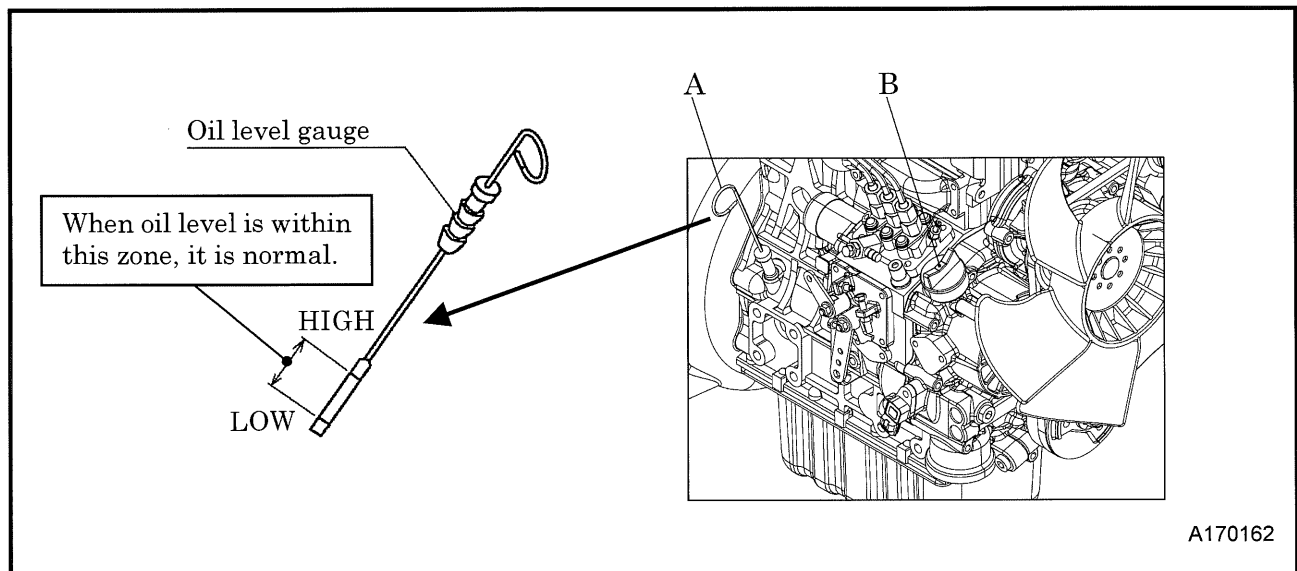
#### 3.3.1 Check engine oil level

Unit should be on level before checking oil level.

If you check engine oil level after starting operation, be sure to check it after the elapse of 10 minutes or more since engine stoppage.

<Procedure>

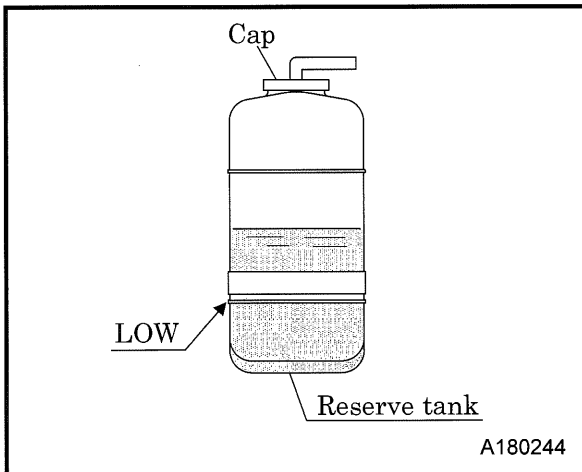
1. Pull out the oil level gauge [A] and wipe it with a clean cloth.
  2. Then, re-insert the oil level gauge fully and pull it out again. If the oil level gauge shows the oil level between LOW and HIGH, it is normal.
  3. When the oil level is below its LOW, add engine oil from engine oil filler port [B].
- While checking oil level, check also for contamination. If the oil is found dirty, contaminated or should it be changed according to the periodic inspection list, change the oil. (See 5.4.1)
  - To cause of the engine output reduction when oil level is too high, do not put oil in more than the upper limit.



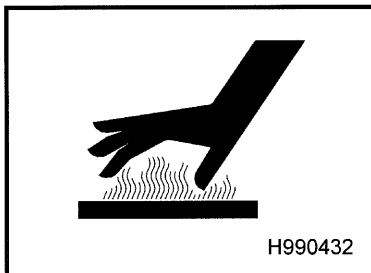


## 3.Operation

### 3.3.2 Check coolant level



- Check the coolant level in the reserve tank. If it is lower than the limit, open the cap and replenish the coolant. (Level must be kept above LOW mark.)
- If the cooling water in the reserve tank is empty, please remove the radiator cap and fill the cooling water to the radiator and reserved tank. (See 5.4.16)



- When removing radiator cap, unfasten it to decrease internal pressure while unlocking first step. After checking internal pressure decreased, unfasten the radiator cap more until second step unlocked. If you fail to conduct these processes, it might causes blowing radiator cap by internal pressure or gushing hot scalding vapor.

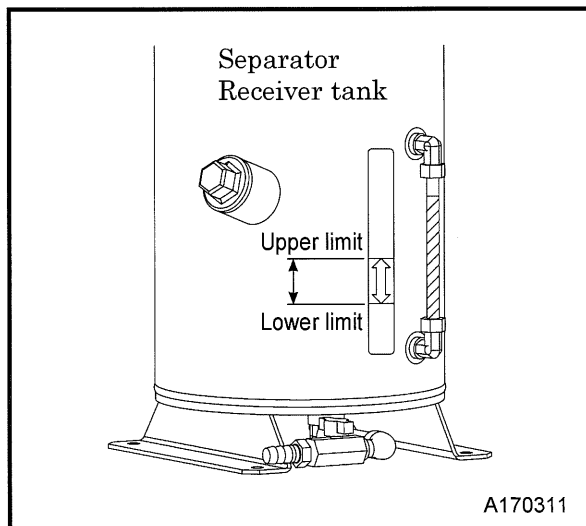


- Do not operate the machine while being lack enough the coolant amount. An air bubble is involved and leads to damage of a radiator.

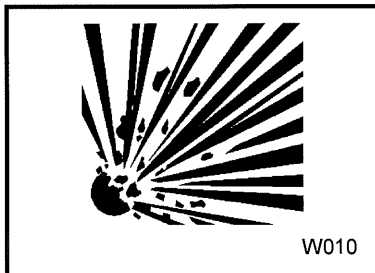


## 3.Operation

### 3.3.3 Check compressor oil level



- Place the machine on level ground when checking the oil level.
  - After checking and confirming that the residual pressure in separator receiver tank is 0MPa, replenish the tank with compressor oil so that the oil level is kept higher than the lower limit of level gauge plate. Be sure to check the surface of compressor oil is in the range between upper limit and lower limit when machine operating. (See 5.4.6)
- ※ Supply of excessive oil can cause deterioration of oil separation performance and the like.

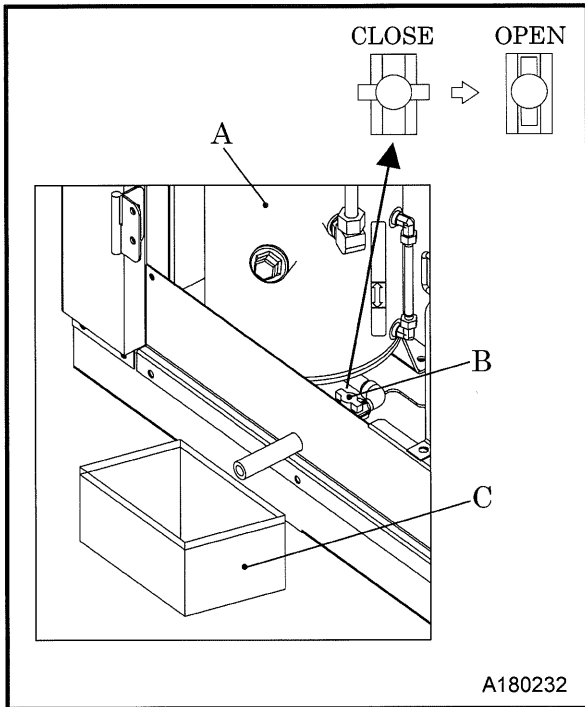


- When you fill the separator receiver tank with compressor oil, stop the engine, and make sure that the pressure gauge indicates 0MPa and there is no residual pressure in it, and then gradually loosen the oil filler cap for refilling oil.
- Should any residual pressure be left in the separator receiver tank, hot compressed air and hot compressor oil jetting out could cause burning or serious injury to persons nearby.

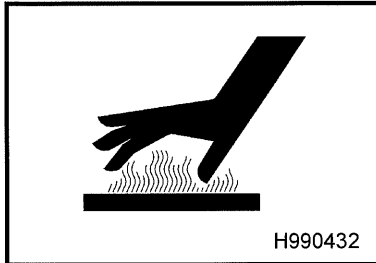


## 3.Operation

### 3.3.4 Drain separator receiver tank



- Gradually opening the drain valve [B] fitted under the separator receiver tank [A] as shown in the fig, drain the condensate.
- Make sure to close the drain valve when all drain is drained and compressor oil starts coming out.
- Drain the condensate in container [C], and then dispose of condensate according to the designated regulations.
- Touch the fluid and check its viscosity to determine whether it is condensate or compressor oil, and when it is difficult to distinguish between the two.

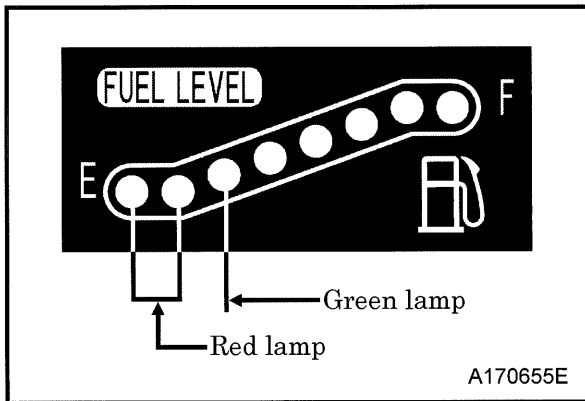


- After stopping the engine, confirm that the pressure gauge indicates 0MPa and there is no residual pressure in it, then open the drain valve gradually to drain the compressor oil.
- Note residual pressure in the receiver tank could force both extremely hot compressed air and oil to jet out and you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





## 3.Operation

### 3.3.5 Check fuel

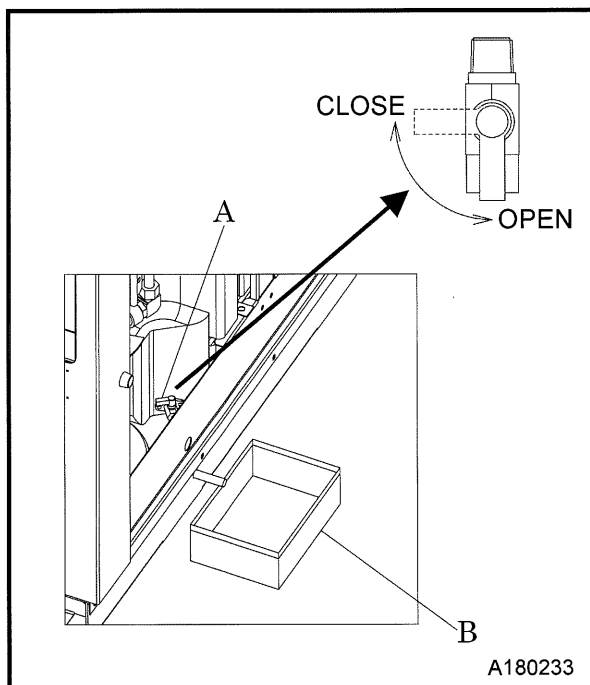


Before starting operation, make sure to check the level of residual fuel so that fuel shortage during operation can be avoided. Drain condensate accumulated at the bottom of fuel tank whenever necessary.

- Refilling fuel tank should be done in an outdoor well-ventilated place.  
Lamp is ON according to fuel level when starter switch of instrument panel is set to “RUN” position. Two red lamps are ON when fuel level is about 1/4 or less of maximum level. Only one red lamp blinks when fuel level becomes more less. Replenish fuel quickly when lamp is ON as red.
- **Never let oil reach the filler pipe of the filler port. Otherwise, high temperature may cause fuel to expand and spill out. Also, fuel may spill out due to vibrations during movement or carriage.**

	 D004	<ul style="list-style-type: none"><li>● Do not, under any circumstance, bring lit cigarettes and/or matches to the fuel.</li><li>● The fuel is extremely flammable and dangerous. Be careful of fire because it is very likely to catch fire.</li><li>● Refuel only after stopping the machine, 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.</li></ul>
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### 3.3.6 Drain fuel tank



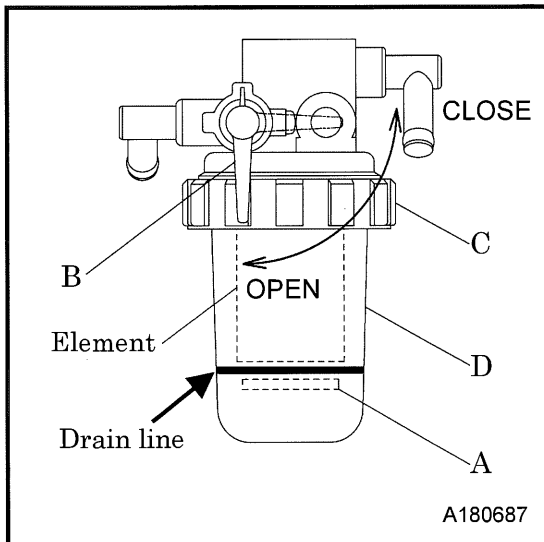
Open the drain valve [A] of the fuel tank little by little, and discharge the drain that has accumulated in the fuel tank. Make sure to close the drain valve when all drain is drained and fuel starts to be released. Drain should be discharged to container [B] and disposed according to regulations.



## 3.Operation

### 3.3.7 Check sedimenter for condensate

If the red float [A] in the sedimenter is up to the bottom of the drain line, please discharge it.



#### <Procedure>

1. Place the lever [B] of sedimenter to "CLOSE" position.
2. Loosen the ring nut [C] and remove the cup [D].
  - Carefully handle the cup because it is filled with fuel, and never spill the fuel inside the machine.
3. After draining the drain and fuel collected inside, clean and install the cup and then tighten the ring nut.
4. Turn the lever to "OPEN" position and fill the cup with fuel. Then bleed air. (See 3.4.7)
  - Drain the condensate in container, and then dispose of condensate according to the designated regulations.

### 3.3.8 Check wiring of each part

Check each wiring for any loose connection, damage to insulating sheathed portion, disconnection, and short-circuit.

### 3.3.9 Check piping of each part

Check each piping for any loose connection and also check each hose and pipe for any tear and leaks.

### 3.3.10 Check in the machine

Periodically check the inside of the machine for dust and flammables.



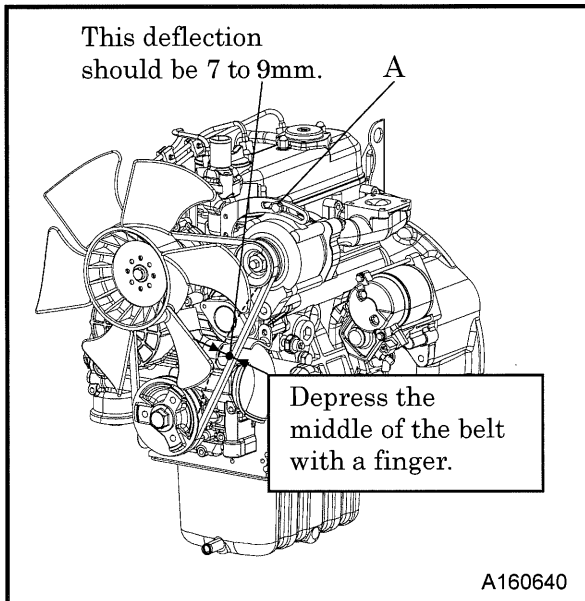
- Be sure to wear protector such as helmet, protective glasses, earplug, safety shoes, gloves and dust protective mask for safety operation conforming with details of work.
- Temperature of muffler and exhaust valve will become high. Be sure to remove combustibles such woodchip, dead leaf, waste paper nearby it.
- Just in case for fire, be sure to set fire extinguisher nearby machine.
- It is helpful to keep emergency contact numbers for urgent visit clinic, ambulance and firehouse.



## 3.Operation

### 3.3.11 Check belt tension

Follow the procedure below to adjust tension of fan belt.  
Adjust the tension by gradually loosening the fastening bolt [A].

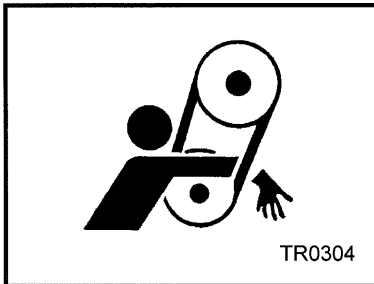


#### <Procedure>

1. Visually check if there are any cracks or tears in the belt.
  2. Check if the tension is 7 to 9 mm (98N) when you press the center of the belt with your finger. If not, loosen the adjustment bolt [A] of the alternator once and adjust again.
  3. Tighten the alternator mounting bolt when the adjustment is completed.
- Replace the belt if it has no adjustment range or if any cut, crack or other defect found.
  - 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.



WARNING



- Be sure to stop the engine and remove the starter key whenever the tension of the 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 belts, and this could cause a serious injury.
- Be sure to stop the engine and remove the starter key whenever the tension of the belt is to be adjusted.
- If the machine is running, it might catch the operator's hand into the belts, and this could cause a serious injury.



IMPORTANT

- Too tight belt tension could damage shaft and shorten bearing life. Too loose belt tension may result in damaging belt earlier and machine components due to overheat.

### 3.3.12 Door opening and closing

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



WARNING



- Keep the door closed and locked while running the unit.
- When the door has to be opened, be careful not to touch portions that are rotating or very hot.



# 3.Operation

## 3.4 Operation

Make sure the door is closed securely.

### 3.4.1 Procedure of starting and stopping

Follow the steps below to start up.

During the warm-up operation, examine the different parts of the equipment for any looseness, leakage of water, oil, fuel, and other irregularities.

Also, set the service valve to "Fully close". Make sure that the error code lamp on the operation panel is also off.

<Procedure>

1. Turn the starter switch [A] to "RUN" position, and the glow lamp [B] goes on.
2. Make sure that the discharge pressure indicates 0MPa.
3. As soon as the glow lamp has gone out, turn the starter switch fully clockwise to start up the engine.

**Limit the time of operating the starter switch to 30 seconds. (Operating said switch for more than 30 seconds activates the emergency engine stop.) Wait at least one minute for any subsequent starting operation; otherwise, the starter may overheat and become damaged.** (See 3.4.2)

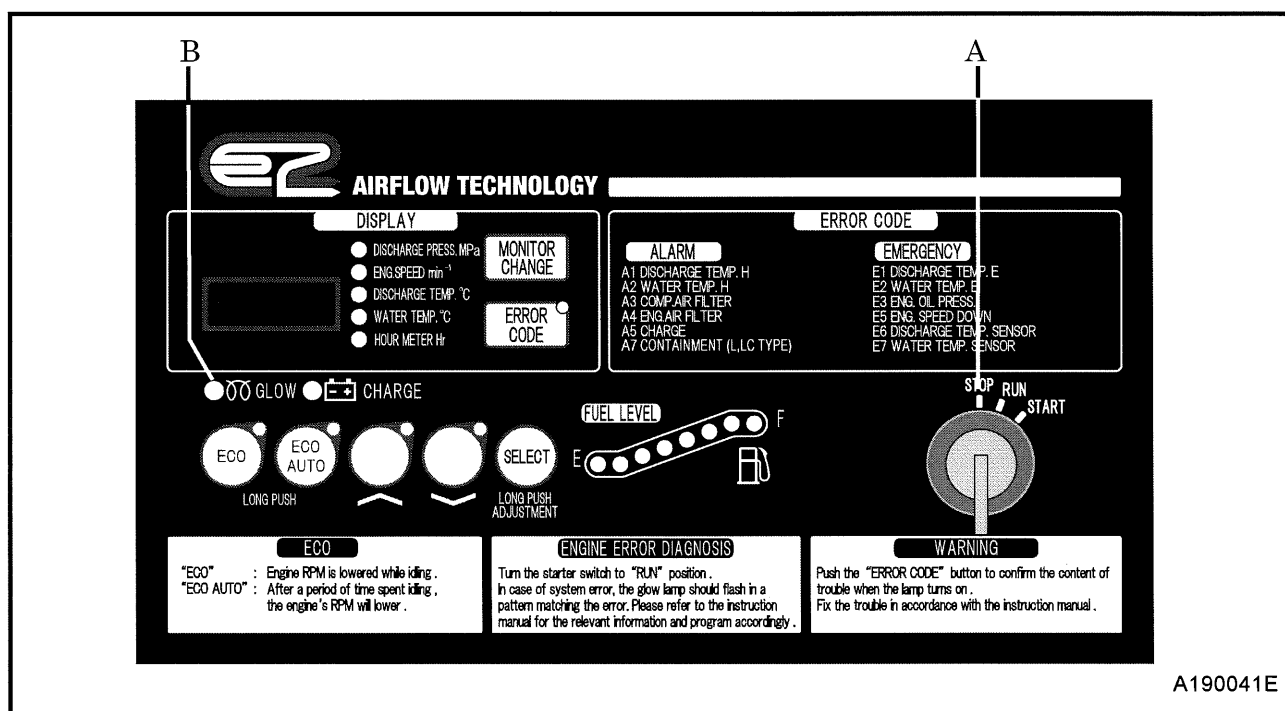
4. Once the engine has started up, leave it running to warm-up for 5 minutes.
  - After the engine start, it starts automatically and starting unloader operation. The time of starting unloader operation changes according to the discharge air temperature as mentioned in the following table. Display of the discharge pressure at this time is 0.2 to 0.3MPa.

Discharge air temperature	Required time for starting unloader operation
Lower than 60°C	120sec or till the temperature rises higher than 60°C.
Higher than 60°C	30 seconds

During starting unloader operation, compressed air is not discharged.

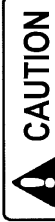
After the starting unloader operation, the discharge pressure display is 0.7 to 0.9 MPa.

5. After finishing warming up operation, open the service valve and start service job.

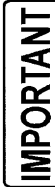




## 3.Operation



- 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.



- 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.

### 3.4.2 Operating procedures when engine fails to start up on first attempt

When the engine fails to start even after performing the startup procedures 1 to 3, do not keep the starter running, but set the starter switch back to the “STOP” position and wait approximately 1 minute. 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 items.

- No fuel
- Lack of air bleeding in fuel line (See 3.4.7)
- Clogging of fuel filter
- Discharge of battery (Low cranking speed)



- If you do starting manipulation successively, the starter will not stop fully and it causes damages to pinion ring gear and breakdown of the starter.

### 3.4.3 How to start the machine at low temperature

- Use engine oil of a viscosity that meets the ambient temperature according to 3.2.1.
- Use compressor oil of a viscosity that meets the ambient temperature according to 3.2.2.
- Use LLC (antifreeze). Use correct amount to provide freeze protection, according to the ambient temperature.
- Use fuel of the kind which is compatible with the outside temperature according to 3.2.4 for fuel.
- Battery should always be kept fully charged.



- Should change a different types of engine oil, compressor oil, LLC, or fuel when operating a machine in cold weather.



## 3.Operation

### 3.4.4 Display of each panel device in operation

During operation, you should sometimes check that all panel devices are working properly and that there are no air leaks, oil leaks, water leaks, fuel leaks, etc. During normal operation, each indication of instruments is shown in the table below. Refer to the table for daily checks.

		Indicator lamp				
		GLOW (Failure diagnosis)	CHARGE	FUEL LEVEL	ECO	ECO AUTO
Monitor					ECO	ECO AUTO
Starting	Starter switch set to "RUN" position	● OFF ※1・※2	 ON	 ON	● OFF ※3	● OFF ※3
		● OFF		Changes depending on the remaining quantity	● OFF ※3	● OFF ※3

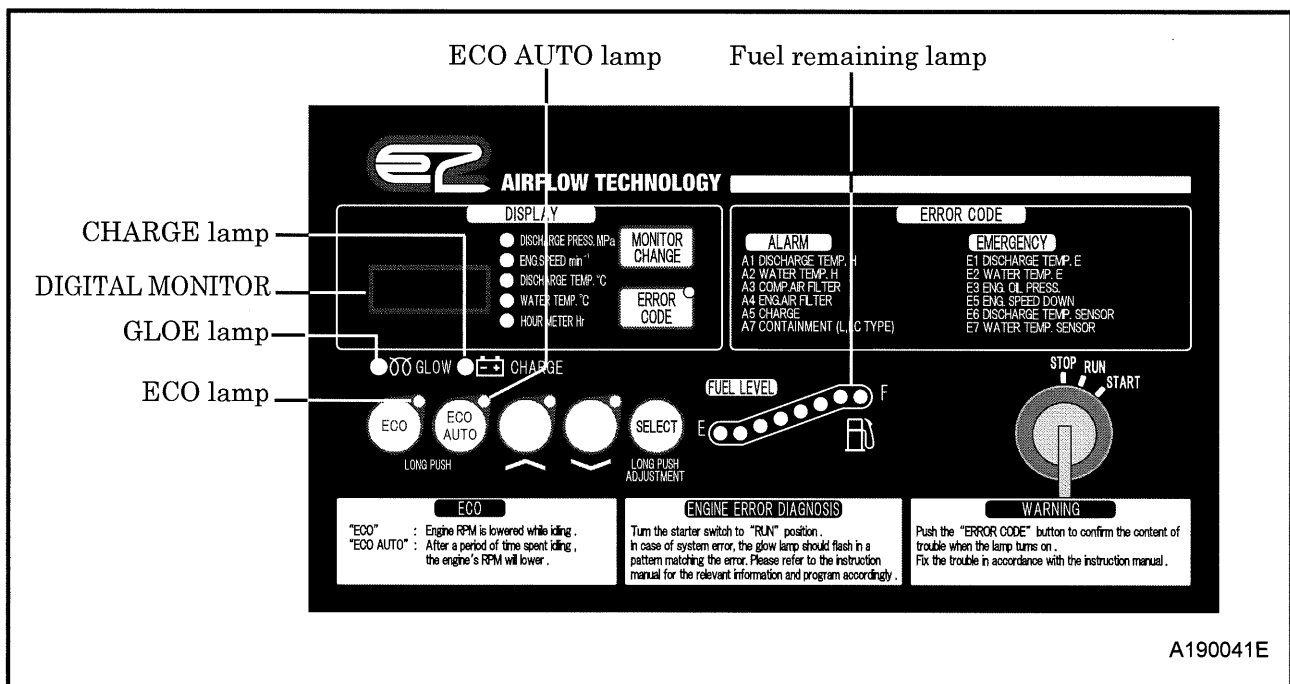
※1: This lamp will be OFF in 3 to 10 seconds, (varying upon ambient temperature.)

※2: GLOW lamp blinks when engine trouble.

※3: Push SELECT switch long to select ON/OFF. (This setting is held until operation mode is changed.)

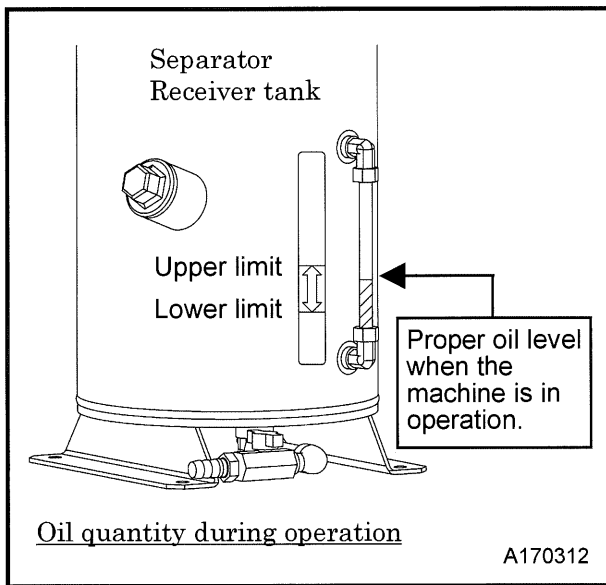
They may vary slightly depending on the operating conditions and other factors.

		Discharge pressure gauge
In operation	Full load	0.4 to 0.7 MPa
	No load (Unload)	0.77 to 0.9 MPa





## 3.Operation



- When the machine is in operation under load, check to see that the compressor's oil level falls within the range between the lower limit and upper limit of the level gauge if the level is found to be insufficient, replenish the oil.
- ※ Keep the operation log to record constant inspection of each component, so that trouble of the machine can be easily discovered and preventive measures can be taken.

<b>CAUTION</b> 	 PK0028	<ul style="list-style-type: none"><li>● Do not open the valves below listed when operating.</li><li>● Separator receiver tank drain valve</li><li>● Radiator drain plug</li><li>● Engine oil drain plug</li><li>● Oil cooler drain valve</li><li>● Fuel tank drain valve</li></ul>
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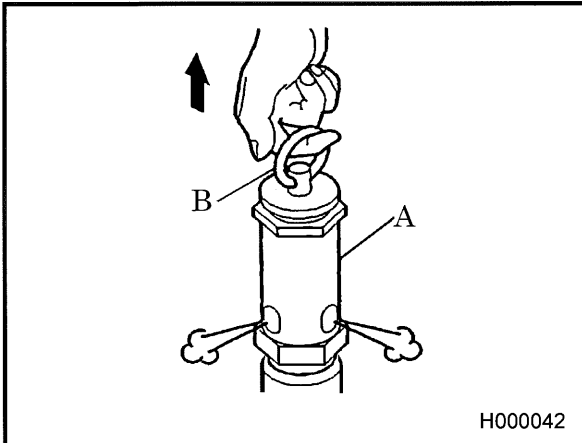
<b>IMPORTANT</b>	<ul style="list-style-type: none"><li>● Minimum discharge air pressure is 0.375MPa during operation.</li><li>● If you keep operating with less than 0.375MPa, it will causes less separation of lubricating oil at oil separator, or baking caused by overheat of compressor body.</li></ul>
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## 3.Operation

### 3.4.5 Performance check of safety valve

Be sure to check the operation of the safety valve [A] before using this machine.



- Close all the service valves after the operating the machine and unloading, and pull the test ring [B] to check. It is performing normally when the compressed air jets out with slight force at a discharge pressure between 0.72 to 0.9MPa.
- Pressure setting for safety valve is 1.0MPa.



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

### 3.4.6 Procedure to stop the machine

<Procedure>

1. Close the service valve completely and operate the machine about 5 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 engine. Keep the key and be careful not to lose it.
- Unless all the service valves are fully closed upon stopping operation, the compressed air will be sent in reverse direction in the hoses (pipes) connected to air tools and relieved to atmosphere continuously through the auto-relief valve. Further, when re-starting operation next time, compressed air will be jetted out through service valves.

### 3.4.7 Air bleeding in fuel line

Should the machine stop due to fuel shortage, perform air bleeding according to the following steps.

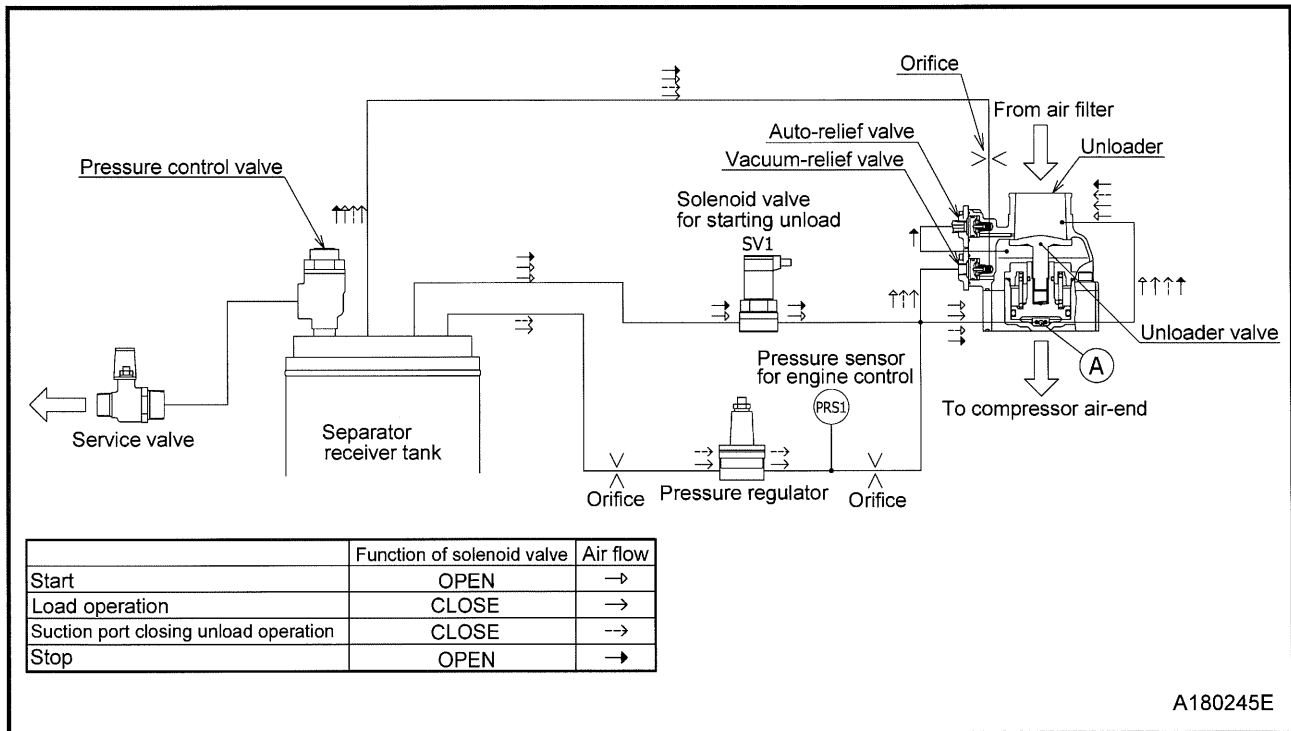
<Procedure>

1. Replenish fuel.
2. When starter switch is turned to “RUN” position, electromagnet pump starts to automatically bleed air in fuel line.
3. Air bleeding is completed about 1 minute.



## 3.Operation

### 3.5 Capacity Control Device



Step	Response
Start	Compressed air flows into unloader chamber (A) because solenoid valve for starting unload SV1 is opened at start-up. The pressure in chamber (A) rises soon to close unloader valve (A) fully and accordingly it can reduce the load at start-up.
Load operation	After start-up, automatic unloader operation is complete before SV1 is closed. Any change in the discharge pressure causes the pressure regulator to change the airflow into chamber (A) so as to change the degree of openness of the unloader valve. The speed of the engine changes according to the pressure detected by pressure sensor PRS1 for the engine control so as to automatically and continuously control the air volume within the range from 0 to 100%.
Suction port closing unload operation	As the pressure exceeds the rated limit due to a decrease in consumption air volume, PRS1 detects the pressure, and the system reduces the engine speed in proportion to the increased pressure. At the same time, airflow from the pressure regulator to the chamber (A) increases and the unloader valve is closed. If the interior of the compressor becomes rendered as an area of high vacuum pressure during unloading operation, a vacuum noise sounds. To prevent such noises, the secondary pressure of the pressure regulator is utilized to open the vacuum relief valve so as to prevent the interior of the compressor from becoming an area of high vacuum pressure.
Stop	When stopping operation, it opens Auto relief valve to relieve the compressed air in separator receiver tank to atmosphere, detecting the pressure inside compressor air-end.



## 3.Operation

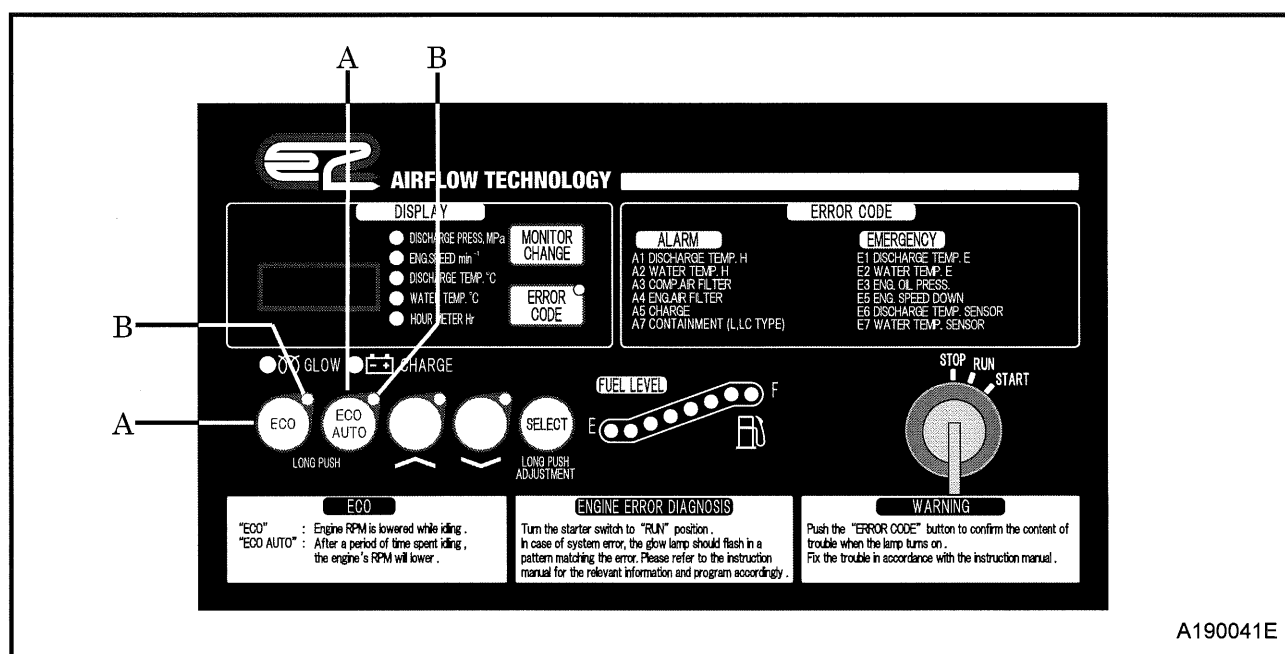
### 3.5.1 ECO/ECO AUTO mode

This machine features ECO/ECO AUTO modes. These modes are suitable if you want to minimize fuel consumption during continuous no-load operation with less air consumption. Referring to the table below, choose a mode according to your usage. Select the operation mode via the ECO or ECO AUTO switch on the operation panel.

Each mode is available according to the consumption of compressed air.

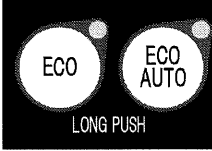
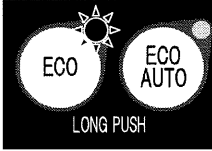
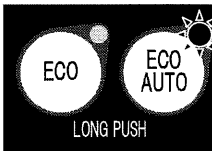
#### <Procedure>

1. Push ECO and ECO AUTO switch [A] long when operation.
2. The indicator of ECO or ECO AUTO [B] turns on, with each mode selected.
3. Push the ECO or ECO AUTO switch for an extended time to release the mode.  
(If you don't release it, the selected mode remains active at next start-up.)



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#### Each mode function

Mode selection	ECO/ECO AUTO lamp status
<ul style="list-style-type: none"> <li>● <b>Normal mode</b> Rotation speed during unload operation is 1,800min<sup>-1</sup>. It is suitable where working responsiveness is required.</li> </ul>	 <p>ECO/ECO AUTO lamp OFF. It shows the switch is not pushed.</p>
<ul style="list-style-type: none"> <li>● <b>ECO mode</b> Rotation speed during unload operation drops to 1,400min<sup>-1</sup>. It makes low fuel consumption and low noise. Rotation speed is reduced when the discharge air temperature is over 60°C and it is kept at unload operation 1,800min<sup>-1</sup> when the discharge air temperature is less than 60°C.</li> </ul>	 <p>ECO lamp ON. It shows ECO switch is pushed.</p>
<ul style="list-style-type: none"> <li>● <b>ECO AUTO mode</b> If operating at a rotation speed of 1,800min<sup>-1</sup> during unloading operation and keeping approx. 20 seconds (initial setting) without work, rotation speed drops to 1,400min<sup>-1</sup>. It achieves low fuel consumption and low noise. Rotation speed is reduced when the discharge air temperature is over 60°C and it is kept at unload operation 1,800min<sup>-1</sup> when the discharge air temperature is less than 60°C.</li> </ul>	 <p>ECO AUTO lamp ON. It shows ECO AUTO switch is pushed.</p>



## 3.Operation

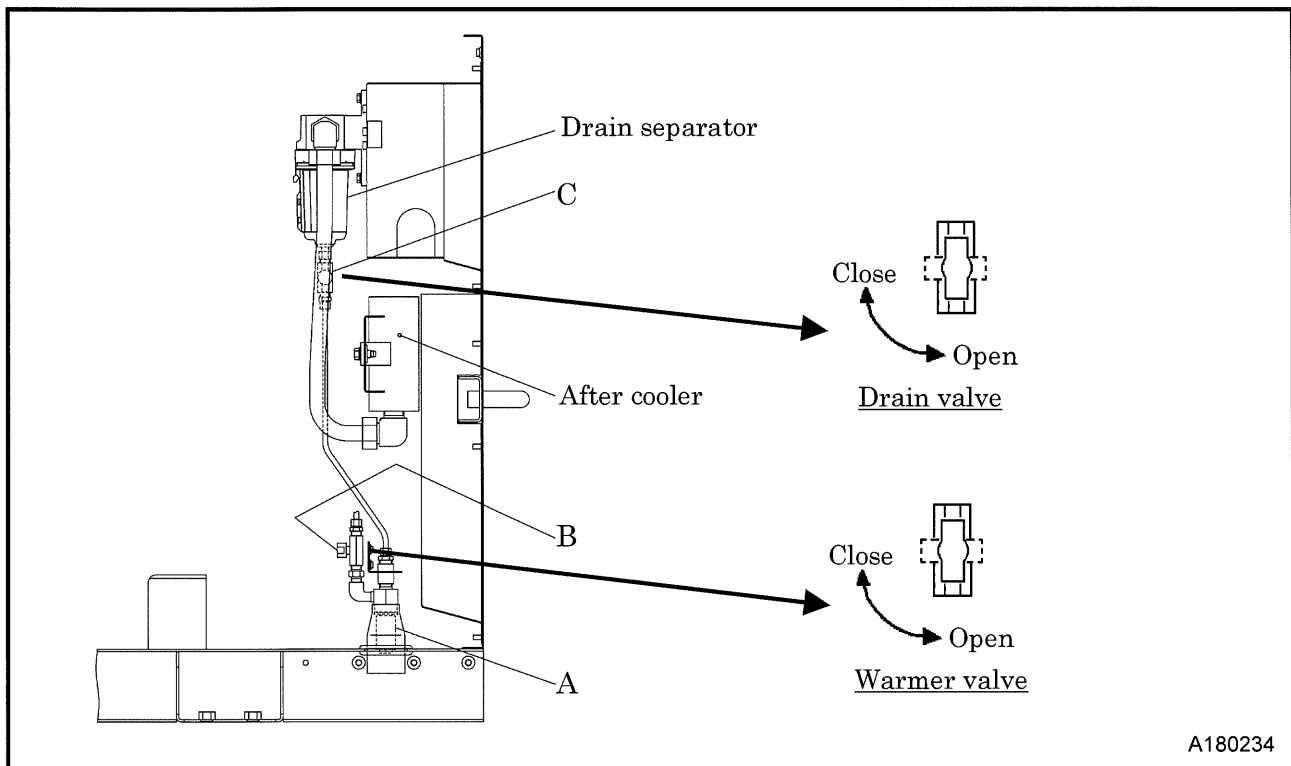
### 3.6 Operation of after-cooler type

#### 3.6.1 Draining after cooler

The condensed water drained from after-cooler contains a little bit of oil.  
So take care how to dispose of it.

[In case that any condensate is found in discharged air]

- Check and confirm that air is emitted from the drain port of after-cooler during operation.  
When any condensate is found mixed in the air, clean the silencer [1] at the discharge port.  
If heavily stained, replace them.  
When cleaning and replacing it, contact our office nearby or distributor because technical knowledge is required.



#### 3.6.2 Drain valve

Always use this valve [C] with "Open". However, if the ambient air is dry, there is no problem if it is used with the valve "Close".

#### 3.6.3 Drain warmer valve

This valve [B] is provided to prevent condensate water from getting frozen when draining water separated. Run the machine with the valve being "Open" when ambient temperature is lower than 5°C. But when freezing is impossible, the machine can be operated more efficiently if the valve is "Close".

#### 3.6.4 To prevent freezing



- If cease the operation and storage the machine under use environment in winter season, be sure to open the service valve 2 to 3 times in order to remove water droplet in air piping such as after-cooler before stoppage of engine.



## 4 Failure cause and measures

### 4.1 Indicator lamp and Warning / Emergency display

**[Indicator lamp]** Turn the starter switch to “RUN” position. Then the lamp goes on.

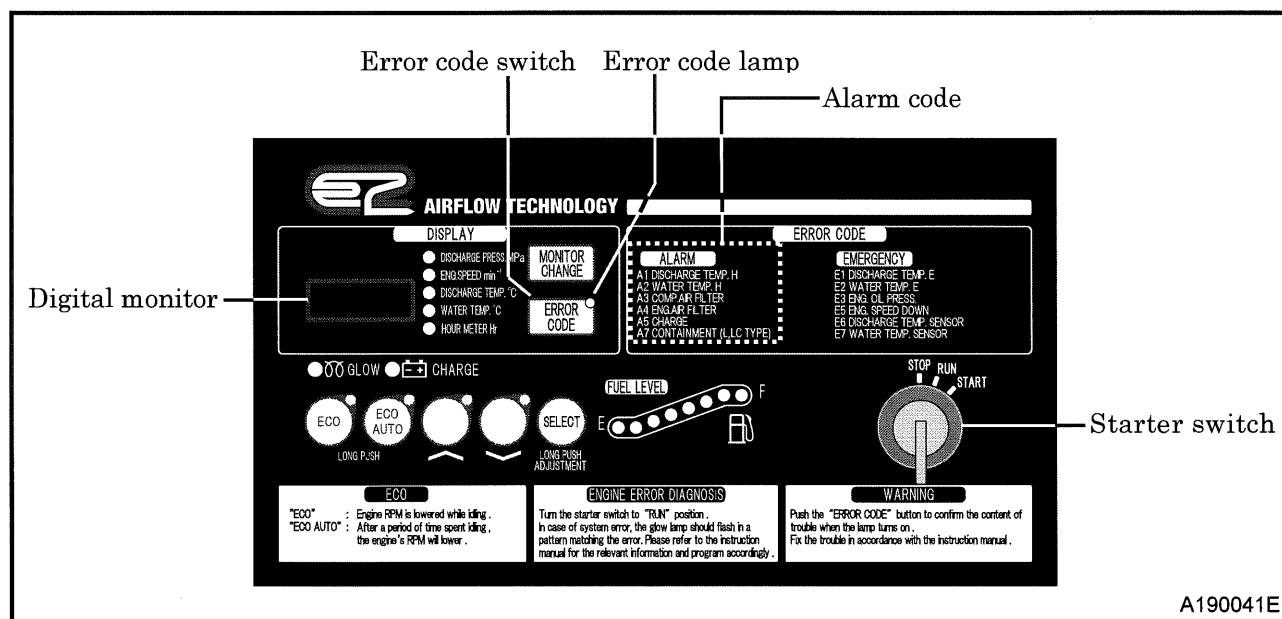
Item	Contents	Operation when not charging	Monitor
Glow	Press starter switch “RUN” and the lamp goes on and after preheating is finished, the lamp will be off.	—	○ 
Charge	Lamp goes on when alternator is not charging.	Check wiring. Check alternator.	○ 

#### 4.1.1 Alarm display

This displays such trouble of less importance when it occurs during operation, but the unit continues operating.

When any abnormality happens, a trouble code lamp flickers. In this time when trouble code switch is pressed, a failure code will be digital monitor.

Item	Failure code	Contents	Measures
DISCHARGE TEMP.H	A-1	Air temperature of the discharge air outlet is 115°C.	See 4.2 “Troubleshooting”
WATER TEMP.H	A-2	Water temperature is 105°C.	
COMP.AIR FILTER	A-3	Air filter clogged and suction air resistance increased. [Actuating resistance is more than 6.2kPa.]	Clean or replace
ENG. AIR FILTER	A-4		
CHARGE	A-5	Belt loosened and/or cut Faulty generation of alternator	See 4.2 “Troubleshooting”



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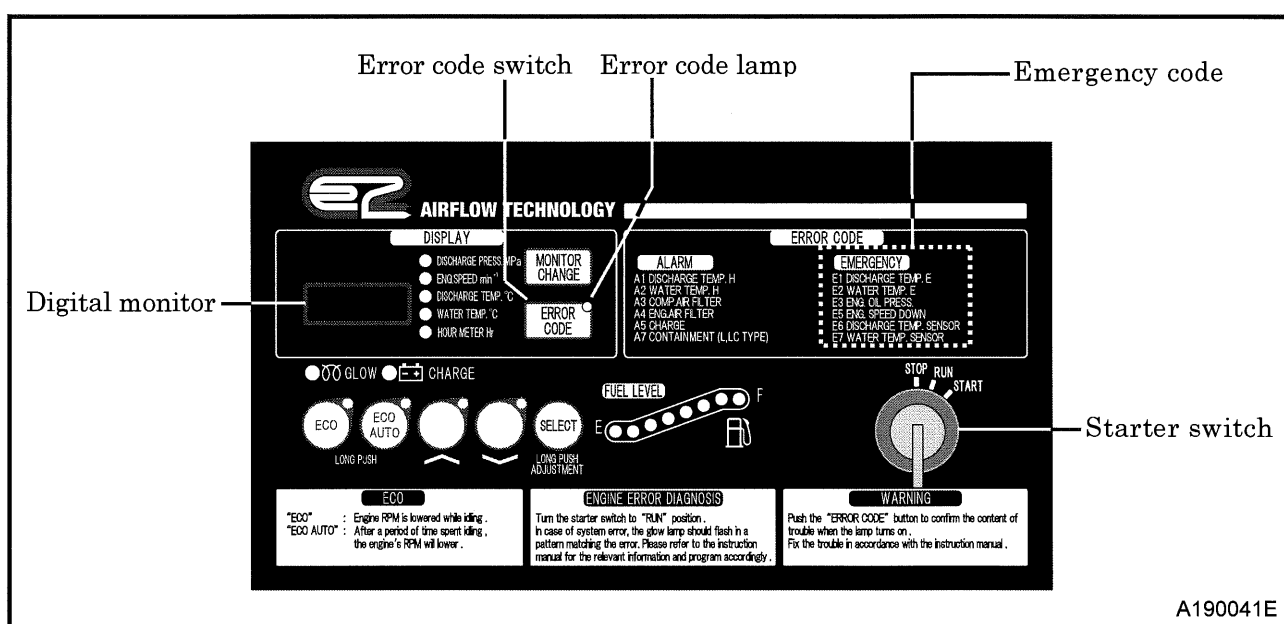


## 4 Failure cause and measures

### 4.1.2 Emergency display

When any trouble takes place during operation, this displays and it stops as an emergency stop. When any abnormality happens, a trouble code lamp flickers. In this time when trouble code switch is pressed, a failure code will be digital monitor.

Item	Failure code	Contents	Measures
DISCHARGE TEMP.E	E-1	Air temperature of the discharge air outlet is 120°C.	See 4.2 "Troubleshooting"
WATER TEMP.E	E-2	Water temperature is 110°C.	
ENG.OIL PRESS	E-3	Engine oil pressure decreased. [The function pressure: 98.1kPa]	
ENG. SPEED DOWN	E-5	Engine rotation speed is less than 950min <sup>-1</sup> .	
DISCHARGE TEMP. SENSOR	E-6	Discharge air temperature sensor of the discharge air outlet disconnected.	
WATER TEMP. SENSOR	E-7	Engine coolant temperature sensor disconnected.	

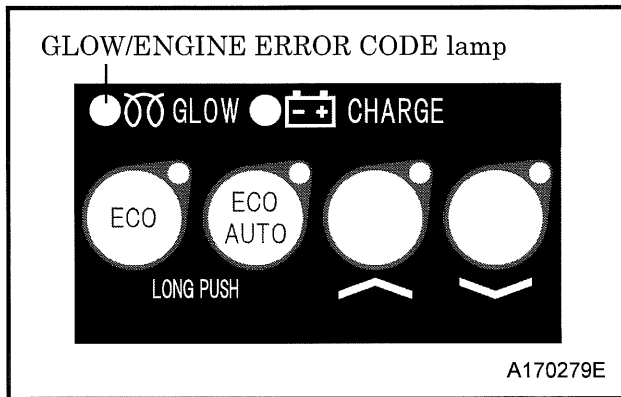


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## 4 Failure cause and measures

### 4.1.3 Engine emergency stop



- When the machine detects any trouble listed on below table, its engine will stop and GLOW/ENGINE ERROR CODE lamp will flicks. You can find which trouble occurs by its flickering pattern.

Trouble	Detective way and contents	Flickering pattern	Note
Engine over-rotation	Number of revolution exceeds $4,105\text{min}^{-1}$ which is maximum number of revolution in operation range.	L1 and S1	Engine stops immediately
Drop of engine oil pressure	After engine starts, oil pressure switch turns "ON" for 1 or more seconds.	L1 and S2	Engine stops after 10 or more seconds later than started.
Battery charging faulty	After engine starts, alternator "L" terminal keeps no voltage status (0V) for more than 1 or more seconds.	L1 and S3	Engine stops after 10 or more seconds later than started.
Water temperature emergency	Coolant temperature exceeds $115^{\circ}\text{C}$ for 1 or more seconds.	L1 and S6	Engine stops after 10 or more seconds later than started.
Emergency stop	The No.35 pin of the Controller (ECU) turns on for 0.1 seconds or longer (+B connection).	L1 and S5	Engine stops immediately
Malfunction of RPM sensor	Even though the alternator L terminal supplies voltage after the engine starts, the RPM is indicated as " $0\text{min}^{-1}$ ."	L2 and S1	Engine stops after 10 or more seconds later than started.
Trouble of solenoid	Detect by solenoid driver IC or current value.	L2 and S2	Engine stops immediately
Trouble of coolant temperature sensor	Disconnection detected (becoming $-40^{\circ}\text{C}$ or lower)	L2 and S4	Engine stops after 10 or more seconds later than started.
	Short circuit detected (becoming $140^{\circ}\text{C}$ or higher)	L2 and S5	
Trouble of alternator L terminal	After key is "ON" (engine does not start), alternator "L" terminal has voltage although number of revolution is $0\text{min}^{-1}$	L2 and S6	Engine stops after 10 or more seconds later than started. (It can start even on error)
Excessive voltage	Power source voltage exceeds 18V or more.	L3 and S1	Engine stops immediately
Trouble of power source for sensor	Detect short circuit at power source (analog 5V drops to 4 or less V)	L2 and S7	Engine stops after 10 or more seconds later than started.
Protection of starter	Starter keeps "ON" for 30 or more seconds.	L1 and S7	Engine stops immediately
Detection of engine stoppage	After engine starts, number of revolution is $0\text{min}^{-1}$ and no oil pressure.	L3 and S2	
Trouble of accelerator sensor	Detect open circuit (0.244 or less V) Detect short circuit (4.432 or more V)	L3 and S3	Engine stops after 10 or more seconds later than started.

※When engine is brought to emergency stop, some of the above flashing patterns is indicated.  
**L and S mean Long time and short time alternatively. Also the numbers of each L and S mean repeated time of flickering lamp.**



## 4 Failure cause and measures

### 4.2 Troubleshooting

If any trouble occurs 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 machine, the faster you can find a problem and solution.
- This chapter describes the symptom, cause and countermeasures of important troubles in detail:

#### 4.2.1 Compressor version

If a problem occurs with the compressor, take appropriate inspection and measures referring to the table below.

Symptom	Cause	Countermeasures
The discharge air pressure will not raise 0.7MPa.	(1)Pressure regulator insufficient adjustment. (2)Trouble of solenoid valve for starting unloader	Re-adjust (Fasten) Change
If the discharge pressure will not increase to the specified one, RPM will drop.	(1)Pressure regulator insufficient adjustment. (2)Trouble of pressure regulator	Re-adjust (Fasten) Change
Engine does not reach minimum revolution at unload.	(1)Faulty engine controller (2)Trouble of emergency controller	Call your nearest dealer Call your nearest dealer
Safety valve relieves at unload.	(1)Pressure regulator insufficient adjustment. (2)Unloader valve damaged/Faulty seat (3)Faulty safety valve (4)Faulty engine speed sensor (5)Faulty of pressure switch	Re-adjust (loosen) Call your nearest dealer Change Call your nearest dealer Change
Oil mixes in air. (poor oil separation)	(1)Scavenging orifice strainer clogging (2)Excessive oil in separator receiver tank (3)Low discharge pressure (4)Oil separator deteriorated	Disassemble/Clean Drain to its proper level  Disassemble and check of pressure control valve Check/Change
Water found mixed in air. (Condensate separation malfunctioned.) For after-cooler type only	(1)Drain valve under drain separator is closed (2)Clogging of silencer at after cooler drain outlet (3)Orifice garbage clogging	Open valve Disassemble/Clean/Change Disassemble/Clean
Insufficient free air delivery.	(1)Air filter element clogging (2)Unloader valve cannot fully open (3)Engine does not reach rated speed	Clean or change of element  Call your nearest dealer Call your nearest dealer
Discharge air temperature alarm (A-1)  Discharge air temperature error (E-1) and engine stoppage	(1)Shortage of compressor oil. (2)Slippage of belt. (3)Oil cooler clogging. (4)Oil filter clogging. (5)Loose wiring connectors and disconnection. (6)Faulty discharged air temp. sensor. (7)Discharge air temp. sensor is disconnected.	Replenish oil Re-adjust tension Clean Change Check/Fasten  Disassemble/Check Repair and replace



## 4 Failure cause and measures

Symptom	Cause	Countermeasures
Coolant temperature alarm (A-2)  Coolant temperature error (E-2) and engine stoppage	(1)Low coolant level. (2)Belt slippage. (3)Radiator clogging. (4)Faulty thermostat. (5)Loose wiring, connectors and disconnection. (6)Faulty coolant temp. sensor. (7)Coolant temp. sensor is disconnected.	Replenish Re-adjust tension Clean Change Check/Fasten  Change Repair/Replace
Engine oil pressure error (E-5) and engine stoppage.	(1)Engine oil shortage (2)Engine oil filter clogging (3)Loose wiring, connectors and disconnection. (4)Faulty oil pressure sensor.	Replenish oil Change Check/Fasten  Change
Charge error (A-5)	(1)Belt damage. (2)Belt slippage. (3)Alternator wiring/connector loosen/come off. (4)Alternator trouble	Change Re-adjust tension Check/Loosen  Call your nearest dealer
Engine rotation speed down error (E-5) and engine stoppage	(1)Check if fuel system clog/hose come off. (2)Fuel injection pump error.	Check/Repair  Call your nearest dealer
Discharge air temperature sensor disconnection (E-6) or coolant temperature sensor disconnection (E-7) and engine stoppage.	(1)Each sensor's wiring/connector loosen/come off. (2)Each sensor has error. (3)Each sensor disconnects.	Check/Fasten  Disassemble/Check Repair/Replace
GLOW lamp flicks	(1) Engine in trouble.	※1

※1: Please contact nearby distributor after checking “4.1.1 Alarm display” to identify the cause by the blinking pattern of the preheat lamp.

- Contact our office nearby or distributor if you find it difficult to repair by yourselves.
- Refer the section “4.2.2 Engine body version” when facing engine trouble.



## 4 Failure cause and measures

### 4.2.2 Engine body version

In case engine trouble occurs, refer below table and do appropriate check and maintainance.

Symptom	Cause	Countermeasures
Low starter revolution speed.	(1)Faulty battery. (2)Failure of battery charging (3)Failure of alternator (4)Failure of starter	Check battery → Charge Change
The starter rotates normally but the engine does not start.	(1)No fuel (2)Air entry into fuel line system (3)Fuel filter clogging. (4)Clogging of sedimenter (5)Nozzle clogging	Fuel replenishment Bleed the air Disassemble/Clean/Change Disassemble/Clean/Change Disassemble/Clean
The engine does not reach the rated revolution speed.	(1)Faulty engine controller (2)Engine trouble. (3)Fuel filter clogging (4)Sedimenter clogging (5)Water is accumulated in sedimenter (6)Air filter element clogging.	Call your nearest dealer Call your nearest dealer Disassemble/Change Disassemble/Change Drain water Clean or change of element
In case hard to start engine	(1)Fuel would not flow	(1)Check fuel tank and remove impurities and water (2)Check fuel filter and replace it if it is dirty
	(2)Air and water are mixed in fuel oil piping	(1)Check pipe and tightening band and replace it with new one or repair it if it is damaged
		(2)Remove air
		(3)Remove water or change fuel
	(3)Oil viscosity is high at cold time. Engine rotation speed is low.	(1)Use oil properly according to temperature
In case output shortage	(1)Fuel shortage (2)Fuel filter clogging	(1)Replenish fuel (2)Check fuel system (Especially beware of air mixing)
		(1)Clean element
	(2)Air filter clogging	(1)Clean element
In case engine stops suddenly	(1)Run out of fuel	(1)Replenish fuel (2)Check fuel system (Especially beware of air mixing)
		(1)Clean element
In case exhaust gas color is bad	(1)Bad fuel is used	(1)Replace fuel with good one
	(2)Excessive quantity of engine oil is used	(2)Change oil quantity as regulated one
In case overheat	(1)Cooling water boiling	(1)Check shortage and leakage of cooling water
		(2)Check tightness and looseness of fan belt
		(3)Clean dust in radiator fin tube



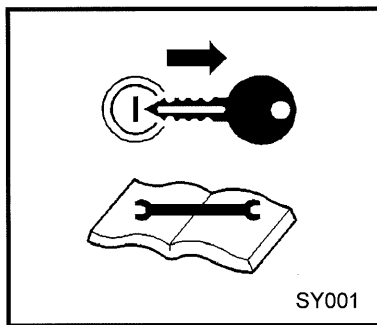
## 5.Periodic inspection/Maintenance

### 5.1 Important Items at Periodic Inspection and Maintenance or after Maintenance

The following table shows the inspection and maintenance intervals under normal operation conditions. When used or operated under hard environmental conditions, it is impossible to warrant the unit even if the above conditions are performed according to the intervals listed in the above table.

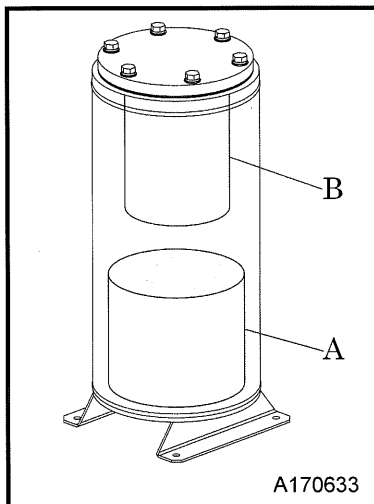
- Please wear protection implements, such as a helmet, protection glasses, earplugs, safety shoes, a glove, and a protection-against-dust mask, according to the contents of work for safety.
- Do not touch hot portions of the machine while inspecting the machine when running. Such parts as engine, exhaust manifold, exhaust pipe, muffler, radiator, oil cooler, air-end, pipe, separator receiver tank, and discharging pipe are especially hot, so never touch those parts, because it could cause serious burns.

#### 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.

#### Prevention of oil separator from catching fire



- Be sure to perform following periodic inspection and maintenance:
  - A. Check and change compressor oil quantity
  - B. Change oil separator



## 5.Periodic inspection/Maintenance

---

### ***Directions: Prohibition of any other jobs or works than directed herein***

**IMPORTANT**

- Be sure to use recommended fuel, oil, grease, and antifreeze.
- Do not disassemble or adjust engine, compressor air-end 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 unapproved parts or by wrong handling, will be out of the scope of "WARRANTY".
- Keep the electrical components away from water or steam.
- Waste from machines contains harmful material. Do not dispose of such harmful fluids to the ground, rivers, lakes or ponds, and sea. It contaminates the environment.
- When draining waste fluid from machines, use leak proof containers to hold such fluids from machine.
- Be sure to follow the designated regulations when disposing of oil, fuel, coolant, filters, battery and other harmful things.



## 5.Periodic inspection/Maintenance

### 5.2 Periodic Inspection List

(Unit:Hour)

Maintenance		Daily	250	300 (First time)	500	1,000	2,000	3,000	Page
Compressor	Check compressor oil level	○							3-6
	Drain separator receiver tank	○							3-7
	Check for looseness in pipe connecting part, and wear and tear of pipe	○							3-9
	Check oil, water, fuel and air leak	○							3-13
	Check functions of all instruments and devices	○							3-13
	Performance check of safety valve	○							3-15
	Check and clean clogging air filter element		○						5-9
	Change compressor oil			○	○				5-10
	Change compressor oil filter element			○		○			5-11
	Change air filter element				○				5-11
	Clean strainer in the scavenging orifice				○				5-12
	Check and clean drain outlet port of after cooler (After-cooler type)				※1 ○				5-13
	Clean outside of the oil cooler					○			5-14
	Clean outside of the after cooler (After cooler type)					○			5-14
	Change oil separator						●		5-16
	Change nylon tubes						☆●		5-16
	Change rubber hoses						☆●		5-16
	Change O-ring of the unloader							★●	5-17
	Change pressure regulator							★●	5-17
	Change solenoid valve for starting unload							●	5-17
	Change oil seal and bearing							●	5-17
	Check consumable parts of auto-relief valve							★●	5-17
	Check consumable parts of vacuum-relief valve							★●	5-17
	Performance check of pressure control valve ASSY							●	5-17

Such items marked ○ shall be carried out by customers. For the items marked ●, contact our office nearby or distributor because technical knowledge is required.

Regarding the item marked ※1:When water is found mixed in the discharged air, perform cleaning work even before the specified interval comes.

The items or parts marked ☆ should be replaced every two years even if they are not in disorder within their periodical maintenance interval because their materials will change or become degraded over the course of as time passes. Also for the same reason, the parts marked ★ should be replaced every three years.

◎The indicated replacement periods are rough estimates. Depending on the usage conditions or environment, inspection/maintenance should be conducted earlier.



## 5.Periodic inspection/Maintenance

(Unit:Hour)

Maintenance		Daily	50 (First time)	250	500	1,000	2,000	3,000	Page
Engine related	Check engine oil level	○							3-4
	Check coolant level	○							3-5
	Check fuel	○							3-8
	Drain fuel tank	○							3-8
	Check sedimenter for condensate	○							3-9
	Check looseness in pipe connectors, terminals and tear in wiring	○							3-9
	Check belt tension	○							3-10
	Change engine oil		○	○					5-6
	Change engine oil filter element		○	○					5-7
	Check battery electrolyte			○					5-7
	Check and clean clogging of air filter element			○					5-9
	Check specific gravity of battery electrolyte				○				5-7
	Change air filter element				○				5-11
	Change fuel filter element				○				5-12
	Change sedimenter element				○				5-13
	Clean inside of radiator				●				5-13
	Clean outside of the radiator					○			5-14
	Change coolant					☆○			5-15
	Clean inside of fuel tank						●		5-16
	Change fuel hose and fuel check valve						☆●		5-16
	Change radiator hoses							☆●	5-17

Such items marked ○ shall be carried out by customers. For the items marked ●, contact our office nearby or distributor because technical knowledge is required.

The items or parts marked ☆ should be replaced every 2 years even if they are not in disorder within their periodical maintenance interval because their materials will change or become degraded as time passes.

◎The indicated replacement periods are rough estimates. Depending on the usage conditions or environment, inspection/maintenance should be conducted earlier.

(Unit:Hour)

Maintenance		800	1,500	3,000	Remarks
Engine body	Check engine valve clearance	●			Please contact nearby distributor or engine distributor for inspection and maintenance.
	Check and clean fuel injection nozzle		●		
	Check fuel injection pump			●	



## 5.Periodic inspection/Maintenance

### 5.3 Periodic Replacement of Parts

Part number changes upon modification.

For replacement of parts, make sure whether the part number is correct or applicable.

Part Name		Part Number	Quantity
Engine oil filter element		41290 01700 KUBOTA 16271-32092	1
Air filter element	for compressor air-end side	32143 11700	1
	for engine side	32143 11500	1
Compressor oil filter element		37438 08900	1
Compressor oil filler port O-ring [C]		03402 25030	1
Fuel filter element	Element [D]	43541 01300 KUBOTA RA211-51281	1
	O-ring [E]	KUBOTA 04811-50650	1
	O-ring [F]	KUBOTA 04816-00160	1
Sedimenter	Element [D]	43541 02600 KUBOTA RD819-51281	1
	O-ring [E]	KUBOTA 1G311-43571	1
Solenoid valve for starting unload		46811 30000	1
Oil separator	Separator	34220 12301	1
	Gasket	03737 16802	2
Pressure control valve ASSY		35300 18700	1
Pressure regulator		36400 19000	1
Belt		KUBOTA 1565972532	1
Fuel check valve		22200 18500 KUBOTA 1C010-42461	1

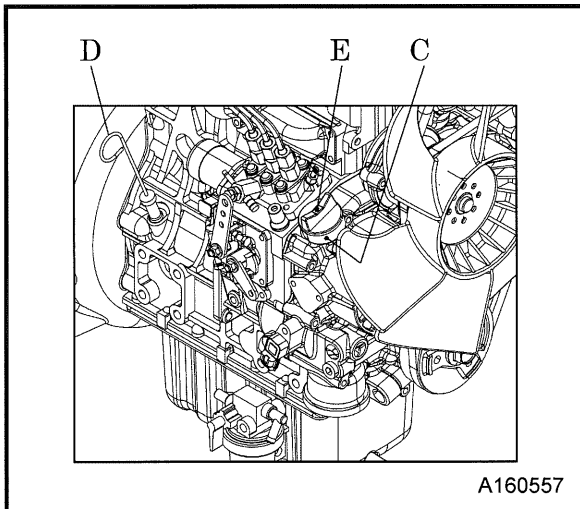


## 5.Periodic inspection/Maintenance

### 5.4 Maintenance Items

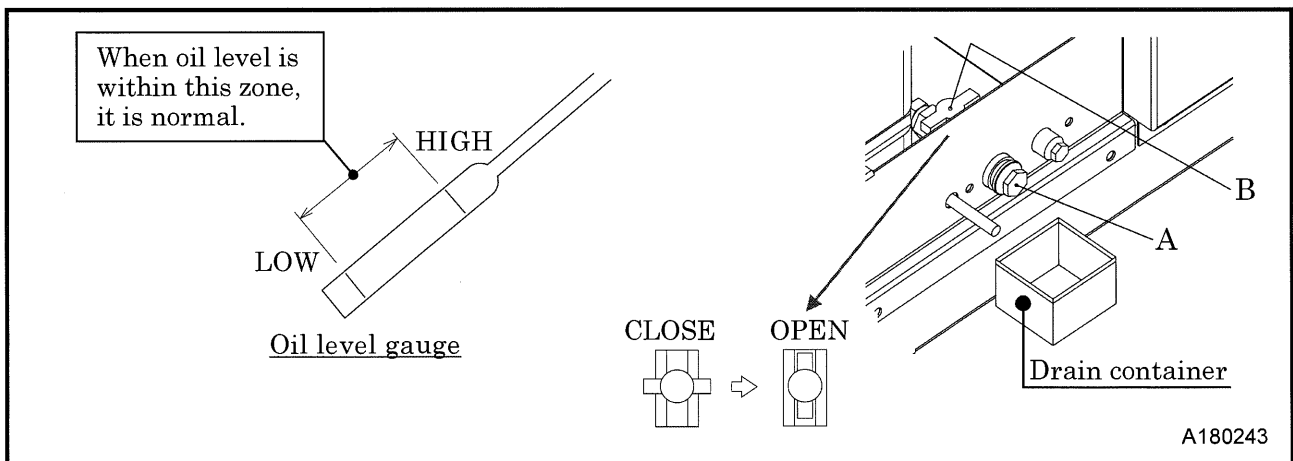
#### 5.4.1 Change engine oil (Change the engine oil filter at the same time.)

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



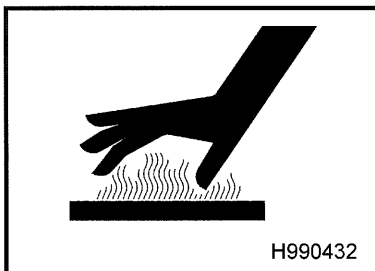
##### <Procedure>

1. After removing the engine oil filler cap [E], remove the drain plug [A] attached outside the machine, open the drain valve [B] attached inside the machine, and drain the oil.
2. After drainage of used engine oil has been completed, close drain plug and drain valve, and supply new engine oil through the oil filler port [C] which is used as oil level gauge also.  
**[Quantity of oil : approx. 4.5L]**
3. After supplying oil, pull out the oil level gauge [D] and wipe it out.
4. Then, re-insert the oil level gauge fully and pull it out again. If the dipstick shows the oil level between LOW and HIGH, it is normal.
5. As you finish refilling, make sure to close filler port cap and to firmly reinsert oil level gauge.



#### Caution in filling or discharging engine oil

**CAUTION**



- After stopping the engine, wait of 10 minutes or more until the engine oil cools off. Then check the level of the engine oil, or refill or drain the oil.
- 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 scalding.
- Never supply more engine oil than the proper level. Too much oil could cause white smoke out of the exhaust, and it can cause damage and accident to engine.

**IMPORTANT**

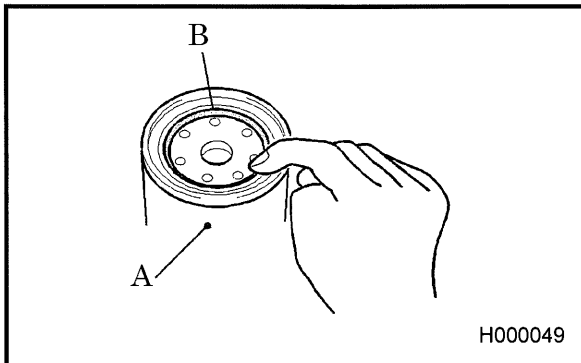
- Follow the designated regulations to dispose of engine oil.



## 5.Periodic inspection/Maintenance

### 5.4.2 Change engine oil filter element

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



<Procedure>

1. Remove the oil filter element [A], using a filter wrench.
2. Screw in the new oil filter element with the gasket [B] coated slightly with oil.  
**(For part number, See 5.3)**
3. After the packing touches the sealing face, tighten another 1 times with a filter wrench.
4. After installing the oil filter element, check it for any oil leak during operation.

### 5.4.3 Check battery electrolyte and specific gravity of battery electrolyte

**Battery electrolyte: every 250 hours**

**Specific gravity of battery electrolyte: every 500 hours**

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

#### ● Ordinary type battery:

Check battery electrolyte level and if the level is not within the specified level, add distilled water.

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

Refer to 5.4.4 for method of specific gravity measurement and recharging the battery.

#### ● Enclosed type battery:

Check the indicator on top surface of the battery.

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

If specific gravity of battery electrolyte does not rise in spite of replenishing distilled water or charging battery, be sure to replace battery with new one quickly.




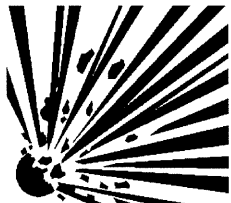

## 5.Periodic inspection/Maintenance

### 5.4.4 Maintenance of Battery

Battery may generate hydrogen gas and may explode.

Therefore, recharging should be done at a well-ventilated place.

- Do not check the battery by short-circuiting the positive and negative terminals with a metallic piece.
- Never operate the machine nor charge the batteries with the battery liquid level being kept lower than the lower level. Continuing operation at this lower level will cause deterioration of such parts as pole plates etc., and also it may cause explosion as well as reduction of battery life. Add distilled water so that the liquid level may reach the middle level between the “UPPER LEVEL” and “LOWER LEVEL” without any delay.
- Wear protective gloves and safety glasses when handling a battery.
  - When such battery electrolyte contacts your clothes or skin, wash it away with large amount of water immediately.
  - If the battery electrolyte gets into your eyes, wash it away immediately with plenty of water and see a doctor at once, because it is feared that eyesight might be lost.

<b>Handling battery</b>		
<div><b>WARNING</b></div>	<div> D004</div>	<ul style="list-style-type: none"><li>● Keep flames away from battery.</li><li>● Do not spark near the battery nor light a match, nor bring lit cigarette and match close to the battery.</li><li>● Do not charge the frozen battery. Otherwise it may explode. If the battery is frozen, warm it up until the battery temperature becomes 16°C to 30°C.</li><li>● Battery electrolyte is dilute sulfuric acid. In case of mishandling, it could cause skin burning.</li><li>● Dispose of battery, observing local regulations.</li></ul>
	<div> W010</div>	
	<div> TR0093</div>	

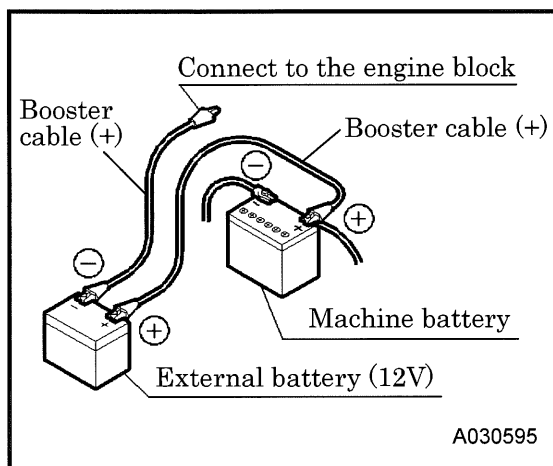
#### [Charge battery]

- Use the battery charger after make sure to confirm whether it's fulfill a condition with the battery you charge.
- Disconnect the cable between battery and the machine, and charge the battery with a 12V battery charger.
- Be sure not to connect (+) and (–) terminals backwards.



## 5.Periodic inspection/Maintenance

[How to use booster cable]



<Procedure for using a booster cable>

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

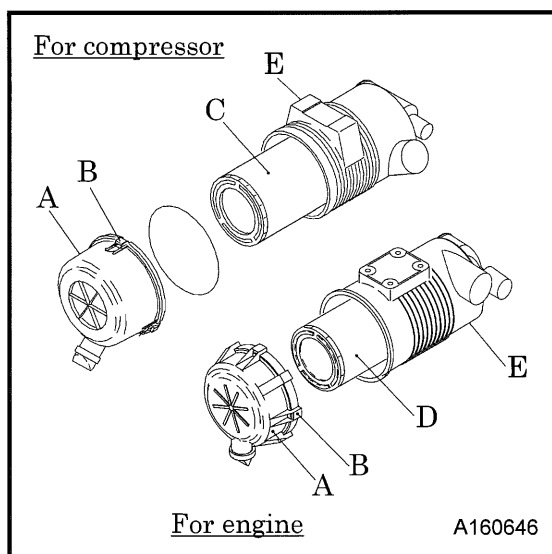


### ***Do not reverse the cable connection***

- When a booster cable has to be used or when cables are connected again after an battery is replaced, be careful not to connect (+) and (-) terminals backwards. Such wrong-connection will cause spark and damage to each component.

### 5.4.5 Check and clean clogging of air filter element

**Every 250 hours**



<Procedure>

1. Loosen the cap fix latch [B] at cap [A], then remove cap and clean inside.
  2. Remove the element [C] and [D], and clean it.
  3. When putting cap after cleaning, push it into case [E] with your hand and fasten it after checking the hook of cap fix latch is set to case.
- If the element is found heavily dusty, replace it with a new one. **(For part number, See 5.3)**



- Clogged or cracked or pitted element could allow entrance of dust into engine and compressor air-end to cause earlier wear of moving parts. Periodical inspection and cleaning of element should be performed to maintain life of compressor air-end and engine long.

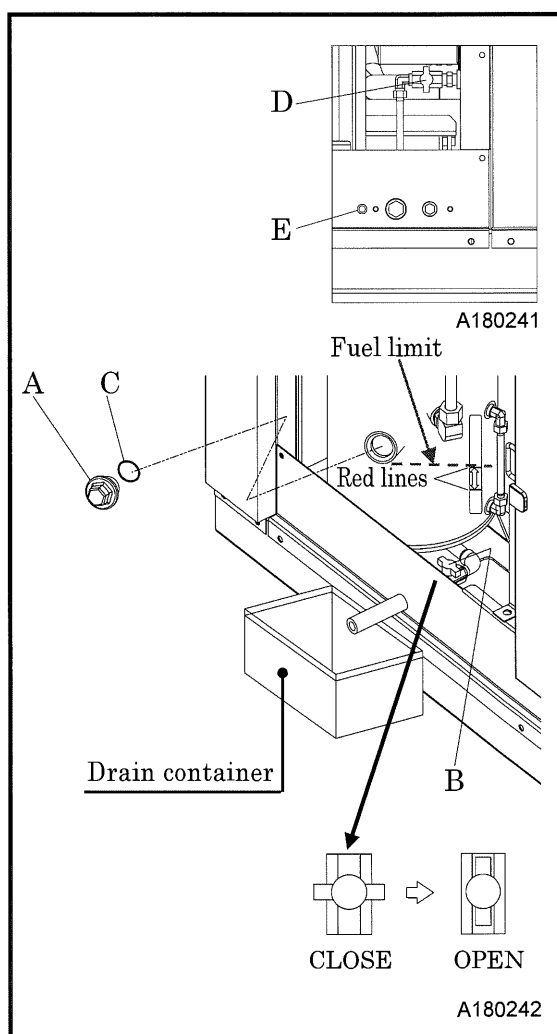


## 5.Periodic inspection/Maintenance

### 5.4.6 Change compressor oil

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

- For prevention of fire caused due to deteriorated oil separator, in principle change of compressor oil is to be performed in accordance with the schedule mentioned in the regular maintenance table. However, it is heavily influenced by operation conditions and environmental conditions. If it has been found more dirty and corrupted, it should be changed.
- If machine is continuously operated in such bad conditions, it could damage bearings and degraded oil sticks oil separator to cause accumulated oxidation heat of reaction to lead oil separator fire. For this reason, regular maintenance work should be done surely and perfectly.
- Conduct changing compressor oil after checking machine stoppage for about 2 to 3 minutes and dropping pressure of separator receiver tank to zero.



#### <Procedures>

1. After stopping the machine, wait for the complete release of the pressure in the separator receiver tank. Then, remove filler cap [A] slowly and open drain valve [B] to discharge the compressor oil. After opening the drain valve [D] of the oil cooler, drain the oil accumulated in the cooler through the drain hose [E] on the side of the frame to the drain receptacle.
2. After discharging compressor oil, be sure to tighten drain valve [B] and [D].
3. Fill the tank with new compressor oil up to the height indicated by the dotted line (Fuel Limit). Then, close filler cap. Inspect O-ring [C] of filler cap and replace it with a new one if any hardening or damage is found.  
**(For part number, See 5.3)**
4. After starting operation, check and confirm that oil level is within red lines of oil level gauge.

Quantity of oil between the red lines	Approx.1.3L
Quantity of change oil	Approx.9.0L

#### IMPORTANT

- Mixture of different brands compressor oil could cause an increase of viscosity and make compressor oil sticky. In the worst case, it could cause sticking trouble of compressor air-end "Compressor air-end will not turn". Also repairing of such air-end needs expensive cost. Therefore, be sure to avoid mixing different brands oil. In case compressor oil brand in use has to be unavoidably changed, it is absolutely necessary to completely clean up the interior of compressor air-end. In such a case, contact "AIRMAN" dealer or us directly.
- Follow the designated regulations to dispose of compressor oil.

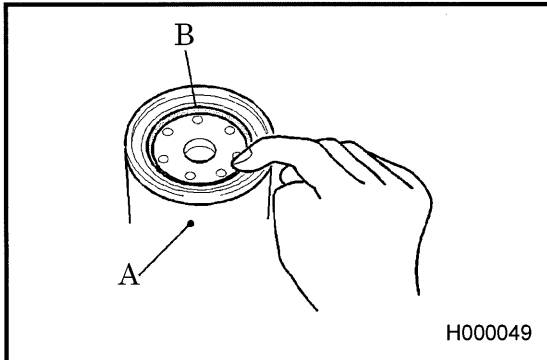


## 5.Periodic inspection/Maintenance

### 5.4.7 Change compressor oil filter element

**At 300 hours for the first change and every 1,000 hours thereafter**

Be sure to use genuine oil filter element.



#### <Procedure>

1. Remove the oil filter element [A], using a filter wrench.
2. Screw in the new oil filter element with the packing [B] coated slightly with oil.

**(For part number, See 5.3)**

3. After the packing touches the sealing face, tighten another 3/4 to 1 turn with a filter wrench.
4. After installing the oil filter element, check it for any leak during operation.

**IMPORTANT**

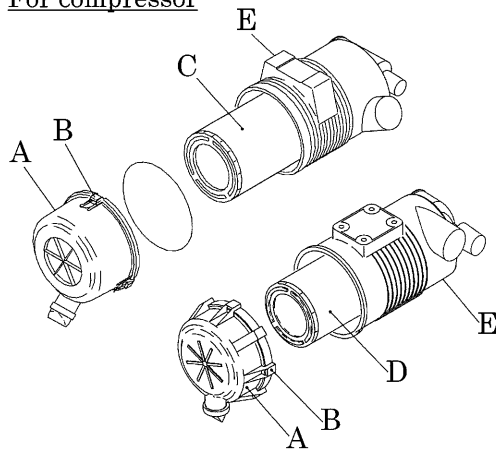
- Poor quality oil filter element do not trap dust sufficiently and will cause damage to the bearings in a short period. Be sure to use genuine parts.

### 5.4.8 Change air filter element

**Every 500 hours**

Be sure to use genuine air filter element.

For compressor



A160646

#### <Procedure>

1. Loosen the cap fix latch [B] at cap [A], then remove cap and clean inside.
  2. Remove element [C] and [D] and replace it with new one. **(For part number, See 5.3)**
  3. When putting cap after replacing, push it into case [E] with your hand and fasten it after checking the hook of cap fix latch is set to case.
- When used or operated under bad conditions, it is better to remove all the elements, check them, clean them and replace them earlier before the intervals listed in maintenance table, if they are found difficult to be repaired.

**IMPORTANT**

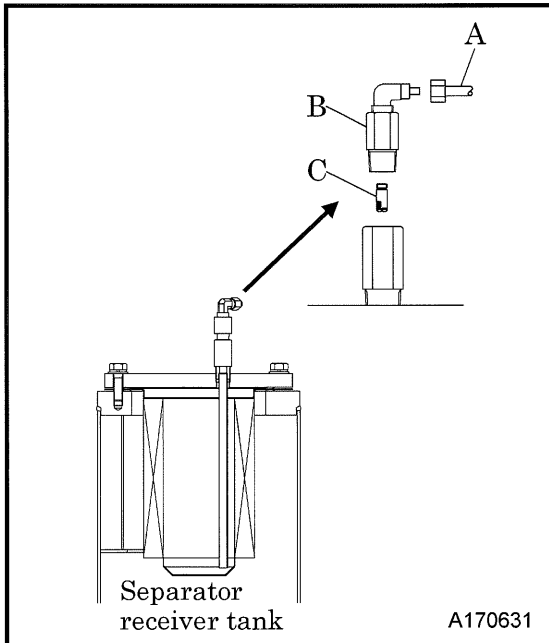
- Air filter is an important part which is crucial to machine's performance and life. Be sure to use genuine parts.



## 5.Periodic inspection/Maintenance

### 5.4.9 Clean strainer in the scavenging orifice

**Every 500 hours**

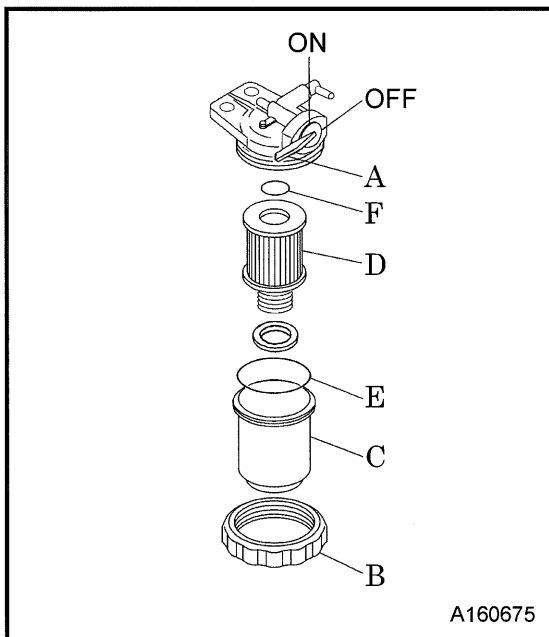


#### <Procedure>

1. Remove the pipe [A], using a spanner.
2. First remove the bushing [B].
3. Then remove the strainer [C].
4. Wash the removed strainer in diesel oil and blow out "dust" by air blowing.
5. After finishing the cleaning, install the strainer again in the reverse procedure.

### 5.4.10 Change fuel filter element

**Every 500 hours**



#### <Procedure>

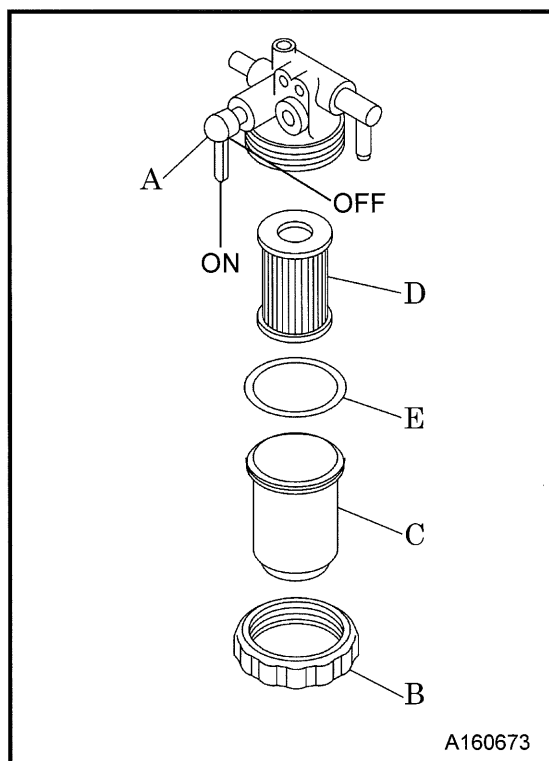
1. Turn the lever [A] of fuel filter to "OFF" and cut off fuel supply.
2. Remove the cup [C] after loosening the ring nut [B], and then take off the element [D] from the inside.
3. Clean the cup and then install the new element and O-ring [E], [F]. **(For part number, See 5.3)**
4. Install to the body the element equipped with the element. Then tighten the ring nut securely.
5. Turning lever of fuel filter to "ON" position, supply fuel in the cup. Then bleed air completely from fuel system. **(See 3.4.7)**



## 5.Periodic inspection/Maintenance

### 5.4.11 Change sedimenter element

**Every 500 hours**



<Procedure>

1. Turn the lever [A] of fuel valve of sedimenter to the direction of "OFF" mark to cut off the fuel flow.
2. Loosen the ring nut [B] to remove cup [C], take out the element [D].
3. Clean the cup, fit a new element in, and install a new O-ring [E]. **(For part number, See 5.3)**
4. After installing the cup with the element built in to the body, securely fasten it by the ring nut.
5. After pouring the fuel into the cup by turning the lever of fuel valve to the direction of "OPEN", bleed the air. **(See 3.4.7)**

### 5.4.12 Clean inside of radiator

**Every 500 hours**

- When the inside of a radiator and water conduits of an engine are dirty with scale and rust, its cooling efficiency will be deteriorated. Clean the interiors of such components periodically.
- When cleaning it, contact directly us or distributor because it requires expert technical knowledge.

### 5.4.13 Check and clean drain outlet port of after cooler (After-cooler type)

**Every 500 hours**

See 3.6.1 for after cooler drain.

***Cleaning it completely and keeping it cleaned***

**IMPORTANT**

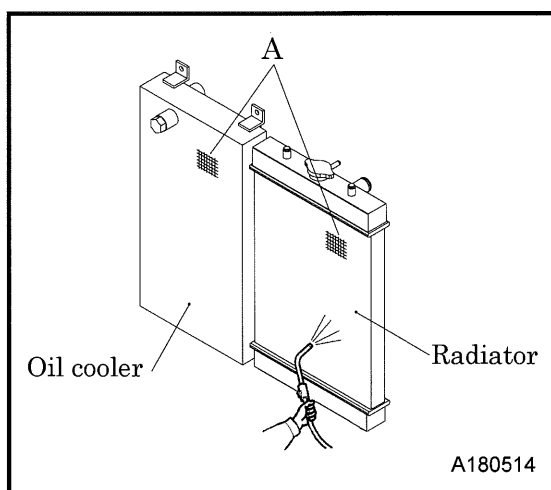
- If the discharge air water is mixed in, it could be clogging of the silencer unit. When inspection and cleaning it, contact directly us or distributor because it requires expert technical knowledge.



## 5.Periodic inspection/Maintenance

### 5.4.14 Clean outside of the radiator·oil cooler

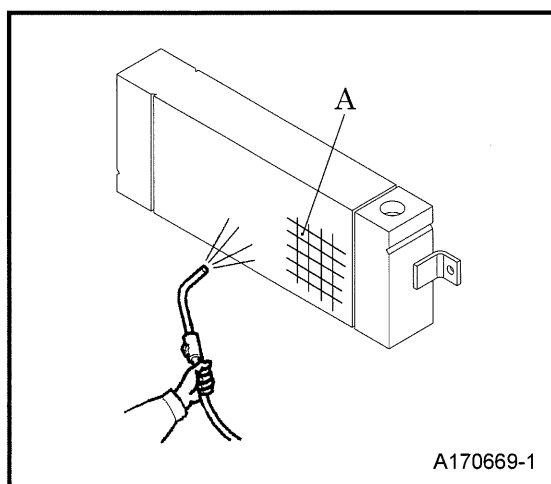
**Every 1,000 hours**



- When the fin tubes diaphragm [A], of a radiator, and an oil cooler are clogged with dust or other foreign materials, the heat exchange efficiency drops and this will raise coolant temperature and discharge air temperature. These tubes and fins should be cleaned depending on the state of clogged tubes diaphragm, even before maintenance schedule.
- Do not use a high pressure washer to protect fin tubes from being damaged.
- Take steam cleaning with removing cooler when there is a lot of dirt.
- When cleaning it, contact our office nearby or distributor.

### 5.4.15 Clean outside of the after cooler (After-cooler type)

**Every 1,000 hours**



- If fin tube [A] of the after-cooler clogged with dust, it may cause troubles (heat exchange efficiency becomes lower and discharge air will not be at low temperature, or water in the discharge air will not be removed). Clean the tube properly according to clogging status even if not at periodic cleaning time.
- Do not use a high pressure washer to protect fin tubes from being damaged.
- Take steam cleaning with removing cooler when there is a lot of dirt.
- When cleaning it, contact our office nearby or distributor.



## 5.Periodic inspection/Maintenance

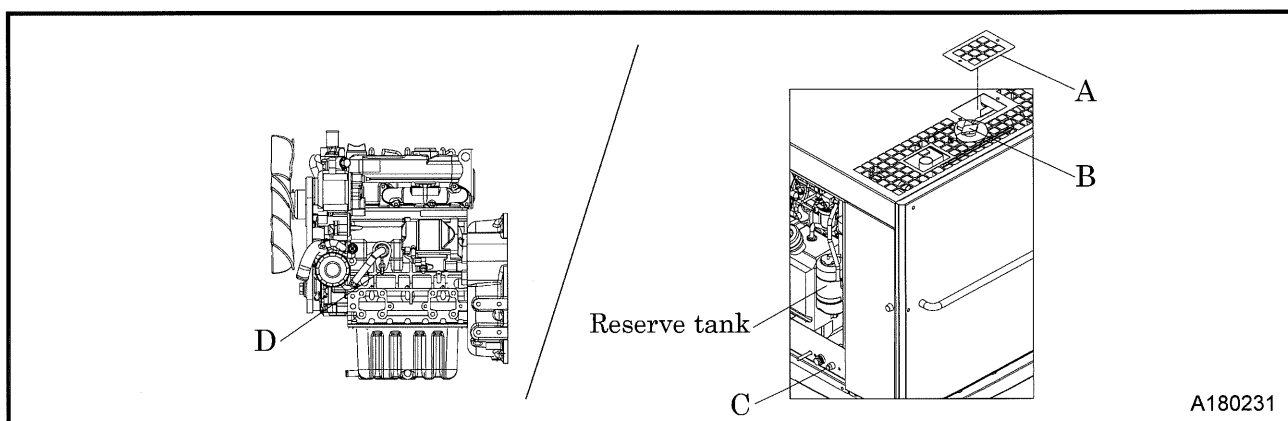
### 5.4.16 Change coolant

**1,000 hours or every 2 years**

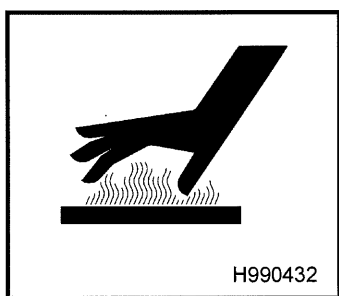
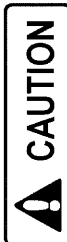
Be sure to stop the machine and loosen the radiator cap slowly after the coolant water is sufficiently cooled and the inner pressure is released, and then take the cap off.

<Procedure>

1. For discharging the LLC (Antifreeze), remove inlet cover [A], and remove radiator cap [B], then remove drain plug [C] with setting drain container.
2. If discharging drain by drain valve [D] on engine body, loosen drain valve with setting the drain container after attaching the drain hose (Please prepare it by your side) to the tip of drain valve.
3. Drain LLC (Antifreeze) of reserve tank.
4. After discharge is completed, attach drain plug and tighten drain valve on engine body, then replenish coolant from radiator water inlet and reserve tank water inlet.  
**[Quantity of water : approx. 4.1L]**
5. After replenish is completed, attach the removed parts by reverse procedures.
6. After changing the LLC (Antifreeze), operate the machine for 5 minutes at the unloaded condition and stop it. Then check the coolant level again, and replenish if it is short.



#### Caution changing coolant



- When removing radiator cap, unfasten it to decrease internal pressure while unlocking first step. After checking internal pressure decreased, unfasten the radiator cap more until second step unlocked. If you fail to conduct these processes, it might causes blowing radiator cap by internal pressure or gushing hot scalding vapor.
- LLC (Antifreeze) is a toxic material.
- If it should be swallowed by mistake, it is necessary to see a doctor immediately instead of being sent out enforcedly.
- When a person gets LLC (Antifreeze) in his eyes, wash the eyes 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 (Antifreeze).



## 5.Periodic inspection/Maintenance

---

### 5.4.17 Change oil separator

**Every 2,000 hours**

Even before the replacement time of the separator, if the compressor oil consumption is high and the oil is mixed in the discharge air, clean the separator recovery orifice first, and if it still does not improve, replace the oil separator and gasket. **(For part number, See 5.3)**

When replacing oil separator, contact our office nearby or distributor because technical knowledge is required.

### 5.4.18 Clean inside of fuel tank

**Every 2,000 hours**

When cleaning inside of fuel tank it, contact our office nearby or distributor because technical knowledge is required.

### 5.4.19 Change nylon tubes

**2,000 hours or every 2 years**

Replace nylon tubes used for the oil and air piping's.

When replacing it, contact our office nearby or distributor because technical knowledge is required.

### 5.4.20 Change fuel hose and fuel check valve

**2,000 hours or every 2 years**

If the various rubber hoses in the fuel system are hardened or deteriorated, replace them even before the replacement time. Also replace the fuel check valve (See 7.4.2) installed between the engine outlet and the fuel tank.

When replacing it, contact our office nearby or distributor because technical knowledge is required.

### 5.4.21 Change rubber hose

**2,000 hours or every 2 years**

Check hoses used for oil piping for any crack or tear, and replace when an abnormality is found.

When replacing it, contact our office nearby or distributor because technical knowledge is required.



## 5.Periodic inspection/Maintenance

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### 5.4.22 Change radiator hoses

**3,000 hours or every 2 years**

When any crack or wear is found on the hoses, change it even before the scheduled time.

When replacing it, contact our office nearby or distributor because technical knowledge is required.

### 5.4.23 Change O-ring of unloader

**3,000 hours or every 3 years**

When replacing it, contact our office nearby or distributor because technical knowledge is required.

### 5.4.24 Change pressure regulator

**3,000 hours or every 3 years**

When replacing it, contact our office nearby or distributor because technical knowledge is required.

### 5.4.25 Change solenoid valve for starting unload

**Every 3,000 hours**

When replacing it, contact our office nearby or distributor because technical knowledge is required.

### 5.4.26 Change oil seal and bearing

**Every 3,000 hours**

When replacing it, contact our office nearby or distributor because technical knowledge is required.

### 5.4.27 Check consumable parts of auto-relief valve and vacuum relief valve

**3,000 hours or every 3 years**

When replacing it, contact directly us or distributor because it requires expert technical knowledge.

### 5.4.28 Change pressure control valve ASSY

**3,000 hours or every 3 years**

When it is out of the minimum pressure normal range (See 3.4.4) at full load, replace the pressure control valve ASSY even before replacement time. **(For part number, See 5.3)**

When replacing it, contact directly us or distributor because it requires expert technical knowledge.



## 6. Storage of the Machine and Disposal of Product

---

### 6.1 Preparation for Long-term Storage

When the machine is left unused or not operated longer than half a year (6 months), store it at the dry place where no dust exists after the following treatments have been done to it.

- Put the machine in a temporary cabin if it is stored outside. Avoid leaving the machine outside with a sheet cover directly on the paint for a long time, or this will cause rust to the machine.
- Perform the following treatments at least once every three months.

#### <Procedure>

1. Drain existing 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. Completely charge the battery and disconnect grounding wires. Remove the battery from the machine, if possible, and store it in a dry place. (Charge the battery at least once every month.)
3. Drain coolant and fuel from the machine.
4. 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 entering the machine.
5. Be sure to repair any breakdowns and maintain the machine so that it will be ready for the next operation.

### 6.2 Disposal of Product

In case of disposal of this machine, at first drain the cooling water and oils.

When you have anything unclear or you want to advise us, contact our office nearby or distributor.



# 7.Specifications

## 7.1 Specifications

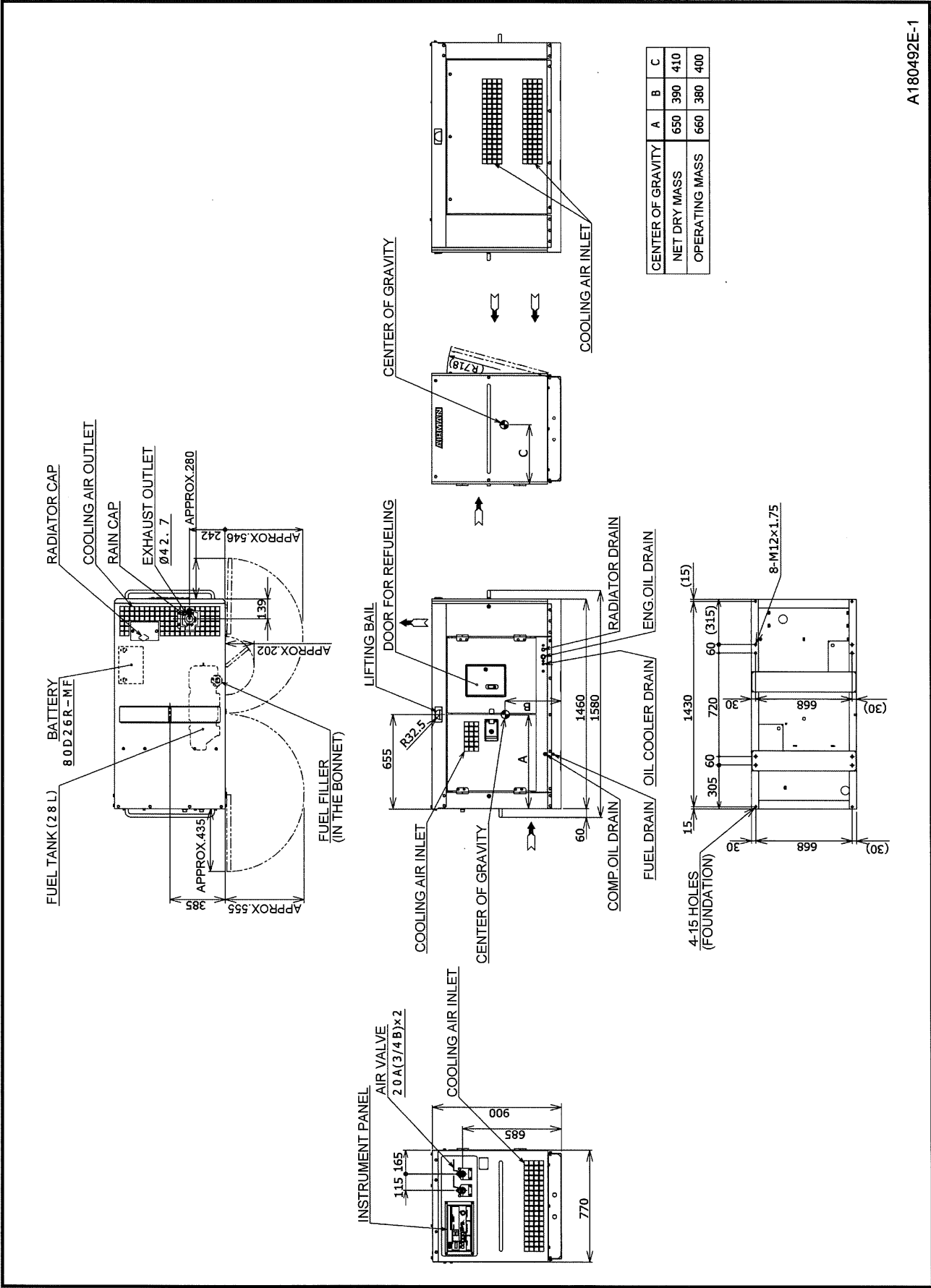
Model			FAC-28B	FAC-28BC (After-cooler type)
COMPRESSOR	Type		Single-stage oil cooled, screw type compressor	
	Free air delivery	m <sup>3</sup> /min	2.8	
	Working pressure	MPa	0.70	
	Safety valve setting pressure	MPa	1.0	
	Rotation speed	min <sup>-1</sup>	Full load:3,400 / Unload:1,800 / ECOmode:1,400	
	Lubricating system		Forced Lubrication by compressed pressure	
	Driving system		Direct driving with gear coupling	
	Receiver tank capacity	m <sup>3</sup>	0.017	
	Lubricating oil capacity	L	9	
ENGINE	Model		KUBOTA D1105-K3B	
	Type		Water-cooled 4-cycle direct injection	
	Cylinder quantity · Cylinder diameter × Cylinder stroke	mm	3·78mm×78.4mm	
	Total displacement	L	1.123	
	Rated output	kW/min <sup>-1</sup>	19.2/3,400	
	Lubricating oil capacity	L	4.5(The amount of initial filling) Approx. 4.5(The amount of exchange)	
	Coolant capacity (including radiator)	L	4.1	
	Battery		80D26R-MF(12V)	
	Fuel tank capacity	L	28	
DIMENSION · MASS	Overall length (only for bonnet)	mm	1,460	
	Overall width	mm	770	
	Overall height	mm	900	
	Net dry mass	kg	460	470
	Operating mass	kg	500	510



# 7.Specifications

## 7.2 Outline drawing

FAC-28B

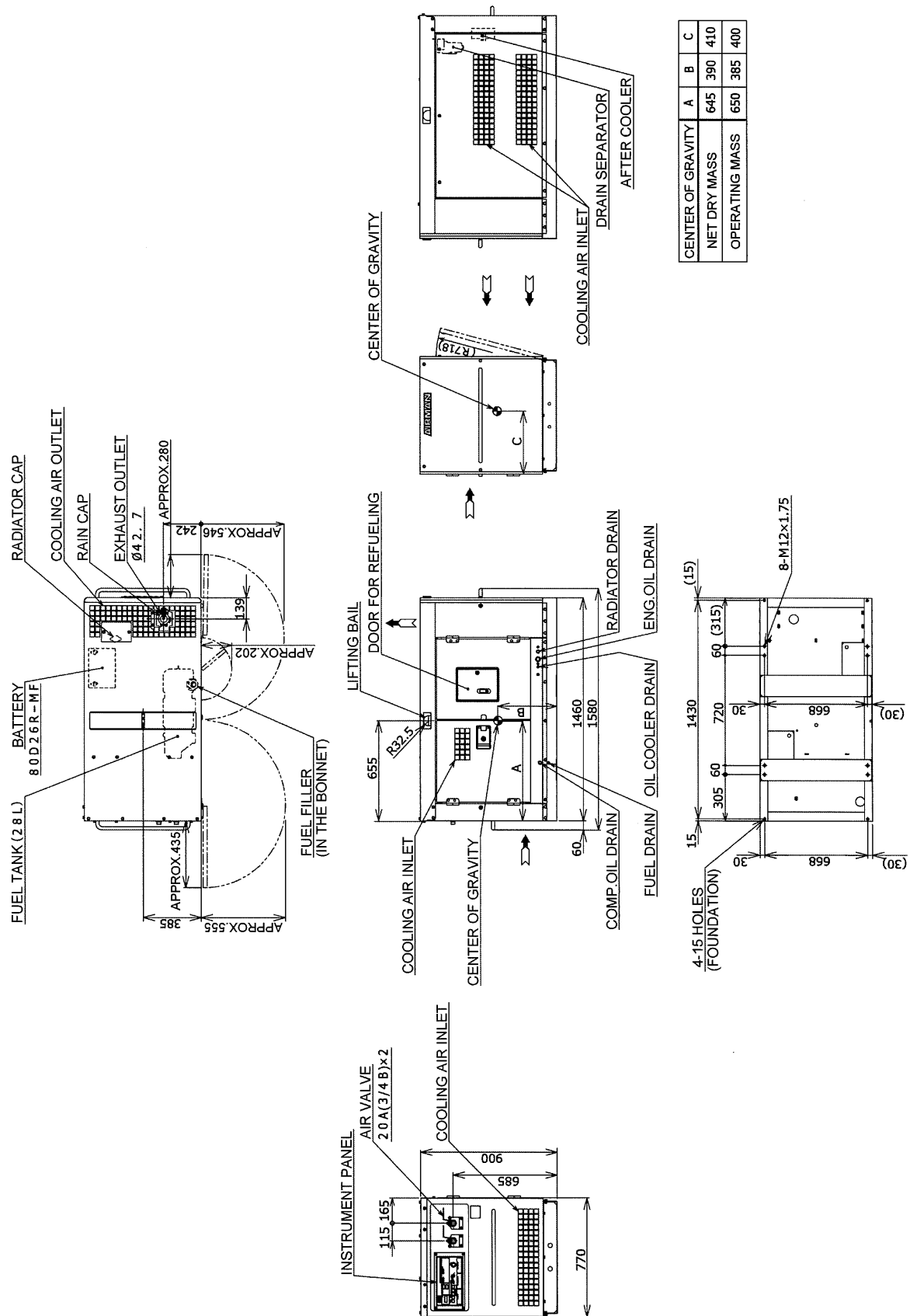


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## 7.Specifications

### FAC-28BC (After-cooler type)

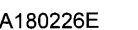


CENTER OF GRAVITY	A	B	C
NET DRY MASS	645	390	410
OPERATING MASS	650	385	400

A180493E-1



### 7.3 Wiring Diagram



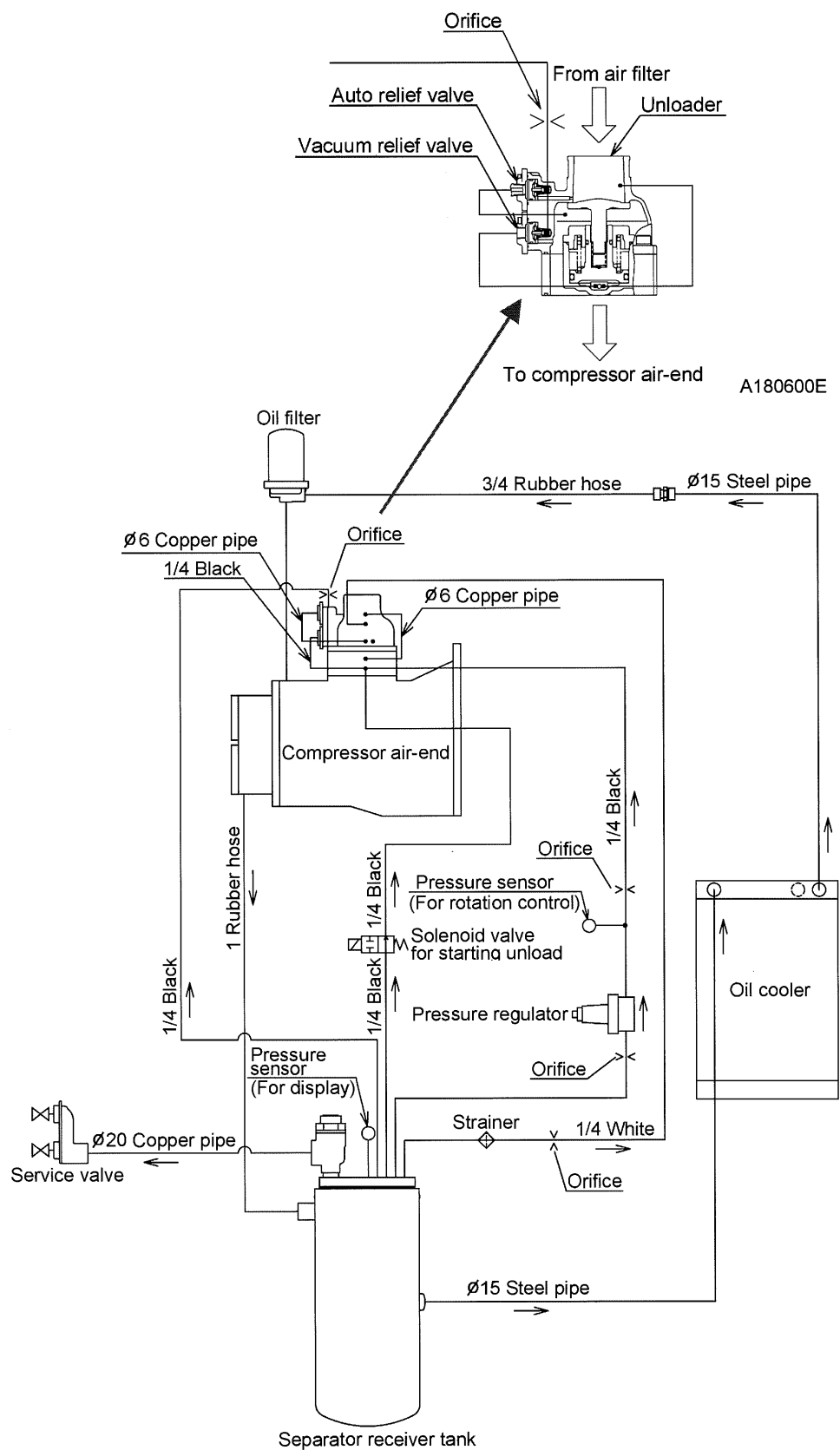


# 7.Specifications

## 7.4 Piping Diagram

### 7.4.1 Compression air · Compressor oil

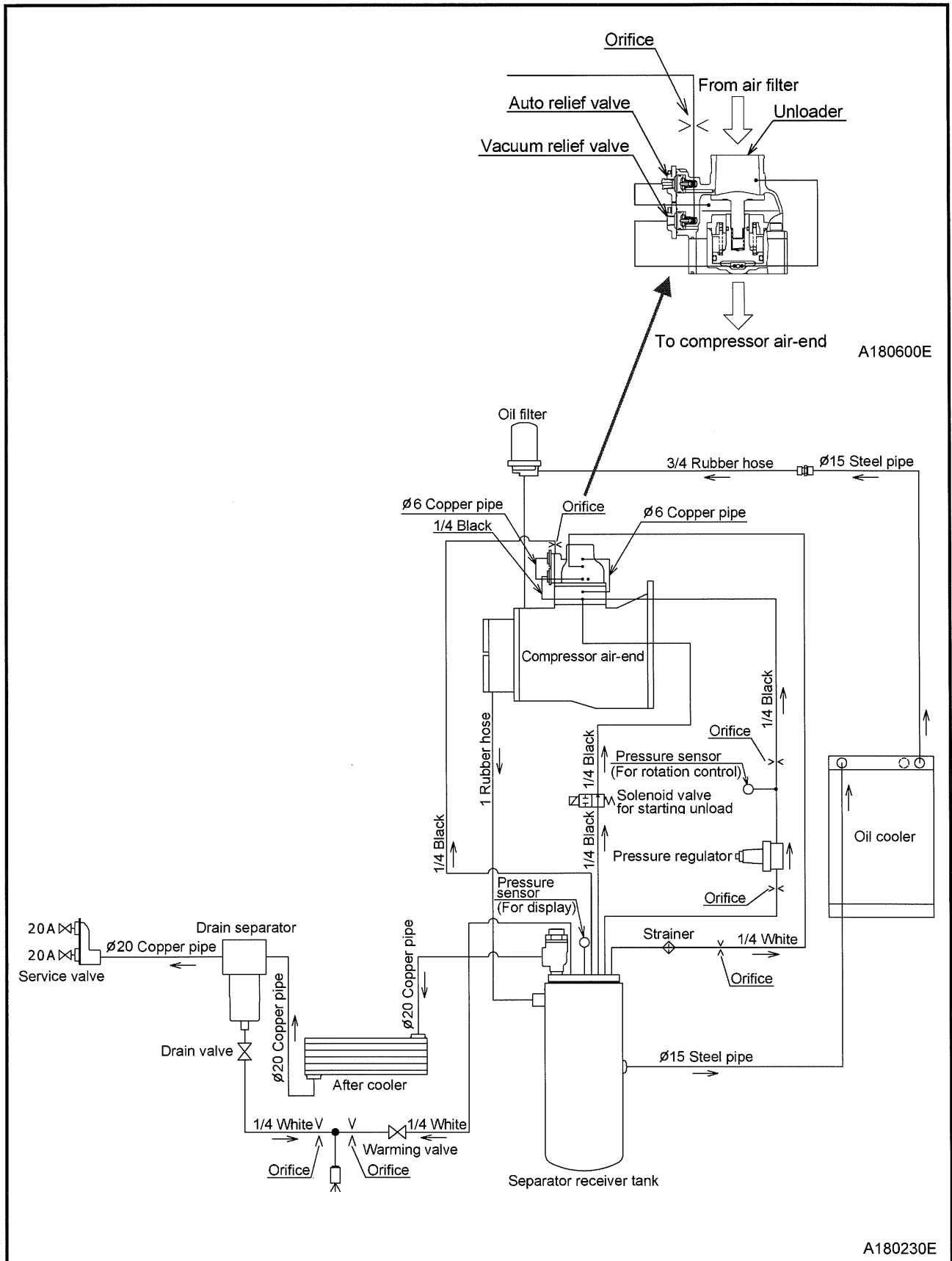
FAC-28B





# 7.Specifications

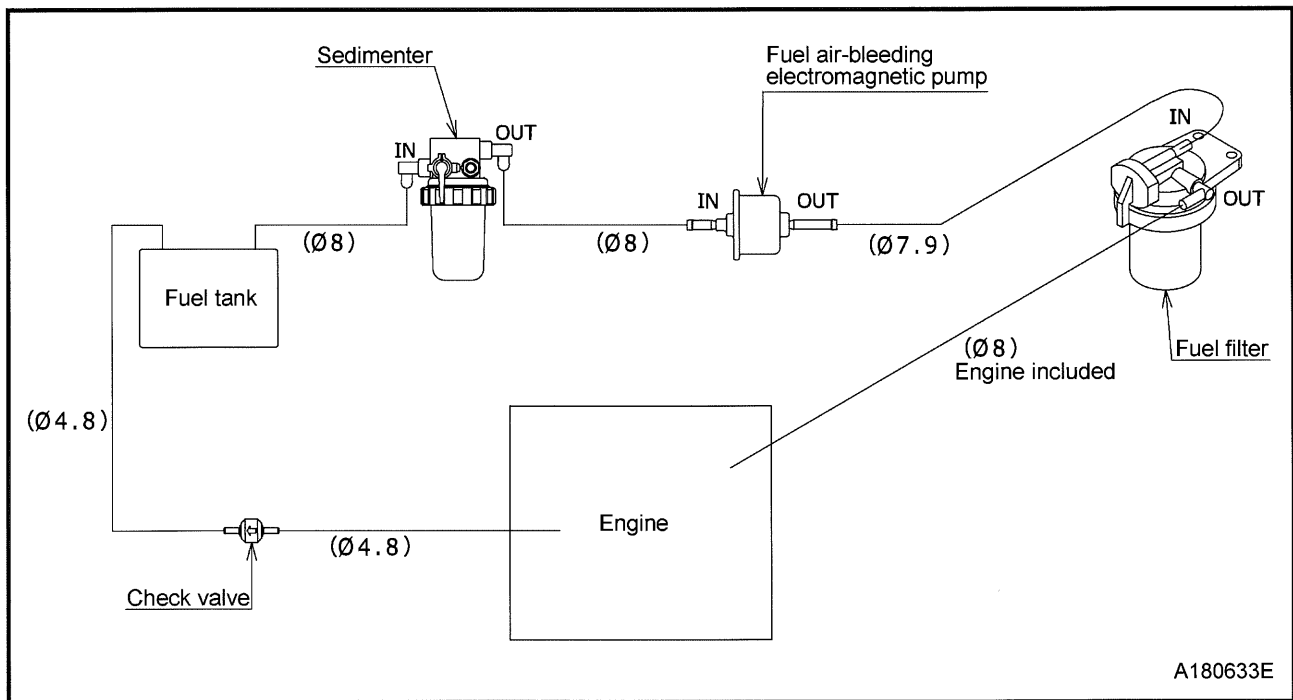
## FAC-28BC (After-cooler type)





## 7.Specifications

### 7.4.2 Fuel Piping





## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



## OPERATION LOG

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