

⚠ Read this handbook thoroughly and understand the whole information contained before trying to operate, inspect and service your machine!

OPERATING & MAINTENANCE INSTRUCTIONS

**VIBRATING
ROLLER**

MODEL

SV204 Series

**SV204D SV204T
SV204TB SV204TF
SV204FB**

From SV204D	→	1SV65	-	30234
SV204T	→	1SV65	-	30234
SV204TB	→	1SV65	-	30234
SV204TF	→	1SV65	-	30234
SV204FB	→	1SV65	-	30234

SAKAI

PREFACE

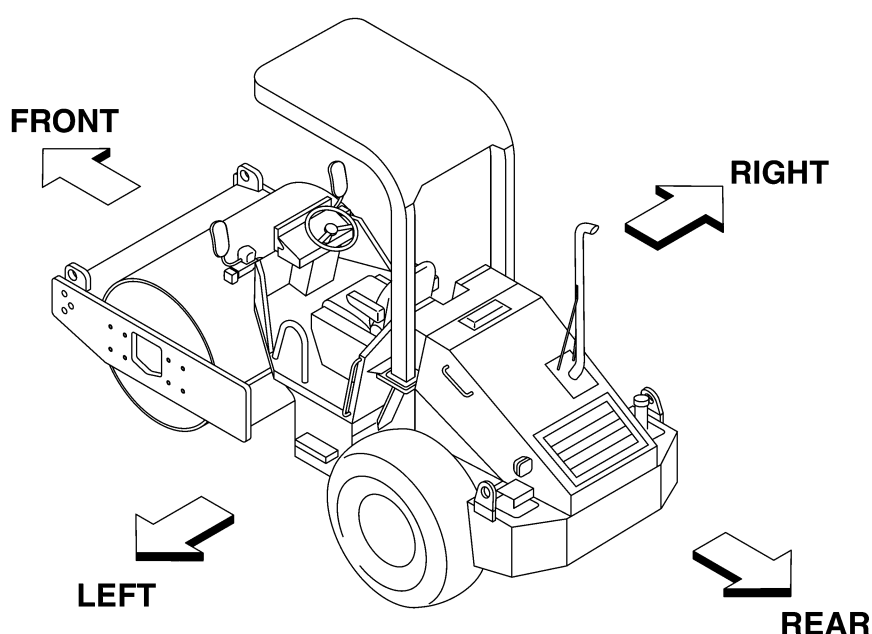
This operator's manual serves as a guide for the use of your SAKAI SV204 Series Vibrating Roller for those who are new to the machine, and also for the people who have experience in using the machine and want to refresh their knowledge for the machine.

Read this manual thoroughly and try to fully understand the information before operating your machine. Keep this handbook at hand whenever you do your work.

When an instruction manual is lost or is damaged and is not legible, replace it immediately.

The main subjects of this manual are:

(1) Basic precautions for safety, (2) Operation, (3) Daily maintenance and (4) Specifications. For operation and maintenance of the engine, refer to the Engine Instruction Manual furnished separately. Descriptions in this manual can differ from the machine instructions of your machine due to the results of the investigation and improvement in its design. If you have any inquiry regarding your machine or this manual, contact our distributors.



CALIFORNIA **Proposition 65 Warning**

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

CONTENTS

PREFACE

MACHINE AND ENGINE IDENTIFICATION NUMBERS	1
SAFETY NOTICES	2

1 BASIC PRECAUTIONS FOR SAFETY	4
1.1 General Precautions.....	4
1.2 Preparation for Safe Operation	8
1.3 Before Starting the Engine	9
1.4 After Starting the Engine	10
1.5 During Operation	11
1.6 Loading and Unloading	14
1.7 Transportation	15
1.8 Handling the Battery	15
1.9 Towing.....	16
1.10 Before Servicing.....	17
1.11 During Servicing.....	19
1.12 Safety Decals	22
2 OPERATION.....	24
2.1 Instruments and Controls	24
2.1.1 Operator's station	24
2.1.2 Gauges, indicator lamps and warning lamps.....	25
2.1.3 Switches	28
2.1.4 Operating levers / pedals.....	31
2.1.5 Unloader valve.....	32
2.1.6 Fuse box	33
2.2 Handling and Adjustments	34
2.2.1 Handling the DPF	34
2.2.2 Seat adjustment.....	38
2.2.3 Fusible link.....	39
2.2.4 Accessory socket.....	39
2.2.5 Scraper adjustment and replacement.....	40
2.2.6 Disengaging the brake when towing.....	41
2.3 Operation.....	42
2.3.1 Before-starting inspection	42
2.3.2 Starting the engine.....	43
2.3.3 After starting the engine.....	44
2.3.4 Traveling	45
2.3.5 Stopping / Parking	46
2.3.6 Stopping the engine.....	47
2.3.7 Check after stopping the engine	47
2.4 Vibratory Operation	48

2.5	Precautions for Work	49
2.5.1	Compaction operation.....	49
2.5.2	When going downhill.....	49
2.5.3	On a slope	49
2.6	Applicable Jobs	50
2.7	After Operation	51
2.8	Loading and Unloading	51
2.8.1	Use of a truck or trailer equipped with a winch	52
2.8.2	Self-propelling.....	53
2.9	After Loading the Machine	53
2.10	Transportation	53
2.11	Operation in Cold Weather.....	54
2.11.1	Fuel oil and grease	54
2.11.2	Coolant	54
2.11.3	Battery	55
2.12	When the Cold Season is Over	56
2.13	For a Long Storage Period	56
2.14	During the Storage Period.....	56
2.15	When the Battery Has Discharged	57
2.15.1	Connection and disconnection of booster cables	57
3	PERIODICAL MAINTENANCE.....	59
3.1	Precautions	59
3.1.1	Lifting the machine on a hoist.....	61
3.2	Walk-around Checking	62
3.2.1	Tire inflation pressure check.....	63
3.2.2	Checking for external injury to a tire	63
3.3	Periodical Maintenance Points	64
3.4	Maintenance Procedure	67
(1)	Every 10 hours or daily	67
(2)	Every 50 hours	69
(3)	Every 250 hours	71
(4)	Every 500 hours	74
(5)	Every 500 hours or 3 months, or each time after brake pedal is used	77
(6)	Every 1000 hours	78
(7)	Every 1500 hours	80
(8)	Every 3000 hours	80
(9)	As required	81
3.5	Consumable Parts.....	84
3.6	Feeding Water and Lubricants	86
3.7	Electric Wiring Diagram.....	88

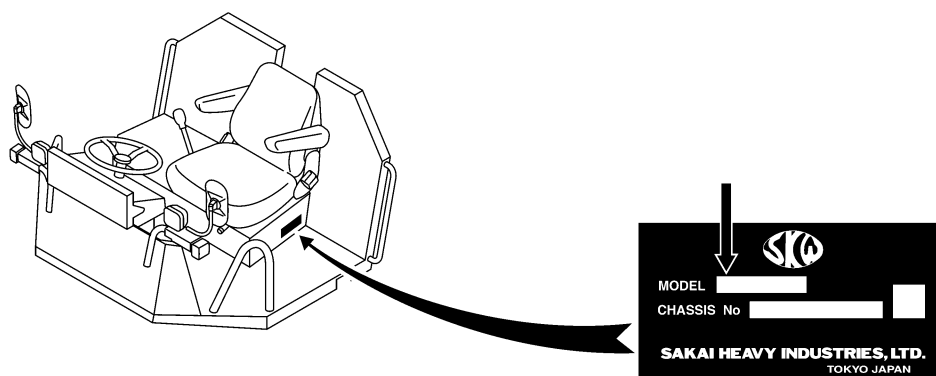
4	SPECIFICATIONS	90
(1)	SV204D	90
(2)	SV204T	91
(3)	SV204TB	92
(4)	SV204TF	93
(5)	SV204FB	94

MACHINE AND ENGINE IDENTIFICATION NUMBERS

When ordering parts or making inquiries about your machine, the following information is requested.

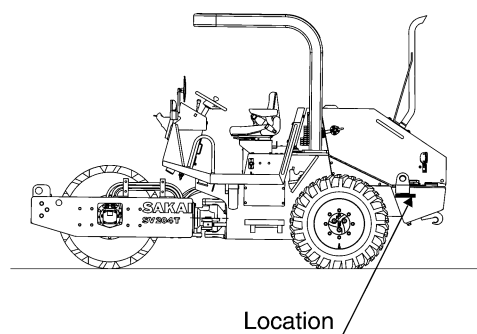
(1) Machine model

Indicated on the nameplate of the left side of the operator's seat.

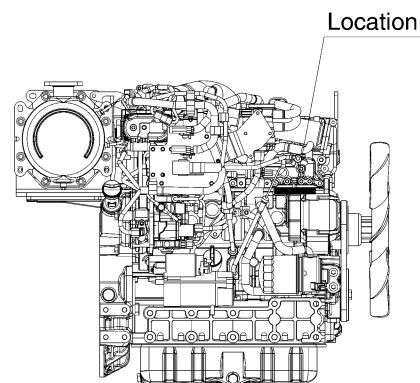


(2) Machine serial number

SV204D → 1SV65 – ○○○○○○
 SV204T → 1SV65 – ○○○○○○
 SV204TB → 1SV65 – ○○○○○○
 SV204TF → 1SV65 – ○○○○○○
 SV204FB → 1SV65 – ○○○○○○



(3) Engine serial number




SAFETY NOTICES

For the safe use of your machine, correct handling and periodical maintenance are of utmost importance. Thoroughly read the safety precautions described in this manual. Do not attempt to operate and maintain your machine until you gain a full understanding of these safety statements.


This manual covers the proper and safe method of driving and handling of this machine for its intended use. When this machine is used in a manner other than those covered in this manual, you must assume responsibility for your own personal safety.

In this manual and on the machine, you will find safety notices. Each safety notice starts with a signal word as shown below:


 **DANGER**

Denotes that there is an extreme hazard. If you fail to take proper precautions, it is highly likely that you could be killed or seriously injured (The color of the symbol  is red).

 **WARNING**

Denotes that there is a hazard. If you fail to take proper precautions, you could be killed or seriously injured (Symbol  is orange).

 **CAUTION**

Calls attention to safety practices. If you fail to take proper precautions, you could be injured or cause damage to the machine (Symbol  is yellow).

It is almost impossible for the safety notices in this manual and on the machine to cover all the potential dangers. Keep alert to possible dangers not mentioned in this manual and on the decals.

 **WARNING**

Do not operate your machine before you read its operator's manual thoroughly.

Incorrect operation can kill or cause injury.

It is your responsibility to operate the machine safely.

☆ Making alterations to the machine.

Please do not make alterations to the machine without permission for safety reasons.

We shall not be held responsible for injuries, death or breakdowns caused by alterations.

☆ Basic precautions for safe operation of your machine are described beginning on page 4.

☆ To operate and work with your machine, you must be qualified.

1 BASIC PRECAUTIONS FOR SAFETY

1 BASIC PRECAUTIONS FOR SAFETY

1.1 General Precautions

■ Ensure proper management of health

- People under the influence of alcohol, drugs, lack of sleep or health problems must avoid driving or repairing the machine at all times, as it may lead to serious accidents.

■ Turn off cell phones

- Turn off cell phones while driving or repairing the machine. Never drive while talking on a cell phone, as it may lead to serious accidents.

■ Read the operator's manual thoroughly

- Understand the functions of the controls and gauges. Familiarize yourself with their location and how to operate them. Understand the meaning of all the symbols.



■ When an instruction manual is lost or is damaged and is not legible, replace it immediately

■ Understanding the uses for the machine

- This machine was developed and manufactured mainly for the purpose of rolling compaction in engineering works. Do not use it for any other purpose. In the case of vibratory rollers, use of vibratory operations under conditions of excessive compaction, or rock crushing operations can lead to premature wear of the rolls and damage to the machine.

■ Obey the worksite rules

- Follow noise standards and worksite rules such as matters forbidden or to be attended to, and working procedures.

⚠ WARNING: Negligence of these instructions can lead to accidents.

1 BASIC PRECAUTIONS FOR SAFETY

■ Wear protective clothing appropriate to work

- Wear clothing, safety shoes and hard hat to suit your work.
- Do not wear clothing and accessories that tend to get caught in the controls or protruded portions of the machine. Do not wear oily clothing.
- Depending on the type of job, wear gloves, earplugs safety goggles or a mask.



■ Know the work area in advance

- Know the terrain, geology and conditions of the road surface at the worksite. Start working after securing safety such as stationing a guardsman or putting up barriers where there is a risk of falling of the machine or collapse of shoulder.

■ The operator must make prior checks when moving the machine to a hazardous area under unusual conditions

■ Provide against an accident

- Decide in advance the means of communication in an emergency. Know the location and use of an extinguisher and first-aid kit.

■ Realize the capability of the machine

- Thoroughly understand the performance of your machine and correctly operate the machine to meet the requirements of the job site. Operating the machine beyond its capabilities may lead to an accident. Use your machine within its capability.

■ The machines not equipped with ROPS must not be operated on the slope or unsafe ground

■ The machines not equipped with CABIN must not be operated in the bad weather or a harmful contaminated zone

1 BASIC PRECAUTIONS FOR SAFETY

■ Do not use a machine which has not been serviced correctly at regular intervals

- Before working, perform necessary inspections. Start operation only after making certain the machine is in good operating condition. If found to be abnormal, report to the responsible person and have the fault corrected. Operate the machine after making sure that it is safe to operate.

■ Do not allow anyone to enter the work area except for authorized personnel

- Always conduct the work paying attention to the workers around the machine.



■ Beware when operating moving parts

- When operating moving parts such as covers, be sure to understand the way they move and take care not to get the hands and feet caught.

■ Operator must sit in the seat when operating the machine

■ Be careful of hot parts

- After your machine has operated for some time, the coolant, engine oil and hydraulic fluid will become hot and the pressure will build up. If, in this state, you try to remove the filler caps, drain the oil or replace the filters, you can get burned. Perform this work in accordance with the correct procedures with the machine cooled down.
- To remove the radiator cap, slowly loosen the cap to relieve the pressure with the engine stopped and the coolant cooled down (For the radiator cap with a lever, lift the lever to release the trapped pressure).
- When removing the filler cap on the hydraulic tank, release the trapped pressure by turning it out slowly to prevent the oil from gushing out (For the cap with a lever, lift the lever to release the trapped pressure).
- While the engine is running or immediately after it has been stopped, do not touch the engine, muffler, exhaust pipes, oil hydraulic pumps, oil hydraulic motors, lights, etc., as they will be hot.
- Resin and metallic parts may become hot under direct sunlight on a hot day. Direct contact with such parts may cause burns, so be sure to wear clothing and protective equipment appropriate for the job.



⚠ WARNING: Negligence of these instructions can lead to accidents.

1 BASIC PRECAUTIONS FOR SAFETY

■ Be careful with fire

- The fuel, oil, and antifreeze will catch fire if open flames or ignition sources are used close to them. Particularly, the fuel is highly flammable.



- Do not smoke or use a match or cigarette lighter close to inflammables (combustibles).
- When refueling, stop the engine and do not smoke.
- The filler caps of the fuel and oil tanks must be kept tight.



■ Ensuring safety in a fire

- Machine fires may cause serious injuries or death, so stop the engine by turning the starter switch to the OFF position, then move away from the machine as quickly as possible.

■ While the engine is running or immediately after it has been turned off, do not touch the muffler, exhaust pipe or DPF

- While the engine is running or immediately after it has been turned off, do not touch the muffler, exhaust pipe or DPF, as they will be hot.

■ Mount on or dismount from your machine after it has come to a complete stop

- For getting on and off, face the machine and use the handrail and step.
- Watch your step when getting on or off the machine.
- Do not jump on or off a machine, particularly when it is moving.
- When getting on and off an articulated machine, straighten it out before stopping the machine. In the turned state, there is danger that personnel gets caught because the getting on and off space narrows.

■ Be careful not to fall

- Falling off the machine may cause serious injuries or death, so do not place your feet anywhere other than on the steps, and in the driver's seat.

■ Do not lock out yourself when leaving the machines

- Always bring the key with you by pulling it out from the starting switch when leaving the machine.

1 BASIC PRECAUTIONS FOR SAFETY

■ To handle the hydraulic fluid

- Wear safety goggles to protect your eyes from contact with hydraulic fluid. It can irritate your eyes.
If the fluid contacts your eyes, flush with clean water for 15 minutes and get medical aid.
- The fluid can also irritate your skin. When handling it, wear rubber gloves to avoid contact with it. In case of skin contact, wash with soap and water.
- Be careful not to swallow the fluid. It can cause diarrhea and emesis.
If swallowed, do not try to vomit. Get medical help immediately.



■ Do not use worn tires (Tire installed)

- Tires may be damaged when they are scratched on curb stones, when the machine runs over irregular surfaces of roads or projections on roads, and when the machine is operated suddenly.
- Continued use of damaged tires will cause them to blow out. Replace them with new ones.

1.2 Preparation for Safe Operation

■ Clean the step, operator's station and floor board and brake pedal

- Do not place parts, tools or unnecessary articles on the step, operator's station and floor board.
- Keep the step, floor board, brake pedal, controls and handholds free from muds, oil, ice or water, as they can cause slippage. Repair them if found to be damaged. Tighten loose bolts.
- Keep your boot soles free of oil or muds. They can slip, leading to an accident.

■ Inspect your machine before operation

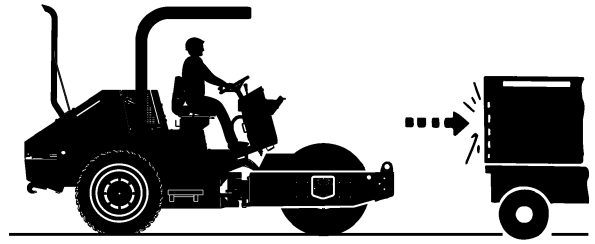
- Check your machine for damage such as cracks and deformation. If found to be abnormal, operate the machine after taking a proper measure to secure safety.
- Check the level of fluids (fuel, engine oil, coolant, antifreeze and hydraulic oil). Add as necessary.
- Check the area where the machine has parked for signs of leakage of oil, fuel and water. If any leakage is noticeable, determine the cause and make corrections immediately.

⚠ WARNING: Negligence of these instructions can lead to accidents.

1 BASIC PRECAUTIONS FOR SAFETY

■ Watch your distance

- When traveling on a road, bear in mind the stopping distance. Avoid excessive speed, and abrupt starting and stopping, and moving in a zigzag direction.



■ Understand ROPS functions (with ROPS)

- Ensure that there is no loose bolt, crack nor rust on the bodies and the attaching portions, of ROPS.
- Tighten bolts with the specified torques after ROPS are removed.
Tightening torque : **496 N·m**
- Do not weld nor drill holes to the ROPS parts without the permissions from SAKAI, because it may decrease strengths of the ROPS.
- Be sure to wear the seatbelt during operation.

1.3 Before Starting the Engine

■ It is confirmed that hood and door is closed

- Please confirm hood and door has put it away in the confirmation before it gets on.

■ Adjust the operator's seat to your most effective operating position

- Sit on the operator's seat. Adjust the seat so that your back will make contact with the seat back when the brake pedal is pressed down to the full extent. Check to be sure that the brake pedal can be fully pressed down without difficulty when you twist your body for reverse run.
- Adjust the seat to allow proper operation of the steering wheel, levers, switches, etc.

■ Secure good visibility (with CABIN)

- Keep the windowpanel clean.
- Lock the windows and doors no matter whether they are open or closed.
- Do not leave the doors half-closed.

■ Secure forward and backward visibilities

- Adjust the rear view mirrors and under mirrors for good visibility. If dirty, clean them. If damaged, replace.

1 BASIC PRECAUTIONS FOR SAFETY

■ Check that the horn, lamps and gauges work correctly

■ Before starting, make certain that each lever is in the neutral position and the parking brake is applied

■ When starting, sound the horn

- Before starting the engine. Make sure there is no one in the immediate vicinity and there are no obstructions around the machine.



■ Sit in the driver's seat and turn on the engine

- Do not start the engine anywhere other than from the driver's seat as there is the danger of operational mistakes.

■ Pay attention to ventilation

- Exhaust fumes are dangerous if breathed in. When starting the engine in an enclosed area, provide good ventilation with windows and doors opened.



■ Do not stand close to the exhaust gas pipe opening

- The exhaust gas from the engine is dangerous.
- Exhaust fumes are harmful if breathed in.

1.4 After Starting the Engine

■ Secure safety around the machine

- Ensure that the area around the machine is clear of personnel and obstructions. Moreover, honk the horn, indicate your intention to move, and wait a while before moving off.



■ Warm up the engine

- Do not put your machine into motion immediately after the engine has started, let it idle for several minutes until it is at operating temperature.
- Check the area where the machine has parked for signs of leakage or oil, fuel and water. If any leakage is noticeable, determine the cause and make corrections immediately.

■ Have a trial run

- Make a test run in a safe place to check that there are no abnormal signs. If found to be abnormal, correct the fault before traveling again.
- Listen for unusual sounds, and check for abnormal temperature rise. If abnormal, park the machine in a safe place and find the source of trouble before operating.

1.5 During Operation

■ Strictly observe the traffic regulations

- Follow all the traffic regulations when driving on a public road.

■ Sit in the driver's seat before starting operation

- Sit in the driver's seat before starting operation. Be sure to wear the seat belt when provided.

■ Seat belt (with seat belt)

- Be sure to wear the seat belt during operation.

■ No other person but the operator

- This machine is a one-man roller. Do not allow anyone to get on. Only the operator is allowed on this machine while it is running or in operation.

■ Before mounting, be sure areas around the machine are safe

- Before getting on the machine, make certain that there are no obstacles around the machine and no workers under it. If some workers are present or close to the machine, tell them that the machine is about to move, warning them to stay away from it.

■ Do not try to get on or off a moving machine

- Get on or off the machine after making sure it has come to a complete stop and the parking brake is applied.

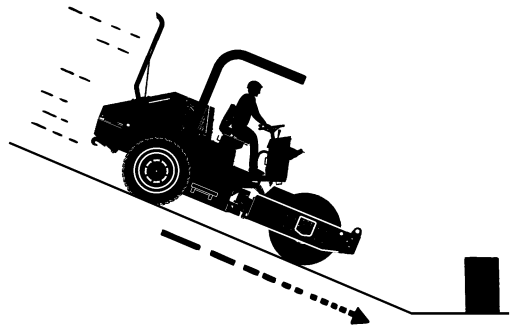
■ Do not let anyone enter the work area

- There is the danger of being run over causing serious injuries or death.
- If the driver does not have a clear field of vision, assign a conductor ensure peripheral safety.

1 BASIC PRECAUTIONS FOR SAFETY

■ To go uphill or downhill, run at a low speed. Do not attempt to shift speeds while traveling on a slope

- Shifting speeds on a slope can cause unexpected running down the slope.
- Going down hill at speeds other than low range can cause the machine to run down violently.



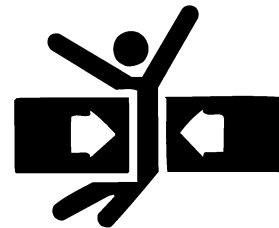
■ Refrain from inattentive driving

- Inattentive driving or driving relying on guess work can cause an accident. Use extreme care for workers present in the path of machine or around it. In case of danger, stop and sound the horn, and proceed when the area is clear of personnel or obstructions.

■ When changing the direction of travel, secure the safety on the path in the travel direction

■ Keep everyone away from the pinch points

- When making turns, do not allow anyone to come close to the pinch point.



■ At night, carefully drive the machine

- Nighttime driving tends to frustrate the sense of distance. Carefully drive the machine at a speed suited to illumination. Keep the headlamps and flood lamps lighted. If necessary, provide extra lighting in the work area.

■ Avoid long hours of continual operation

- Avoid long hours of continual operation as it may lead to loss of health.

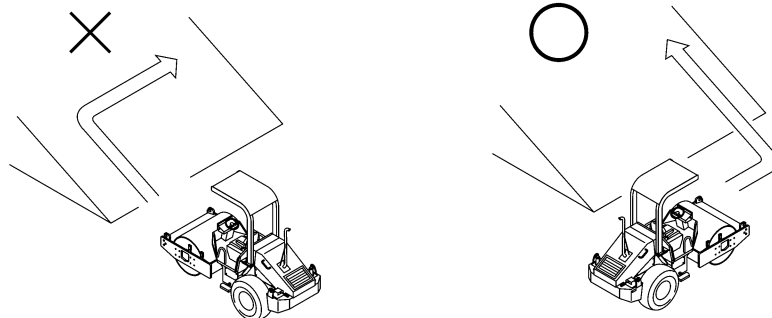
■ Repair as soon as possible if found to be defective

- If the machine is found to be faulty, stop the machine and repair. Do not operate the machine until the problem is corrected. When any warning lamp indicates faulty operation, inspect the machine after moving it to the nearest safe location.

⚠ WARNING: Negligence of these instructions can lead to accidents.

1 BASIC PRECAUTIONS FOR SAFETY

- **The machines not equipped with ROPS must not be operated on the slopes or unsafe ground**
- **The machines not equipped with CABIN must not be operated in the bad weather or a harmful contaminated zone**
- **Do not operate the machine except from the operator's seat. Do not drive in a standing posture**
 - Do not throw your legs out or lean forward. Be sure to sit in the proper position while driving the machine.
- **While making turns, do not run at abnormally high speed and do not turn the steering wheel abruptly and sharply. High speed turns, especially on soft or uneven ground, could result in a rollover**
- **For the traveling on structures such as a bridge, make certain that they can support your machine. Before traveling on the structure, you must know the load capacity of the structure and the load weight of the machine you are operating to insure safe travel across the structure**
- **Do not make turns on a slope and do not travel across sidehill. If necessary to do so, go down straight along the slope to the flat ground, move sideways and go up straight to the destination**

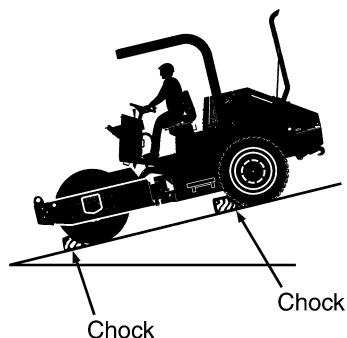


- **On a steep slope, run the machine at low speed**

1 BASIC PRECAUTIONS FOR SAFETY

■ When parking

- Select level and hard ground. If necessary to park on a slope, chock the front of the drum and tire on the downside of the slope.
- When required to park on the public road, provide necessary markings such as flag, barriers and illumination. However, be sure they do not obstruct traffic.
- Stop the engine when getting off the machine. Remove the key from the starter switch, and make sure it is stored appropriately.
- Be sure not to get your hands caught in the chocks when handling them.

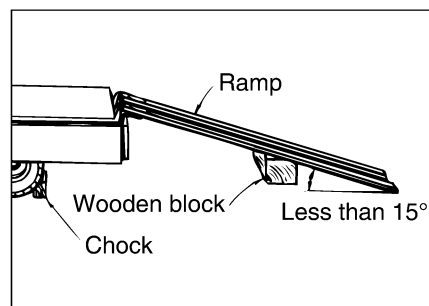


■ Beware of deformation in tires during long-term parking (if tires installed)

- The surfaces of tires in contact with the ground may become flattened, leading to their deformation (forming of flat spots) during long-term parking.
- The forming of flat spots may cause bounding or shaking during operation of the machine.
- After the forming of flat spots, driving the machine will restore the tires and remedy the situation.
- To prevent the forming of flat spots during long-term parking, inflate the tires to a higher pressure within the allowable range and drain the water from the sprinkler tank before parking. Furthermore, move the machine regularly.

1.6 Loading and Unloading

- Loading and unloading can accompany any danger. Use extreme care.
- Select level and hard ground leaving a sufficient distance from the shoulder of a road or bank.
- Use sturdy ramps with proper width, length and thickness which allow safe loading and unloading. If they deflect considerably under load, apply wooden blocks to reinforce the ramps.
- To prevent your machine from crosswise slippage, keep the ramps free from oil, mud, debris, etc. The drum must also be free from extraneous matter that can cause slippage.
- Do not steer your machine on the ramps. If the machine is facing in the wrong direction, go back off the ramp, correct the direction and try again.
- Do not use kinked, twisted or damaged wirerores for crane or winch operation. Use ones with ample strength.
- When loading is complete, fix the machine with wooden blocks placed under the drums and chains fastened to the machine.



⚠ WARNING: Negligence of these instructions can lead to accidents.

1 BASIC PRECAUTIONS FOR SAFETY

1.7 Transportation

- Follow required regulations.
- Select a transporting route according to the overall width, overall height and gross weight of the trailer with the machine loaded.
- Know the maximum height clearance of the machine loaded on the transport trailer before hauling under bridges and other structures.

1.8 Handling the Battery

■ When handling the battery

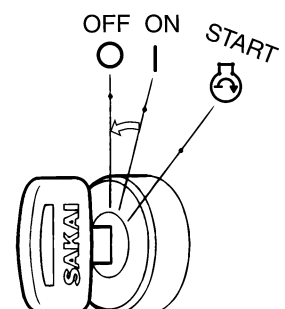
- Battery electrolyte contains sulphuric acid. It will destroy clothing and skin. If it touches your clothing or skin, flush with large quantities of water.
- In case of eye contact, flush with clean water and get medical help.
- If swallowed, drink large amount of water, milk, beaten egg or vegetable oil, and get medical help.
- Wear safety goggles when handling the battery. Wear safety goggles, full face shield, rubber gloves and rubber apron when adding fluids to the battery.
- Keep cigarettes and flames away, and avoid recharging the battery in poorly ventilated places when there is a danger or generating sparks.



⚠ WARNING

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hand after handling.

- Inspect or handle the battery with the engine stopped and the starter switch in the OFF position.
- Turn the starter switch to the OFF position, then wait at least 30 seconds before removing the battery. An abnormality may arise in the ECM (engine control module).

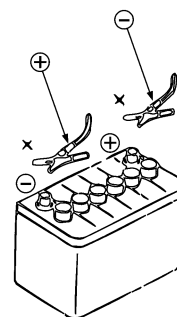


1 BASIC PRECAUTIONS FOR SAFETY

- Keep metallic items such as tools away from the battery terminals.
- Tangled terminals may generate sparks due to improper connections, resulting in the danger of explosions. Make sure terminals are connected firmly.
- The battery is for starting the engine and operating electrical equipment on the machine. Do not use it for any other purpose.
- Do not charge battery when the top surfaces of the liquids are at the LOWER level (the minimum liquid level) or below. Not only the internal parts of the battery are degraded and the battery lifetime are shortened but also it can cause explosions if you continue on using the battery when the top surfaces of the liquids are at the LOWER level or below. Immediately supply water until the water level is between the UPPER and LOWER levels.

■ Jump-starting the engine

- Wear safety goggles when jump-starting the machine.
- When starting from another machine, do not allow the two machines to make contact with each other.
- When connecting the battery cables, start with the positive terminal. For disconnection, start with the negative one.
- Do not allow a tool to bridge between the positive terminal and machine body. This can generate dangerous sparks.
- Do not connect the booster cable to wrong the terminal. Never connect the positive terminal to the negative terminal or the body of the machine.
- Final connection to the engine block of the disabled machine can cause sparks. The connecting point should be as far as possible from the battery.



1.9 Towing

- Towing should only be carried out in emergencies and over short distances. A trailer should be used for long distance transport.
- The machine should not be operated while being towed.
- Follow the instructions in this manual to enable towing.
- Do not tow if the braking system has broken down, as it is dangerous.
- To tow the machine, use cables with ample strength.
- Do not perform towing on a slope.
- Be sure to attach a wire rope firmly to the towing hook.
- Do not use twisted, kinked or damaged cables when towing.
- Do not step over the wire rope.
- Keep everyone away from the space between the machine and the towing machine when connecting the two.
- Align the connection points of the disabled machine and the towing machine in a straight line when connecting the machines.

1.10 Before Servicing

■ Attach warning tags when servicing the machine

- Serious accidents can occur if the machine is unexpectedly started or controls carelessly touched by an unauthorized person.
- Attach a warning tag at a clearly visible location in the operator's station and insure the key has been removed from the starter switch.



■ Setting the chocks

- Set chocks in front of and behind the roller drum (wheels) to prevent the machine from moving before beginning inspections or maintenance work.

■ Use proper tools

- It is very dangerous to use damaged or deteriorated tools or to use tools for other purposes than intended. Use correct tools for their intended use only.



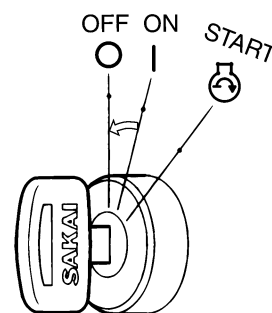
■ Change safety-related parts at regular intervals

- Change any seatbelt found to be abnormal even if it is within its recommended service interval.
 - Change any ROPS found to be abnormal even if it is within its recommended service interval.
 - Replace fuel hose, high pressure hydraulic hoses and liquid hoses regularly to prevent fire. Replace high pressure hoses of the power steering system every two years.
- ☆ Change these parts at regular intervals even if found to be normal. They will deteriorate as time goes on.
- ☆ Change any hose found to be abnormal even if it is within its recommended service interval.

1 BASIC PRECAUTIONS FOR SAFETY

■ Inspect or service your machine with the engine stopped

- If required to keep the engine running in such a case as radiator interior cleaning, perform the work with two persons. One of them should sit on the operator's seat getting ready for shutting down the engine. He must take care not to touch any of controls carelessly. Maintenance personnel must exercise extreme caution not to make contact with moving parts.



■ Supplying fuel, oils and grease

- Do not cover the filler port when refueling. Feeding fuel in an airtight tank might damage the fuel tank.
- Spilled fuel or oil will be slippery. Wipe up immediately. Keep the filler caps tight. Do not use fuel for flushing oil. Handle fuel and oil in a well ventilated area.

■ Check the coolant level in the radiator

- To check the coolant level, stop the engine and allow the engine and radiator to cool down before removing the radiator cap. Remove the cap by covering it with a rag before removing to prevent any fluid that could spray under pressure from causing a burn.

■ Illumination

- For inspecting the level of the fuel, oil, coolant and battery electrolyte, use explosion-proof illuminations. Failure to use this type of illumination can result in an explosion.



■ Make sure the gas dampers are properly maintained

- Before inspecting the engine room, make sure the gas dampers holding up the hood are firmly engaged. Furthermore, in machines with stays to prevent the hood from closing, make sure they are firmly in place.

■ Points to beware of when filling the sprinkler tank with water (on machine equipped with a sprinkler tank)

- Do not fill the tank with the water inlet blocked. It may damage the sprinkler tank.

1.11 During Servicing

■ Keep unauthorized persons away

- During service, do not allow persons not concerned to enter the work area, particularly when grinding or welding operation is performed or heavy hammers are being used.



■ Assume an appropriate posture while working

- An unnatural posture during maintenance work may cause injuries. Assume a posture that is appropriate for the work being carried out.

■ Keep your machine clean

- Spilled oil, grease or scattered debris are dangerous. Always keep your machine clean. Moisture that penetrates into the electrical system can cause malfunctions. Do not use water to clean sensors, connectors and the operator's station.

■ Take care not to get caught or crushed

- Be sure to fix the hood and other covers after opening them to prevent closing and avoid getting caught in them.
- If there is a need to crawl under the machine after it has been lifted, be sure to support it from underneath with a solid prop or block.

■ When repairing the electrical system

- Read the warnings in this manual regarding the handling of batteries, and make sure to have a thorough understanding in order to handle them appropriately and safely.
- When repairing the electrical system or welding, disconnect the negative cable from the battery to shut off the electricity. Carrying out work while the cables are connected to the negative terminal may cause electrocution or explosions.



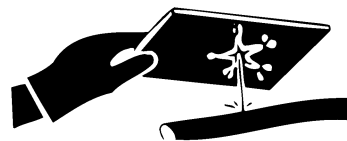
■ Carefully handle high pressure hoses

- Do not try to bend or hit hoses against a hard object. Do not use hoses or pipes that are bent or damaged. They will burst.
- Replace damaged fuel hose, hydraulic hoses and liquid hoses. An oil, hydraulic and liquid fluid spill can cause a fire.

1 BASIC PRECAUTIONS FOR SAFETY

■ Be careful of high pressure hydraulic fluid

- Bear in mind that the working equipment hydraulic systems are under internal pressure. Do not perform adding, draining, inspection or servicing of the hydraulic systems until the internal pressure has been relieved. Hydraulic fluid leaking through a fine hole at high pressure can penetrate your skin and eyes. Inspect leakage by holding a hard board close to suspected leaks wearing goggles. If affected by high pressure oil, get medical help immediately.



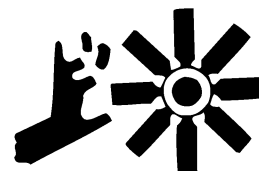
■ Be careful of hot parts

- After the machine has been operated for some time, the coolant, engine oil and hydraulic fluid will become hot.
- Removing the radiator cap or draining the coolant or oil can burn you. Perform this work in accordance with correct procedures after the systems have cooled down.



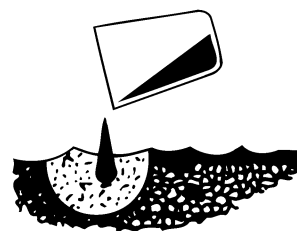
■ Use care when inspecting or servicing fan or belts in motion

- Do not wear clothing and accessories that tend to get caught in moving parts.
- Do not let your body or tools make contact with the fan blades or belts. They can be cut seriously.



■ Used oil disposal

- Do not throw used oil into a drain or waterway. Drain the oil from the machine into a proper container. Do not drain directly on the ground.
- Obey all local, state and federal environment regulations for the proper disposal of oil, fuel, coolant, battery electrolyte or any other fluids.

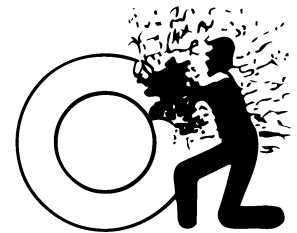


■ Take care in handling the gas damper

- Never dismantle it.
- Do not throw it into a fire.
- Do not damage the rod.
- Do not bend the tube or rod, or use it as a handle.
- When disposing of it, be sure to fix the gas damper, and drill a hole around 2 to 3 mm in diameter, about 20 to 30 mm from the edge on the tube bracket side. Dispose of it after releasing the gas pressure. When doing this, be sure to wear protective goggles because of the danger of oil inside or swarfs getting sprayed everywhere by the compressed gas inside.

■ Exercise extreme care when replacing and repairing tires (Tire installed)

- Disassembly, repair and reassembly of tires require special facility and knowledge. Have them repaired at work shop specialized in handling tires.
- An improperly fitted tire can separate from the rim when inflating.
- When dismounting a tire, chock other tires for safety.
- When welding job is carried out near the tires, use extreme care, as this can cause an explosion of the tires.

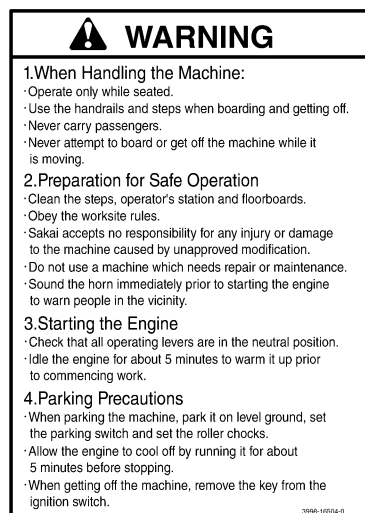


1 BASIC PRECAUTIONS FOR SAFETY

1.12 Safety Decals

Keep all decals clean. If lost, replace with new one. There are decals other than those shown below: Treat them in the same manner as the one shown here.

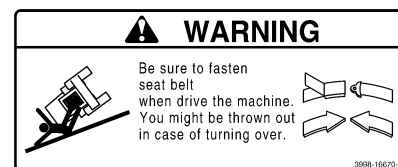
① 3998-16504-0



⑥ 1202-19062-0



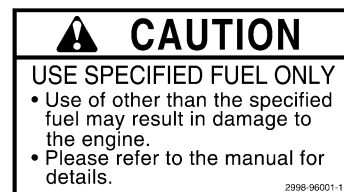
⑫ 3998-16670-0



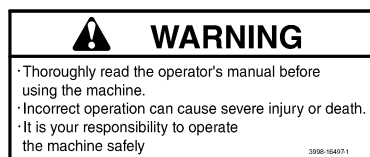
⑦ 3998-06139-0



⑬ 2998-96001-1



② 3998-16497-1



⑧ 3998-19678-0 (2 locations)



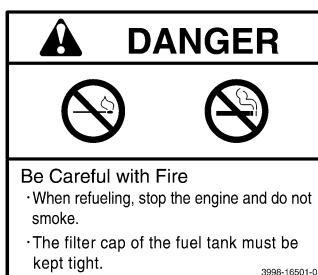
⑭ 3998-16700-0



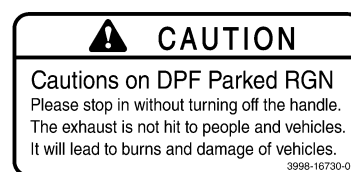
③ 3998-16500-0



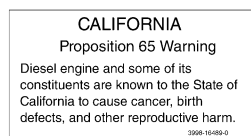
⑨ 3998-16501-0



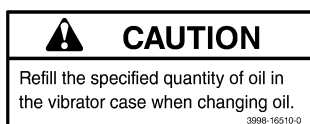
⑮ 3998-16730-0



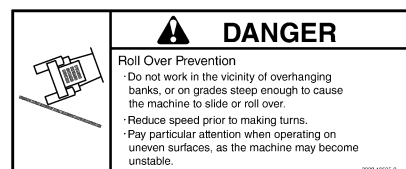
④ 3998-16489-0



⑩ 3998-16510-0



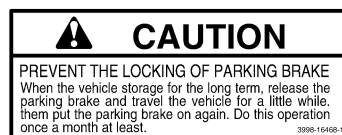
⑯ 3998-16505-0



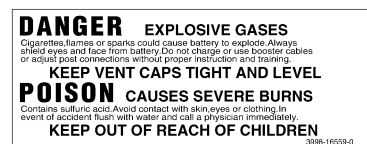
⑤ 3998-16499-0 (2 locations)



⑪ 3998-16468-1

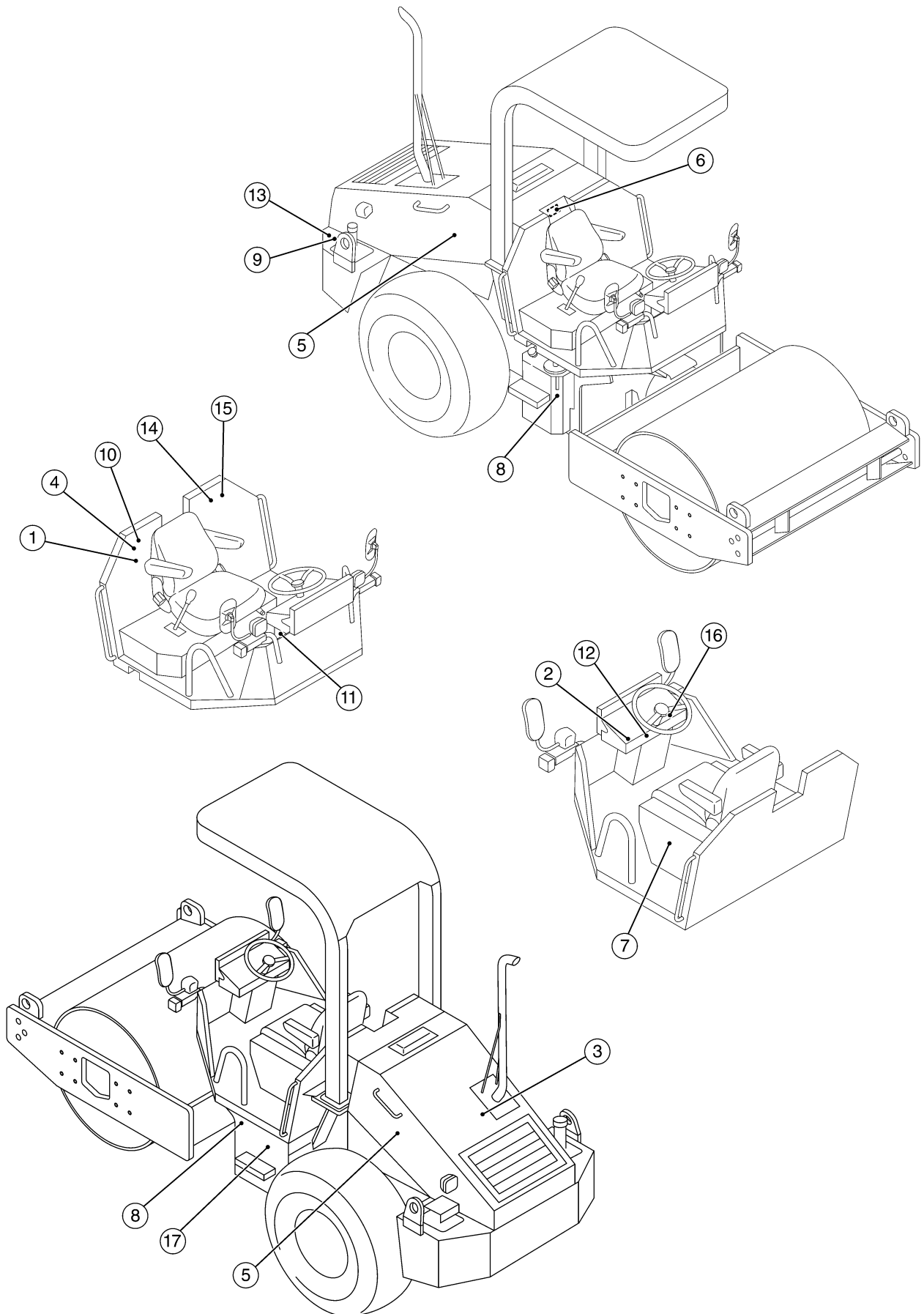


⑰ 3998-16559-0



⚠ WARNING: Negligence of these instructions can lead to accidents.

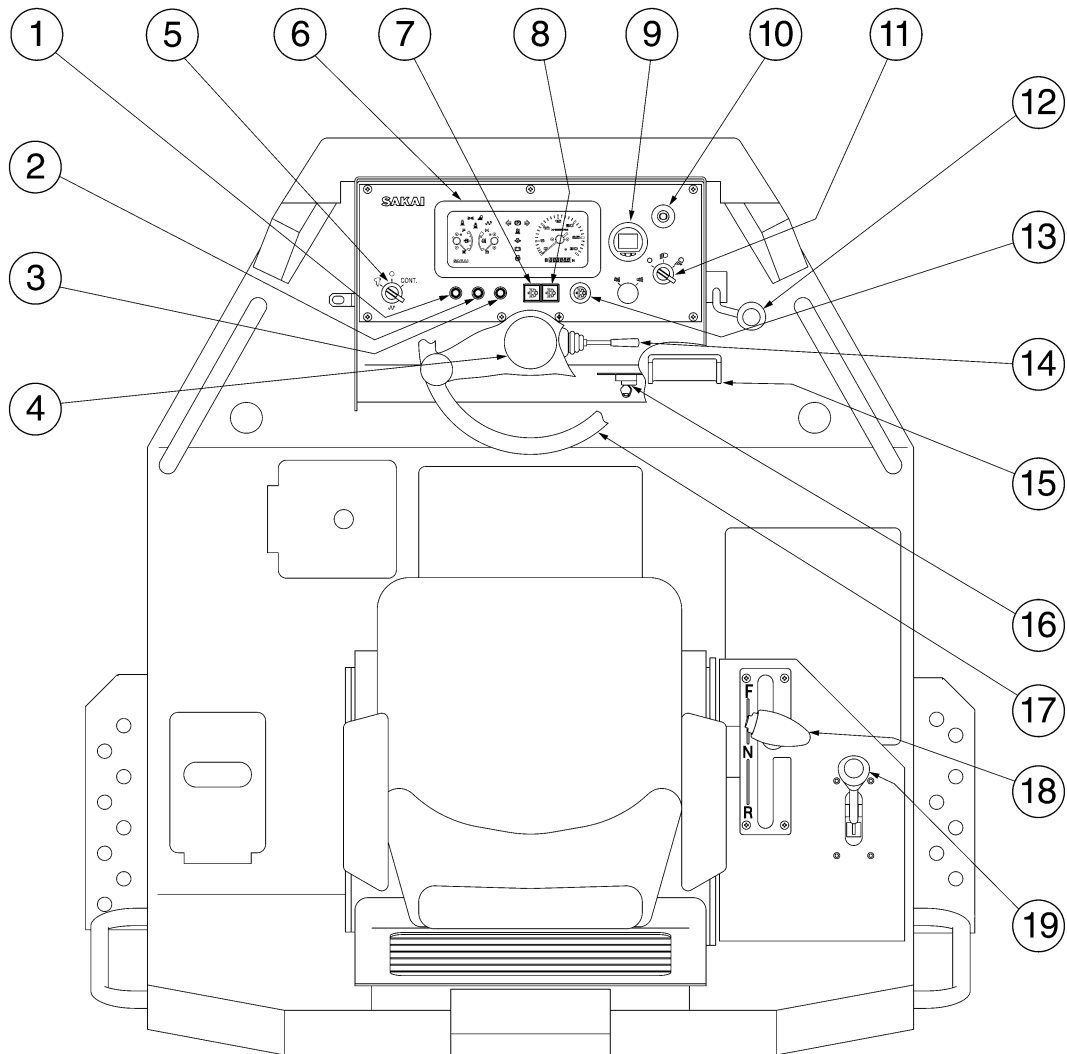
1 BASIC PRECAUTIONS FOR SAFETY



2 OPERATION

2.1 Instruments and Controls

2.1.1 Operator's station

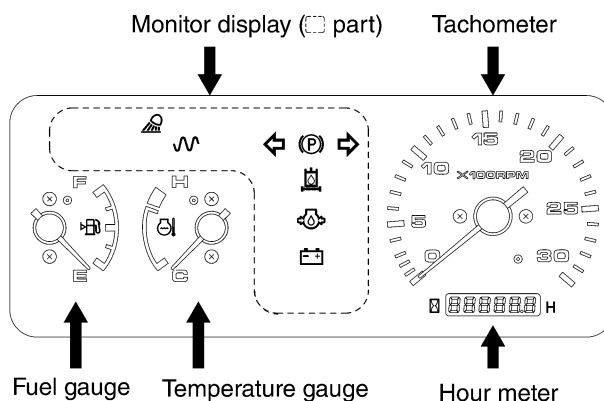


- | | | |
|----------------------------------|--|--|
| ① Engine warning lamp | ⑧ Parked regeneration request lamp (amber) | ⑭ Turn signal lever (option) |
| ② Engine stop lamp | ⑨ DPF meter | ⑮ Brake pedal |
| ③ Overheat lamp | ⑩ Parking brake switch | ⑯ Starter switch |
| ④ Horn switch button | ⑪ Lamp switch (option) | ⑰ Steering wheel |
| ⑤ Vibration selector switch | ⑫ Throttle lever | ⑱ Forward-Neutral-Reverse (F-N-R) lever with vibrator switch |
| ⑥ Combination meter | ⑬ Parked regeneration switch (black) | ⑲ Leveling blade lift lever (for SV204TB, SV204FB only) |
| ⑦ Auto regeneration lamp (green) | | |

2.1.2 Gauges, indicator lamps and warning lamps

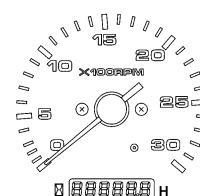
For safe execution of your job, fully understand the role and function of the systems involved.

Combination meter



Tachometer

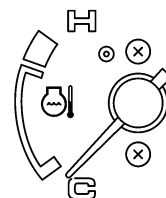
Indicates the engine RPM. The hour meter shows total operating hours. The service interval recommendation in this manual should be based upon the hour meter readings.



Tachometer / Hour meter

Temperature gauge

Indicates the coolant temperature. Zone close to symbol H indicates overheating. In case of overheating, run the engine at idling for about ten minutes before shutting it down. Then determine the cause.

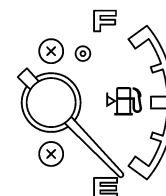


Temperature gauge

Fuel gauge

Indicates the fuel level in the tank.

- E: The tank is empty.
- F: The tank is full.



Fuel gauge

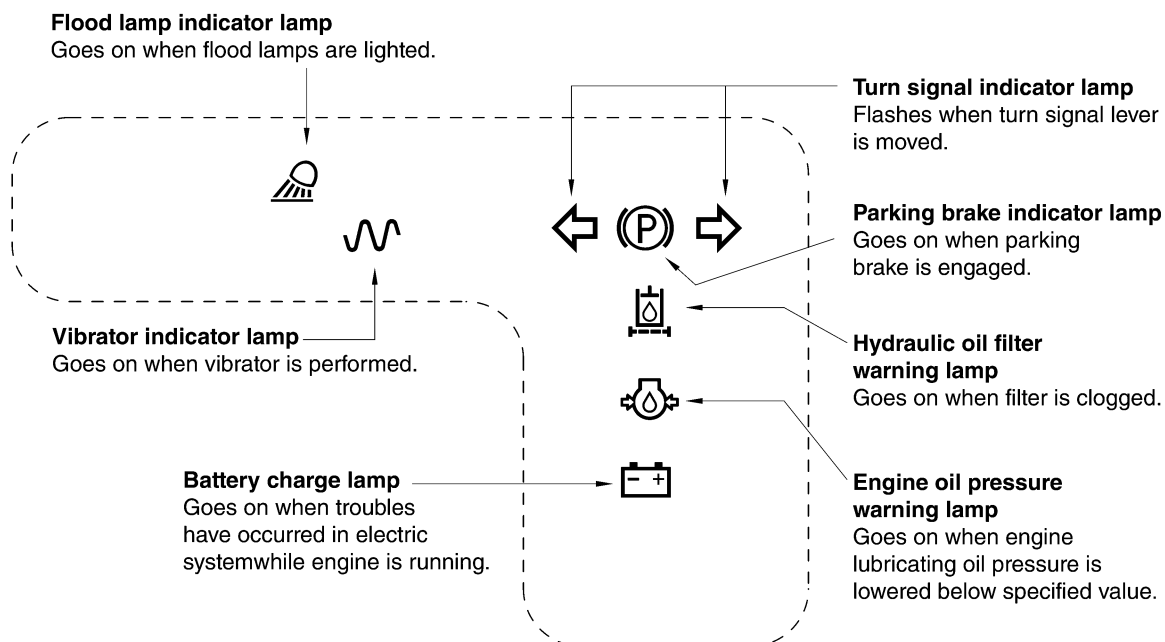
Replenish fuel appropriately before the fuel runs down.

⚠ CAUTION

Be sure to use fuel recommended by SAKAI (refer to page 86).

2 OPERATION

Monitor display



★ Indicator lamps [  ]

Light up when corresponding systems have been operated.

★ Parking brake indicator lamp []

It will flash once when the starter switch is turned to the “I” position.

After that it will remain on while the parking brake is engaged, and turn off when it is released.

★ Hydraulic oil filter warning lamp []

It will flash once when the starter switch is turned to the “I” position.

After that it will turn on when the hydraulic oil filter becomes clogged. Stop the machine and carry out an inspection.

★ Engine oil pressure warning lamp []

It will turn on when the starter switch is turned to the “I” position, and turn off when the engine starts running.

It will turn on while the engine is running if the engine oil pressure drops below the specified value. Stop the machine and carry out an inspection.

★ Battery charge lamp []

It will turn on when the starter switch is turned to the “I” position, and turn off when the engine starts running.

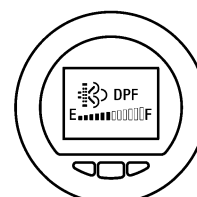
It will turn on while the engine is running when a problem arises with the electric system. Stop the machine and carry out an inspection.

IMPORTANT

- **Hydraulic oil filter warning lamp**
Go on when the engine rpm is increased before the engine has been warmed up enough. Keep the engine idling until the lamp goes off, before starting your work. In that case, warm up the engine sufficiently, and operate the machine after the warning light has gone out. When the warning light will not go out, the filter may be clogging up. Check the filter.
- **Checking for warning lamp and parking brake indicator lamp**
They should turn on light when the starter switch in “I” position. If not, there is some trouble.
Check and repair the combination meter or wirings harness.
- **The window of the combination meter**
The window of the combination meter may become invisible because of aged deterioration caused by fine sand or dust or ultraviolet. When any flaw or mist is found on the window, contact our branch offices or designated factory.

DPF meter

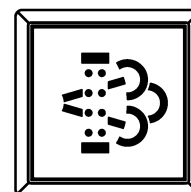
This meter indicates the amount of PM (particulate matter) that has accumulated on the DPF (diesel particulate filter).



DPF meter

Auto regeneration lamp (green)

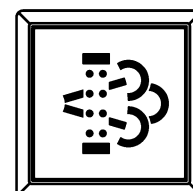
The auto regeneration lamp (green) will turn on when the amount of PM accumulated on the DPF reaches a specified level.



Auto regeneration lamp (green)

Parked regeneration request lamp (amber)

This lamp will flash to indicate the necessity for manual regeneration when the amount of PM accumulated on the DPF exceeds a specified level after the auto regeneration lamp (green) has turned on.



Parked regeneration request lamp (amber)

2 OPERATION

Engine check lamp

When the starter switch is turned to the “I” position, the engine check lamp will turn on once, then turn off.

If the engine check lamp stays on, or it turns on during driving, there is something wrong with the engine. Park the machine in a safe place and carry out an inspection.

★ ENGINE WARNING LAMP

★ ENGINE STOP LAMP

When the engine stop lamp lights, it means a serious abnormality occurs with the engine. Stop the machine and the engine, and receive proper checking / maintenance or repairing.



★ OVER HEAT LAMP

If the overheat lamp turns on, there is a possibility of overheating regardless of the temperature gauge reading. Stop the machine, put the throttle lever in the idling position and let the engine idle to gradually cool it.

If the lamp does not turn off, contact one of our sales offices or a factory designated by our company for advice.

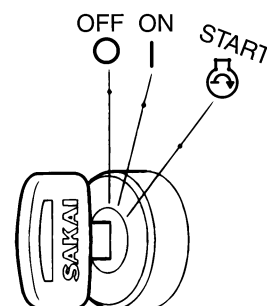


2.1.3 Switches

Starter switch

Starts and stops the engine.

- : The key can be removed in this position. All the electric systems are switched off. To shut down the engine, move the key to this position.
- I : The charging circuit and lamp circuit are charged with electricity. Let the key stay in this position after the engine has started.
- 🔑 : The engine is cranked and gets started. The moment the engine has started, release the key. It will automatically return to the “I” position.



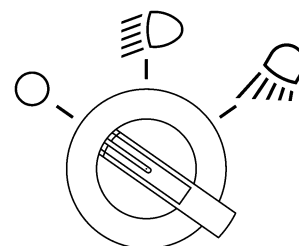
⚠ CAUTION

Make certain that the parking brake is on, pull out the keys from the starting switches, and always bring keys with you when leaving the machines.

Lamp switch (option)

Has three positions.

- : All lamps are switched off.
- ☞○ : Each gauge lamp and the headlamps become bright.
- ☞☞ : In addition, the flood lamps become bright. At this time, an icon ☞☞ on monitor display will go on.



⚠ CAUTION

Leaving the rear work lamp on for a long time with the throttle lever in the idling position may run the battery flat. It is recommended that the rear work lamp only be turned on when the lever is in the full position.

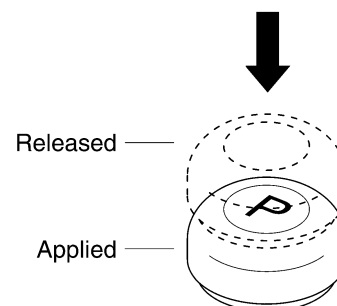
Parking brake switch

Use it as a parking brake.

Do not use while the machine is moving.

If switch (P) is pressed down, the parking brake applies with the indicator lamp (P) on the monitor display lighted up.

When pressed again, the brake is released and the indicator lamp goes off.



⚠ WARNING

- To disengage the brake, be sure to press the button again instead of pulling it.
- When dismounting from the machine, press the button to apply the brake without fail.

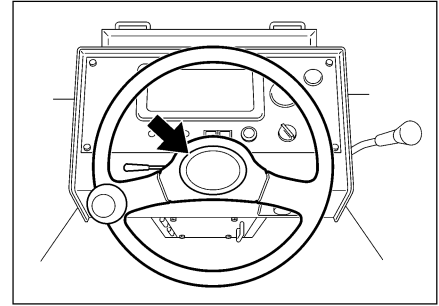
⚠ CAUTION

Never pull the switch UP.

2 OPERATION

Horn switch

Pressing the button at the center of the steering wheel makes the horn sound.



Vibration Selector Switch

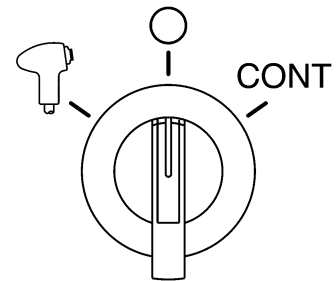
Selection can be made between the vibrator switch installed to the F-N-R lever and the other one located on the panel.



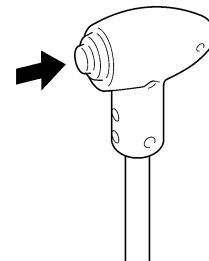
position : Vibration can be turned ON or OFF with the switch located on the F-N-R lever. Pressing this switch causes the vibration to start and pressing it again to stop.

○ position : Vibration is shut down.

CONT position : Have this switch placed at this position when vibration is not to be actuated.



Vibration selector switch



Vibrator switch

IMPORTANT

- Do not operate the vibrator on a hard area such as cement concrete pavement surface or the ground covered by thick steel sheets.
- Keep the vibrator stopped when the machine is at rest.
- Shut off the vibrator immediately when the machine has been caught in the mud during vibratory operation.

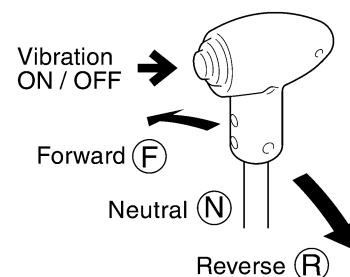
NOTE: For vibratory rolling, run the engine at 1,800 rpm or higher.

2.1.4 Operating levers / pedals

Forward-Neutral-Reverse lever (F-N-R lever) with vibration switch

Moving the F-N-R lever forward or backward makes the machine travel forward or backward respectively. The neutral position (N) brings the machine to a stop. The machine speed increases or decreases in proportion to the lever displacement.

Provided at the knob of the lever is the vibrator switch for turning on or off the vibration.

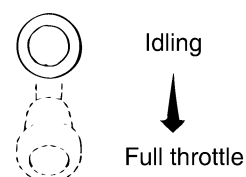


IMPORTANT

- For normal braking, return the F-N-R lever back to neutral position (N) .
- In an emergency, depress the brake pedal.

Throttle lever

Shifts the engine RPM. The engine RPM increases when moved toward the operator.

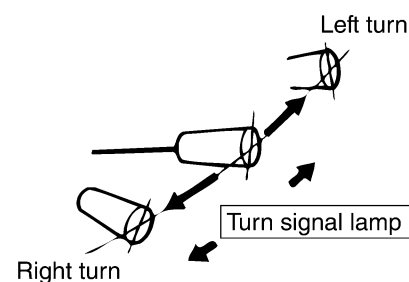


Turn signal lever (option)

Turn signal lamp flashes when the turn signal lever is operated.

Left turn : Move the lever forward.

Right turn : Move the lever backward.



NOTE: The lever does not return to the OFF position even if the steering wheel is turned back.

2 OPERATION

Brake pedal

Use it in emergencies. Carry out inspections in accordance with “ 3.3 Periodical Maintenance Points” (refer to page 64) after each use.

In an emergency, push down on the pedal to the full extent, and the machine will come to a sudden stop.

⚠ CAUTION

- **Do not use the pedal wherever practicable except for an emergency.**
- **Use the F-N-R lever for normal braking.**

NOTE: When pressing the brake pedal, the brake is activated and the engine is stopped at the same time. When starting the engine again, foot is separated from a pedal, set the maintaining the engine in IDLE. Shift the F-N-R lever back to the neutral position (N) , activate the parking brake switch, and then start the engine.

2.1.5 Unloader valve

The unloader valve disengages the drive, playing a role like a clutch. Use this valve for towing the machine when the engine is disabled or when troubles have developed in the hydraulic drive.

Towing speed:

At of less than 0.5 km/h (0.3 mile/h).

Towing distances:

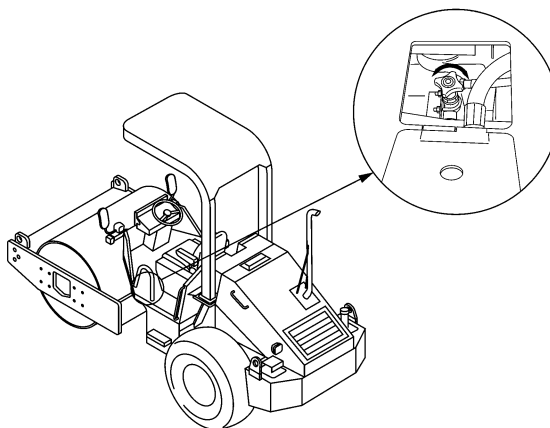
With in 100 m (328 ft).

For towing:

Turn the knob counterclockwise (Unload).

For normal traveling:

Turn the knob clockwise (Onload).



⚠ WARNING

- **On a slope, chock the wheels and use extreme care when handling the unloader valve and towing the machine.**
- **Be sure to apply the parking brake when operating the unloader valve.**
- **Unloading the unloader valve will disengage the engine, so never get in front of or behind the machine.**

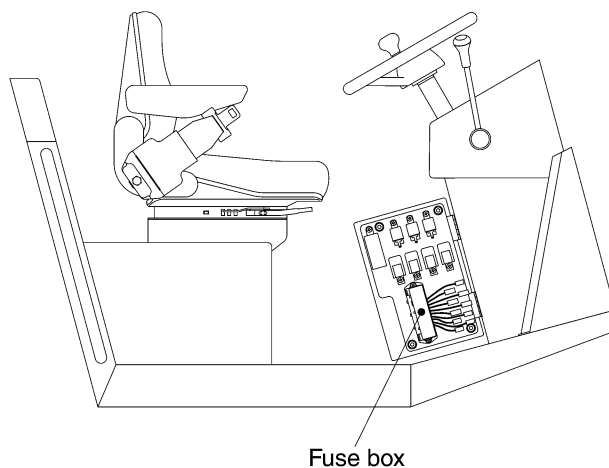
NOTE: For normal travel, be sure to hold the unloader valve in the ONLOAD position.

2.1.6 Fuse box

⚠ WARNING

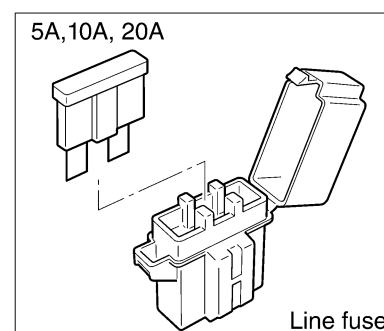
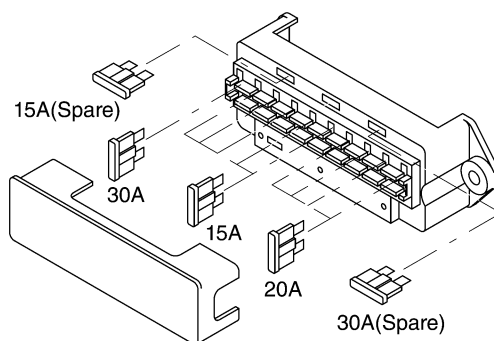
When changing a fuse, cut the power supply by turning the starter switch to the “O” position.

The fuse box is found under the dashboard. Pull on the grips to open the panel cover.



Fuses protect electrical components and wiring from burning. Change any fuse which has become powder-coated due to deterioration or which has a play between it and fuse holder. To replace fuses, take off the cover.

Be sure to use fuses of correct capacity.



2.2 Handling and Adjustments

2.2.1 Handling the DPF

About the DPF (diesel particulate filter)

The DPF is a filter, which collects PM (particulate matter) contained in the exhaust gas to automatically or manually burn (regenerate) it. Be sure to observe the following to maintain the performance of the DPF.

- Always use fuel and lubricants designated or recommended by our company (refer to page 86).
- Do not modify the DPF muffler or exhaust pipe in any way.
It may hinder its proper performance or lead to breakdowns.
- Do not use DPFs that have been dropped.
The DPF consists of a ceramic catalyst installed inside the muffler. A strong impact may damage the DPF.

Regeneration the DPF

When the amount of PM accumulated in the DPF reaches a specified level, the auto regeneration lamp (green) will turn on and the PM will be automatically burned (regenerated). If the conditions do not allow automatic regenerating, the parked regeneration request lamp (amber) will flash to enable manual regenerating.

WARNING

- **Do not carry out regenerating in enclosed spaces with poor ventilation, such as inside a garage or a room. There is the danger of carbon monoxide poisoning.**
- **Check to make sure there are no inflammables near the mouth of the exhaust pipe to prevent fires.**
- **Do not touch or let people go near the exhaust pipe or muffler, which will be hot during cleaning, and for a while after regenerating.**
- **Carrying out regenerating on painted roads may cause the paint to discolor.**
- **Carrying out regenerating in front of hedges may cause them to wither.**
- **In the event of storing the machine outside for a long time, open the drain plug at the bottom of the DPF, and when starting the engine, check to make sure that no water has collected inside the DPF.**
Starting the engine when water has collected inside the DPF may lead to breakdowns.

Automatic regeneration

If the coolant temperature and exhaust temperature are at a specified level when the auto regeneration lamp (green) turns on, the PM accumulated in the DPF will automatically be burned (regenerated). If even one of the conditions strays from the specified level during automatic regeneration, it will stop. Furthermore, the machine can be driven as usual during automatic regeneration.

Burning (regenerating) will stop when the auto regeneration lamp (green) turns off.

* Automatic regenerating cannot be carried out when the auto regeneration lamp (green) is flashing.

Manual regeneration

The PM accumulated in the DPF can be burned (regenerated) by following the procedures outlined below, while the parked regeneration request lamp (amber) is flashing.

Failure to carry out manual regeneration may lead to breakdowns.

Follow the procedures below to carry out manual regeneration:

- 1) Move the machine to safe location.
- 2) Shift F-N-R lever into neutral.
- 3) Push on parking brake switch.
- 4) Keep engine rpm at idle.
- 5) Push on parked regeneration switch.

The parked regeneration request lamp (amber) will flash then turn on, after which the engine will automatically rev up and manual regeneration will begin. Manual regeneration will finish when the engine returns to idling and the parked regeneration request lamp (amber) turns off. Manual regeneration will stop if the parking brake switch, F-N-R lever, throttle lever, or accelerator pedal are operated during regeneration.

CAUTION

- **When stopping the machine during automatic regeneration, keep the steering wheel straight. After stopping, do not turn the steering until the automatic regeneration has been completed.**
- **Keep the steering wheel straight while you carry out manual regeneration. Do not turn the steering wheel until the manual regeneration has been completed.**
- **After burning (regeneration), do not turn the engine off immediately. Leave the throttle lever in the idling position for around 5 minutes, let the engine idle, and gradually let it cool. Stopping the engine suddenly without letting it cool may shorten the life span of engine parts.**
- **Continuing to drive the machine without carrying out manual regeneration, while the parked regeneration request lamp (amber) is flashing, will turn on the engine warning lamp, and the engine output will be limited. Carry out manual regeneration immediately.**

Regeneration "RGN" of DPF for Roller Operator / Engine Diagnosis

Soot accumulated at DPF can be burned and regenerated automatically and/or manually. Maintain DPF and engine properly by following this instructions and/or operator manual.

Level (Stage)	DPF Gauge	Green Lamp	Amber Lamp	Black Switch	Red Lamp	Auto RGN	Parked Manual RGN	Limit of Engine Output	Operations
		Auto RGN	Parked RGN Request	Parked RGN	Emission Sys. Warning				
0 (No RGN Needed)	1 – 11	Off	Off		Lamp Off	No Need	No Need	NO	RGN is not required. Normal machine operation is available.
1 (Auto RGN)	Lamp On	Off			Lamp Off	Applicable	No Need	NO	When green lamp goes on during Auto RGN, keep engine RPM at Max for 30 min to perform best RGN Normal machine operation is available.
2 (Requesting Parked RGN)	Lamp On Blinking	Blinking	Start Parked RGN by pushing the switch. Amber lamp blinking changes to light-on.	Lamp Off	Applicable	Applicable	NO	Perform a Parked RGN as early as possible by following instructions, "Procedure of Parked RGN" below, when the Amber lamp starts blinking while Green lamp is on. Parked RGN may be cancelled even though Amber lamp blinks, if Max RPM can be maintained for 30 min.	
3 (Parked RGN Urgent Request)		Blinking			Lamp On	Not Applicable	Applicable	YES	URGENT: If Red Warning lamp turns on while the Green and Amber lamps are blinking a Parked RGN must be performed urgently to prevent possible costly repairs. If Red lamp doesn't go off after Parked RGN, access the engine error codes at DPF Meter and contact your Sakai dealer or company Techs.
4 (RGN with Service Tools)	Blinking	Off		Lamp On	Not Applicable	Not Applicable	Not Applicable	YES	If Green lamp is blinking and Red lamp goes on, Parked RGN by operator is impossible. In this condition DPF may only be regenerated using special service tools. Contact your Sakai dealer or company Techs.
5 (DPF Cleaning)	Blinking	Off		Lamp On	Not Applicable	Not Applicable	Not Applicable	YES	The engine controller may shut down the engine if above request for parked RGN are ignored. The engine will not restart until the DPF unit is replaced or cleaned using special tools. Contact your Sakai dealer or company Techs.
Engine Diagnosis (DPF Meter)		Blinking			Lamp On				The Red Emission System Warning Lamp also serves as Check Engine Alert. This lamp turning on may be signal problems unrelated to emission system. See the operation manual in detail.
General Cautions for Safe RGN	1. Don't perform Parked RGN in closed unventilated space. Poisoning by carbon monoxide gas can occur. 2. Don't touch and/or get close to "HOT" DPF and exhaust pipes during and after RGN to avoid burns. 3. Hot exhaust gas can ignite combustible material during RGN. Insure hot exhaust is dissipated away from combustible materials. 4. Exhaust smoke may be white during part of RGN.					1. Move the machine to safe location. 2. Shift FNR lever into neutral. 3. Push on the parking brake switch. 4. Keep engine rpm at idle. 5. Push on the Parked RGN black switch. With a start of RGN, Amber lamp stops blinking and goes on. 6. The engine will rev up for about 30 min, and then return to idle, and then lamps turn off when RGN is complete. 7. Idle for 5 minutes after Parked RGN. Do not shut down immediately after Parked RGN. [NOTE] If Parked RGN is cancelled by operating FNR lever or parking brake switch or throttle lever (gas pedal), you must start the Parked RGN process over.			
Daily Check of Engine Oil Level and Oil Change	1. If engine oil level exceeds the upper level, change oil as soon as possible. Engine may be damaged by oil mixed with post-injected fuel during RGN. 2. Change oil when RGN interval gets shorter than 5 hours. 3. Be sure to use engine oil with grade of JASO DH-2 or API CJ-4.					Procedure of Parked RGN			

Engine Service Info in DPF Meter

Counterclockwise

Hold a right button (RB) about 10 sec.

DPF Gauge display is changed (goes down) to "RPM" as indicated by yellow arrow.

Every time pressing the RB, the display goes down as indicated by red arrows, and then comes back to DPF Gauge display.

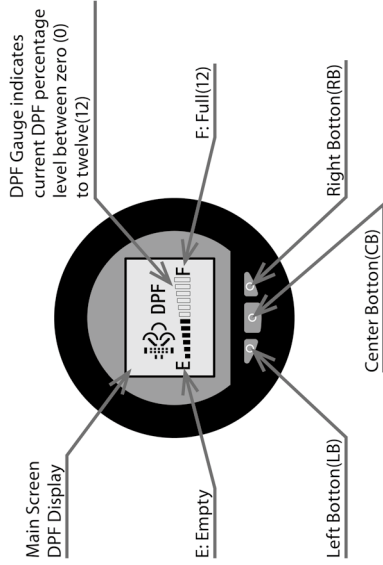
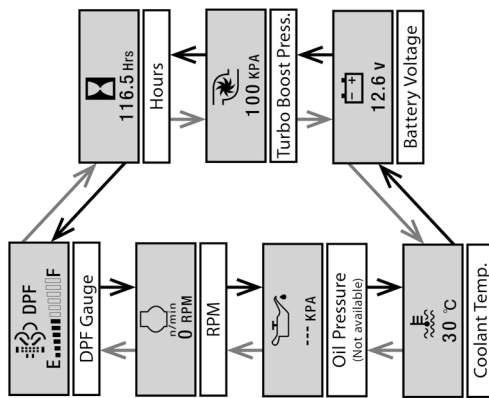
Clockwise

Hold a left button (LB) about 10 sec.

Display is changed from DPF Gauge to "Hours" at bottom as indicated by green arrow.

Every time the LB is pressed, the display goes up as indicated by green arrows, and then comes back to DPF Gauge display.

DPF Meter



Engine Diagnosis in DPF Meter

How to access to Engine Error Codes?

When Green lamp blinks on and Red lamp goes on, check engine error codes in the Diagnosis section of DPF Meter.

Hold Center button about 10 sec until next Display is shown.

"Metric or English", Press "X" at Center button.

"Contrast", Press "✓" at Center button.

"Backlight Control", Press "X" at Center button.

"Diagnosis", Select "Active DM1" and press "✓" at Right button.

If no problem, display shows "No Faults", and then press "X" at Center button to move next display.

If there are problems, display shows "Source 0 Engine". Press "Q" at Right button.

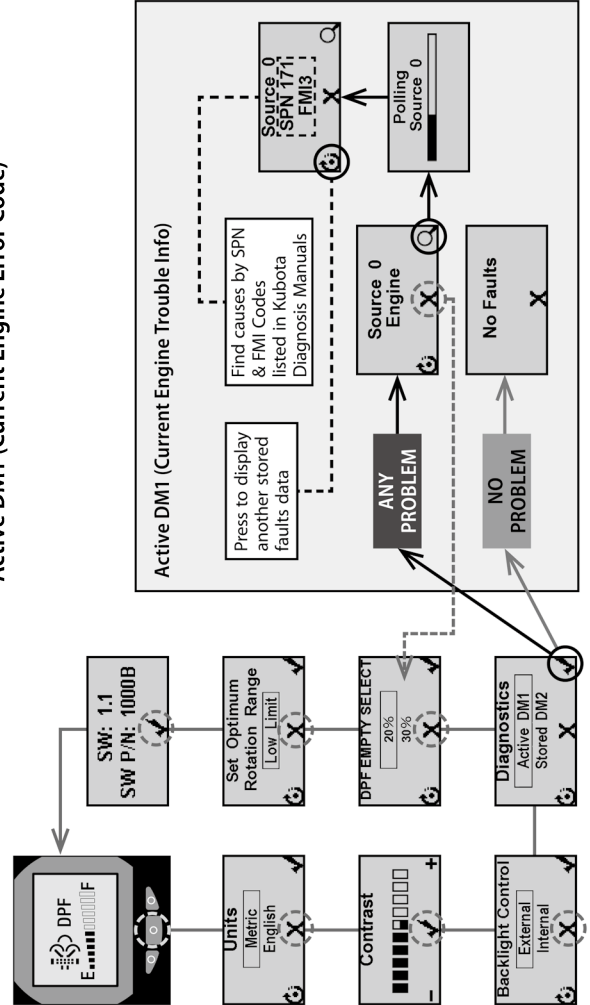
"SPN and FMI" code numbers are displayed after showing "Polling Source" with bar graph. See SPN 171 and FMI 3, as an example.

To see another error codes, press "⌚" at Left button, then press "X" at Center button to move next display.

Contact Sakai dealer or company Techs to let them know the codes.

Engine Diagnosis

Active DM1 (Current Engine Error Code)



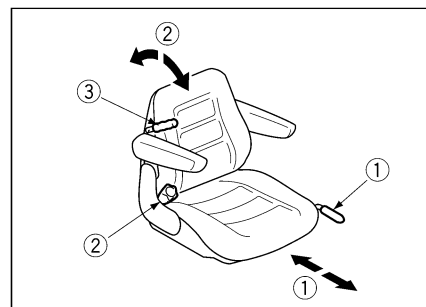
2 OPERATION

2.2.2 Seat adjustment

Adjust the seat for your best operating position. Move the lever as shown by arrow. With the lever held in that position, slide the seat forward or backward as desired. When properly adjusted, release the lever.

Adjust your seat position to suit you as follows:

- 1) Pull the lever ① and adjust seat position longitudinally.
- 2) Turn the backrest adjust dial ② for optimum angle.
- 3) Move the suspension lever ③ to select suitable suspension for your body weight.



⚠ WARNING

- **Be sure to wear the seatbelt during operation.**
- **The seat shall be adjusted before starting any works or when the driver is switched over the other person while the machine is completely stopped. Do not adjust the seat while the machine is in motion.**
- **Some unexpected troubles may be accidentally caused if moving the machine without completely fixing the seat such as while sliding the seat. Before moving the machine, make certain that the seat is completely fixed after making proper adjustments.**
- **Do not pinch your fingers, hands or legs while adjusting the seat.**
- **Adjust seat only when one person rides on the machine.**
- **Adjust seat only when the machine stays on the flat ground.**
- **Adjust the seat so that your back is in close contact with the back of the seat while seated and when stepping on the brake pedal down to the floor. Adjust the seat so as to be able to certainly step on the brake pedal when twisting your body around to look back in order to move the machine backwards.**

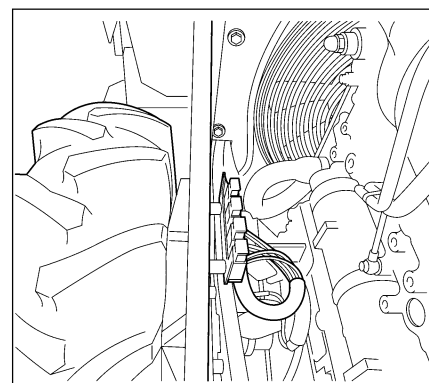
2.2.3 Fusible link

⚠ WARNING

Be sure to turn off the electricity (by turning the starter switch to the “O” position) before replacing the fusible link.

As with ordinary fuses, this protects electronic equipment and circuits from burnouts.

If the starter does not turn on when the starter switch is turned to the “I” position, there is the possibility of a fusible link burnout caused by problems with the electronic equipment or circuits. Inspect and replace the fusible link after inspecting the electronic equipment and circuits. Be sure to replace the fusible link with one of the same capacity.



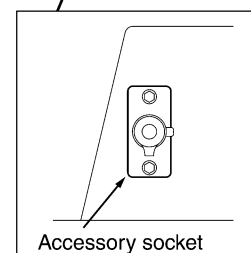
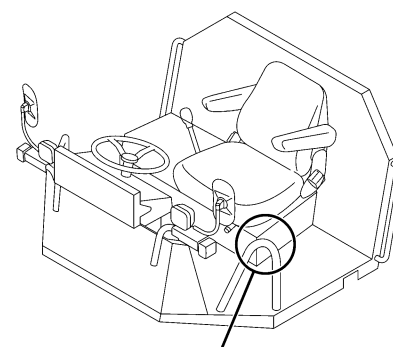
2.2.4 Accessory socket

The accessory socket may be used when the starter switch is turned to the “I” position.

Open the cover, and a 12 V DC can be drawn from the socket for powering electronic equipment.

⚠ WARNING

When connecting electronic equipment to the accessory socket, make sure it does not obstruct the raising and lowering of the F-N-R lever.



⚠ CAUTION

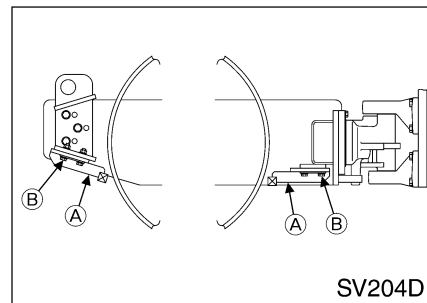
- Use electronic equipment that consumes no more than 120 W (12 V, 10 A).
- Keep the cover closed when not in use to prevent foreign matter from getting inside.
- There is a possibility of the battery running flat when the accessory socket is used for a long time to power electronic equipment with the engine turned off or idling.

2.2.5 Scraper adjustment and replacement

SV204D

1) Clearance adjustment of scrapers ①

- ① Loosen bolts and nuts ② (4 locations respectively at front and rear).
- ② Provide a clearance of 20 mm between scrapers ① and the drum.
- ③ Retighten bolts and nuts ② (4 locations respectively at front and rear).



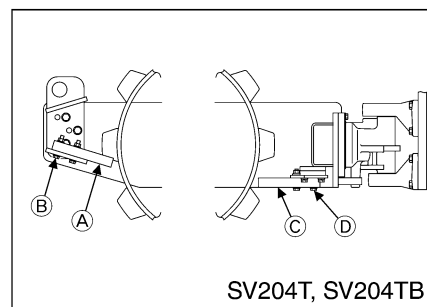
2) Replacement of scrapers ①

- ① Remove bolts and nuts ② (4 locations respectively at front and rear).
- ② Replace scrapers ① with new ones.
- ③ Refit and retighten bolts and nuts ② (4 locations respectively at front and rear).

SV204T, SV204TB

1) Clearance adjustment of scrapers ③

- ① Loosen bolts and nuts ④ (14 locations) at the bottom.
- ② Provide a clearance of 20 mm between scrapers ③ and the drum.
- ③ Retighten bolts and nuts ④ (14 locations).



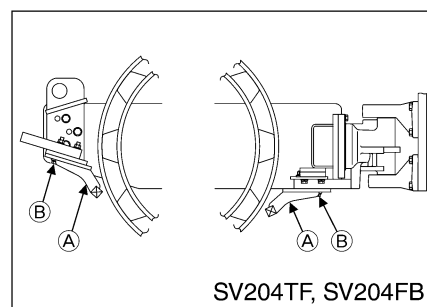
2) Replacement of scrapers ① and ③ (7 pieces at front and 7 pieces at rear)

- ① Remove bolts and nuts ② and ④ (14 locations respectively at front and rear).
- ② Replace scrapers ① and ③ with new ones.
- ③ Refit and retighten bolts and nuts ② and ④ (14 locations respectively at front and rear).

SV204TF, SV204FB

1) Clearance adjustment of scrapers ①

- ① Loosen bolts and nuts ② (4 locations respectively at front and rear).
- ② Provide a clearance of 20 mm between scrapers ① and the drum.
- ③ Retighten bolts and nuts ② (4 locations respectively at front and rear).



2) Replacement of scrapers ①

- ① Remove bolts and nuts ② (4 locations respectively at front and rear).
- ② Replace scrapers ① with new ones.
- ③ Refit and retighten bolts and nuts ② (4 locations respectively at front and rear).

2.2.6 Disengaging the brake when towing

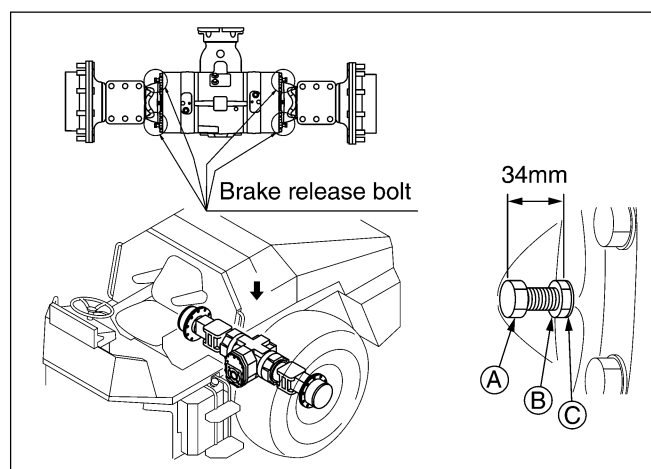
⚠ WARNING

- On a slope, chock the drums and prepare for towing before disengaging the brake.
- Avoid a long-distance towing.

For towing the machine when the engine is disabled or when troubles have developed in the hydraulic system for propulsion, disengage the brake as instructed below:

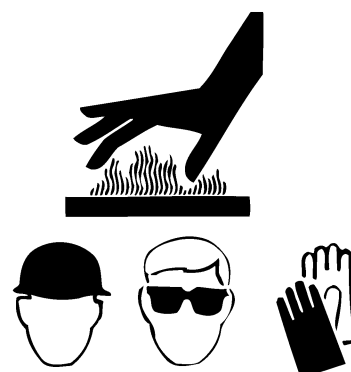
1) Rear brake

- ① For the transmission, after removing lock nut ②, tighten bolts ① (2 on each side) alternately until resistance gets greater.
- ② After towing, remove bolt ①, nut ② and seal ③, and replace seal ③ with a new one.
- ③ Apply grease to bolt ① (lithium type, extreme pressure type NLGI-2) and return all parts to their original positions.
- ④ Tighten bolt ① at its original position (the distance between the bolt head and attachment surface is 34 mm). Then lock it using lock nut ②.



⚠ WARNING

- Do not try to release the brake immediately after a hot engine has been stopped. Let the oil cool down.
- For the brake disengagement, wear hard hat, safety goggles and safety gloves.



2.3 Operation

⚠ WARNING

- This machine is a one-man roller.
- Operate the machine from the operator's seat.
- Be sure to wear the seatbelt during operation.

2.3.1 Before-starting inspection

1) Check that the steering lock pin is in the carrying position.

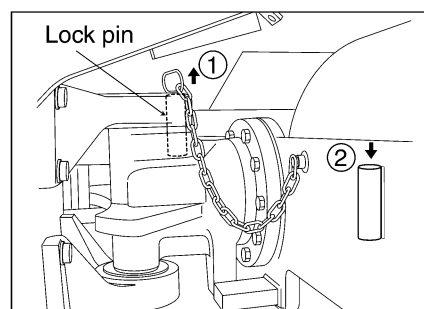
⚠ WARNING

- Make sure that the steering lock pin is connected in the carrying position before putting the machine in motion.
- Steering is impossible if the pin is in the steering lock position.

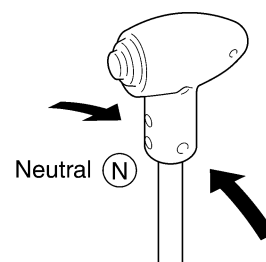
The lock pin is located at the right of the center of the machine.

To unlock the lock pin :

- ① Pull out the lock pin.
- ② Fit the lock pin to the front frame.

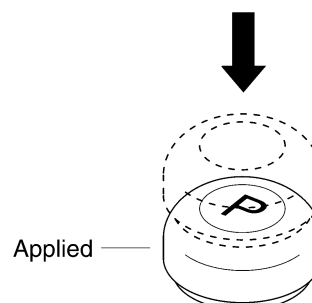


2) Check that the F-N-R lever and is in the neutral position (N) .



3) Confirm that the parking brake is engaged.

NOTE: When the F-N-R lever is not in the neutral position (N) , or the parking brake has been released, the interlocking system goes into operation and the engine will not turn on. Be sure to confirm that the F-N-R lever is in the neutral position (N) , and that the parking brake is engaged before starting the engine.

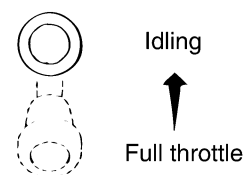


2.3.2 Starting the engine

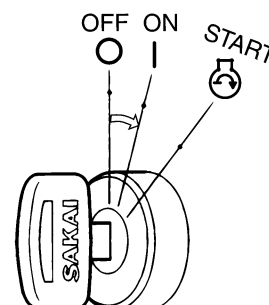
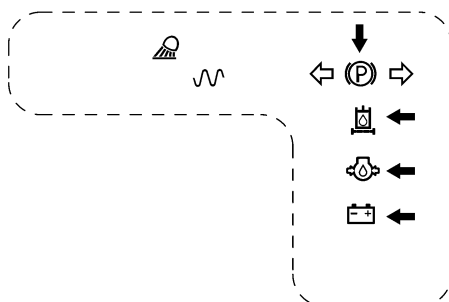
⚠ WARNING

Check that the F-N-R lever is in the neutral position **N** and press down the parking brake switch, and sound the horn when starting the engine after making certain that there are no one and no objects close to the machine.

- 1) Set the throttle lever in a position slightly higher than IDLING.




- 2) Turn the starter switch to the "I" position and check that the warning lamps and parking brake indicator lamp on the monitor display are on.

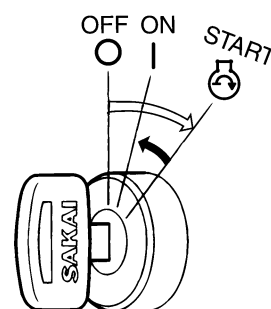


- 3) Start the engine after the engine check lamp has turned on once, then turned off.




2 OPERATION

- 4) Turning the key to the “” position makes the engine start. Release the key the moment the engine has started. The key will automatically return to the “I” position.



CAUTION

- Do not allow the starter key to stay in the “” position for more than 15 seconds.
- When the engine fails to start, or you want to restart the engine immediately after turning it off, wait around 30 seconds before restarting it.
- Check that the warning lamps on the monitor display go off immediately after the engine is started. If any of these warning lamps becomes bright while the engine is running, shut down the machine, determine the cause and rectify the fault.

2.3.3 After starting the engine

Try not to move to operation immediately after starting but observe the following:

IMPORTANT

Avoid increasing the engine speed abruptly before warming-up run is completed.

- 1) Run the engine at around 900 rpm for about 5 minutes to warm it up. Warming-up run allows the lubricating oil to reach the vital parts of the engine and hydraulic system, gradually warm the engine, engine oil and hydraulic oil to prepare the machine for driving.
- 2) After the warm-up operation, check that:
 - Temperature gauge Pointer falls near the center zone.
 - Fuel gauge Pointer falls between the E and F marks.
 - Charge lamp Has gone off.
 - Engine oil pressure warning lamp Has gone off.
 - Engine check lamp Has gone off.
 - Auto regeneration lamp (green) Has gone off.
 - Parked regeneration request lamp (amber) .. Has gone off.
- 3) Check for the color of exhaust gas, listen for unusual sounds and vibration. If abnormal, determine the cause and correct the problem.

WARNING

Keep staying at the driver's seat while starting the engine.

2.3.4 Traveling

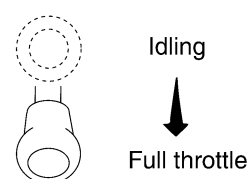
⚠ WARNING

- When starting, operate the horn after securing the safety around the machine.
- On a steep slope, run the machine at low speed.
- Be sure to wear the seatbelt during operation.

⚠ CAUTION

While travelling, do not turn the starter switch to the “O” position.

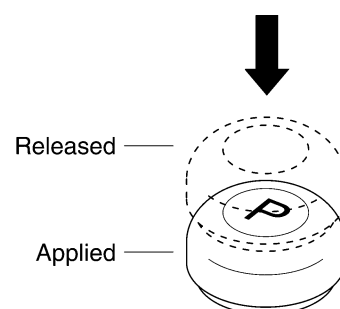
- 1) Speed up the engine by pulling the throttle lever towards you.



- 2) Press down the parking brake switch to release the brake. Check that indicator lamp (P) on the monitor display goes off.

⚠ CAUTION

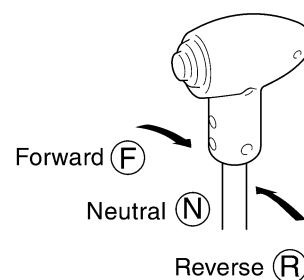
Never pull the switch.



- 3) Move the F-N-R lever in the direction to travel, and the machine will begin traveling.

⚠ CAUTION

Avoid abrupt operation of the F-N-R lever.



NOTE: The travel speed can be controlled by the throttle lever and F-N-R lever.

⚠ WARNING

Pay extreme attention to the area behind the machine when backing, since the space just behind it tends to be a blind spot.

2 OPERATION

2.3.5 Stopping / Parking

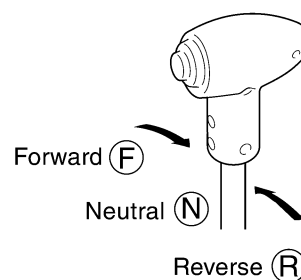
⚠ WARNING

- Avoid abrupt braking. Try to leave enough time for braking.
- Avoid parking on a grade.
- If necessary to park on a grade, block the wheel to prevent unexpected moving down the grade.

- 1) Bring the F-N-R lever to the neutral position (N), and the machine will come to a halt.

⚠ CAUTION

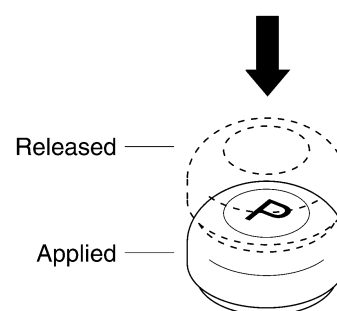
- For normal braking, move the F-N-R lever back to the neutral position (N).
- In an emergency, depress the brake pedal.
- Stepping on the brake pedal all the way down will stop the engine and operate the brakes at the same time.



IMPORTANT

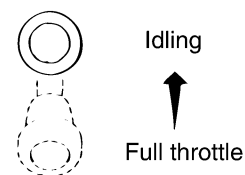
After the machine has stopped upon stepping on the brake pedal, lift the foot off the brake pedal, put the F-N-R lever into neutral position (N), make sure that the parking brake switch has been pressed (is in operation), then restart the engine.

- 2) Press the parking brake switch securely, and check that indicator lamp (P) illuminates.



2.3.6 Stopping the engine

- 1) Gradually cool down the engine at low idling for about 5 minutes.



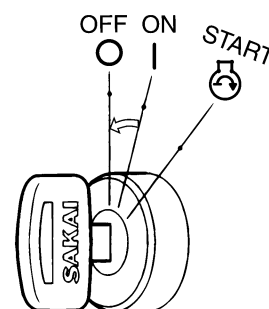
IMPORTANT

- Do not bring a hot engine to a sudden stop except for an emergency. This will shorten the life of its component parts.
- Do not also allow an overheated engine to come to a sudden stop, but run it at middle idling speed for gradual cooling down.

- 2) Turn the starter key to the “O” position to stop the engine.

⚠ CAUTION

Do not turn the starter switch to the “O” position while the machine is in motion.



- 3) Remove the starter key.

⚠ WARNING

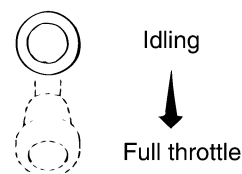
- When dismounting from the machine, apply the brake by pressing the parking brake switch. If necessary to park on a grade, chock the wheels to prevent unexpected moving down the grade.
- Never fail to remove the starter key.

2.3.7 Check after stopping the engine

- 1) Perform the walk-around checks for oil and water leakage, abnormal signs around the drums.
- 2) Fill the fuel tank.
- 3) Remove waste paper if any from the engine compartment, as this will pose a possible fire hazard.
- 4) Scrape mud or other materials from and around the drums.

2.4 Vibratory Operation

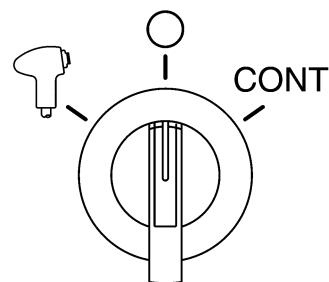
- 1) Run the engine at 1,800 rpm or higher by operating the throttle lever.



- 2) Also, by means of vibration selector switch, the selection can be made between the vibration switch installed to the F-N-R lever and the other one located on the panel to the right of operator seat.



position : Vibration can be turned ON or OFF with the switch located on the F-N-R lever. Pressing this switch causes the vibration to start and pressing it again to stop.

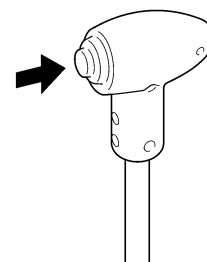


Vibration selector switch

- position : Vibration is shut down.

CONT position : Have this switch placed at this position when vibration is not to be actuated.

- 3) Proper travel speed for vibratory compaction is 2 – 5 km/h, however, select speeds depending upon job requirements.



Vibrator switch

IMPORTANT

- **Keep the vibrator shut off when the machine is not rolling.**
- **Stop vibration if the machine has encountered a running difficulty, for example, when it gets stuck in the mud.**

NOTE: Rev up the engine when there is a big drop in its rate of revolution during rolling compaction.

2.5 Precautions for Work

2.5.1 Compaction operation

■ Understand the intended purposes of the rollers

- This roller is developed and manufactured mainly for rolling compactions of road constructions and repairing. Working with vibrations under excessive rolling compactions or using for crushing operations may cause damages to this machine. Do not use for any other purposes than rolling compactions in civil engineering works.

■ Do not operate the vibrator on hard location

- Do not work the vibrator on a hard surface such as concrete pavement, as this can cause the machine to jump and give abnormal shock load. Damage to shock isolators will result.

■ Change the direction of travel gently

- When changing the direction of travel during asphalt mix compaction, slowly shift the F-N-R lever.

■ Drive at a speed appropriate for the road surface conditions

- Drive slowly on uneven surfaces.

2.5.2 When going downhill

■ Use the F-N-R lever

- Run slowly by the operation of the F-N-R lever even if the travel distance is short.

■ Use the engine brake

- Go downhill by applying the engine brake along with the F-N-R lever operation.

WARNING

- When going downhill, adjust the travel speed not to allow the engine speed to exceed 2,500 rpm.
- When going uphill, run at low speed. Do not attempt to shift speeds during travelling. The machine can slip down the slope.

2.5.3 On a slope

■ Working on a sidehill

- Work in an uphill / downhill direction, and avoid working on sidehill with the machine inclining sideways.

2.6 Applicable Jobs

The machines do a variety of jobs as listed below.

1) This machine is mainly used for:

- Static compacting work
- Vibratory compacting work

2) Road rollers do a variety of jobs as listed below.

This machine most effectively handles works or materials marked ☆ .

Work

- Asphalt road paving
- Dust removal treatment for road
- ☆ Road improvement
- ☆ Embankment construction
- ☆ Dam construction
- Construction of forestry and farm roads
- Foundation building
- Construction of sidewalk, shoulder and gutter foundation

Material to be compacted

- Asphalt pavement
- ☆ Crusher run
- ☆ Cement concrete
- ☆ Sands
- ☆ Soils
- ☆ Slag
- ☆ Soft rock

CAUTION

If the compaction material is hard, the rolls may wear prematurely due to rolling pressure or scratch.

Layers to be compacted

- Surface course, Binder course
- ☆ Base course
- ☆ Subgrade
- ☆ Embankment
- Shoulder
- Sidewalk

2.7 After Operation

Follow the procedures below to prevent the machine from falling into an unworkable condition the following morning caused by muds and other extraneous matter on the drum, or frozen drums:

- 1) Check to see if the engine coolant temperature is too high and the engine oil pressure is not normal. Also check the fuel level.
- 2) Remove muds and water from the machine. Muds can get into the seals together with water drops on the hydraulic cylinder piston rod. Damaged seals will result.
- 3) Park the machine on a hard and dry surface. If such a place is not available, cover the ground with hard plates.
- 4) Low temperature will cause a significant reduction of battery efficiency. Cover batteries or take them off from the machine and store in a warm place for the following day's operation. There is a danger of battery fluid leaking when removing the battery from the machine, so take care not to tilt the battery when doing so.

IMPORTANT

Avoid carrying out high pressure cleaning around the meter panel or behind the dashboard, as it may damage meters and other equipment.

2.8 Loading and Unloading

⚠ WARNING

- Use sturdy ramps with proper width, length and thickness which allow safe loading and unloading.
- If the ramps deflect considerably under load, apply wooden blocks to reinforce them.
- Loading should be conducted on a level and hard ground. Leave a sufficient distance between the machine and the shoulder.
- To prevent slippage on the ramps, keep the drums free from mud, oils, etc. The ramps must also be free of grease, oil and ice.
- Do not steer the machine on the ramps. If the machine is facing in the wrong direction, allow it to dismount from the ramps and correct the direction.

For loading and unloading, use ramps or a proper loading stand.

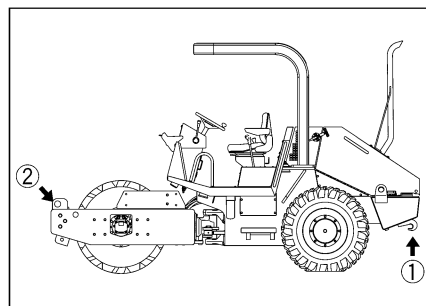
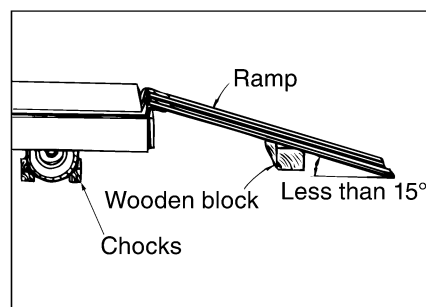
2 OPERATION

2.8.1 Use of a truck or trailer equipped with a winch

⚠ WARNING

Placing the unloader in UNLOAD position disrupts the power for traction. Do not enter the areas ahead of and behind the machine. It is very dangerous.

- 1) Engage the truck or trailer brake and chock its wheels.
Fix the ramps so that the machine and truck or trailer are completely aligned.
 - ☆ The angle between the ramps and ground must be less than 15 degrees.
 - ☆ Leave a proper space between the ramps according to the width of the roller drum.
- 2) Decide the correct direction of run and make the machine run forward to the ramps.
 - 3) Draw the wire rope from the truck or trailer winch and put its hook on the hooking point ① or ② of the roller.
 - 4) Place the unloader valve located at the operator's station to the UNLOAD position (refer to page 32).
 - 5) With the engine running at idle, perform loading by means of the truck or trailer winch.
 - 6) When the loading is completed, set the unloader valve back in the ONLOAD position.
 - 7) Locate the machine correctly on the truck or trailer.

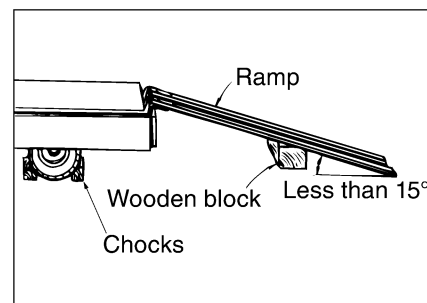


2.8.2 Self-propelling

- 1) Engage the truck or trailer brake and chock its wheels. Fix the ramps so that the machine and truck or trailer are completely aligned.

☆ The angle between the ramps and ground must be less than 15 degrees.

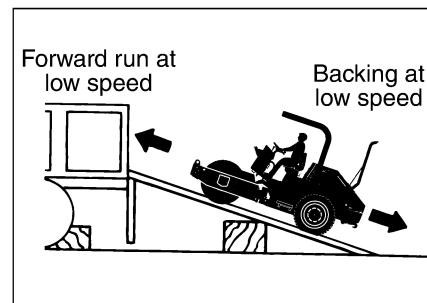
☆ Leave a proper space between the ramps according to the width of the roller drum.



- 2) Decide the correct direction of run and conduct loading or unloading at low speed.

For loading, run forward at low speed.

For unloading, run backward at low speed.



- 3) Locate the machine correctly on the truck or trailer.

2.9 After Loading the Machine

When the machine has been located properly on the truck or trailer, tie it down as follows:

- 1) Press the parking brake switch to apply the parking brake. Place chocks under the drums to prevent movement.
- 2) Fix the machine with ropes tied at the front and rear towing hook holes. Particularly, pay attention to sidewise skidding.

2.10 Transportation

⚠ WARNING

To decide the transporting route, check the width of the road, height and weight (including the roller) of the truck or trailer. Obey relevant regulations.

2.11 Operation in Cold Weather

In cold weather, take the following measures to prevent troubles such as starting difficulty and coolant freeze-up.

2.11.1 Fuel oil and grease

Use fuel and oil with low viscosity (refer to page 86).

2.11.2 Coolant

WARNING

- Do not bring an open flame to the antifreeze or do not smoke when handling it. It is inflammable.
- When the temperature of the water in the radiator is high, do not remove the radiator cap or the reserve tank cap. It may cause hot water to spurt out, causing burns.

When removing the cap after the water temperature has dropped, turn it slowly to release the pressure before opening.

CAUTION

Never use methanol-, ethanol- and propanol-base antifreeze.

Use soft water for coolant.

In freezing weather, add antifreeze to the coolant referring to the table below. Select the most suitable mix ratio according the lowest temperature in the job location.

Ambient temperature	−33°C (−27.4°F)	−26°C (−14.8°F)	−20°C (−4°F)	−16°C (3.2°F)	−11°C (12.2°F)
Amount of antifreeze	3.4 L (0.9 gal)	3.0 L (0.8 gal)	2.7 L (0.7 gal)	2.3 L (0.6 gal)	2.0 L (0.5 gal)
Amount of water	3.4 L (0.9 gal)	3.7 L (1.0 gal)	4.0 L (1.1 gal)	4.4 L (1.2 gal)	4.7 L (1.3 gal)
Ratio	50%	45%	40%	35%	30%

Our machines are filled with a long-life coolant (non-amine type).

The validity of the antifreezer is for two years.

Use non-amine type long-life coolant when changing coolant.

2.11.3 Battery

⚠ WARNING

- The battery contains diluted sulfuric acid, which will dissolve clothes and skin. Should you get battery fluid on your clothes or skin, wash it off immediately with copious quantities of clean water.
- If you get it in your eyes, rinse them straight away with clean water and immediately seek the help of a doctor.
- If you accidentally ingest it, drink copious quantities of water and immediately seek the help of a doctor.
- Always wear safely glasses when handling the battery.
- The battery generates hydrogen gas, so there is a danger of explosions. Avoid recharging the battery, keep cigarettes and flames away, etc., in poorly ventilated places when there is a danger of generating sparks.
- The inspection and handling of batteries should be carried out with the engine turned off and the starter switch in the “O” position.
- Turn the starter switch to the “O” position, then wait at least 30 seconds before removing the battery. An abnormality may arise in the ECM (engine control module).
- Be careful not to accidentally connect the two battery terminals with tools or other metallic objects.
- Tangled terminals may generate sparks due to improper connections, resulting in the danger of explosions. Make sure terminals are connected firmly.
- The battery is for starting the engine and operating electrical equipment on the machine. Do not use it for any other purpose.

IMPORTANT

The battery is maintenance free at the time of delivery.

When the temperature decreases, the battery capacity will lower, possibly freezing the electrolyte.

The battery should be maintained in a good state at all times, with care taken to keep it warm in preparation for use the next morning.

Hydrometer atop the battery permits confirmation of the condition of the battery.

Green Satisfactory (Good)

Black..... Charging is necessary (Charging required)

Red..... Replacement is necessary (Electrolyte insufficient)

Please refer to “3 PERIODICAL MAINTENANCE” for inspection and maintenance of battery.

⚠ CAUTION

The power-supply voltage of this machine is 12 V.

2.12 When the Cold Season is Over

When winter is over and the warm season has come, proceed as follows:

- 1) Change oil and fuel with those for use in warm season referring to “Rating” on page 86.
- 2) If AF-PT antifreeze is in use, drain the coolant completely, wash clean inside the cooling system, and then fill with non-amine type long-life coolant.

2.13 For a Long Storage Period

For leaving the machine unused for longer than one month, proceed as follows:

- 1) Store the machine in a closed area after cleaning.
- 2) Conduct oiling, greasing and changing of oil.
- 3) Grease lubricate the exposed portion of hydraulic cylinder piston rods.
- 4) Cover the battery after disconnecting the negative cable or take off the battery from the machine and store in a safe place.
- 5) If the temperature is expected to go down below 0 degree, add antifreeze to the coolant.
- 6) With F-N-R lever placed at neutral position **(N)** and vibrator switch at **(O)** position, have the parking brake engaged.
- 7) Place wheel chocks in front of and behind the rollers.
- 8) Remove the starter switch key.

2.14 During the Storage Period

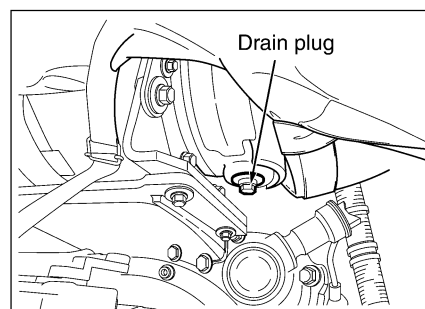
⚠ WARNING

If necessary to operate the machine for anti-corrosive purpose in closed area, ensure good ventilation keeping windows and doors open to prevent gas poisoning.



- During storage, operate the machine at least once a month to prevent the oil films on the lubricated parts from deteriorating and to charge the batteries.
- Disengage the brake at least once a month to prevent the brake lining from sticking to the brake drum, and travel the machine forward and backward. Then, engage brake again.
- In the event of storing the machine outside for a long time, open the drain plug at the bottom of the DPF, and when starting the engine, check to make sure that no water has collected inside the DPF.

Starting the engine when water has collected inside the DPF may lead to breakdowns.

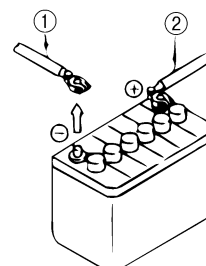


2.15 When the Battery Has Discharged

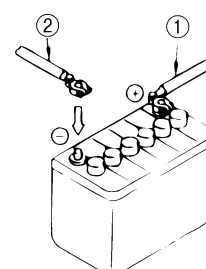
⚠ WARNING

- To check and handle the batteries, keep the engine stopped with the starter switch in the “O” position.
- The batteries give off explosive gases. Do not smoke close to the batteries. Keep flames and sparks away from the batteries.
- The electrolyte is very corrosive and will harm your clothing or skin. If the electrolyte has come into contact with your clothing or skin, flush with sufficient amount of water. In case the electrolyte has gotten into your eyes, flush with water and get medical help.
- To disconnect the battery cables, start with the negative terminal (earth). When connecting, start with the positive terminal. Do not allow a metallic item to bridge between the positive terminal and machine body. This can generate sparks, causing an explosion.
- Loose battery terminals can cause sparks. An explosion will result. When connecting the terminals, make certain that they are tight.

Disconnect with negative cable first



Connect with positive cable first



⚠ CAUTION

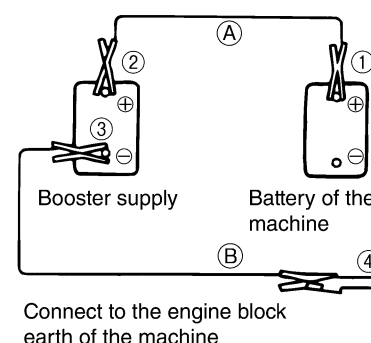
The power-supply voltage of this machine is 12 V.

2.15.1 Connection and disconnection of booster cables

When jump-starting the engine, connect the booster cables as follows:

■ Connection of booster cables

- 1) Connect one end of the positive booster cable (A) to the positive \oplus terminal of the battery on the machine.
- 2) Connect the other end of the positive booster cable to the positive \oplus terminal of the booster supply.
- 3) Connect the negative booster cable (B) to the negative \ominus terminal of the booster supply.
- 4) Connect the other end of the negative booster cable to a good earth of the engine block of the machine.

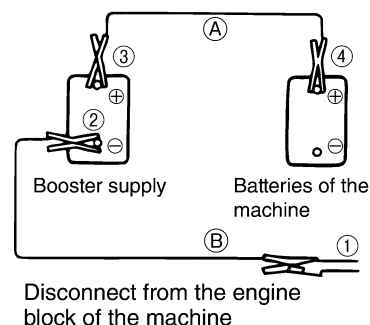


Connect to the engine block earth of the machine

2 OPERATION

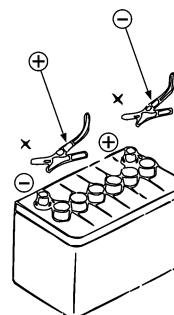
■ Disconnection of booster cables

- 1) Disconnect the negative booster cable (B) from the engine block earth.
- 2) Disconnect the negative booster cable (B) from the booster supply.
- 3) Disconnect the positive booster cable (A) from the booster supply.
- 4) Disconnect the positive booster cable (A) from the machine.



⚠ WARNING

- Do not allow the positive \oplus terminal to make contact with the negative \ominus terminal when connecting the booster cables.
- Wear safety goggles when jump-starting the engine.
- Do not allow the machine to make careless contact with the booster supply.
- Do not make wrong connections. Connect the negative \ominus cable to the engine block earth far away from the battery, as sparks may occur when connecting.



⚠ CAUTION

- Use booster cables and end clips of proper size suited to the battery capacity.
- Use the batteries of the equal capacity for the machine and booster supply.
- Check booster cables and end clips for signs of damage and corrosion.
- Connect the clips positively.
- The power-supply voltage of this machine is 12 V.

3 PERIODICAL MAINTENANCE

3.1 Precautions

Whether or not the inspection service and lubrication are performed at the correct regular intervals exerts significant influence on the occurrence of trouble and service life of the machine. In this manual, typical intervals for inspection and service are given. However, flexibility should be introduced as to interval or type of services to enable your machine to always operate in the best condition.

WARNING

Be sure to take adequate care not to burn yourself when replacing filters, elements, oil, etc.

IMPORTANT

- **After maintenance and inspection record the result of inspection. Remember that replacement of filter elements, replenishment and change of oil and grease, and cleaning the radiator fins are important.**
When draining a hot oil, use care not to get burned.
- **The disposal of waste oil and coolant, and used filters, elements, etc., should be handled by specialized disposal companies.**

General precautions:

- 1) Always use SAKAI genuine parts for replacement.
- 2) Use lubricants recommended by SAKAI. Avoid mixing different brand lubricants.
- 3) For hydraulic oil replenishment, changing, level checking, filter cleaning or replacement, oiling and greasing, use extreme care to prevent dust from entering.
- 4) For checking oil level or changing oil, park the machine on a level and hard surface.
- 5) Change oil while its temperature remains high after operation.
- 6) For a long-term storage, fill the fuel tank, lubricate necessary points and run the machine for more than 20 minutes once a month.
- 7) In freezing weather, add antifreeze to the coolant according to the ambient temperature.
- 8) For the hydraulic pump and motor, have them serviced at authorized service shops.
- 9) Turn the starter switch "O" when performing services such as repairing broken wires, short circuits and tightening loose terminals.

3 PERIODICAL MAINTENANCE

Periodical replacement of essential maintenance parts

In order secure safety for work and travel, conduct inspection and services.

Further, for enhanced safety, following parts and components should be replaced periodically. These parts are prone to material deterioration due to aging or physical change due to wear, while it is difficult to determine their useful limit by regular inspection, which makes it necessary to replace with new ones after certain period of service to maintain their perfect function.

If any abnormality is detected such as crack, deformation, wear or oil leakage, go ahead and replace them even if it is within scheduled replacement time.

System or Mechanism	Part name	Periodical replacement maintenance part	Replacement period	Remarks
1 Brake system	Master cylinder	Seals (rubber parts)	2 years	
	Wheel cylinder	Seals (rubber parts)	2 years	
	Brake piping parts	Brake hose	2 years	
		Air hose	2 years	
	Operating parts	Cable	4 years	
2 Steering system	Orbitrol	Seals (rubber parts)	2 years	
	Hydraulic piping parts	Hydraulic hose	2 years	
	Steering cylinder	Seals (rubber parts)	2 years	
	Hydraulic pump	Seals (rubber parts)	4 years	
3 Power transmission system (inclusive of axle)	Axle	Seals (rubber parts)	4 years	
	Travel pump	Seals (rubber parts)	4 years	
	Travel motor	Seals (rubber parts)	4 years	
	Hydraulic piping parts	Hydraulic hose	4 years	
	Isolation rubber	Isolation rubber itself	4 years	
4 Fuel system	Piping parts	Fuel hose	2 years	
5 Engine related	Engine mounting parts	Isolation rubber	4 years	
	Seals (rubber parts)	Packing and others	4 years	
	Drive parts	V-belt	2 years	or 500 hours
	Piping parts	Engine drain hose	4 years	
6 Cooling system	Piping parts	Radiator hose	2 years	
		Radiator drain hose	4 years	
7 Control related parts	Cable	Cable	4 years	
8 Intake system	Piping parts	Intake hose	2 years	
		CAC hose	2 years	
9 Hydraulic system	Hydraulic piping parts	Hydraulic hose	4 years	

⚠ CAUTION

- With a new machine, change the engine oil and change the engine oil filter elements after 50 hours of operation for the first time only (refer to page 74).
- When trouble occurs in the location indicated by the indicator lamp on the monitor display, sensor will work and corresponding lamp comes on. If this occurs, conduct necessary service regardless of the periodical service interval recommendation.
 - 1) The hydraulic filter (line filter) warning lamp ➡ Replace elements
 - 2) Battery charge lamp: Recharge the battery.
- Check the electric wiring at a regular interval not exceeding one month, when there is abnormality, replace it.

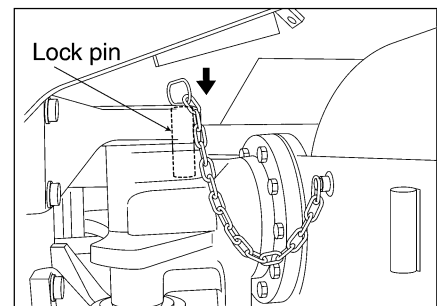
If there are some trouble on the electric wiring, replace them with new one.

 - 1) Damage to the wire harness and loose clamps
 - 2) Loose sockets
 - 3) Function of electrical systems
- For the parts other than listed above, if there are some trouble on the parts at periodical inspection or daily check, replace them as soon as possible.

3.1.1 Lifting the machine on a hoist

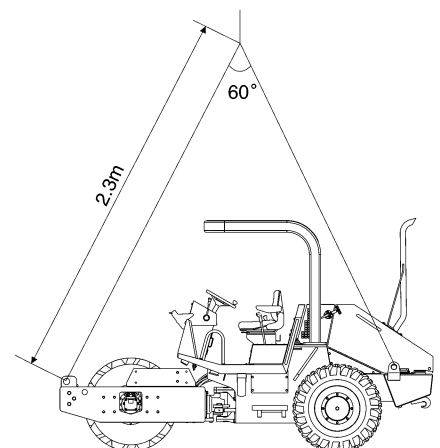
⚠ WARNING

- Get a qualified personnel to lift and lower the machine on a hoist.
- Use sturdy wire ropes.
- Lock articulation by means of lock pin located at the center of machine.

**⚠ CAUTION**

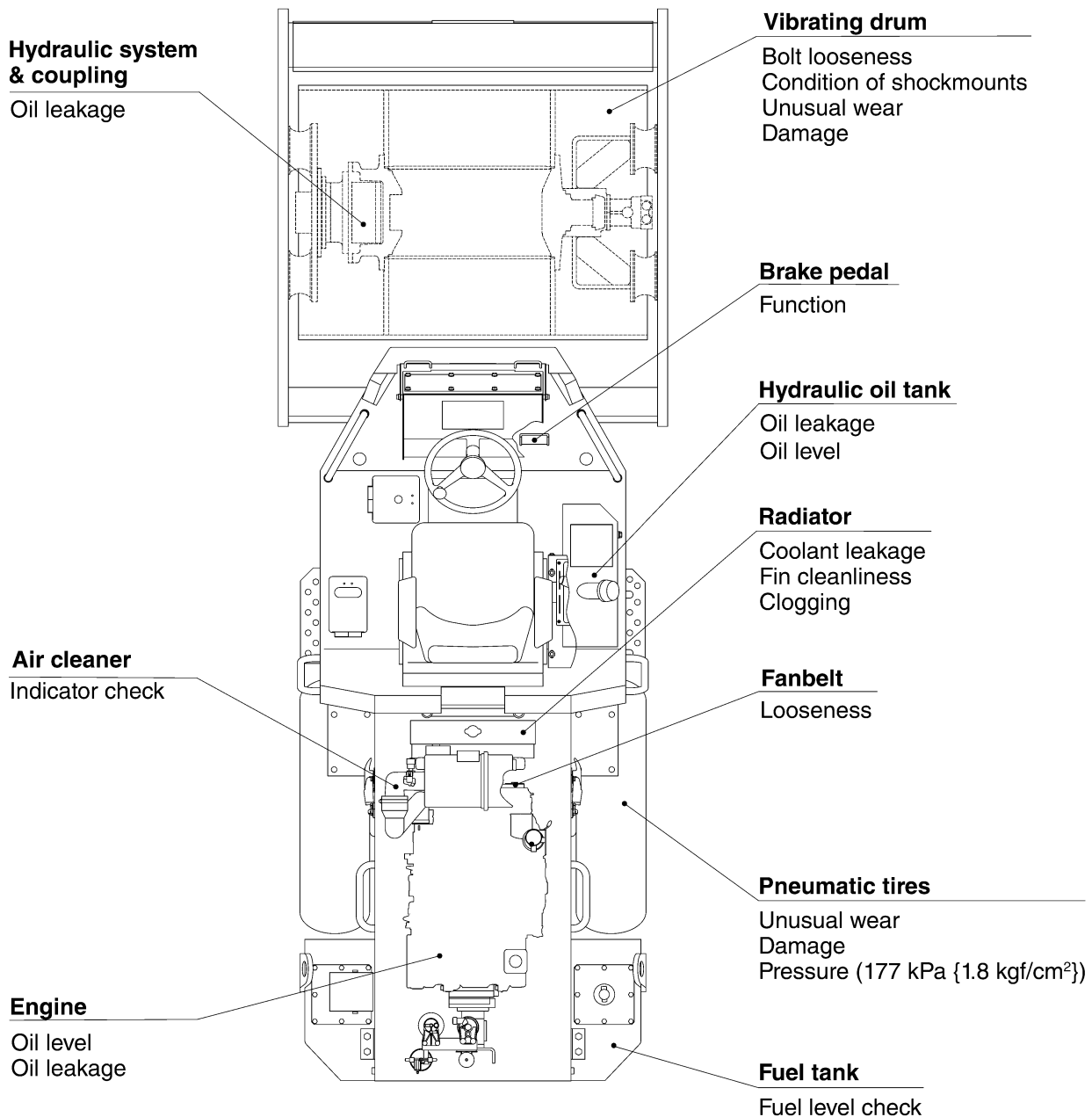
To do the lifting and lowering work, fold the awning.

- 1) Put wire ropes securely on the hook and lifting points as shown.
- 2) If wire ropes make contact with other parts of the machine, put pieces of cloth or wooden blocks at the contact points. Carefully perform lifting.
- 3) When lifting, keep the machine properly balanced.



3.2 Walk-around Checking

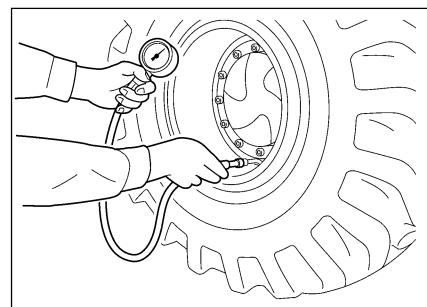
For efficient operation, daily, before-operation checking is very important. Before starting, perform walk-around checking for loose bolts, nuts and signs of leakage in addition to items as shown below:



3.2.1 Tire inflation pressure check

Inflation pressure

Check that the inflation pressure of a tire is 177 kPa (1.8 kgf/cm²) with a pressure gauge when the tire has cooled down. If the pressure reading exceeds the above range, adjust the pressure accordingly.



⚠ WARNING

- Improper handling of a tire is dangerous and may cause flat tire and a rim to come off.
- Do not work on a tire facing the rim, but from behind the tread of the tire while checking the inflation pressure or replenishing air into a tire.

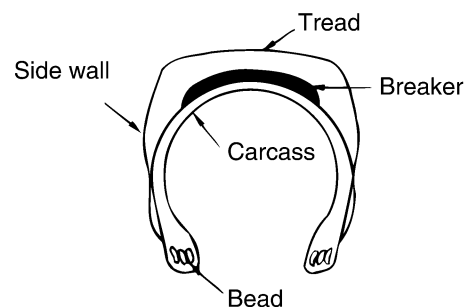
3.2.2 Checking for external injury to a tire

Check any external injury to a tire, its size and its depth (whether it has reached the carcass or not), etc.

- 1) Check for any cuts on the tread.
- 2) Check for any cracks on a rim or deformation of rim flanges.

When a tire shows one or more of the following conditions, regard it as defective, and replace the tire with a new one for safety.

- 1) When the bead wire is cut, bent or significantly deformed.
- 2) When the carcass ply is showing due to excessive wear.
- 3) When damaged portion of the carcass exceeds one thirds of the tire width.
- 4) When a tire has ply separation (peeling).
- 5) When radial cracks reach the carcass.
- 6) When the tire is not regarded as durable due to abrasion, deformation, or abnormal flaw growth.

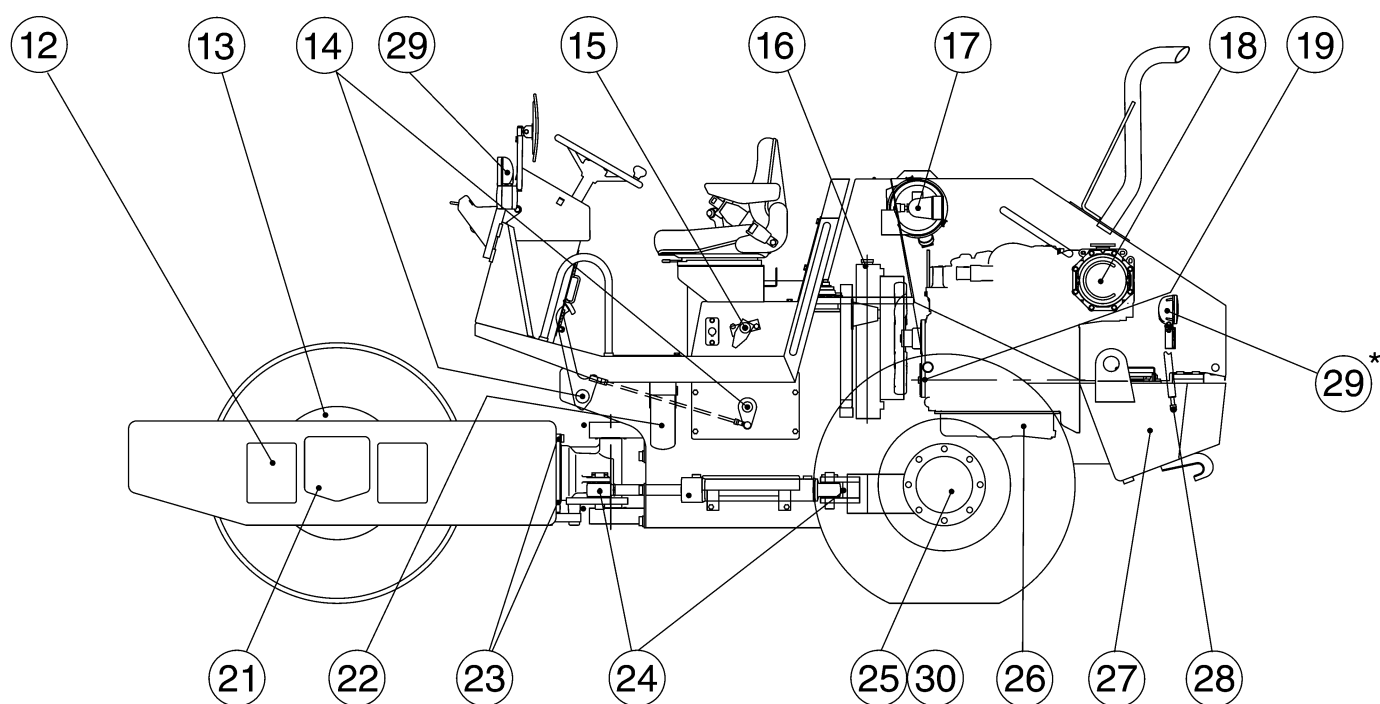
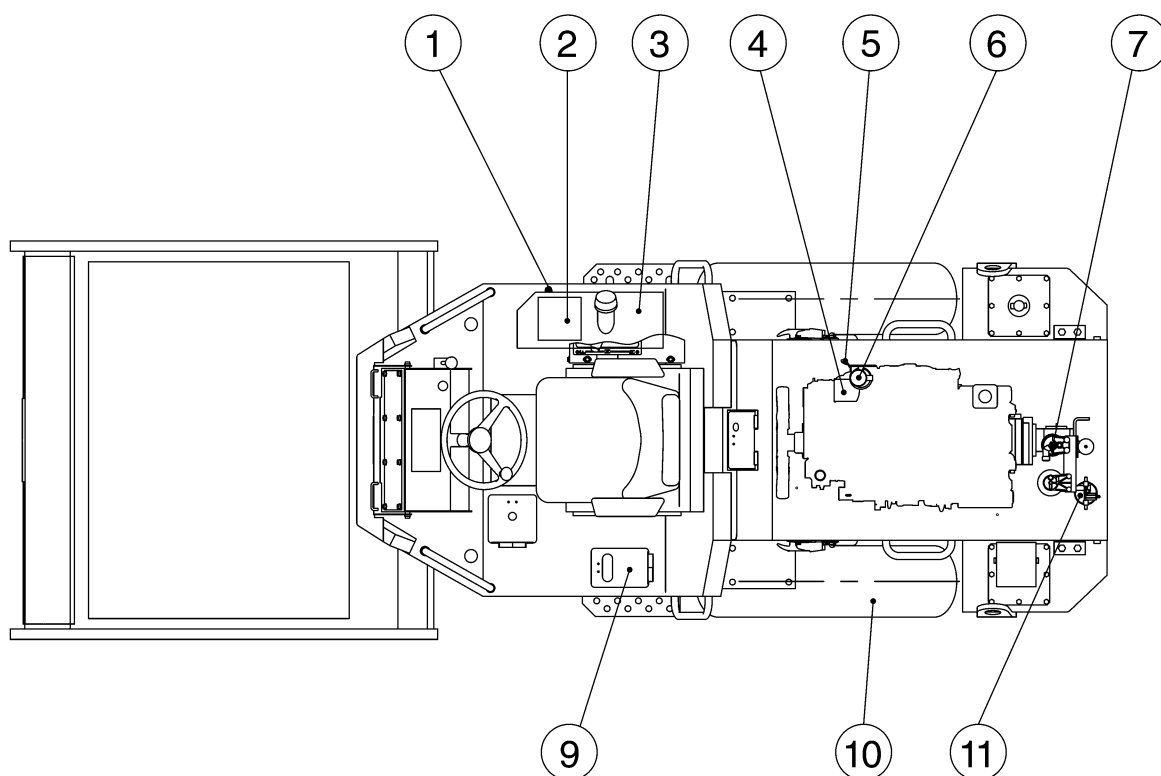


Please consult with an agency for maintenance in the following cases.

- When injury is found on the surface of a tire.
- When the degree of wear on the front, rear, right and left sides of a tire are extremely different.
- When a bent rim is found.

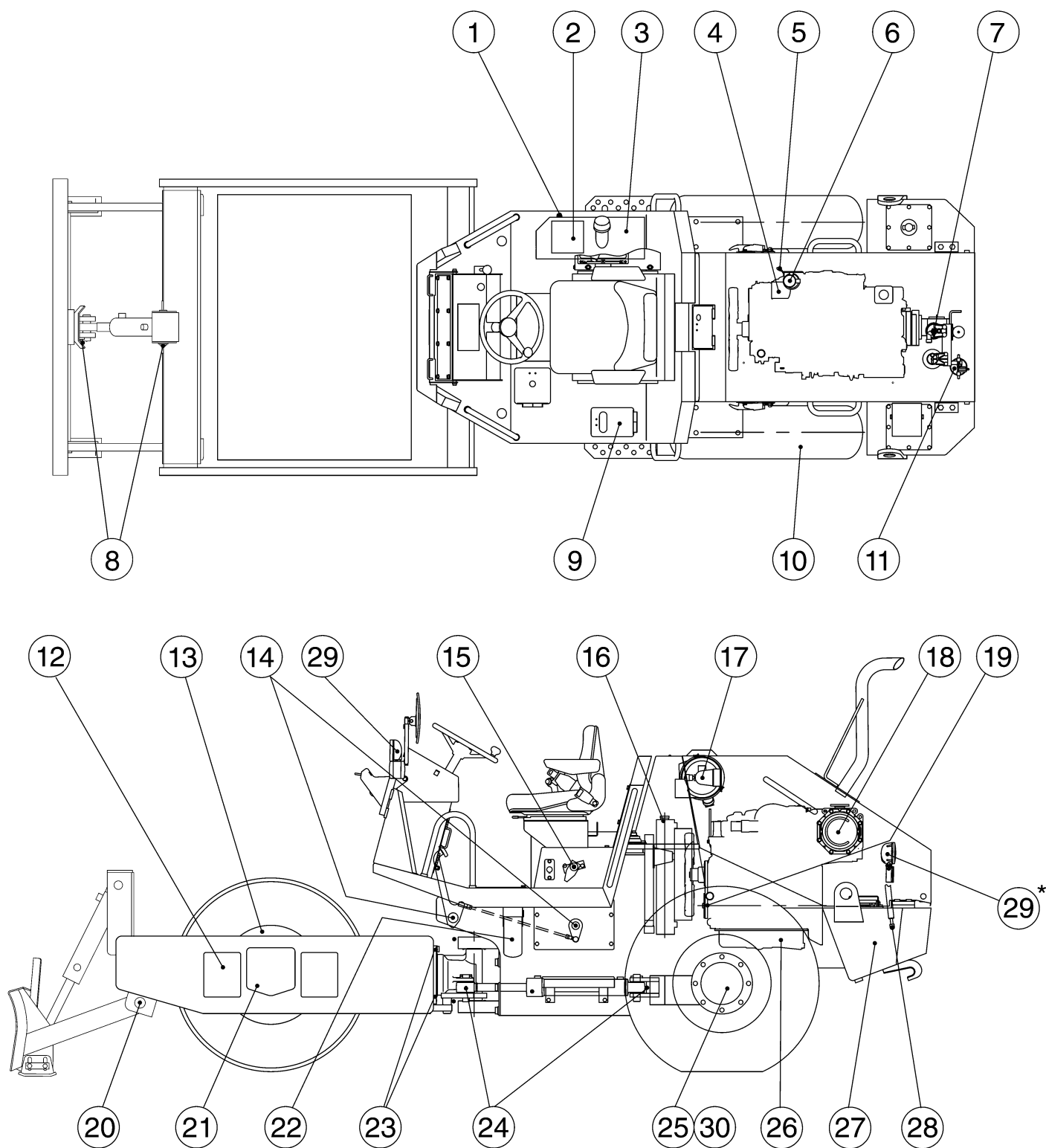
3.3 Periodical Maintenance Points

(1) SV204D
SV204T
SV204TF



*29 Option

(2) SV204TB
SV204FB



*29 Option

3 PERIODICAL MAINTENANCE

Interval	Ref. No.	Location	Inspection and service	Lubricant	Q'ty
Every 10 service hours or daily	⑤	Engine oil level gauge	Check oil level, add as necessary	Engine oil	1
	⑯	Radiator : Reserve tank	Check coolant level, add as necessary	Coolant	1
	⑲	Fan belt	Check tension, unusual wear and adjust		1
Every 50 service hours	①	Hydraulic oil tank	Check oil level, add as necessary	Hydraulic oil	1
	*1⑧	Blade cylinder head and anchor pins	Apply grease	Grease	2
	*1⑳	Push rod anchor pins	Apply grease	Grease	2
	⑨	Battery	Check hydrometer, looseness of terminals		1
	⑪	Fuel sedimenter	Check, drain water and dust		1
	⑭	Brake	Check, function and adjust		1
Every 250 service hours	⑫	Rubber dampers	Check for cracks		6
	⑬	Vibrator	Check oil level, add as necessary	Gear oil	1
	⑭	Brake links	Apply grease	Grease	2
	㉑	Gear case : Wheel motor	Check oil level, add as necessary	Gear oil	1
	㉓	Tilt pin	Apply grease	Grease	3
	㉔	Steering cylinder	Apply grease	Grease	2
	㉕	Final drive : Differential case	Check oil level, add as necessary	Gear oil	3
Every 500 service hours	④	Engine oil filter	Change filter element		1
	⑦	Fuel filter	Change filter element		2
	⑪	Fuel sedimenter	Change filter element		1
	⑮	Control links	Check looseness, adjust as necessary Apply grease	Grease	1
	㉒	Line filter	Change filter element		1
	㉕	Final drive : Differential case	Change gear oil	Gear oil	3
	㉖	Engine oil pan	Change engine oil	Engine oil	1
Every 500 hours or 3 months, or each time after brake pedal is used	⑳	Parking brake	Check function		1
Every 1000 service hours	②	Suction filter	Clean filter element or change		1
	③	Hydraulic oil tank	Change hydraulic oil, clean inside	Hydraulic oil	1
	⑬	Vibrator	Change gear oil	Gear oil	1
	㉑	Gear case : Wheel motor	Change gear oil	Gear oil	1
Every 1500 service hours	⑥	Engine oil separator	Change filter element or clean		1
Every 3000 service hours	⑱	DPF	Clean DPF		1
As required	⑩	Tires : Wheel hub nut	Check condition, air pressure and looseness		2
	⑯	Radiator	Clean fins and inside		1
	⑰	Air cleaner	Change filter element		1
	㉗	Fuel tank	Drain water and dirt		1
	㉘	Gas damper	Check condition, change as necessary		2
	*2㉙	Lighting	Check bulbs		-

*1 : For SV204TB, SV204FB only *2 : Option

- Ensure the 10 hours maintenance and that there are no loose bolts, nuts and oil leaks before start the machine.
- No.22 : Change the hyd. filter when the monitor lamp comes on. even if it's before every 500 hours.

3.4 Maintenance Procedure

➔ For servicing the engine, see the separate engine manual.

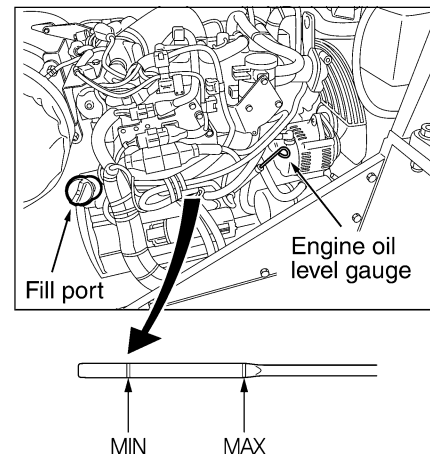
(1) Every 10 hours or daily

⑤ Engine oil level gauge

Shut down the engine and check the engine oil level. If it is not between MAX and MIN marks, add oil through the fill hole.

The engine oil level may rise

In engines installed with DPFs, some fuel may become mixed into the engine oil during cleaning (burning) of the DPF, diluting (increasing the amount of) the engine oil. If the level rises above the maximum level on the engine oil gauge, change the oil immediately as it may cause the engine to break down.



⚠ CAUTION

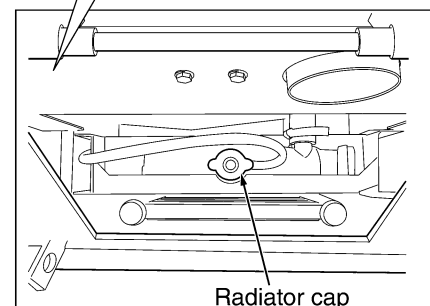
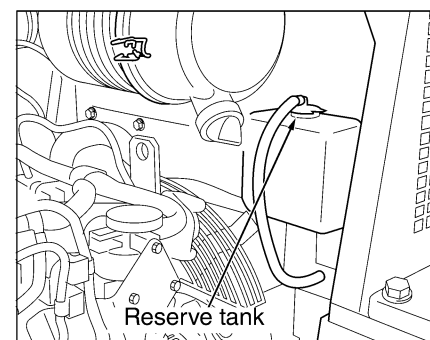
- When intervals between DPF cleaning become five hours or shorter, it is time to change the engine oil.
- Be sure to use engine oil recommended by SAKAI (refer to page 86).

⑯ Radiator : Reserve tank

Remove the cap from the radiator to make sure it is filled to the top with coolant, and top it up if it is not. Moreover, let the engine idle for 2 to 3 minutes and check to make sure the coolant in the reserve tank is between Full and Low. If it is not, remove the reserve tank cap and top it up with more coolant. Use soft water for the coolant.

⚠ WARNING

- Do not remove the radiator cap while the coolant is hot.
- Hot water may be spouted out that can cause scald. Relieve pressure by slowly turning the cap after the water temperature is dropped, then remove the cap.



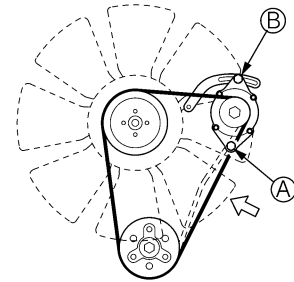
IMPORTANT

Change the cooling water every two years.

3 PERIODICAL MAINTENANCE

①⑨ Fan belt

- 1) Check for wear and damage. If out of service, replace with new one.
- 2) Check the tension. Depress the middle of the belt with a push of about 98N [22.0lbs]. A properly adjusted belt deflects 10 to 12 mm [0.39 to 0.47 in].
- 3) To adjust, loosen alternator bracket bolt ① and adjust plate bolt ②, sliding alternator.

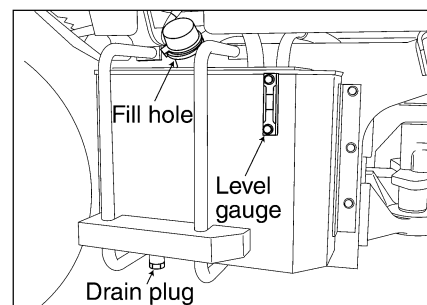


⚠ DANGER

After purchasing a new machine, adjust the fan belt after 50 hours of operation for the first time only.

(2) Every 50 hours**① Hydraulic oil level gauge**

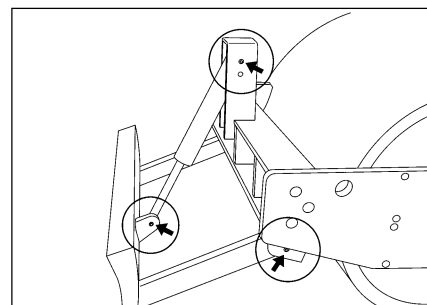
Check the oil level with the sight glass on the side of tank.
The level is proper if it is between H and L marks.
If necessary, add the hydraulic fluid from the fill port.

**⚠ CAUTION**

Be sure to use hydraulic oil recommended by SAKAI (refer to page 86).

⑧ Blade cylinder head and anchor pins (for SV204TB, SV204FB only)**⑳ Push rod anchor pins (for SV204TB, SV204FB only)**

Apply grease.

**⚠ CAUTION**

Be sure to use grease recommended by SAKAI (refer to page 86).

3 PERIODICAL MAINTENANCE

⑨ Battery

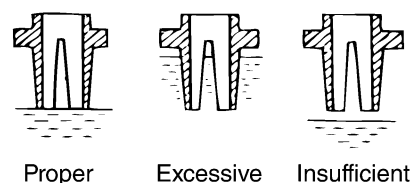
This machine is equipped with maintenance-free batteries at the time of delivery.

Inspection and maintenance procedures for the batteries equipped on the machine

- 1) The condition of the battery can be confirmed by checking the indicator at the top of the battery. Check the condition of the battery. Charge or replace it with a new one as necessary.
Green ... Satisfactory (Good)
White Charging is necessary (Charging necessary)
Red..... Replacement is necessary (Electrolyte insufficient)
- 2) When the terminal is loose, tighten it sufficiently, and thinly apply vaseline or grease to prevent rusting.
- 3) Be sure to tighten the battery holder if it is loose.

Check and maintain the batteries other than maintenance-required batteries.

- 1) With the caps removed, check to see if the electrolyte level is above the plates.
- 2) Add distilled water or battery fluid commercially available if the level is too low.
- 3) Retighten any loose terminal. Apply grease or vaseline to the terminals to retard rusting.
- 4) Be sure to tighten the battery holder if it is loose.
- 5) Confirm that there is no abnormality in appearance.



⚠ WARNING

- Using or charging battery with electrolyte level below **LOWER LEVEL** mark on its side, could result in explosion.
- Continuing to use battery with insufficient electrolyte accelerates deterioration of the battery container internals. Be sure to have the electrolyte always replenished to the prescribed level.
- Always keep away from fire as the battery may generate the flammable gas.
- Battery fluids are hazardous. Keep them away from eyes and skins. In case the battery fluids accidentally come in contact with skins and eyes, wash them off with a large amount of water and go to see doctors for check-ups and treatments.

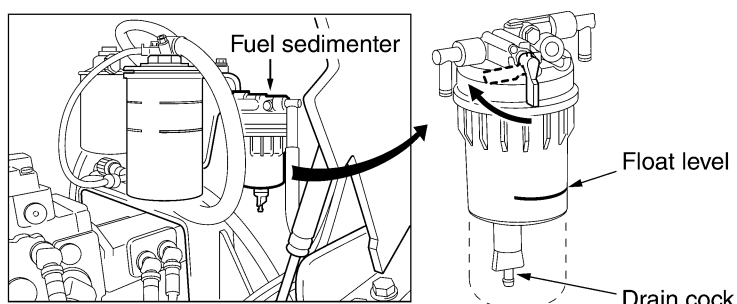
⚠ CAUTION

The power-supply voltage of this machine is 12 V.

⑪ Fuel sedimenter

➔ See the separate engine manual.

Check the float level. If it comes up to the level mark, open the drain cock at the bottom and drain water.

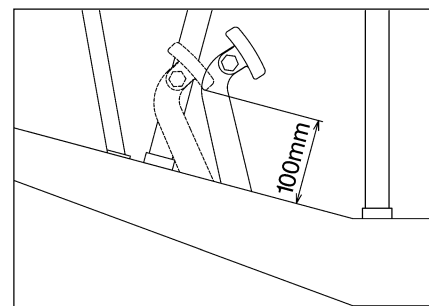


NOTE: After purchasing a new machine, drain water 50 hours after the initial operation.

⑭ Brake

When the engine is completely stopped, step on the brake pedal by two or three times. After this, while forcefully keep stepping on the brake pedal for more than five seconds, check the gap between the brake pedal and the floor panel by rulers. It is appropriate if the gap between the brake pedal and floor panel is 100 mm.

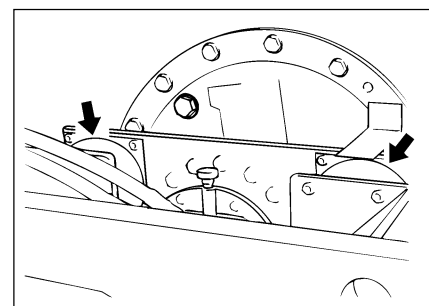
Also check that each bolt is not loose, the motion of the brake pedal is smooth, and the brake pedal is properly resilient when stepping it on.



3) Every 250 hours

⑫ Rubber dampers

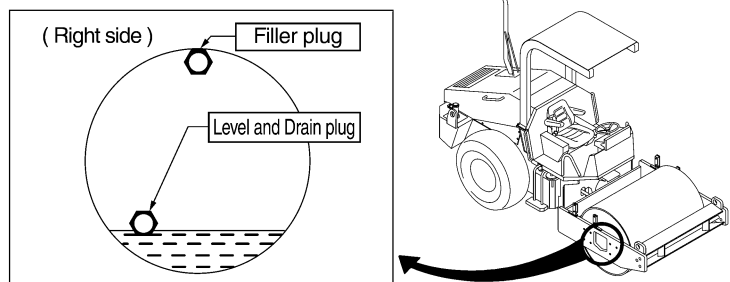
Check the rubber blocks for cracks, and their mounting bolts for looseness.



3 PERIODICAL MAINTENANCE

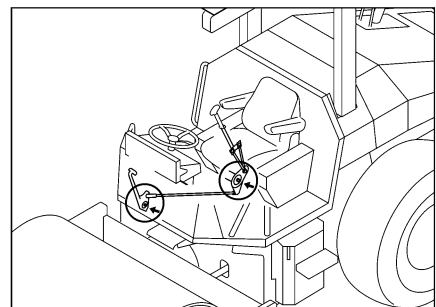
⑬ Vibrator

Check for the oil level and leakage.



⑭ Brake links

Apply grease to the brake pedal shaft.

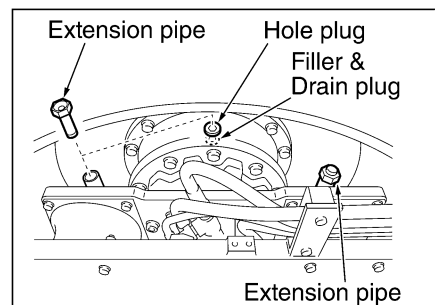
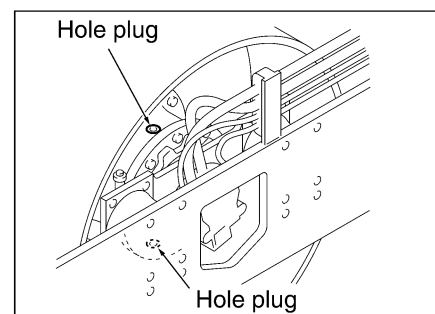


⚠ CAUTION

Be sure to use grease recommended by SAKAI (refer to page 86).

⑳ Gear case: Wheel motor

- 1) Position the drum so that the drain plug comes to the bottom.
- 2) Check for oil level, and add oil through the fill port as necessary.

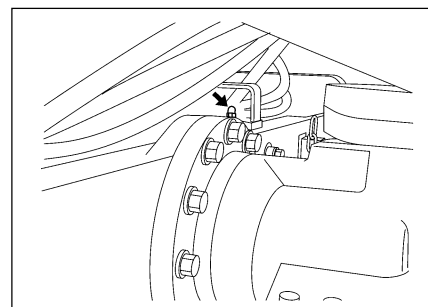


⚠ CAUTION

Be sure to use gear oil recommended by SAKAI (refer to page 86).

②③ Tilt pin

Apply grease.

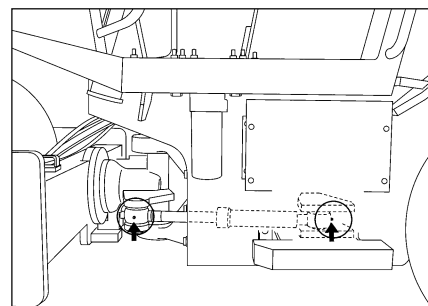


⚠ CAUTION

Be sure to use grease recommended by SAKAI (refer to page 86).

②④ Steering cylinder

Apply grease at 2 locations.



⚠ CAUTION

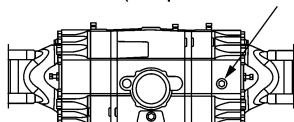
Be sure to use grease recommended by SAKAI (refer to page 86).

②⑤ Final drive : Differential case

Check for oil level, and add oil through the fill port as necessary.

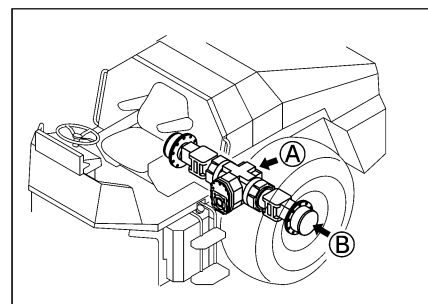
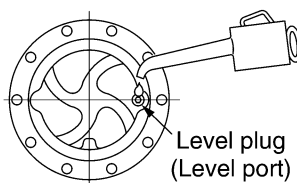
〈Differential ①〉

Fill port plug and Level plug
(Fill port and Level port)



〈Final drive ②〉

Level plug
(Level port)



⚠ CAUTION

Be sure to use grease recommended by SAKAI (refer to page 86).

3 PERIODICAL MAINTENANCE

4) Every 500 hours

④ Engine oil filter

②⑥ Engine oil pan

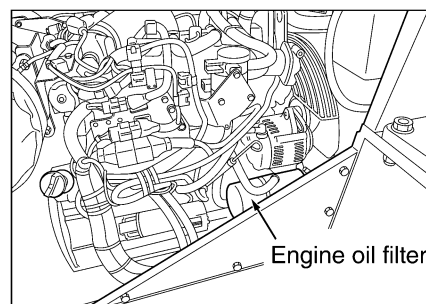
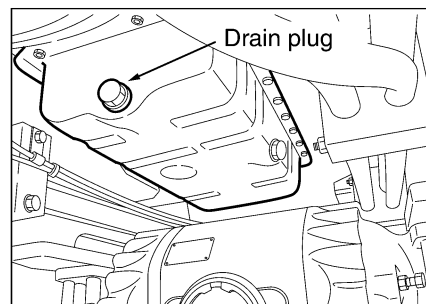
➡ See the separate engine manual.

- 1) After completion of operation and while the oil is warm, drain the oil with the drain plug removed.

⚠ WARNING

When draining a hot oil, use care not to get burned.

- 2) Refit the drain plug and fill the crankcase with the engine oil from the fill hole on the cylinder head cover.
- 3) Change the oil filter.



⚠ CAUTION

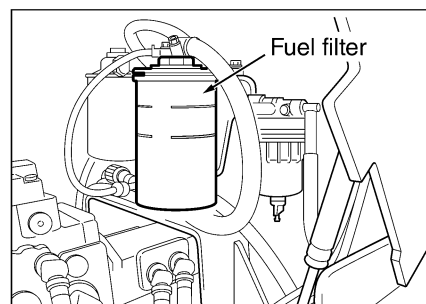
Be sure to use engine oil recommended by SAKAI (refer to page 86).

NOTE: For a new machine, change oil and oil filter at 50 operating hours for the initial time only.

⑦ Fuel filter

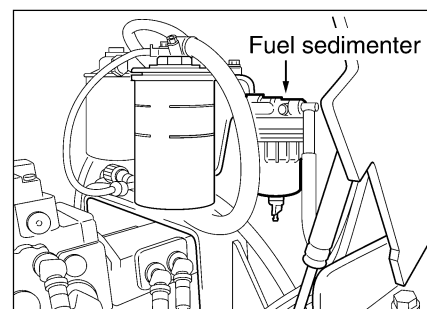
➡ See the separate engine manual.

Change the filter cartridge.



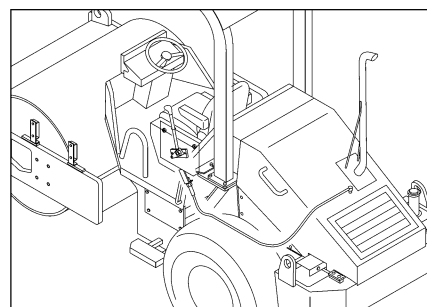
⑪ Fuel sedimenter

➔ See the separate engine manual.
Change the filter element.



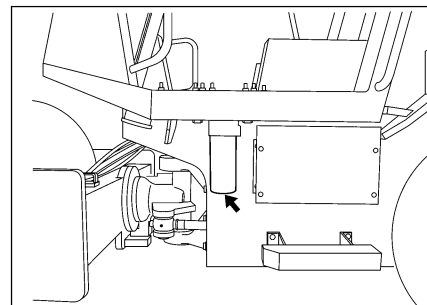
⑮ Control links

Check the nuts for looseness.



⑳ Line filter

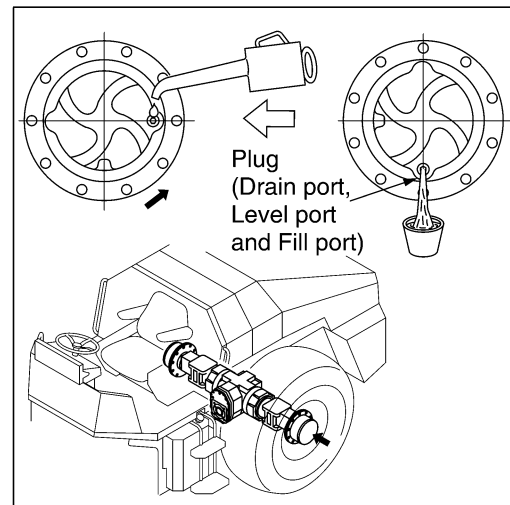
Change the filter cartridge.



3 PERIODICAL MAINTENANCE

25 Final drive

- 1) Turn the wheel until the drain / level / filler plug of the final reduction gear come to the lowest position.
Remove the drain / level / filler plug to discharge the oil.
- 2) Turn the wheel until the drain / level / filler port come to a position on the side.
- 3) Fill with oil until the drain / level / filler port start to overflow.
- 4) When filling is complete, attach the drain / level / filler plug.

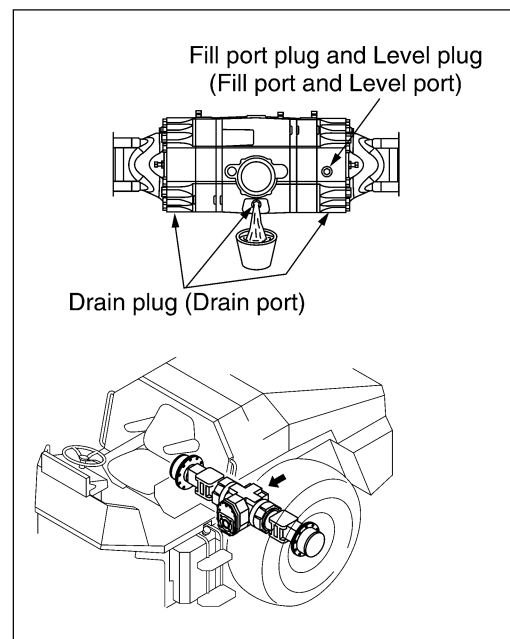


⚠ CAUTION

Be sure to use gear oil recommended by SAKAI (refer to page 86).

25 Differential case

- 1) Drain oil by removing the drain plug, filler plug and level plug.
- 2) Refit the drain plug.
- 3) Fill oil through the fill port till it overflows from the level port.
- 4) Refit the removed plug, filler plug and level plug.



⚠ CAUTION

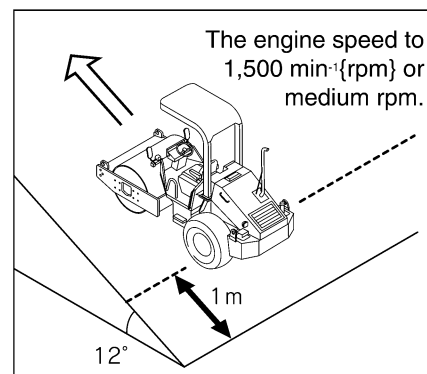
Be sure to use gear oil recommended by SAKAI (refer to page 86).

5) Every 500 hours or 3 months, or each time after brake pedal is used

③⑩ Parking brake

⚠ WARNING

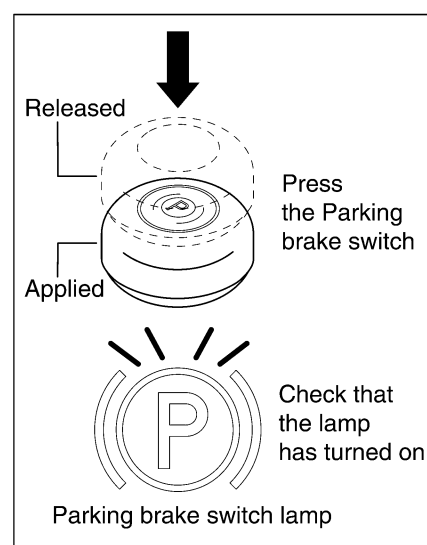
- Ensure safety by checking to make sure there is no one and no obstacles near the machine.
- Keep your hands on the F-N-R lever and steering wheel during inspections.
The machine may move in unexpected ways during inspections, leading to accidents.



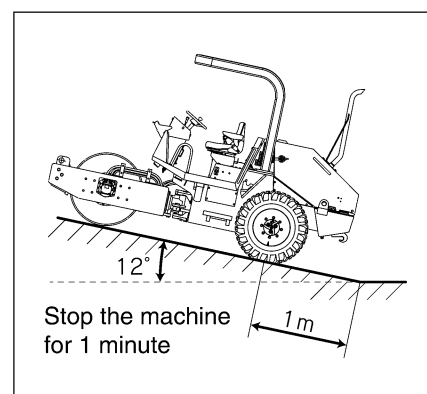
- 1) Adjust the engine speed to 1,500 min⁻¹ {rpm} or medium rpm.
- 2) Be sure to move the machine onto asphalt pavement or another hard surface with an upward inclination of 12° (20 %) with the engine left on.
- 3) Press the Parking brake switch (P) to engage the parking brake. Check that the OK monitor lamp (P) has turned on.

If the lamp (P) does not turn on, contact one of our sales offices or a factory designated by our company for advice.

- 4) Remain seated on the machine to make sure it remains completely still for 1 minute. If it moves, move it immediately to flat ground, stop using it, contact one of our sales offices or a factory designated by our company, and have it repaired.

**⚠ WARNING**

- This inspection must be carried out after each use of the brake pedal.
If the inspection is not carried out, the parking brake may malfunction when you try to use it next time causing a serious accident.
- Making alterations to the machine.
Please do not make alterations to the machine without permission for safety reasons. We shall not be held responsible for injuries, death or breakdowns caused by alterations.



3 PERIODICAL MAINTENANCE

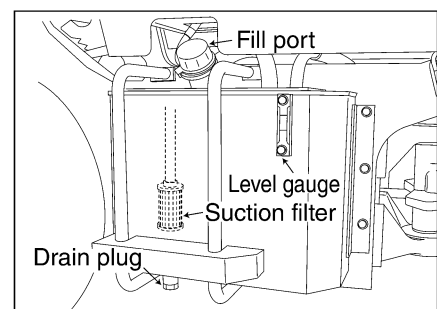
6) Every 1,000 hours

② Suction filter

Take off the hydraulic tank cover. Take out and clean the strainer, change the strainer if necessary.

③ Hydraulic oil tank

- 1) Remove the drain plug, and drain oil while it is warm.
- 2) Clean inside of the tank, and fill fresh oil to the specified level.
- 3) Start and run the engine at idling for 2 to 5 minutes. When the hydraulic oil has become free from air bubbles, stop the engine and recheck the oil level.



⚠ WARNING

When draining a hot oil, use care not to get burned.

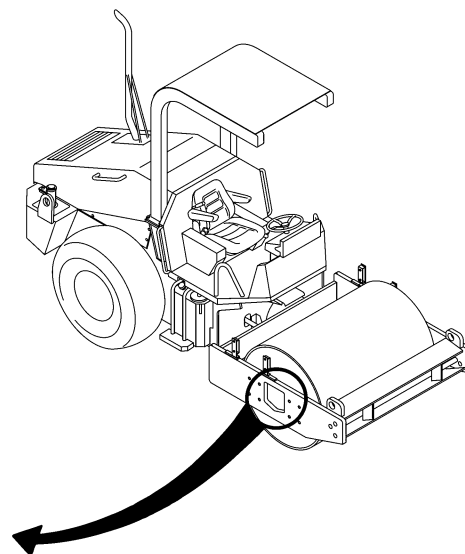
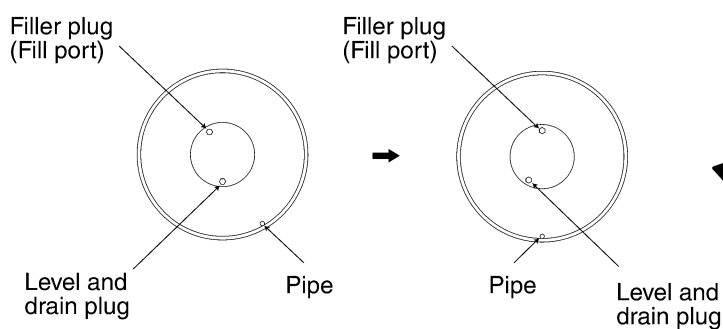
⚠ CAUTION

Be sure to use hydraulic oil recommended by SAKAI (refer to page 86).

⑬

Vibrator

- 1) Rotate the drum till the drain plug comes to bottom.
- 2) Remove drain plug, level gauge plug and filler plug.
- 3) Drain oil from vibrator.
- 4) Clean the vibrator before reinstalling it.
- 5) Feed oil at filler port until oil flows out of level gauge hole.
- 6) Reinstall the level gauge plug as well as filler plug after cleaning them.

**⚠ WARNING**

When draining a hot oil, use care not to get burned.

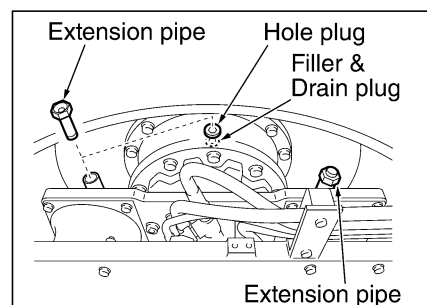
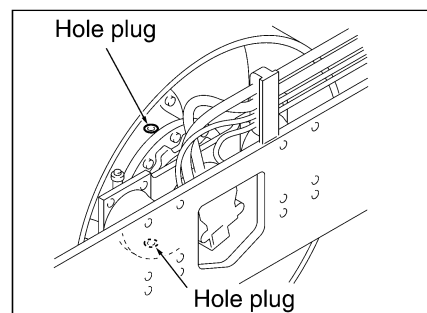
⚠ CAUTION

- The oil capacity of the vibrator is 4.0 liters. Do not fill more than 4.0 liters.
- Be sure to use gear oil recommended by SAKAI (refer to page 86).

3 PERIODICAL MAINTENANCE

②① Gear case : Wheel motor

- 1) Set the gear case so that the hole plug will be at the lowest position.
- 2) Remove the hole plug and drain plug at the upper and lower locations while the oil is still hot, and drain the wheel motor.
- 3) After attaching the drain plug wrapped up in seal tape to the port at the lowest position, attach the hole plug.
- 4) Remove the extension pipe, and attach it to the port at the uppermost position.
- 5) Supply 1.6 liters (0.4 gallons) of gear oil from the extension pipe.
- 6) After setting the extension pipe at the original position and attaching the drain plug wrapped up in seal tape, attach the hole plug.



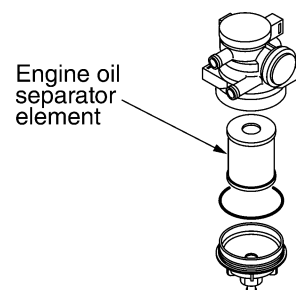
⚠ CAUTION

Be sure to use gear oil recommended by SAKAI (refer to page 86).

7) Every 1,500 hours

⑥ Engine oil separator

Open the cover, take out the oil separator element, wipe off the oil, and replace it with a new one.



8) Every 3000 hours

⑱ DPF

Ash accumulates in the filter when a DPF is used for a long time. The accumulation of too much ash will lower the performance of the DPF.

Contact one of our sales offices for advice on how to clean the DPF.

9) As required

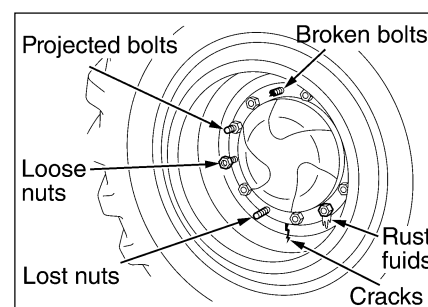
⑩ Tires : Wheel hub nut

Inspect the wheel hub nut to make sure it is not loose.

Retighten it if it is loose.

Tightening torque: **630 N·m**

Turn the wheel hub nut in the tightening direction during inspection.



⚠ CAUTION

- Overtightening of the wheel hub nut may snap the bolt or cause cracks in the disc wheel.
- Overtightening of the wheel hub nut may snap the bolt or cause cracks in the disc wheel. Observe the prescribed tightening torque.

NOTE: Tighten the wheel hub nut 50 hours after purchase of a new machine or replacement of tires.

Roll

The drum may wear down quickly and become damaged depending on the way it is used, or on-site conditions. As with the tires, the drum too, must be inspected regularly.

⑩ Radiator

Clean the cooling fins.

In case dirt or dust is attached, clean the radiator, the oil cooler and the core with compressed air or tap water.

It is to prevent performance decline of the cooling system.

⚠ WARNING

When cleaning the radiator fins, be sure to wear safety glasses, dust-proof masks and other protective gear to prevent particles from entering the body through the eyes, nose, etc.

IMPORTANT

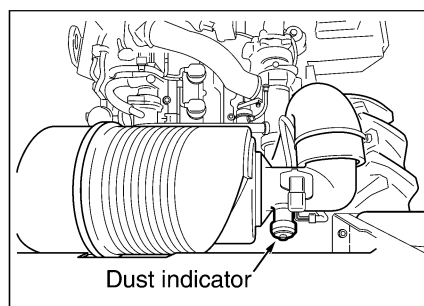
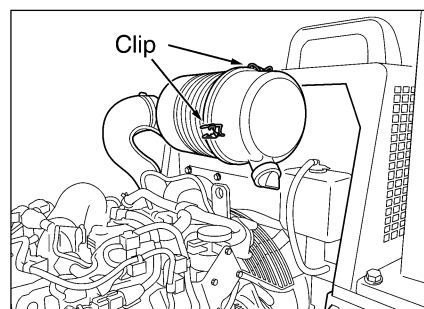
- If the discharge rate of compressed air or tap water is too high, it can damage the radiator or the fins of the oil cooler. Keep a distance of 500mm or more between the nozzle and the core surface.
- Don't use any driver or steel spatula (or paddle). If it rubs the fins, it can damage the tubing.
- Clean the inside when replacing the engine coolant, too.

3 PERIODICAL MAINTENANCE

⑰ Air cleaner

When the red moving piece of the dust indicator reaches the service level (mark on the dust indicator), clean the outer element in the manner shown below.

- 1) Open the hood, remove the clip on the air cleaner case, and remove the cover.
- 2) Pull the outer element straight out of the element case so as not to damage the outer element.
- 3) Blow compressed air from the inside of the outer element for cleaning. The air pressure shall not exceed 686 kPa {7 kgf/cm²}. If the element has scratches, holes, or oil spots, replace it with a new one.



⚠ WARNING

- Stop the engine before inspection, cleaning, or maintenance, otherwise dust will enter the engine, causing the breakdown of the engine.
- Wear protective goggles, a dust respirator, and other protective gear before cleaning the air cleaner and outer element in order to prevent dust from entering your eyes or nose.

- 4) Attach the outer element and clamp it with a clip.

⚠ CAUTION

- Clean only the outer element. Do not remove the inner element.
- If the red moving piece of the dust indicator still reaches the service level after the outer element has been cleared, replace the outer element with a new one.
- Under conditions of ordinary use, the outer element is to be replaced once a year, or for every five times it is cleaned. Be sure to replace the inner element at the same time.
- Shorten the outer element cleaning and replacing intervals as necessary when our machine is used under severe conditions.
- Do not use elements other than those designated by the company.

②⑦ Fuel tank

- 1) With the drain plug removed, remove the water and sediment from the bottom of the tank.
- 2) If sedimentation is substantial, remove the drain plug and clean the interior of the tank.
- 3) When the necessary work and refueling are complete, tighten the filler cap positively.

⚠ WARNING

- The fuel will catch fire if open flames or ignition sources are used close to it.
- Do not smoke or use a match or cigarette lighter close to it.



NOTE: When removing the water and sediment from the tank filled with the fuel, the fuel will gush out if the drain plug is screwed out completely.

②⑧ Gas damper

Open the hood and check to make sure it is held up by the gas dampers. If it is not, replace the gas dampers.

⚠ WARNING

Even if the hood is held up by the gas dampers, make sure to lock it in place using the stay to prevent it from falling when inspecting the engine room.

②⑨ Lighting (OPTION)

Operate the switches on control panel to confirm whether bulbs (turn signal indicator lamps, head lamps, flood lamps, rear combination lamps) flash or light up. If any lamp does not flash or light up, the bulb has burnt out; replace it with a new one.

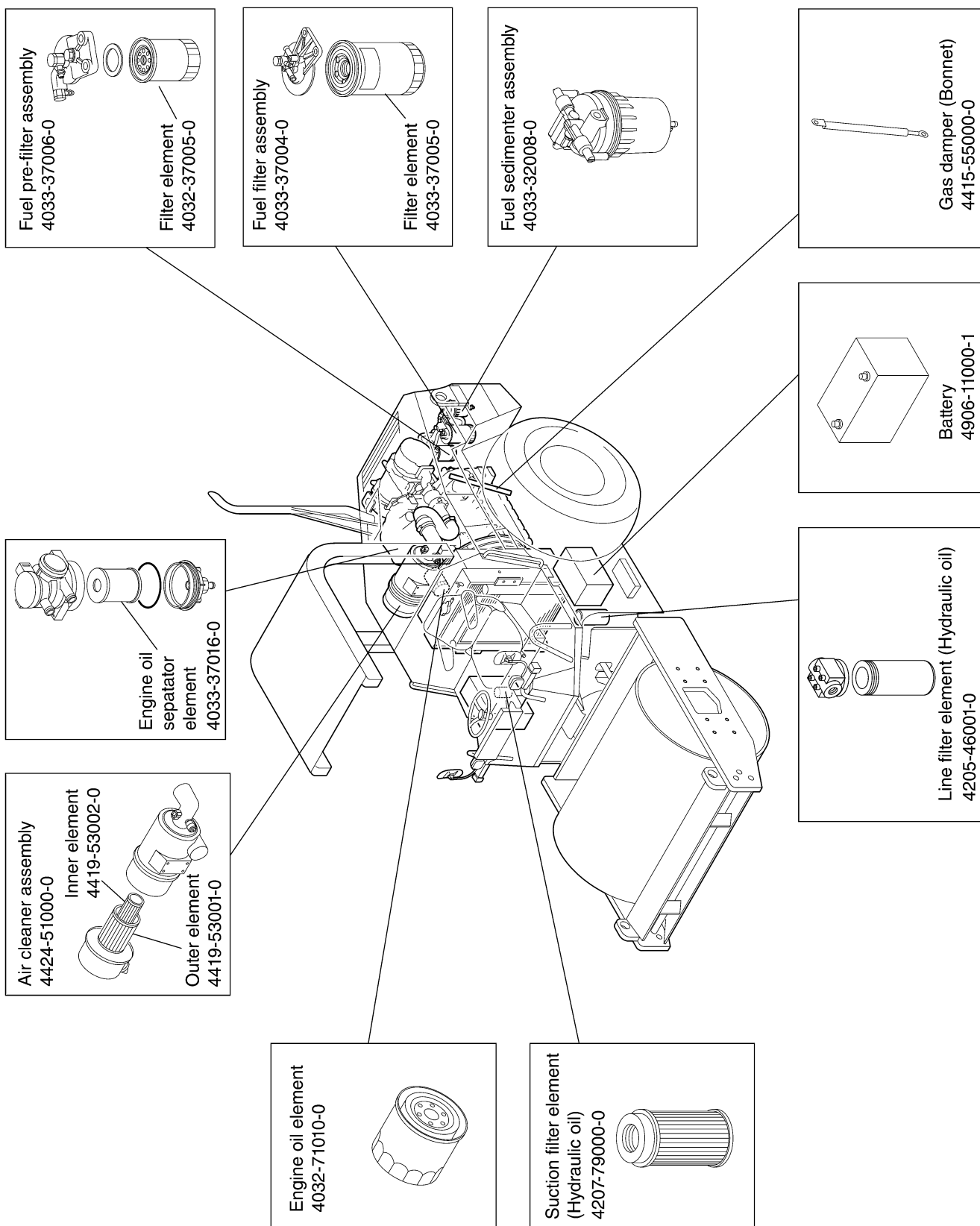
3.5 Consumable Parts

Replace consumable parts such as filter elements and air cleaner elements during periodical maintenance or before reaching the wear limit. Proper replacement of consumable parts will improve the overall life of the machine, resulting in cost-effective operations.

Use genuine SAKAI parts as replacement parts.

The part numbers are subject to change due to the improvements to the parts. When ordering parts, make sure to obtain the latest part numbers by checking with our distributorship or one of our certified service shops of the version, model name and model number of the machine in use.

Consumable Part	Part No.	Interval		Remark
		Annual replacement (year)	Replacement per operation (hours)	
Engine oil element	4032-71010-0		500	
Engine oil separator element	4033-37016-0		1500	
Fuel pre-filter assembly	4033-37006-0		500	
Filter element	4032-73005-0		500	
Fuel filter assembly	4033-37004-0		500	
Filter element	4033-37005-0		500	
Fuel sedimenter assembly	4033-32008-0		500	
Air cleaner assembly	4424-51000-0		As required	
Inner element	4419-53002-0		Replacement simultaneously with the outer element	
Outer element	4419-53001-0		After cleaning 5 times	
Suction filter element (Hydraulic oil)	4207-79000-0		1000	Clean or replacement
Line filter element (Hydraulic oil)	4205-46001-0		500	
Gas damper	4415-55000-0	2		
Battery	4906-11000-1		As required	115D31R



3.6 Feeding Water and Lubricants

(1) General rules

- 1) Never feed water or lubricant with the strainer removed.
- 2) Use recommended lubricant and hydraulic fluid.
- 3) Do not use lubricants and hydraulic fluid of different brands.
- 4) When replacing oil, drain it completely and clean the container with flushing oil before filling new oil.
- 5) Be sure to use fuels and greases designated / recommended by SAKAI. Faulty due to the use of those not designated / recommended by SAKAI is out of the scope of repair and guarantee.

(2) Capacity

Compartment	Type of fluid	Capacity in liters (gal.)
Fuel tank	Diesel oil	100 (26.4)
Engine oil pan	Engine oil	11.2 (3.0)
Hydraulic oil tank	Hydraulic oil	38 (10.0)
Wheel motor	Gear oil	1.6 (0.4)
Radiator	Coolant	6.7 (1.8)
Vibrator	Gear oil	4.0 (1.1)
Differential	Gear oil	8.3 (2.2)
Final drives	Gear oil	0.9 x 2 (0.22 x 2)

(3) Rating

Lubricant	Service classification	Ambient temp. and applicable viscosity rating			Applicable standards
		-15 – 30°C (5 – 86°F) Cold	0 – 40°C (32 – 104°F) Moderate	15 – 55°C (59 – 131°F) Tropical	
Engine oil	API grade CJ4 JASO DH-2	SAE 10W-30	SAE 30	SAE 40	MIL-L-2104D
Gear oil	API grade GL5	SAE 80W-90	SAE 90	SAE 140	MIL-L-2105
Hydraulic oil	Wear resistant	ISO-VG32 over VI 140	ISO-VG46 over VI 140	ISO-VG68 over VI 110	ISO-3448
Grease	Lithium type extreme pressure NLGI-2				
Fuel	Diesel fuel ASTM D975 No.2-D S15				

(4) Recommended lubricants

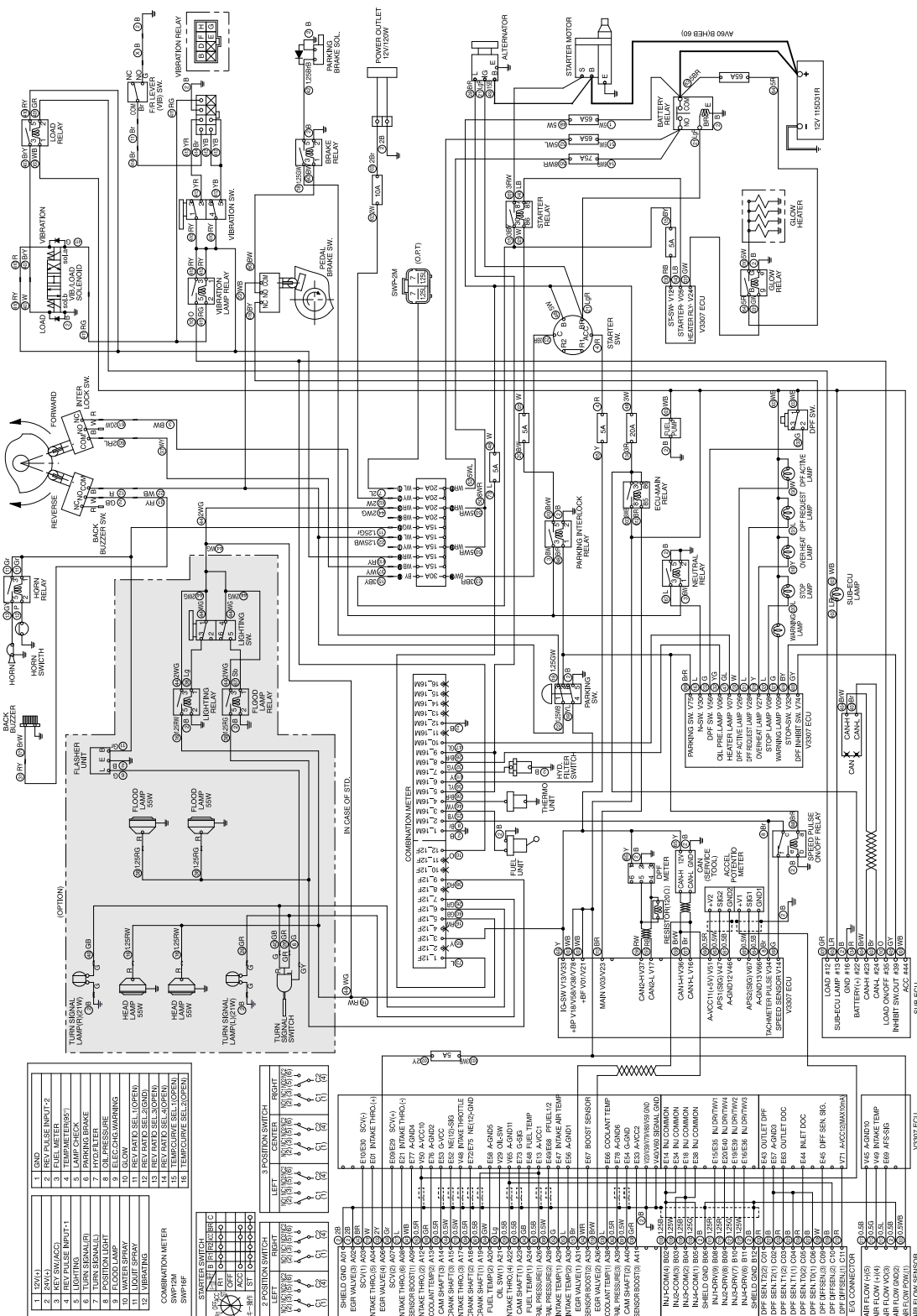
Oil company \ Lubricant	Engine oil API – CJ4	Gear oil API GL 5	Hydraulic oil ISO-VG 46	Grease (NLGI – 2)
CHEVRON	DELO 400 LE	RPM Universal Gear Lubricants	Rando HDZ 46	Multifak EP 2
BP	—	BP Energear HYPO – U	Bartran HV 46	BP Energrease LS – EP 2
CASTROL	Tection Extra	EXP Gear OILS	Castrol Hyspin AWH 46	Castrol Spheerol ELP 2
EXXON MOBIL	Mobil Delvac 1 ESP	Mobilube HD	Mobil DTE 10 Excel 46	Mobilux EP 2
SHELL	Shell Rimula R4 L	Shell Spirax S2 A 90	Shell Tellus S2V 46	Shell Alvania Greases EP 2

⚠ CAUTION

- **Fill the fluid reservoirs with the filters installed.**
- **Use recommended fuels and lubricants only.**
- **Use the hydraulic oils which specifications are as clean as ISO4406 18/13 or above.**

3 PERIODICAL MAINTENANCE

3.7 Electric Wiring Diagram



Color of wire

CAUTION: Size of wires not indicated by letters are AV 0.85.

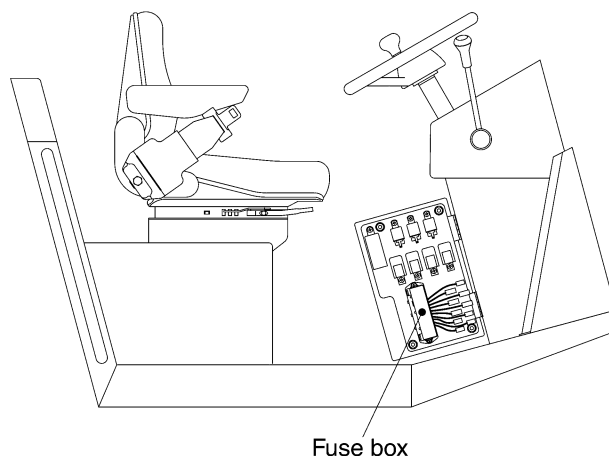
: OPTION

B	Black	BrR	Brown/ Red stripe	GR	Green/ Red stripe	LR	Blue/ Red stripe	P	Pink	RW	Red/ White stripe	WR	White/ Red stripe	YR	Yellow/ White stripe	LB	Blue/ White/ Green stripe
BR	Black/ Red stripe	BrW	Brown/ White stripe	GW	Green/ White stripe	LW	Blue/ White stripe	R	Red	RY	Red/ Yellow stripe	Y	Yellow	YW	Yellow/ White stripe	WG	
BW	Black/ White stripe	G	Green	GY	Green/ Yellow stripe	LY	Blue/ Yellow stripe	RB	Red/ Black stripe	W	White	YB	Yellow/ Black stripe	BrY	Brown/ Yellow stripe		
BY	Black/ Yellow stripe	GB	Green/ Black stripe	Gr	Gray	Lg	Light green	RG	Red/ Green stripe	WB	White/ Black stripe	YG	Yellow/ Green stripe	Sb	Blue		
Br	Brown	GL	Green/ Blue stripe	L	Blue	O	Orange	RL	Red/ Blue stripe	WL	White/ Blue stripe	YL	Yellow/ Blue stripe	BG	Black/ Green stripe		

Fuse box

The fuse box houses one 30 A-, four 20 A-, five 15 A- fuses lined up with spares fitted for one 30 A- and one 15 A- fuses.

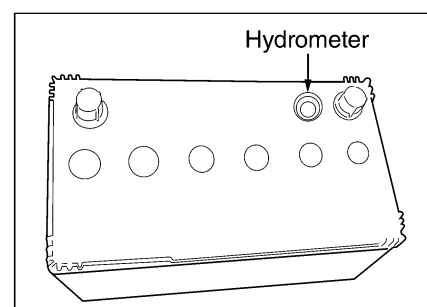
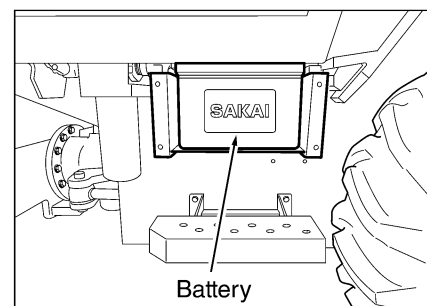
Use fuses of correct capacity (refer to page 33).



NOTE: When a fuse is burned, determine the cause before replacing.

Battery (The battery is maintenance free at the time of delivery)

- ★ Leaving the battery unused for long without attention or its power excessively at a time can cause damage to the plates, leading to a shortened life.
- ★ For long-term storage, charge it fully, tighten the caps securely, store in a cool and dry place, and check the level of charge at least once a month.
- ★ Make sure the battery is charged at over 75% of capacity at all times.
- ★ When starting the engine on a cold day, the battery will ideally be fully charged, but avoid starting the engine at all times when the battery is less than 75% charged (when in a maintenance-free state, start the engine on cold days when the battery is in “good” condition. However, avoid starting the engine at all times when the battery is not in “good” condition).

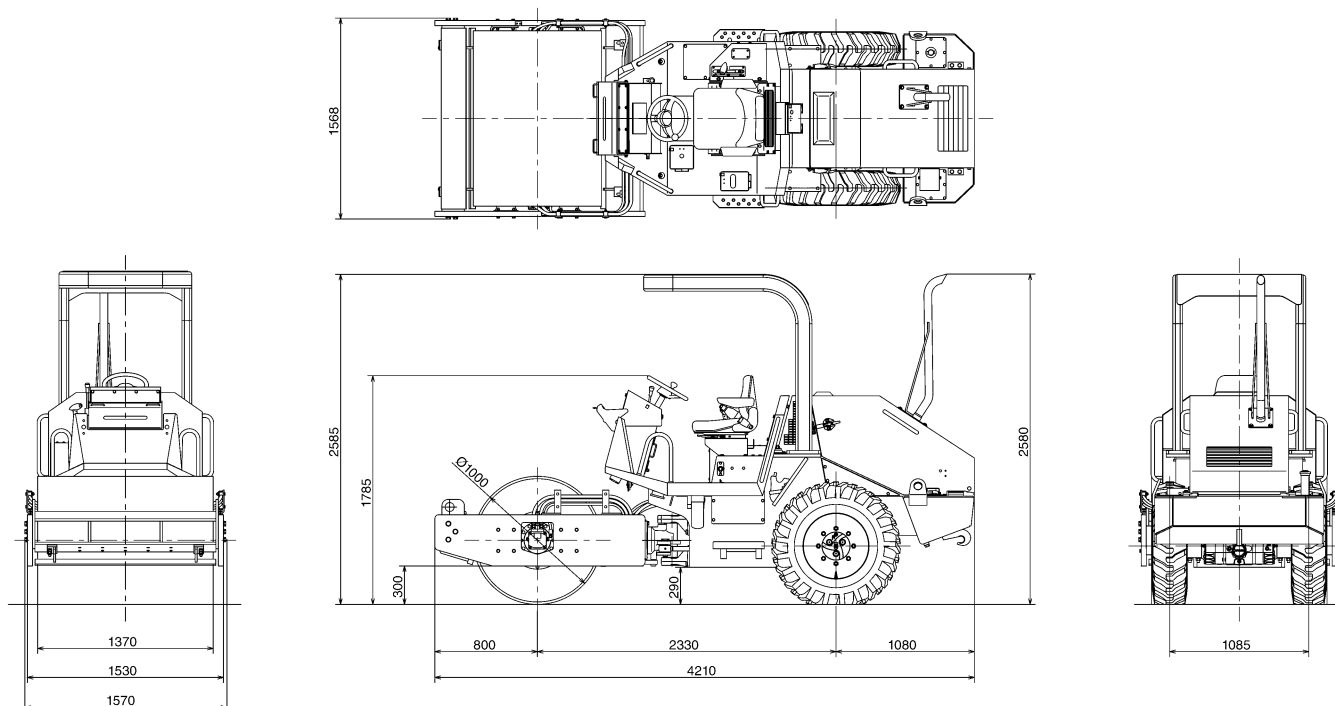


The battery is maintenance free at the time of delivery.

4 SPECIFICATIONS

4 SPECIFICATIONS

(1) SV204D



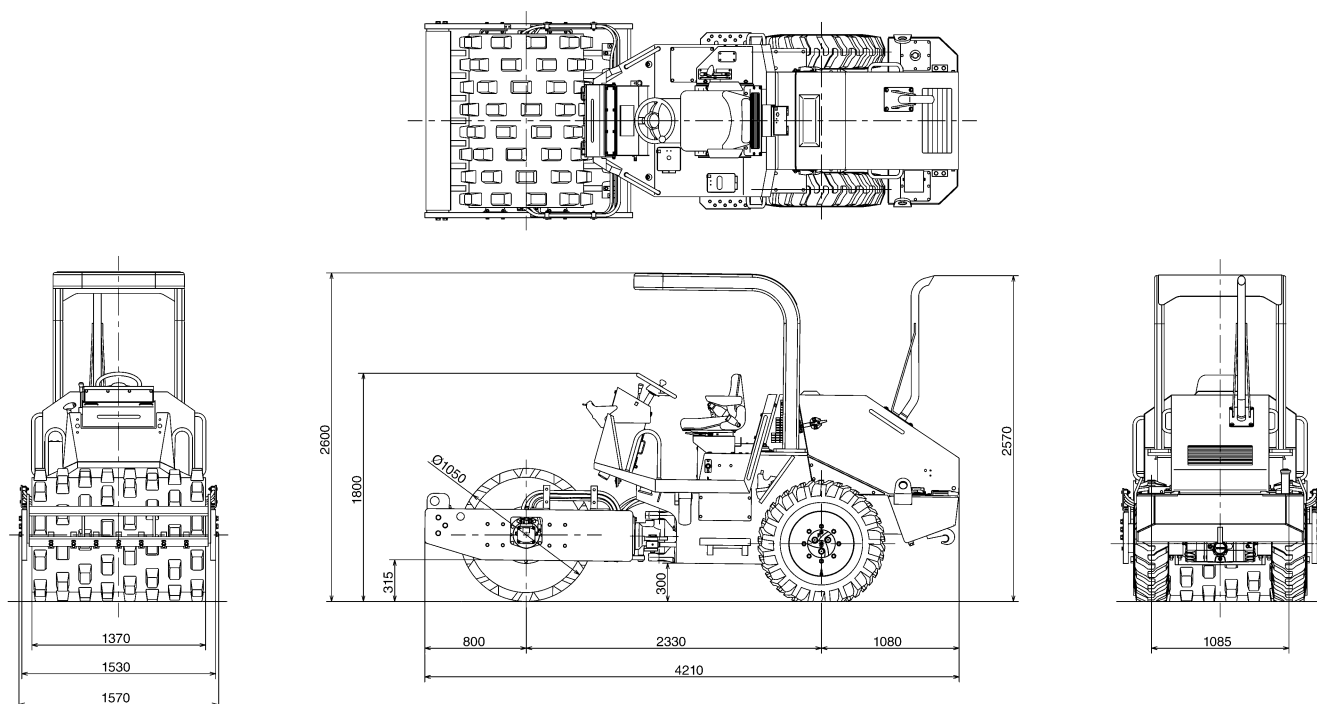
Model SV204D		Vibrating power	
Weight		Frequency	30 Hz (1,800 vpm)
Operating weight	4,635 kg (10,220 lbs)	Centrifugal force	74kN (16,635 lbs)
On front axle	2,175 kg (4,795 lbs)	Gradeability	52% (27°)
On rear axle	2,460 kg (5,425 lbs)	Rolling width	1,370 mm (54")
Dimension		Minimum turning radius	4.1 m (162")
Overall length	4,210 mm (166")	Engine	
Overall width	1,570 mm (62")	Model	KUBOTA "V3307-CR-T-EF05"
Overall height	2,585 mm (102")		Diesel Engine
Wheelbase	2,330 mm (92")	Total displacement	3.331 litres (203.3 cu.in)
Wheel		Rated output	54.6 kW / 2,200 min ⁻¹ (73 HP / 2,200 rpm)
Front	Roll (dia. x width)	Max. torque	261 N·m / 2,000 min ⁻¹ (193 ft·lb / 2,000 rpm)
	1,000 x 1,370 mm (39" x 54")	Tank capacity	
Rear	Tire	Fuel tank	100 litres (26.4 gal)
	11.2-20-6PR	Hydraulic oil tank	38 litres (10 gal)
Performance			
Travel speed	0–7.4 km/h (0–4.6 mile/h)		

NOTE: 1) Gradeability is the calculated value. It may vary with ground surface conditions.

2) According to European Standards (EN500-1, ISO 6165, etc.), the weight are defined as follows.

Operating weight : Fuel=50%, Water=50%, Operator=75kg.

(2) SV204T

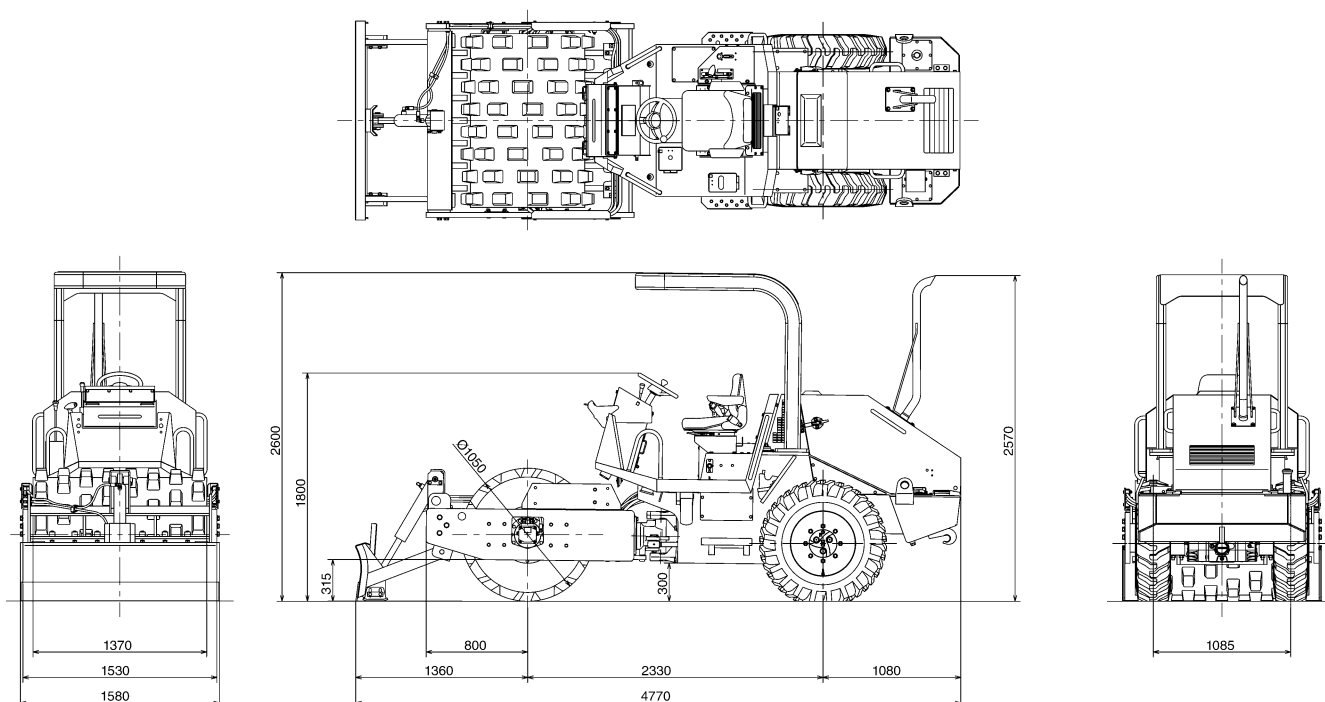


Model SV204T		Vibrating power	
Weight		Frequency	30 Hz (1,800 vpm)
Operating weight	4,735 kg (10,440 lbs)	Centrifugal force	74kN (16,635 lbs)
On front axle	2,275 kg (5,015 lbs)	Gradeability	49% (26°)
On rear axle	2,460 kg (5,425 lbs)	Rolling width	1,370 mm (54")
Dimension		Minimum turning radius	4.1 m (162")
Overall length	4,210 mm (166")	Engine	
Overall width	1,570 mm (62")	Model	KUBOTA "V3307-CR-T-EF05"
Overall height	2,600 mm (102")		Diesel Engine
Wheelbase	2,330 mm (92")	Total displacement	3.331 litres (203.3 cu.in)
Wheel		Rated output	54.6 kW / 2,200 min ⁻¹ (73 HP / 2,200 rpm)
Front	Roll (dia. x width)	Max. torque	261 N·m / 2,000 min ⁻¹ (193 ft·lb / 2,000 rpm)
Rear	1,050 x 1,370 mm (41" x 54")	Tank capacity	
	Tire	Fuel tank	100 litres (26.4 gal)
	11.2-20-6PR	Hydraulic oil tank	38 litres (10 gal)
Performance			
Travel speed	0–7.5 km/h (0–4.7 mile/h)		

NOTE: 1) Gradeability is the calculated value. It may vary with ground surface conditions.
2) According to European Standards (EN500-1, ISO 6165, etc.), the weight are defined as follows.
Operating weight : Fuel=50%, Water=50%, Operator=75kg.

4 SPECIFICATIONS

(3) SV204TB



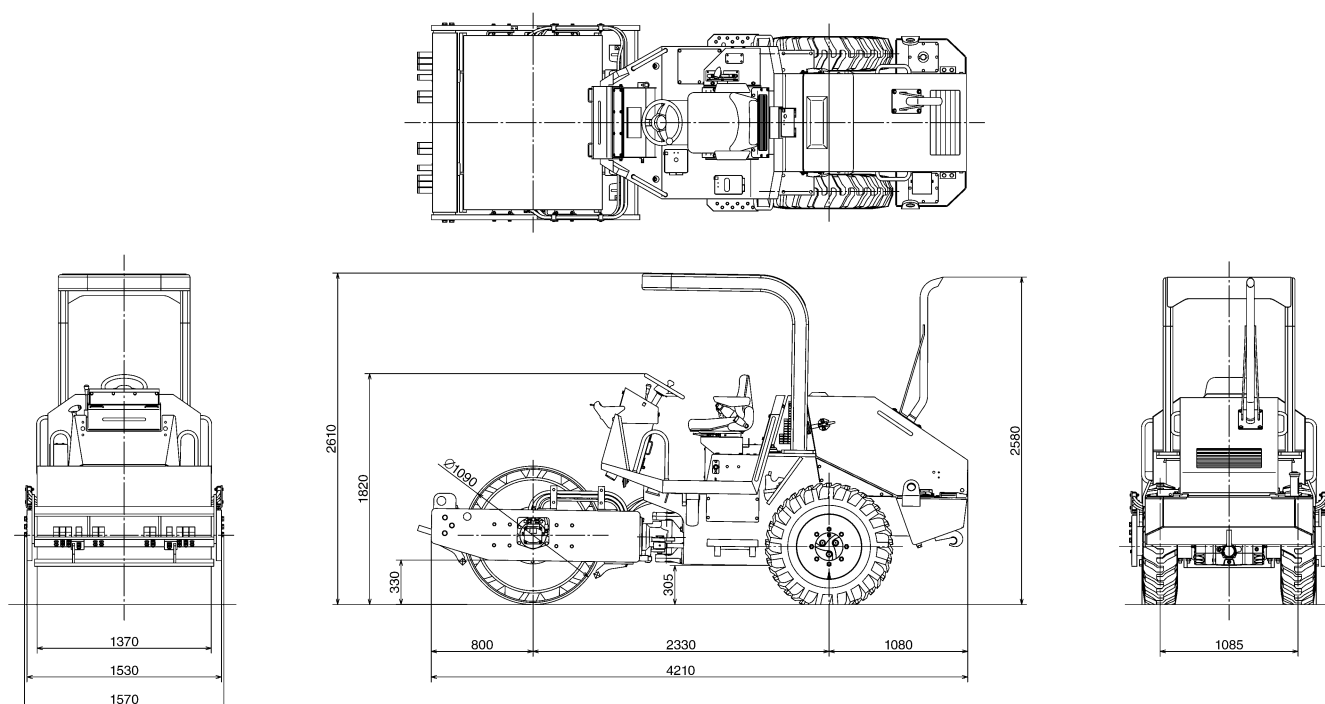
Model SV204TB		Vibrating power	
Weight		Frequency	30 Hz (1,800 vpm)
Operating weight	5,035 kg (11,100 lbs)	Centrifugal force	74kN (16,635 lbs)
On front axle	2,625 kg (5,785 lbs)	Gradeability	46% (24°)
On rear axle	2,410 kg (5,315 lbs)	Rolling width	1,370 mm (54")
Dimension		Minimum turning radius	4.3 m (170")
Overall length	4,770 mm (188")	Engine	
Overall width	1,580 mm (62")	Model	KUBOTA "V3307-CR-T-EF05"
Overall height	2,600 mm (102")		Diesel Engine
Wheelbase	2,330 mm (92")	Total displacement	3.331 litres (203.3 cu.in)
Wheel		Rated output	54.6 kW / 2,200 min ⁻¹ (73 HP / 2,200 rpm)
Front	Roll (dia. x width)	Max. torque	261 N·m / 2,000 min ⁻¹ (193 ft·lb / 2,000 rpm)
	1,050 x 1,370 mm (41" x 54")	Tank capacity	
Rear	Tire	Fuel tank	100 litres (26.4 gal)
	11.2-20-6PR	Hydraulic oil tank	38 litres (10 gal)
Performance			
Travel speed	0–7.5 km/h (0–4.7 mile/h)		

NOTE: 1) Gradeability is the calculated value. It may vary with ground surface conditions.

2) According to European Standards (EN500-1, ISO 6165, etc.), the weight are defined as follows.

Operating weight : Fuel=50%, Water=50%, Operator=75kg.

(4) SV204TF

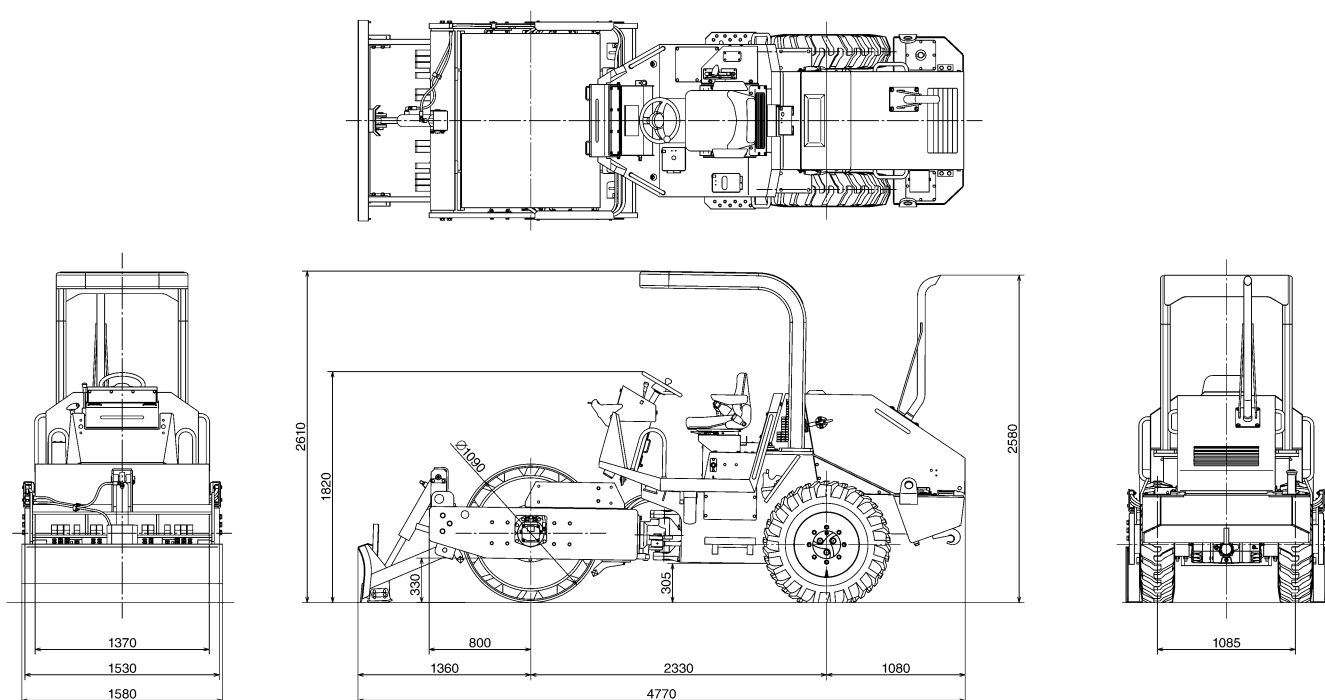


Model SV204TF		Vibrating power	
Weight		Frequency	30 Hz (1,800 vpm)
Operating weight	5,435 kg (11,980 lbs)	Centrifugal force	74 kN (16,185 lbs)
On front axle	2,975 kg (6,560 lbs)	Gradeability	41% (22°)
On rear axle	2,460 kg (5,425 lbs)	Rolling width	1,370 mm (54")
Dimension:		Minimum turning radius	4.1 m (162 ")
Overall length	4,210 mm (166")	Engine	
Overall width	1,570 mm (62")	Model	KUBOTA "V3307-CR-T-EF05"
Overall height	2,610 mm (103")		Diesel Engine
Wheelbase	2,330 mm (92")	Total displacement	3.331 litres (203.3 cu.in)
Wheel		Rated output	54.6 kW / 2,200 min ⁻¹ (73 HP / 2,200 rpm)
Front	Roll (dia. x width)	Max. torque	261 N·m / 2,000 min ⁻¹ (193 ft·lb / 2,000 rpm)
Smooth	1,090 x 1,370 mm (43" x 54")	Tank capacity	
Pad	1,050 x 1,370 mm (41" x 54")	Fuel tank	100 litres (26.4 gal)
Rear	Tire	Hydraulic oil tank	38 litres (10 gal)
	11.2-20-6PR		
Performance			
Travel speed	0–7.6 km/h (0–4.7 mile/h)		

NOTE: 1) Gradeability is the calculated value. It may vary with ground surface conditions.
2) According to European Standards (EN500-1, ISO 6165, etc.), the weight are defined as follows.
Operating weight : Fuel=50%, Water=50%, Operator=75kg.

4 SPECIFICATIONS

(5) SV204FB



Model SV204FB		Vibrating power	
Weight		Frequency	30 Hz (1,800 vpm)
Operating weight	5,735 kg (12,645 lbs)	Centrifugal force	74 kN (16,185 lbs)
On front axle	3,325 kg (7,330 lbs)	Gradeability	38% (20°)
On rear axle	2,410 kg (5,315 lbs)	Rolling width	1,370 mm (54")
Dimension		Minimum turning radius	4.3 m (170")
Overall length	4,770 mm (188")	Engine	
Overall width	1,580 mm (62")	Model	KUBOTA "V3307-CR-T-EF05"
Overall height	2,610 mm (103")		Diesel Engine
Wheelbase	2,330 mm (92")	Total displacement	3.331 litres (203.3 cu.in)
Wheel		Rated output	54.6 kW / 2,200 min ⁻¹ (73 HP / 2,200 rpm)
Front	Roll (dia. x width)	Max. torque	261 N·m / 2,000 min ⁻¹ (193 ft·lb / 2,000 rpm)
Smooth	1,090 x 1,370 mm (43" x 54")	Tank capacity	
Pad	1,050 x 1,370 mm (41" x 54")	Fuel tank	100 litres (26.4 gal)
Rear	Tire	Hydraulic oil tank	38 litres (10 gal)
	11.2-20-6PR		
Performance			
Travel speed	0 – 7.6 km/h (0 – 4.7 mile/h)		

NOTE: 1) Gradeability is the calculated value. It may vary with ground surface conditions.

2) According to European Standards (EN500-1, ISO 6165, etc.), the weight are defined as follows.

Operating weight : Fuel=50%, Water=50%, Operator=75kg.

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