



- U.S.A. : **KUBOTA TRACTOR CORPORATION**
1000 Kubota Drive, Grapevine, TX 76051
Telephone : 888-4KUBOTA
- Canada : **KUBOTA CANADA LTD.**
5900 14th Avenue, Markham, Ontario, L3S 4K4, Canada
Telephone : (905)294-7477
- France : **KUBOTA EUROPE S.A.S**
19-25, Rue Jules Vercurysse, Z.I. BP88, 95101 Argenteuil Cedex, France
Telephone : (33)1-3426-3434
- Italy : **KUBOTA EUROPE S.A.S Italy Branch**
Via Grandi, 29 20068 Peschiera Borrome (MI) Italy
Telephone : (39)02-51650377
- Germany : **KUBOTA BAUMASCHINEN GmbH**
Steinhauser str, 100, 66482 Zweibrucken Rheinlandpfalz Germany
Telephone : (49)6332-4870100
- U.K. : **KUBOTA (U.K.) LTD.**
Dormer Road, Thame, Oxfordshire, OX9 3UN, U.K.
Telephone : (44)1844-214500
- Australia : **KUBOTA AUSTRALIA PTY LTD.**
25-29 Permas Way, Truganina, VIC 3029, Australia
Telephone : (61)-3-9394-4400
- Malaysia : **KUBOTA MALAYSIA SDN. BHD.**
Lot 766, Jalan Subang 4, off Persiaran Subang Sungai Penaga Industrial Park,
47500 Subang Jaya
Telephone : (60)-3-7890-3533
- Philippines: **KUBOTA PHILIPPINES, INC.**
232 Quirino Highway, Baesa, Quezon City 1106, Philippines
Telephone : (63)2-422-3500
- Taiwan : **SHIN TAIWAN AGRICULTURAL MACHINERY CO., LTD.**
16, Fengping 2nd Rd, Taliiao Shiang Kaohsiung 83107, Taiwan R.O.C.
Telephone : (886)7-702-2333
- Thailand : **SIAM KUBOTA CORPORATION CO., LTD.**
101/19-24 Moo 20, Navanakorn Industrial Estate, Tambon Khlongnueng, Amphur Khlongluang,
Pathumthani 12120, THAILAND
Telephone : (66)2-909-0300
- Japan : **KUBOTA Corporation**
Farm & Industrial Machinery International Operations Headquarters
2-47, Shikitsuhashi 1-chome, Naniwa-ku, Osaka, Japan 556-8601

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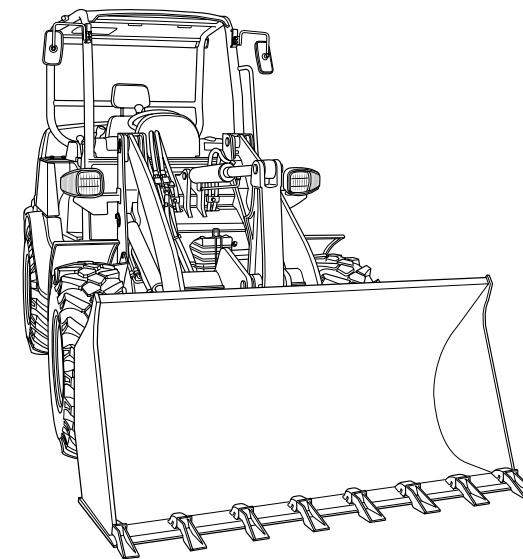
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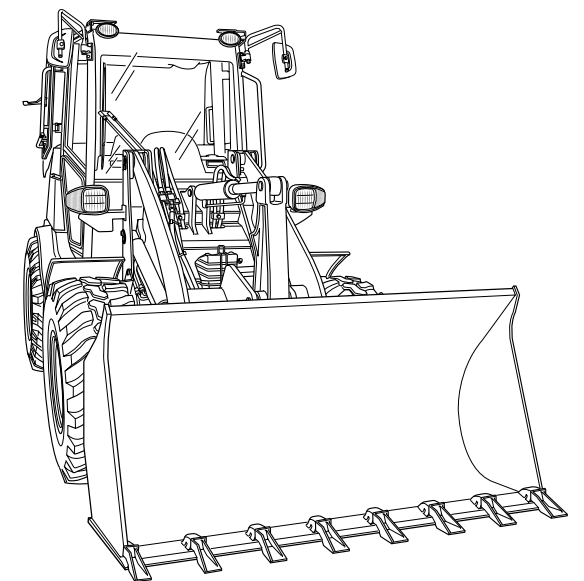
OPERATOR'S MANUAL

KUBOTA WHEEL LOADER

MODELS R540·R640



1BBABKAP0460



1BBABKAP0450

READ AND SAVE THIS MANUAL



ABBREVIATION LIST

Abbreviations	Definitions
API	American Petroleum Institute
ASTM	American Society for Testing and Materials, USA
DIN	Deutsches Institut für Normung, GERMANY (German Institute for Standardization)
EN	European Standard
FOPS	Falling Objects Protective Structures
HST	Hydrostatic Transmission
ISO	International Organization for Standaridization
JIS	Japanese Industry Standard
MIL	Military Standard
ROPS	Roll-Over Protective Structures
rpm	Revolutions Per Minute
rps	Revolutions Per Second
SAE	Society of Automotive Engineers, USA
SMV	Slow Moving Vehicle

California Proposition 65

WARNING

Engine exhaust, some of its constituents, certain vehicle components and fluids, contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

IMPORTANT

The engine in this machine is not equipped by the manufacturer with a standard spark arrester.
It is a violation of California Public Resource Code Section 4442 to use or operate this engine on or near any forest-covered, brush-covered land, or grass- covered land unless the exhaust system is equipped with a working spark arrester meeting state laws. Other states or federal areas may have similar laws.

Canadian Electromagnetic Compatibility (EMC):
This machine complies with Industry Canada ICES-002.

UNIVERSAL SYMBOLS

As a guide to the operation of your machine, various universal symbols have been utilized on the instruments and controls. The symbols are shown below with an indication of their meaning.

	Safety Alert Symbol		Read the Operating instructions
	Engine Oil-Pressure		Diesel Particulate Filter regeneration
	Battery Charging Condition		Parked Diesel Particulate Filter Regeneration
	Diesel Preheat/Glow Plugs		Diesel Particulate Filter Regeneration Inhibit
	Water separator fill-up		Parked Regeneration switch
	Horn		Bucket Up
	Engine Warning		Bucket Down
	Wiper/washer		Bucket Tilt
	Coolant Temperature		Bucket Dump
	HST Temperature		Bucket Float
	HST Oil-Pressure		Working Light
	Diesel Fuel		High-beam
	Hydraulic Oil		Low-beam
	Low Travel Speed		Hazard Switch
	High Travel Speed		Hazard / Turn Signal
	Parking Brake		Clearance Light
	Neutral		Rotary Beacon
	Travel Forward		Differential Lock
	Travel Backward		Display Selector
	Lock		User Setting
	Unlock		Set Clock
	Hydraulic lock indicator		Service Interval
	Auxiliary port indicator		Brake fluid warning indicator
	Auxiliary hold indicator		Air cleaner warning indicator
	Insert key indicator		
	Pull out key indicator		

FOREWORD

Thank you for the purchase of a Kubota product.

Before using this product, read this manual carefully and use the product correctly. After reading, keep the manual in a safe and easy-to-access place for future reference. Note that product specifications are subject to change without prior notice. The product delivered to you may differ slightly from the product described in the manual.



SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.

**DANGER :**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING:**

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

**CAUTION:**

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

IMPORTANT:

Indicates that equipment or property damage could result if instructions are not followed.

NOTE:

Gives helpful information.

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SAFE OPERATION

Careful operation is your best insurance against an accident.

Read and understand the *Safe operation* section carefully, before operating the wheel loader.

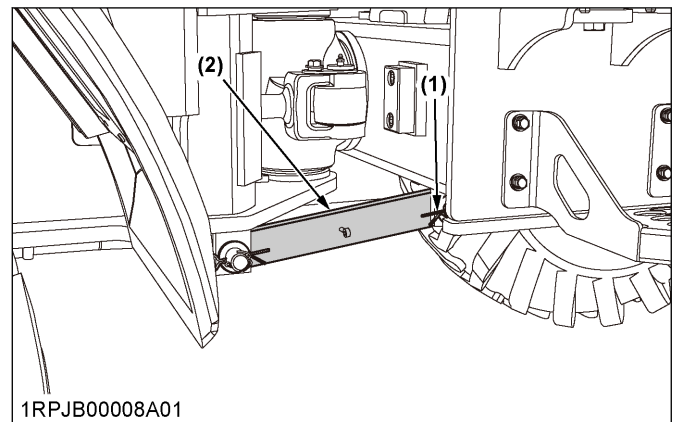
All operators, no matter how much experience they may have had, should read this and other related manuals before operating the machine or any attachment. It is the owner's obligation to instruct all operators in safe operation.

PRECAUTIONS BEFORE OPERATING THE WHEEL LOADER

1. General precautions

Know your equipment and its limitations. Read and understand this entire manual before starting and operating the machine.

- If using an attachment on the machine, read the attachment operator's manual to ensure the safe operating procedures.
 - Pay special attention to the safety labels on the machine and the attachments.
 - Do not start or operate an unsafe machine. Before working the machine, be sure that any unsafe condition has been satisfactorily remedied. Check brakes, steering, and attachment controls before moving. Consult a proper maintenance authority if any malfunctioning part of the system is observed. Be sure all safety appliances are in the right place and in good operating condition.
 - Wear and use safety gear such as non-slip safety shoes or boots, safety glasses, and safety hardhats as appropriate for the job. Do not operate or work around the machine, when wearing loose, bulky clothing.
 - Never operate the machine or any equipment while under the influence of alcohol or other drugs, or while fatigued.
 - Before allowing other people to use your machine, give instruction to the operator on safe and correct use of the machine and make sure that the operator reads and understands the Operator's Manual for the machine.
 - Inspect your seat belt daily for signs of fraying, wear or other weakness that could endanger your safety.
 - Do not use the loader bucket or an attachment to lift or carry a person.
 - Do not use the bucket or any other working attachment of the machine for crane work.
- Otherwise, the machine may lose its balance and overturn.
- Use the following precautions when changing the attachment.
 1. Position the machine and attachment on level ground.
 2. Make sure that no persons are in the immediate vicinity of the machine.
 3. When actuating the machine to change the front attachment:
 - a. Lower the bucket and attachment to the ground.
 - b. Actuate the parking brake switch.
 - c. Stop the engine (for machines with mechanical quick coupler).
 - d. Release the hydraulic pressure in the hydraulic system by operating the appropriate control levers (for machines with mechanical quick coupler).
 4. After changing the front attachment, make sure that the installed attachment is securely attached to the quick coupler.
 - To mount a fire extinguisher, use the space above the fender on the side of the operator's seat.
 - Carry out the following procedure when lifting the machine.
 1. Attach the steering-frame-lock.

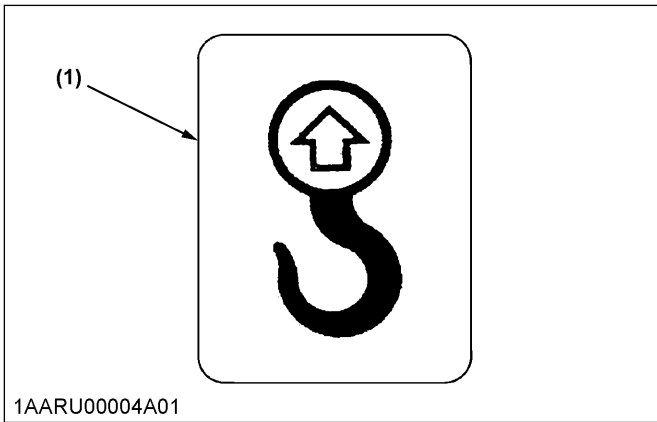


(1) Snap pin

(2) Steering frame lock

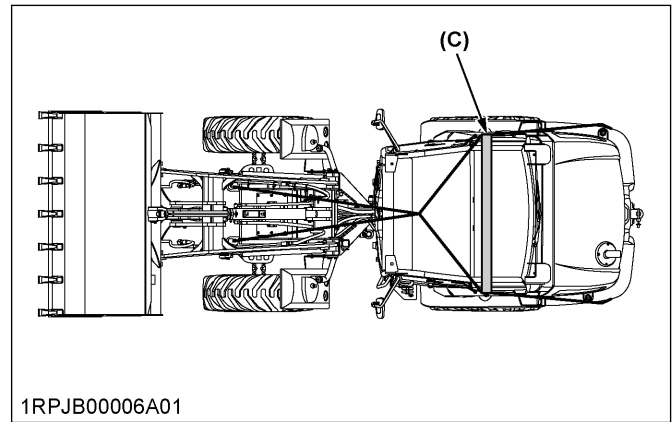
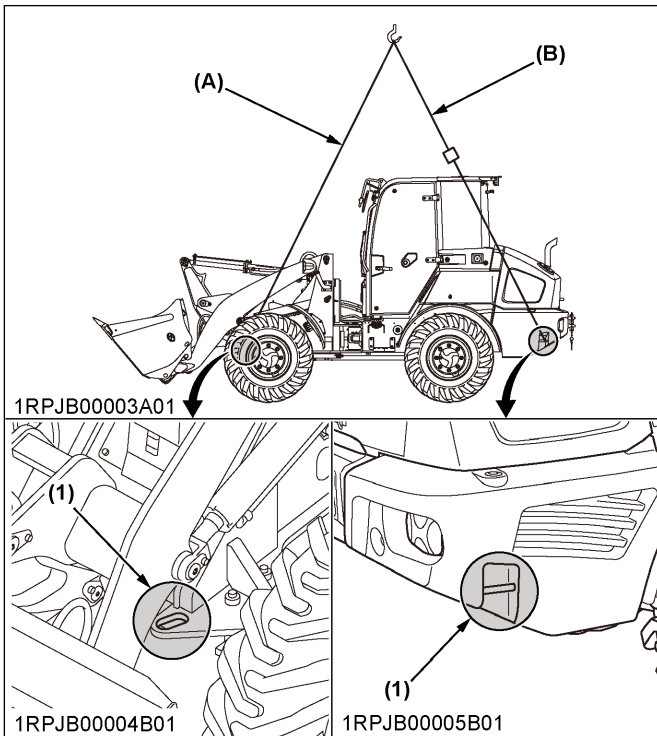
2. Use the locations indicated by marks in the diagram to lift the machine.

SAFE OPERATION



(1) Diagram to lift machine

3. Pass a nylon sling or chain through the lugs and lift as shown in the following diagram. Use only a nylon sling or chain that is capable of holding the weight of the machine.



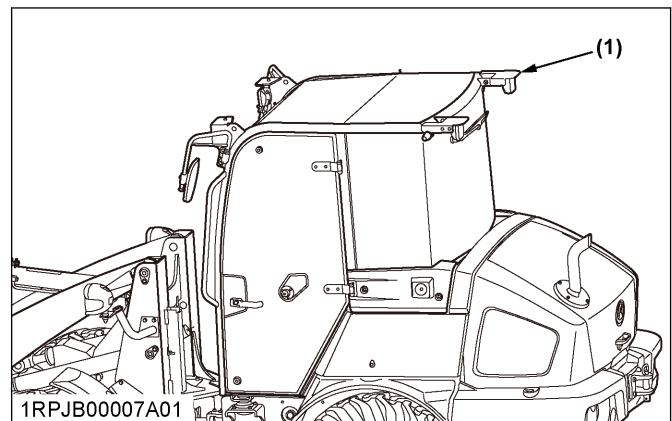
(1) Lugs (both sides)

- (A) 3.8 m (12 ft 6 in.)
(B) 4.0 m (13 ft 1 in.)
(C) 1.5 m (4 ft 11 in.)

2. Precautions of ROPS and FOPS

Know your equipment and its limitations. Read and understand this entire manual before starting and operating the machine with the ROPS and FOPS.

- For your safety, KUBOTA installs a ROPS (roll-over-protective-structure) and a FOPS (falling-objects-protective-structure) with a seat belt. Always use the seat belt when the machine is equipped with canopy or cab.
- OSHA regulations and SAE standard require the ROPS and FOPS on wheel loaders, bulldozers, truck type loaders, graders, and scrapers.



(1) ROPS and FOPS

- Never modify structural members of ROPS by welding, drilling, bending, grinding, or cutting because modifying may weaken the structure. If any component is damaged, replace it. Do not attempt repairs. If ROPS is loosened or removed for any reason, reinstall all parts correctly. Tighten mounting bolts to proper torque.
- Do not install any ballast, including water, and calcium chloride that is added into the tires, that exceed the specified maximum weight shown under "MAXIMUM GROSS MACHINE WEIGHT" space on the ROPS label.

PRECAUTIONS FOR THE AXLE SUSPENSION

Improper handling of the machine damages the axle suspension! To protect the axle suspension from excessive wear, observe the following instructions.

- Only use KUBOTA-approved tire sizes.
- Observe the tire pressure table.
(See Checking the tire pressure on page 132)
- Check tire pressure before commencing day-to-day operations.
- Do not use any liquids in the tires.
- Replace excessively worn tires with new tires before commencing operations.
- Only use identical wheels and tires with the same degree of wear on the same axle.
- Never exceed the specified max. load capacity.
- Only use KUBOTA-approved buckets, palette forks, and fork arms.

PRECAUTIONS FOR OPERATING THE MACHINE

- Get on and off safely when entering or leaving the operator's cab. Face the machine. Always maintain a three-point-contact with the steps and handrails. Do not use control levers as handles. Do not jump on or off the machine. Never try to get on or off a moving machine.
- Do not start the engine or operate the control elements from anywhere other than the operator's seat.
- Before starting the engine, fasten the seat belt, make sure that the direction switch is set in the neutral position, the parking-brake-switch is actuated and the bucket is lowered to the ground.
- Do not start the engine by shorting across starter terminals.
- Watch where you are going at all times. Watch for and avoid obstacles.
- Never permit passengers on the machine. Keep bystanders away from the machine during operation.
- When working around other machines, let the other operators know what you are performing at all times.
- Never allow anyone to get under or near the bucket or attachment when it is raised.
- When raising the bucket or attachment, take extra caution to prevent it from touching overhead wires or other obstacles. Contact with wires may cause fatal injuries.
- Keep away from the muffler while the engine is running and immediately after it has stopped.
- Hazardous operation such as on dangerous terrain, beyond the load capacity or contrary to the

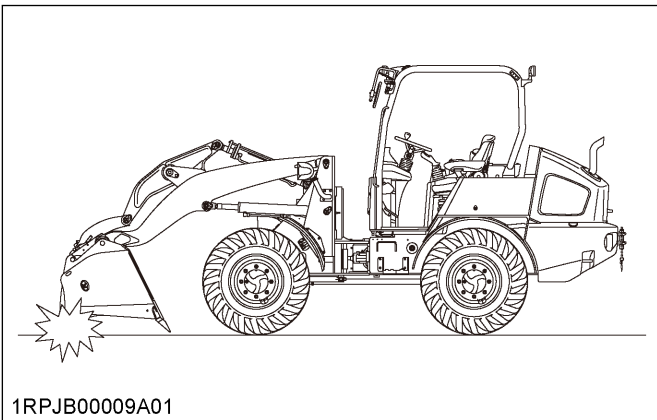
intended use of the machine must be avoided as it may cause the machine to tip over.

- Do not drive the machine close to edges of ditches or banks which may collapse under the weight of the machine, especially when the ground is loose or wet.
- Slow down for turns, uneven terrain, and slopes to avoid tipping over.
- When transporting a load, keep the loader bucket as low as possible to avoid tipping over. Be extremely careful when working on inclines.
- Operation on slopes can be dangerous. Rain, snow, gravel soft ground, and so on will change the ground conditions. Do not operate the machine in questionable ground conditions. If operating on a slope or ramp, always slow down, travel straight up, and down the incline and not across. Keep the bucket as low as possible. If you do not follow these instructions, the machine can go out of control and tip over.
- Avoid turning on a slope.
- Never perform digging or shoveling with the machine in the articulated condition, or the machine may tip over.
- Never dig or shovel at high speed. Digging or shoveling at high speed can cause the machine to lose stability and its rear wheels to lift off the ground, which may lead to serious personal injury or fatal accidents.
- Do not go up or down a 30 degrees or steeper hill. Otherwise, the machine may skid sideways or turn on its side. If the ground is ungraded or is soft, limit the slope below 15 degrees.
- To avoid tipping over, do not operate the machine on any site where the terrain cannot be ascertained, such as ground covered with seeds or snow and check for hidden projections, dips, road shoulders, and so on beforehand, and take care not to approach them during work.
- Be sure to ease off the accelerator at the end of backfilling grooves, or areas at the edge of cliffs or pond banks, or at the end of an ascent. Upon removal of the external load, the machine speed will automatically increase, reduce speed to avoid entering grooves or tipping over.
- To avoid the machine slipping or tipping over, do not operate the machine on ungraded or soft terrain, such as land fills. Grade and compact the site beforehand at all times.
- Avoid running the engine for a long time indoors. When the engine must be run indoors, be sure to open the windows and doors. Carbon monoxide gas from exhaust is colorless, odorless and deadly.
- Check that no one is near the muffler exhaust before starting the engine. If exposed to exhaust fume, he or she may get burned or poisoned. Check that there is no flammable objects, such as dead leaves, sheets of paper, or pieces of cloth,

SAFE OPERATION

attached to areas around the engine before starting the engine.

- To avoid the danger of exhaust fume poisoning, do not operate the engine, in a closed building without proper ventilation. Carbon monoxide is odorless, colorless, and deadly.
- Be especially careful when reversing and watch the area behind the loader carefully before starting to drive.
- When parking your machine if at all possible, park on a firm, flat, and level surface. If not, park across a slope. Set the parking brake, lower the implements to the ground, remove the starter key from the ignition, and lock the cab door if equipped and chock the wheels.
- Do not get a load on the bucket at the position as the following figure.



1. Safety for children

Serious accidents can occur if the operator does not pay attention to children in the vicinity of the machine. Children are unpredictable.

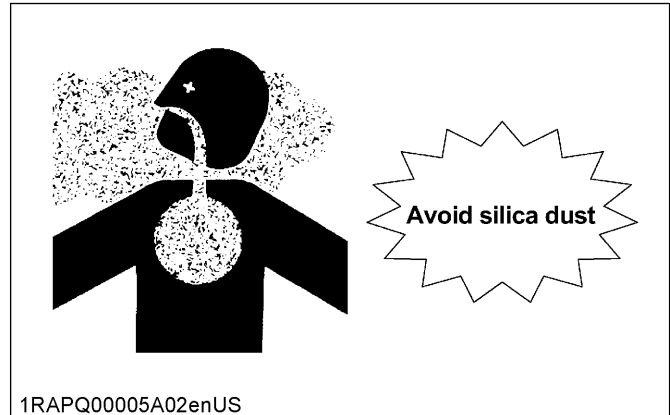
- Always keep an eye on children because they change their location continuously.
- Make sure that no children are within the working range of the machine.
- Be extremely cautious when children approach the working area. Stop working, if necessary.
- Do not carry children on the machine.
- Do not allow children to operate the machine.
- Do not allow children to play around the machine.

2. Avoiding crystalline silica (quartz) dust

To avoid serious injury or death from silica dust:

- Avoid exposure to dust containing crystalline silica particles.
This dust can cause serious injury to the lungs (silicosis).

Because crystalline silica is a basic component of sand and granite, many activities at construction sites produce dust containing crystalline silica. Trenching, sawing and boring of material containing crystalline silica can produce dust containing crystalline silica.



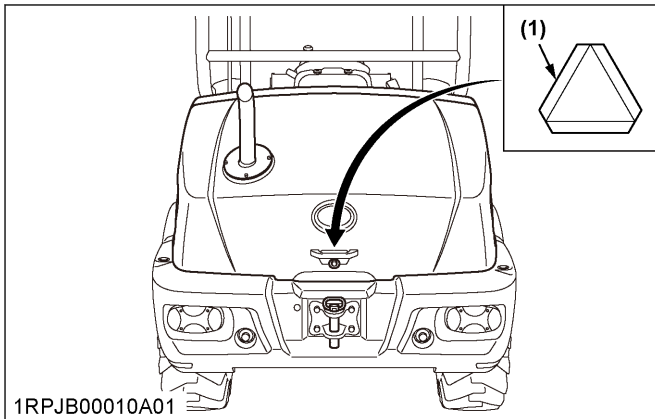
- If dust which contains crystalline silica is present, there are guidelines which should be followed:
 - Be aware of the potential health effects of crystalline silica and that smoking may add to the damage.
 - Be aware of and follow OSHA (or other local, State or Federal) guidelines for exposure to airborne crystalline silica.
 - Know the work operations where exposure to crystalline silica may occur.
 - Participate in air monitoring or training programs offered by the employer.
 - Be aware of and use optional equipment controls such as water sprays, local exhaust ventilation, and enclosed cabs with positive pressure air conditioning, if the machine has such equipment. Otherwise respirators shall be worn.
 - Where respirators are required, wear a respirator approved for protection against crystalline silica containing dust. Do not alter the respirator in any way. Workers who use tight-fitting respirators cannot have beards/mustaches which interfere with the respirator seal to the face.
 - If possible, change into disposable or washable work clothes at the work site; shower and change into clean clothing before leaving the work site.
 - Do not eat, drink, use tobacco products, or apply cosmetics in areas where there is dust containing crystalline silica.
 - Store food, drink and personal belongings away from the work area.
 - Wash hands and face before eating, drinking, smoking, or applying cosmetics after leaving the exposure area.

PRECAUTIONS FOR TRAVELING

- Before traveling on the public road, follow all local and state-traffic-regulations. Use the SMV emblem and warning flashers as required.

SMV

Slow moving vehicle



(1) SMV emblem

- **Traveling on the public road**

Please note the following points:

- Raise the lift arm.
 - Fully tilt the bucket.
 - Lock the operations of the lift arm and the bucket by pressing the hydraulic-lock switch.
- When traveling on a public road, lock the bucket and attachments securely so that they cannot lower, even if any control lever is operated. Lift the bucket about 40 cm (16 in.) above the ground and set it in the proper position for travel, then lock the control lever.
 - First check the area around the machine, then gradually increase the engine rpm and slowly move the machine. Do not move the machine abruptly. To move the machine on a steep slope, press the accelerator pedal gradually while releasing the inching and brake pedal so that the machine does not move backwards.
 - The steering wheel for this machine will not return to the starting position after turning a bend. Be sure to turn the wheel to the starting position by yourself.
 - When operating the machine, obey all safety signals and traffic signs.
 - Use the brake when the machine begins to accelerate by itself.
 - If the engine should stall on a slope, apply the brake to hold the machine in a present position and then set the parking brake switch to the parking position, lower the bucket to the ground to prepare for the next start.
 - When operating over an obstacle such as a rock, cross slowly at a right angle. Trying to cross over

obstacle diagonally or at high speed may tip the machine over.

- If there is the risk of the machine slipping excessively on frozen ground, install chains on the front wheels. For operation on snow, install the chains on both front and rear wheels or change into winter tires.
- Do not turn sharply at high speed, or the machine may tip over.
- Steering effort will increase if the engine stops. Do not stop the engine during travel.
- If a tire has blown, the machine may slip or turn over. If a tire blows, do not brake or steer hard, brake slowly to stop the machine gradually.

1. Operating the engine at overheating

Take the proper actions in this section in the event which the coolant temperature increases too much.

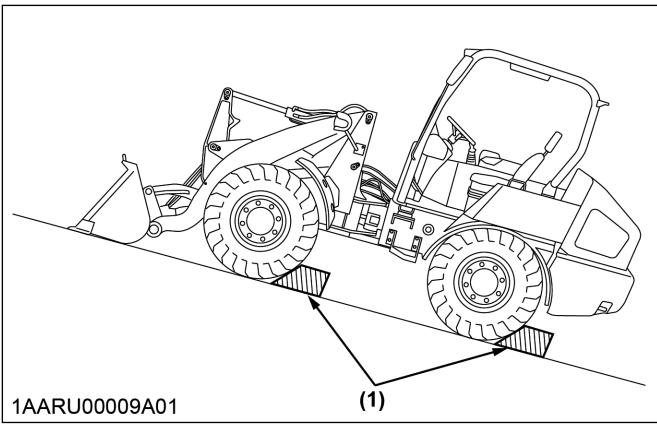
The condition which the coolant temperature increases too much is called “Overheating”.

1. Park the machine in a safe place and keep the engine unloaded idling.
2. Do not stop the engine suddenly, but stop it after about 5 minutes of unloaded idling.
3. Keep yourself well away from the machine for a further 10 minutes or while the steam blows out.
4. When there is no longer any danger of scalding, try to find the cause of overheating according to the manual, see TROUBLESHOOTING OF THE ENGINE AND OTHER SYSTEMS on page 139 and then start again the engine.

PRECAUTIONS AFTER OPERATION OF THE WHEEL LOADER

- When getting off the machine, always stop the engine, follow the following procedure.
 1. Set the parking brake.
 2. Lower the bucket and attachment to the ground.
 3. Release the hydraulic pressure in the hydraulic system by operating the control levers.
(For details, see RELEASING THE PRESSURE TRAPPED IN THE HYDRAULIC SYSTEM on page 79)
 4. Remove the key.If the machine has to be parked on a slope, be sure to block the wheels securely.

SAFE OPERATION



(1) *Wheel chock*

- All equipment left unattended at night adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors to identify the location of the equipment.
- For storage, be sure not to cover the machine until after all the heated parts have cooled down.
- Before storing the machine for long periods of time, do the following.
 1. Set the parking brake.
 2. Stop the engine.
 3. Lower the bucket and attachments to the ground.
 4. Release the hydraulic pressure in the hydraulic system by operating the control levers.
 5. Remove the key.

PRECAUTIONS FOR SAFELY LOADING AND TRANSPORTING THE MACHINE

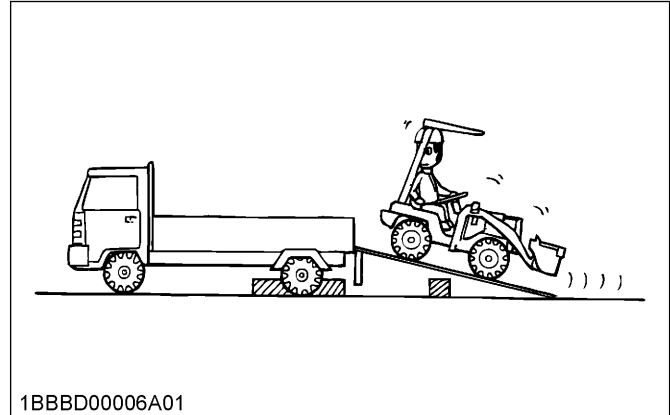
- When loading or unloading the machine on or from a truck or trailer, be sure to use strong ramps. Never use wet lumber, etc...
- Keep the ramps at an angle such that the machine cannot slip. Never try to change direction while on the ramps.

Angle of ramps	10 degrees to 15 degrees
----------------	--------------------------

- When loading or unloading the machine on or from a truck, keep the bucket about 40 cm (16 in.) up from the ground and reverse the machine at low speed to load it, or advance it at the same speed to unload it.
- It is dangerous to alter the direction once already on the ramps. If direction needs correction, bring the machine down off the ramps first and make the directional correction.
- If you operate a steering handle while the machine is loaded or unloaded, the machine may move at an

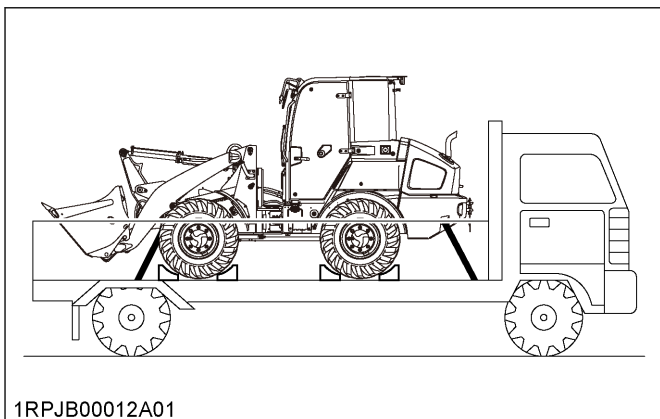
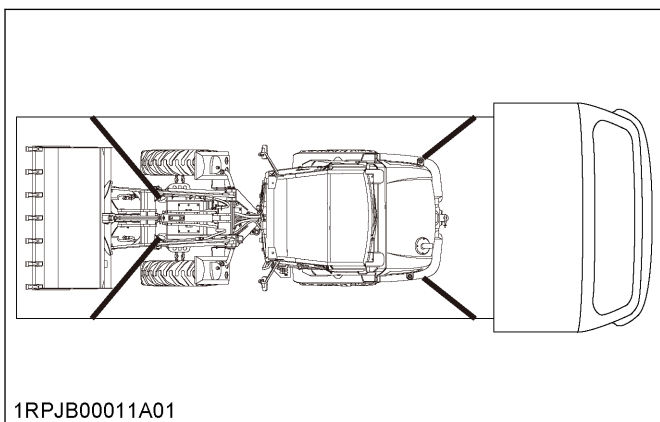
angle. Be sure to stop the machine before using another control.

While loading or unloading the machine, block the truck wheels and apply the truck parking brake. If necessary, place a support under the truck bed behind the rear wheels to prevent the truck front from lifting.



- After loading the machine on the truck bed, perform the following.
 1. Check to see that the center of gravity of the machine aligns with that of the truck bed.
 2. Secure the steering frame lock on the machine.
 3. Set the parking brake.
 4. Stop the engine.
 5. Lower the bucket and attachment to the truck bed.
 6. Release the hydraulic pressure in the hydraulic system by operating the control levers.
 7. Remove the key.
 8. Block the wheels of the machine.
 9. Secure the machine with chains or belts.

! SAFE OPERATION

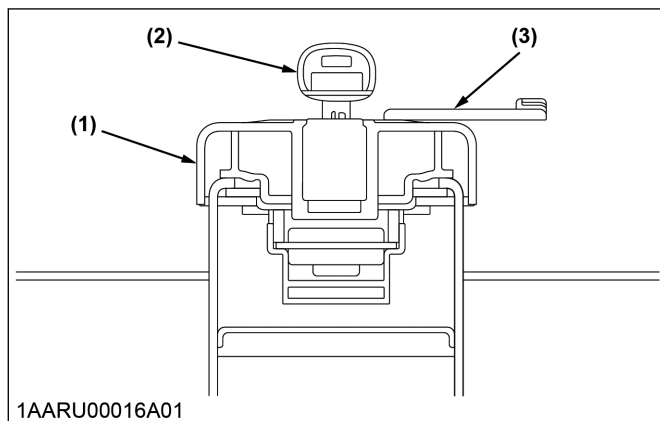
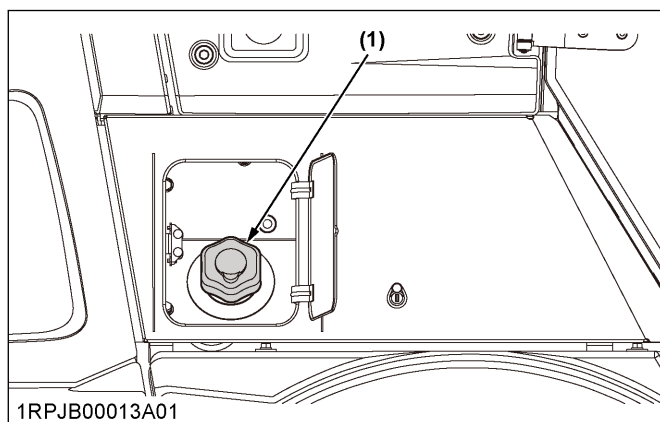


- While traveling with the machine loaded, do not start with a jerk, stop suddenly or turn sharply on curves so as to prevent the machine from shifting on the truck bed.

PRECAUTIONS FOR SERVICING THE MACHINE SAFELY

- Before checking, adjusting, or cleaning the machine parts, or leaving the machine, follow the following items.
 1. Set the parking brake.
 2. Stop the engine.
 3. Lower the bucket and attachment to the ground.
 4. Release the hydraulic pressure in the hydraulic system by operating the control levers.
(For details, see **RELEASING THE PRESSURE TRAPPED IN THE HYDRAULIC SYSTEM** on page 79)
 5. Remove the key.
- Never be under the machine while it is being lifted with only the bucket. If servicing or checking underneath, support it firmly with strong jackstands.
- Secure the articulated steering with the steering frame lock.
- Keep clear of articulation area when servicing.
- When checking or servicing the electrical system, disconnect the battery cables.

- It is dangerous to drain oil or coolant and to replace the filter just after stopping the engine. Wait for the engine to cool.
- Do not allow an unauthorized person to service or maintain the machine. Do not perform any work or equipment that is not authorized. Do not try to do any repairs that you do not understand. Follow the maintenance and service procedures.
- Service or check the machine after it has completely cooled off. Do not touch the muffler and the radiator until they have cooled off.
- When you drive the connecting pins in or out, guard against injury from flying pieces of metal. Use eye or face protection.
- Safety covers, shields, and guards may not be modified or removed.
- Always stop the engine before refueling. Keep away from sparks and naked flames, while refueling. Avoid fuel spills and overfilling the fuel tank. Always refuel from properly grounded fuel tank or system. Keep first aid kit and fire extinguisher nearby at all times.



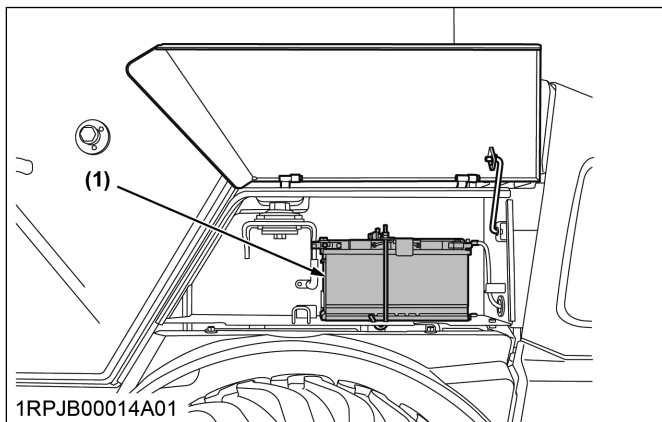
- (1) Fuel tank cap
(2) Starter key
(3) Tank cap cover

- Do not use or charge the refillable type battery if the fluid level is below the "LOWER" (lower-limit-level) mark. Otherwise, the battery component parts may prematurely deteriorate, which may shorten the battery's service life or cause an explosion. Check the fluid level regularly and add distilled water as

⚠️ SAFE OPERATION

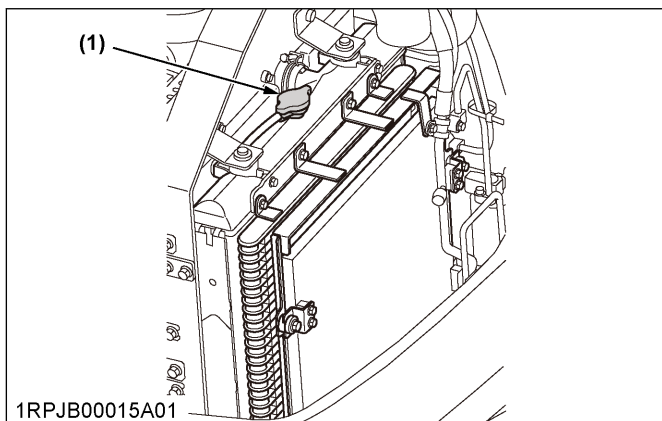
required so that the fluid level is between the "UPPER" and "LOWER" levels.

- A battery, especially when charging, will give off hydrogen and oxygen gases that are very explosive. Keep away from sparks and naked flames at all times. To avoid sparks from an accidental short circuit, always disconnect the battery ground cable first and always reconnect the ground cable last.
(See STARTING THE ENGINE WITH AN AUXILIARY BATTERY on page 64)



(1) Battery

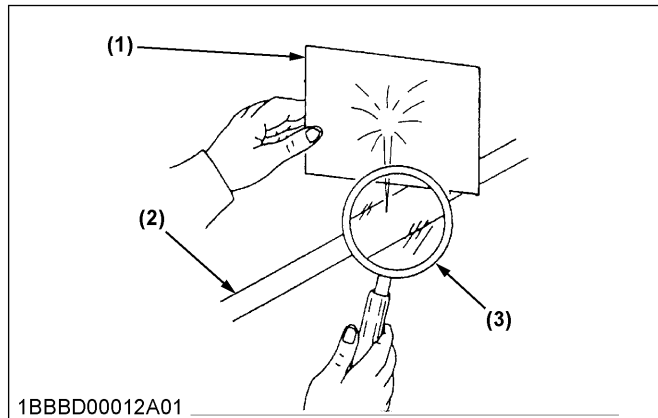
- Never remove the engine/hydraulic oil plug or the radiator cap right after the engine has been stopped, or oil or hot water may gush out. Wait for the water or oil to cool, loosen the engine/hydraulic oil plug or radiator cap just a little to release pressure, and then check the level. Releasing pressure is especially important for opening the radiator cap.



(1) Radiator cap

- Leaking hydraulic fluid has enough pressure to penetrate the skin and cause serious injuries. Leakages from pin holes can be totally invisible. Do not use the bare hand for checking on possible leakages. Always use a piece of wood or cardboard. It is strongly recommended to use a face mask or eye protection. Should injuries occur with leaking hydraulic fluid, contact a doctor

immediately. This fluid can cause gangrene or serious allergic reactions.



(1) Cardboard
(2) Hydraulic line
(3) Magnifying glass

• Towing in case of problems

If the machine breaks down and requires towing, please contact your nearest KUBOTA dealer. In case of an emergency, carry out the following procedure.

1. Preparation of towing

- To release the negative brake, loosen the 2 bolts on the rear axle cover and remove the spacer.
- Tighten both bolts by hand until both are in contact the internal pusher plate. After tightening both bolts, alternatively, for a quarter of turn on each side, with a wrench until they are completely tightened.
- Remove the caps of the 2 high pressure relief valves that are located at the top and bottom of the pump. Loosen the M8 nuts and tighten the adjust bolts by 6 turns. Be careful never to loosen the M8 nuts too much.

2. Towing

- Make sure the foot brake is ready.
- The towing speed should be less than the following value.

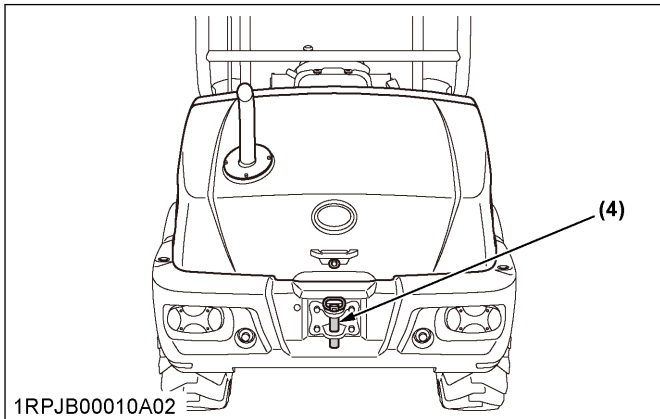
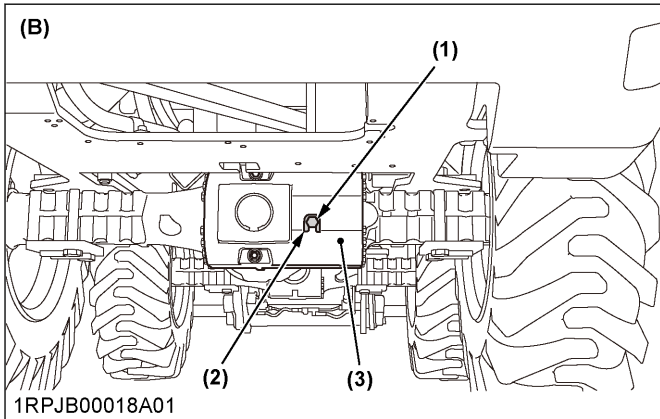
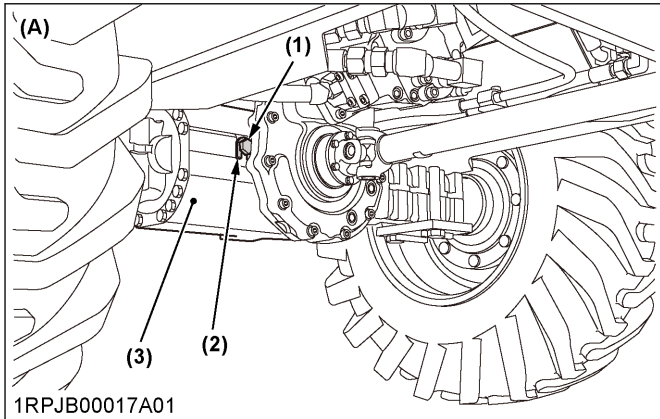
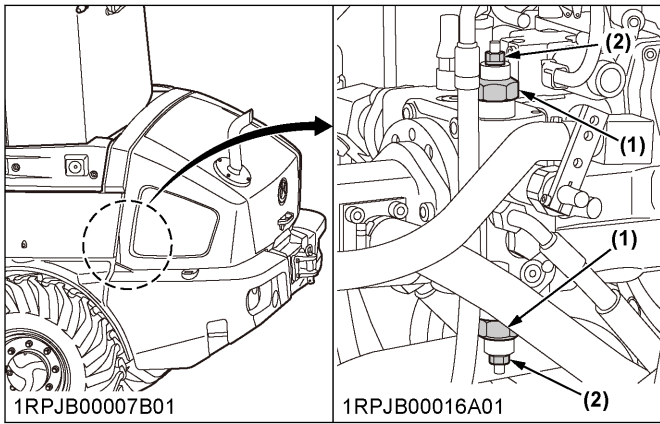
Towing speed	1 km/h (0.6 MPH)
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- Do not perform the towing over long distance.

NOTE :

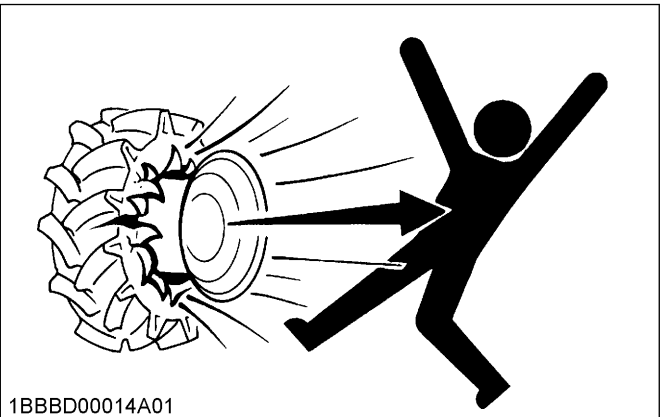
- When towing backward, pull the machine using the towing pin.

! SAFE OPERATION

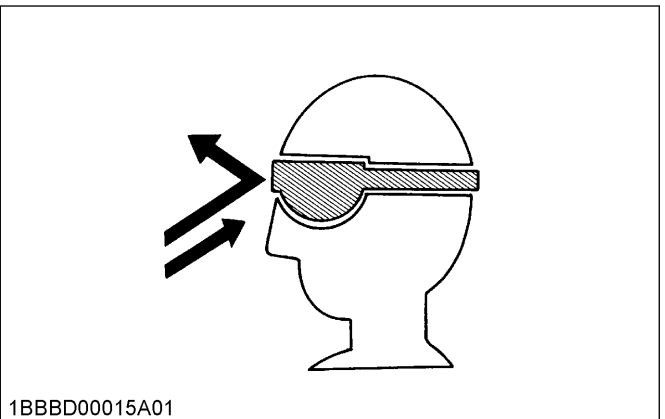


- | | |
|---------------------|-----------|
| (1) Bolt | (A) Front |
| (2) Spacer | (B) Rear |
| (3) Rear axle cover | |
| (4) Towing pin | |

- Do not install any tires on the rims yourself because serious or fatal accidents could happen. Have the tires mounted by your KUBOTA dealer.



- Use a face mask or eye protection to protect the eyes and respiratory system against dust and other foreign particles.



- Refuse such as old oil, fuel, hydraulic fluid, coolant, and batteries comes under the category of toxic waste and can be a hazard to the environment, people, and animals.
- Undertake disposal in an appropriate way, according to legally prescribed pollution control and safety regulations.
- If you have questions about the correct disposal or storage of refuse and toxic waste, contact your KUBOTA dealer or a local waste management contractor.
- Do not open high-pressure fuel system. High-pressure fluid remaining in fuel lines can cause serious injury. Do not disconnect nor repair fuel lines, sensors, or any other components between the high-pressure fuel pump and injectors on engines with high-pressure common rail fuel system.
- To avoid hazardous high voltage, turn the key switch to the **[STOP]** position if it is necessary to check to repair the computer, harness, or connectors.
- During diesel particulate filter (hereinafter called DPF) regenerating operations, exhaust gases and

SAFE OPERATION

exhaust filter components reach temperatures hot enough to burn people, or ignite or melt common materials.

- Keep the wheel loader away from people, animals, or structures which may be susceptible to harm or damage from hot exhaust gases.
- To prevent fires, keep the DPF muffler and its surroundings clear of anything flammable and keep clean at all times.
- During regeneration, white exhaust gas may be visible. Do not allow regeneration in a non-ventilated space.
- During regeneration, do not leave the wheel loader.
- **Fire prevention**

Wheel loader and some attachments equip components that are at high temperatures under normal operating conditions. The primary source of high temperatures is the engine and exhaust system.

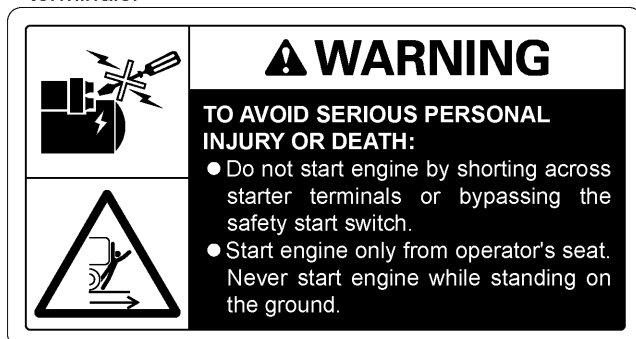
The electrical system, if damaged or incorrectly maintained, can be a source of arcing or sparks. The following fire prevention guidelines will help to keep your equipment up and running efficiently and keep the risk of fire to a minimum.

- Blow off all accumulated debris near hot engine-exhaust-components such as turbocharger and exhaust manifold as well as EGR tube, exhaust pipes, and muffler more frequently when working in severe conditions.
- Clean out all accumulated flammable debris such as leaves, straw, pine needles, branches, bark, small wood chips, and any other combustible materials from inside the machine belly pans or lower unit structures as well as from area in proximity to the engine.
- Inspect the exhaust system daily for any signs of leakage. Check for broken pipes and muffler and also for loose or missing bolts, nuts and clamps. If any exhaust leaks or fractured parts are found, repairs must be completed prior to operation.
- Examine the electrical wiring and connectors frequently for damage. Repair any wires that are loose or frayed before operating the machine. Clean all electrical connections and tighten all electrical connections as necessary.
- Inspect the exhaust system daily for any signs of leakage. Check for broken pipes and muffler and also for loose or missing bolts, nuts, and clamps. If you find any exhaust leaks or fractured parts, please take machine to your dealer for repairs.
- Always keep a multipurpose fire extinguisher on or near the machine. Be familiar with the operation of the fire extinguisher.
- Do not park the machine anywhere there are combustible materials such as dried grass and straw.

SAFETY LABELS

(1) Part No. R5631-5721-0

Start the engine only from the operator's seat.
Do not start the engine by bridging the starter terminals.



(2) Part No. R5611-5722-0

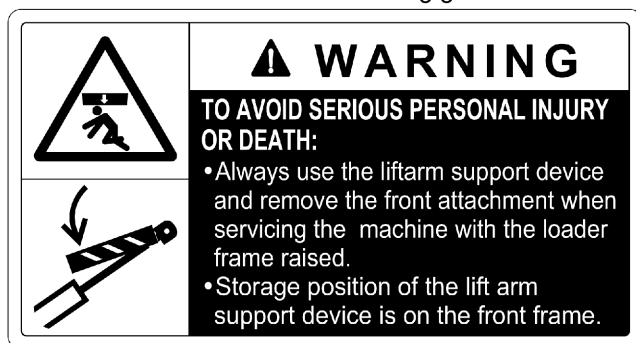
Do not enter the swing area.



1BBABBKAP200A

(3) Part No. R5611-5723-0

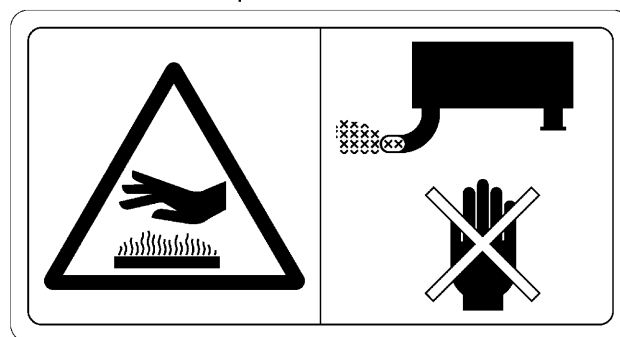
Always attach the lifting cylinder lock for performing maintenance work with raised lifting gear.



1BBABBKAP197A

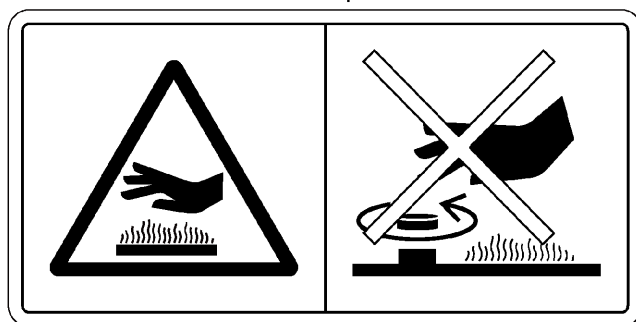
(4) Part No. R5631-5725-0

Do not touch hot parts such as exhaust muffler etc.



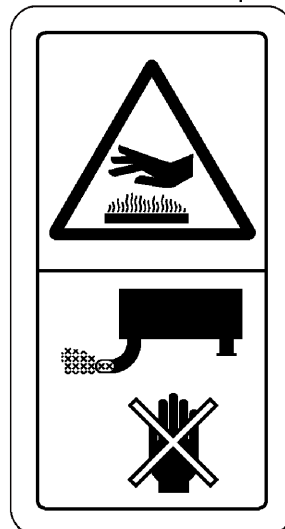
(5) Part No. R5631-5732-0

Risk of burns from hot components!



(6) Part No. R5631-5785-0

Do not touch hot parts such as exhaust muffler etc.



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SAFE OPERATION

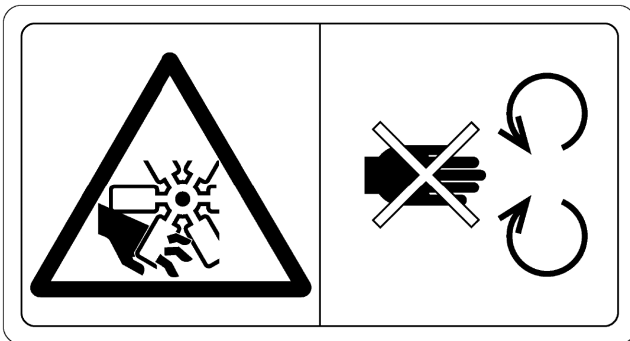
- (7) Part No. R5631-5789-0
Keep away from fan and fan belt.



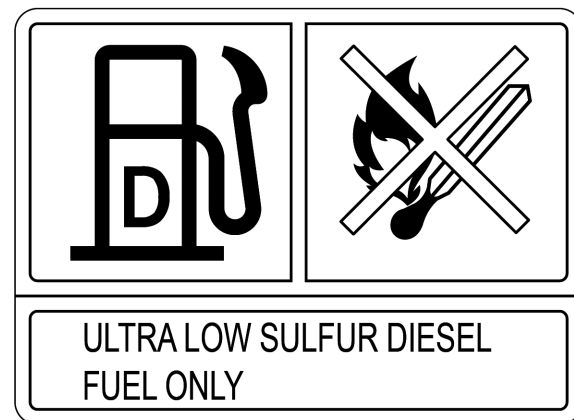
- (8) Part No. R5631-5724-0
Radiator: Risk of scalding.



- (9) Part No. R5631-5726-0
Open the engine compartment cover only with the engine stopped.



- (10) Part No. R5631-5736-0
Do not use open flames in the area of the fuel tank.



- (11) Part No. R5611-5727-0
Always buckle up



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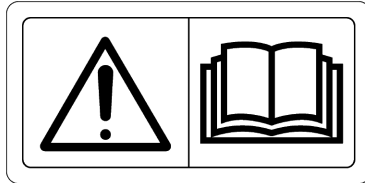
- (12) Part No. RG158-5734-0
Risk of injury when entering or leaving the machine!
- When entering or leaving the machine without a secure halt, you can slip and fall down.
 - Do not jump on or out of the machine.
 - Always hold the hand rail tightly with one hand.
 - Make sure that you have a secure footing.



1BBABBKAP199A

(13) Part No. R5611-5789-0

Please read the operating instructions before commissioning.



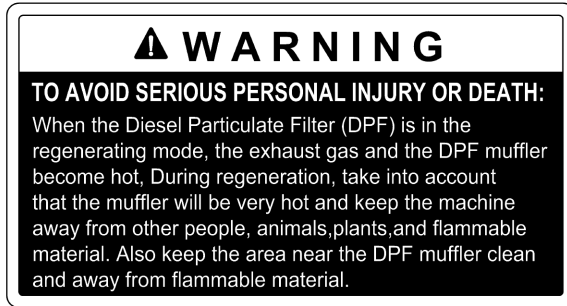
1BBABBKAP143A

(14) Part No. RG158-5765-0

DANGER EXPLOSIVE GASES
Cigarettes, flames or sparks could cause battery to explode. Always shield eyes and face from battery. Do not charge or use booster cables or adjust post connections without proper instruction and training.
KEEP VENT CAPS TIGHT AND LEVEL
POISON CAUSES SEVERE BURNS
Contains sulfuric acid. Avoid contact with skin, eyes or clothing. In event of accident flush with water and call a physician immediately.
KEEP OUT OF REACH OF CHILDREN

1BBABACAP011A

(15) Part No. R5611-5728-0



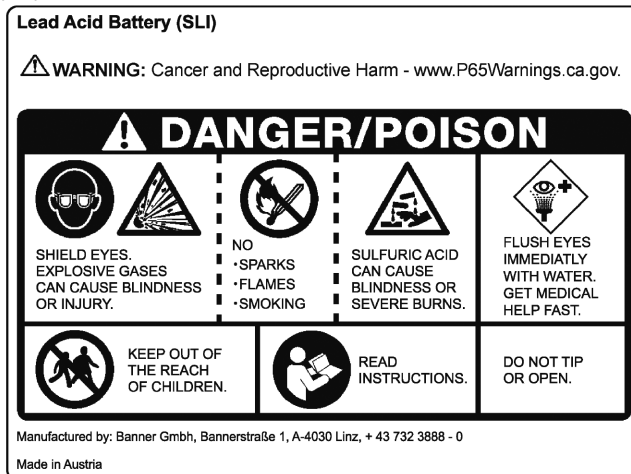
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(16) Part No. R5513-5784-0



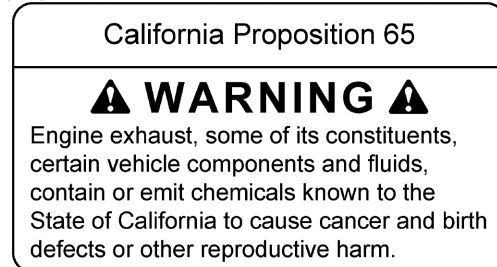
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(17) Part No. RH418-5835-0



1BBABBKAP257A

(18) Part No. RH418-5837-0



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(19) Part No. RH418-5899-0



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SAFE OPERATION

(20) Part No. R5513-5781-0

 **WARNING**

TO AVOID SERIOUS PERSONAL INJURY OR DEATH:

- Read and understand the operator's manual and all labels on the machine.
- Know how to operate all controls.
- Do not allow any bystanders around or near the machine.
- Never allow passengers on the machine.
- When parking or dismounting the machine, stop the engine, set the parking brake, lower the bucket and attachment to the ground relieve the hydraulic pressure by operating the control levers forward, backward, left and right. And remove the key.
- Do not get under the machine while it is being lifted with only the bucket. When servicing or checking underneath, securely support with jackstands.
- Do not stand, walk or work under raised loader unless the lift arm support device is used to secure the lift arms, and the front attachment is removed.

1BBABBKAP2500

(21) Part No. R5513-5782-0

 **WARNING**

TO AVOID SERIOUS PERSONAL INJURY OR DEATH:

- Always drive or operate straight up or down a slope.
- Do not cross a slope, or the machine may slip sideways and tip over.
- Slow down when turning on rough, uneven terrain and slopes to avoid tipping over.
- When transporting a load, keep the loader bucket as low as possible to avoid tipping over. Be extra careful when working on inclines.
- Never perform digging or shoveling in the articulated position, or the machine may tip over.
- Do not use loader for handling large, loose or shiftable load which could fall out of the bucket or roll down the loaders arms onto the operator.

1BBABBKAP2510

(22) Part No. RH418-5824-0

 **WARNING**



TO AVOID SCALDING
Stop engine and allow radiator to cool before opening cap.

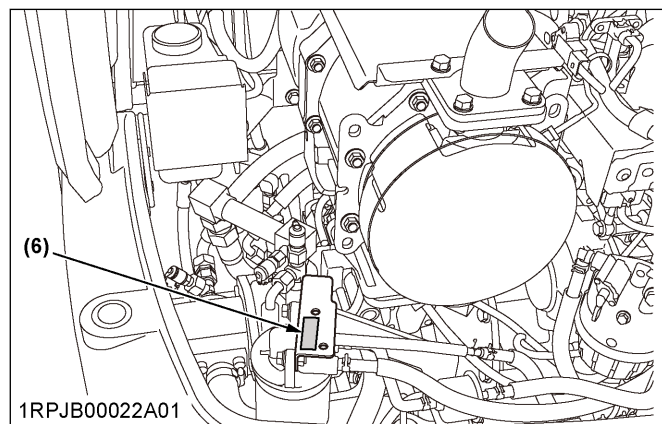
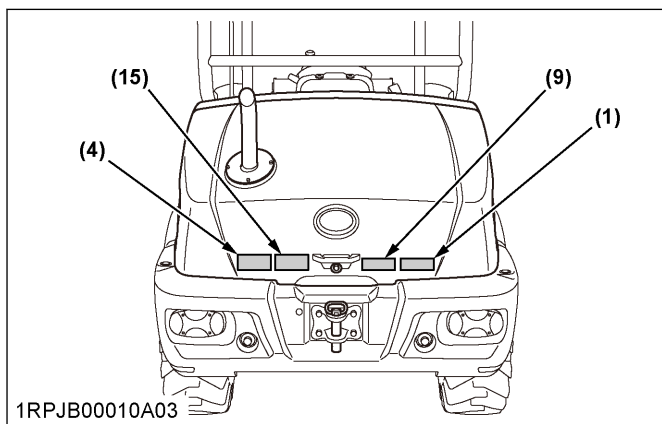
(23) Part No. R5513-5761-0

 **WARNING**

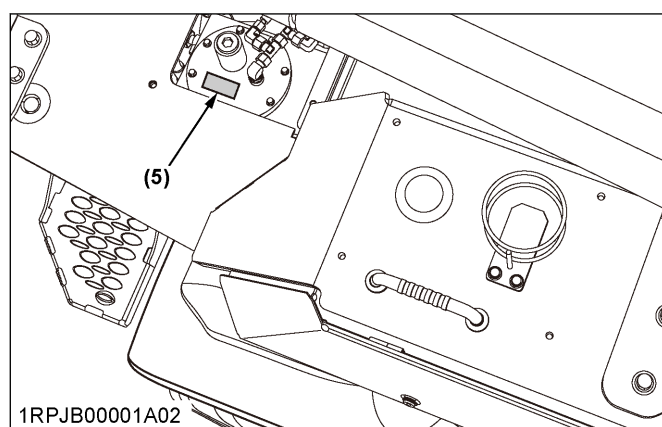
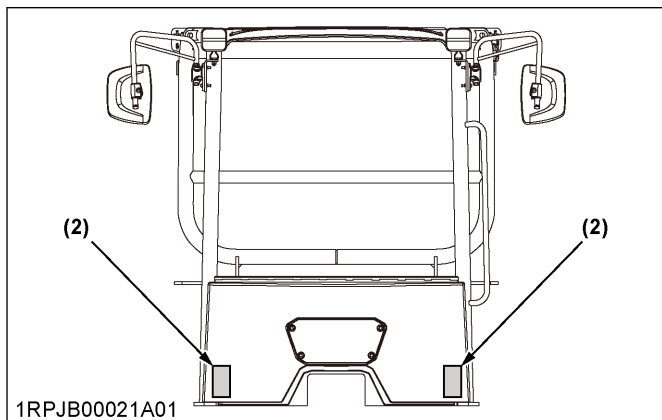


TO AVOID PERSONAL INJURY OR DEATH:
DO NOT MOUNT OR DISMOUNT FROM THIS SIDE

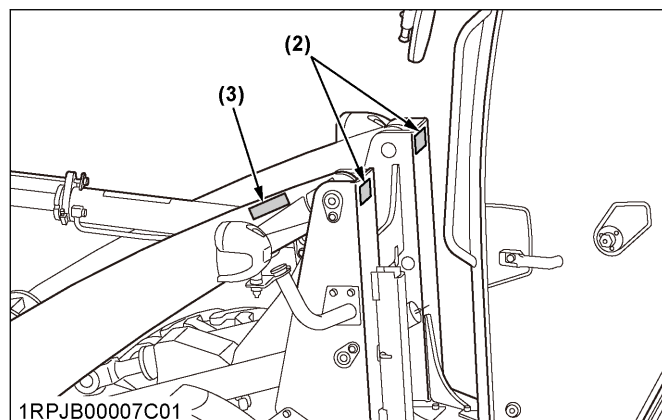
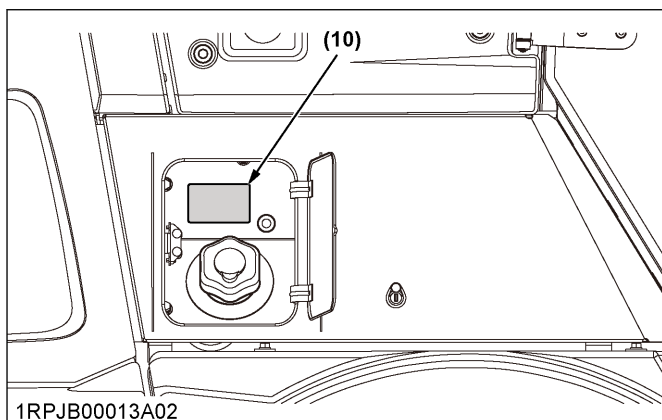
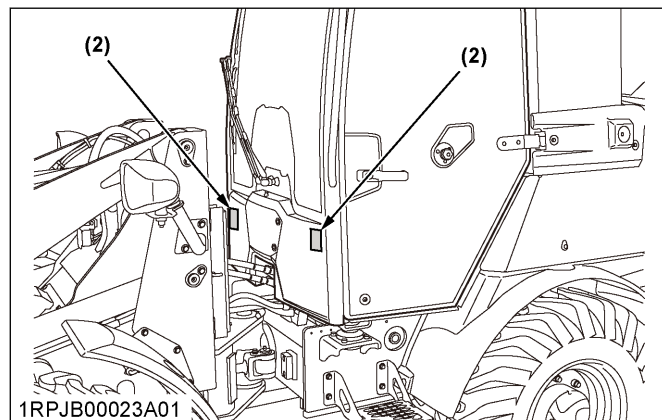
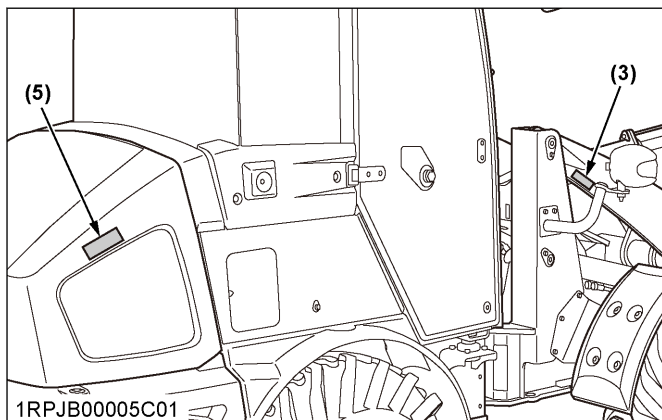
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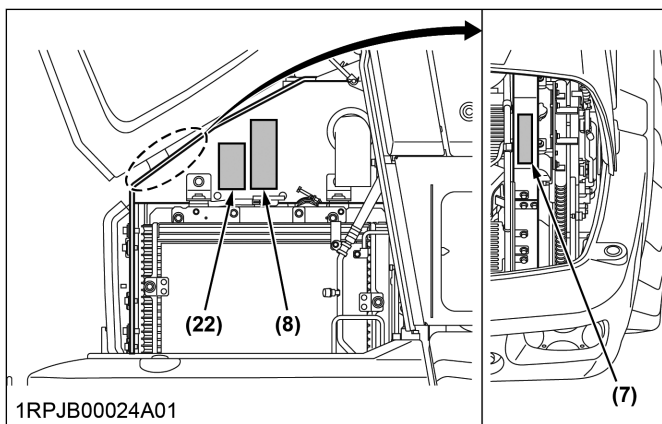
[Canopy]



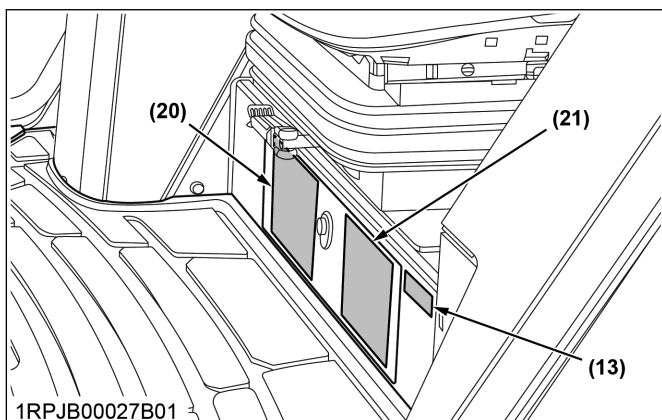
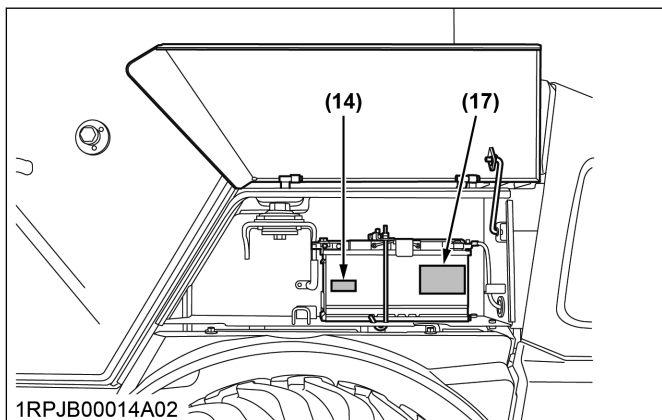
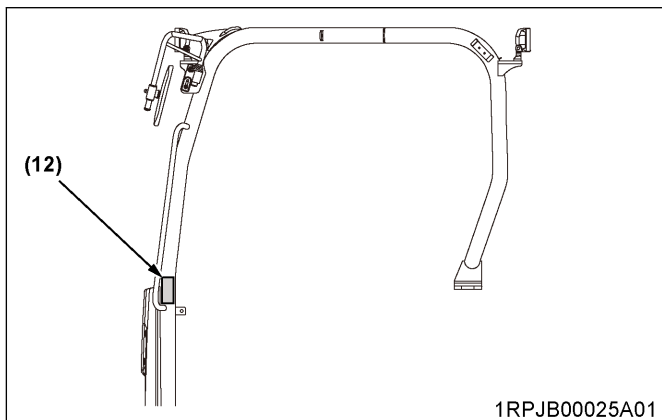
[Cabin]



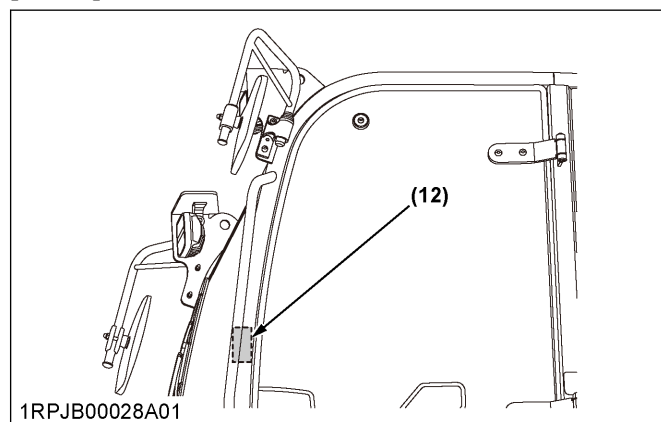
SAFE OPERATION



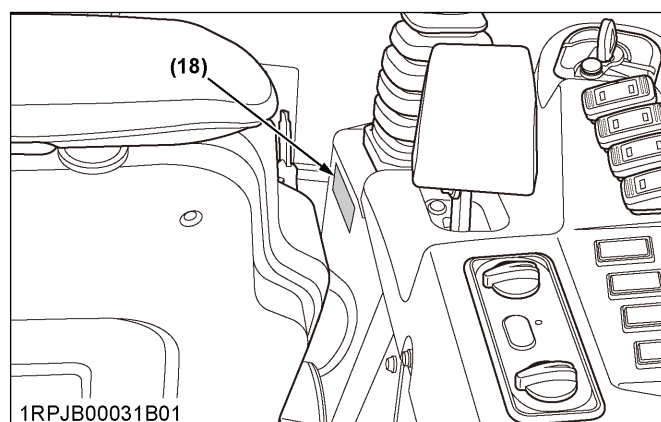
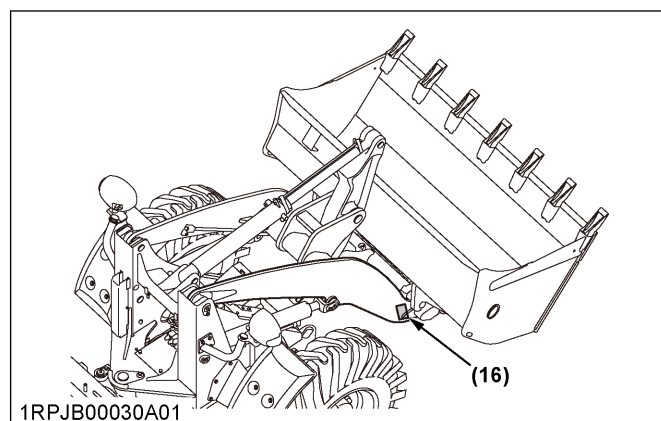
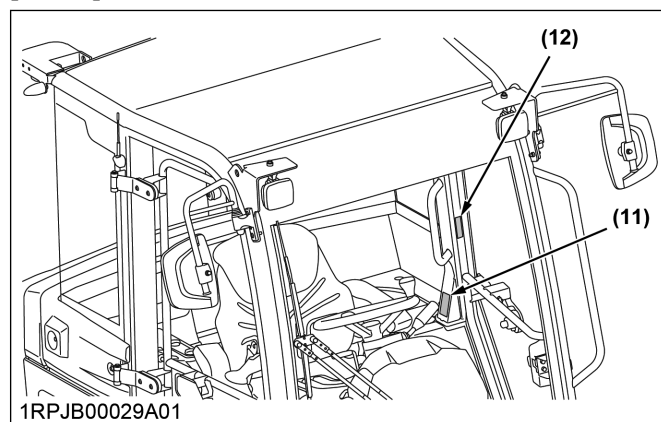
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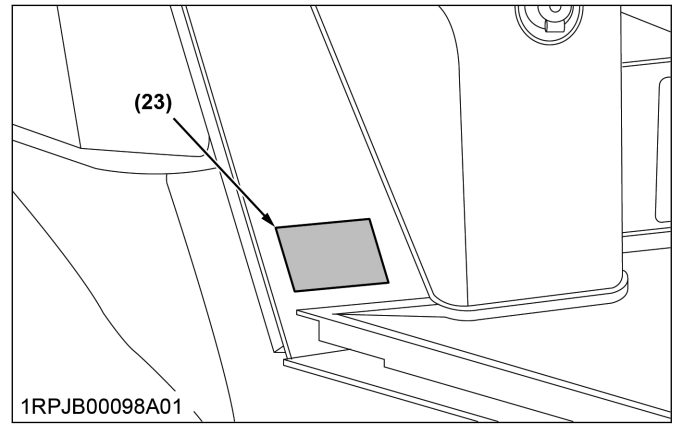
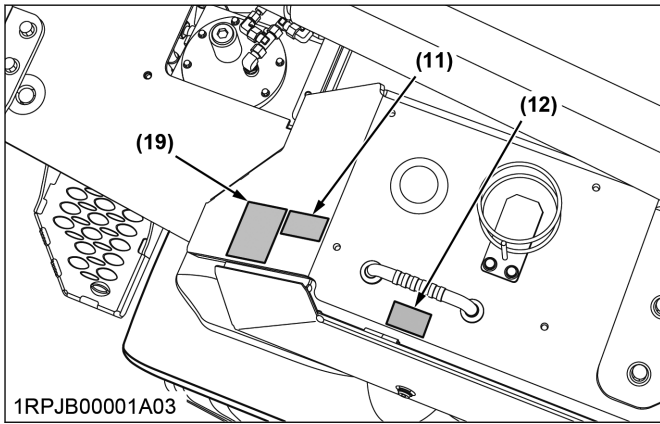
[Cabin]



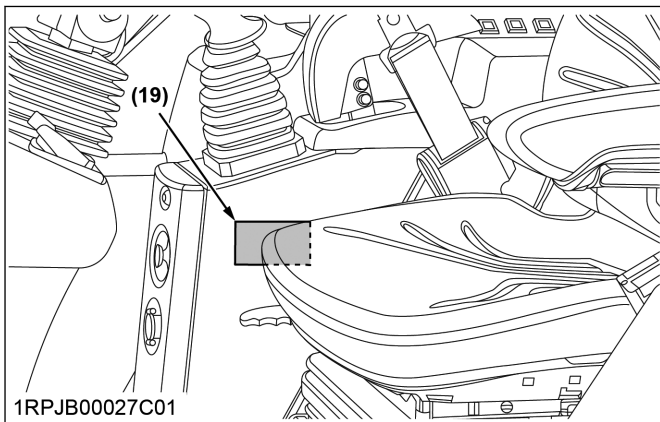
[Cabin]



[Canopy]



[Cabin]





SAFE OPERATION

1. Care for safety labels

- Keep safety labels clean and make sure that they are not obstructed by any objects.
- Clean safety labels with soap and water, and dry with a soft cloth.
- Replace damaged or missing safety labels with new safety labels from your local KUBOTA dealer.
- If a component with safety label(s) affixed is replaced with new part, make sure that new safety label(s) is (are) attached in the same location(s) as the replaced component.
- Mount new safety labels by applying on a clean, dry surface and pressing any bubbles to outside edge.

SERVICING OF THE WHEEL LOADER

DEALER SERVICE

Your KUBOTA dealer is always ready to help you with problems with your wheel loader and make sure that you get the most value from it.

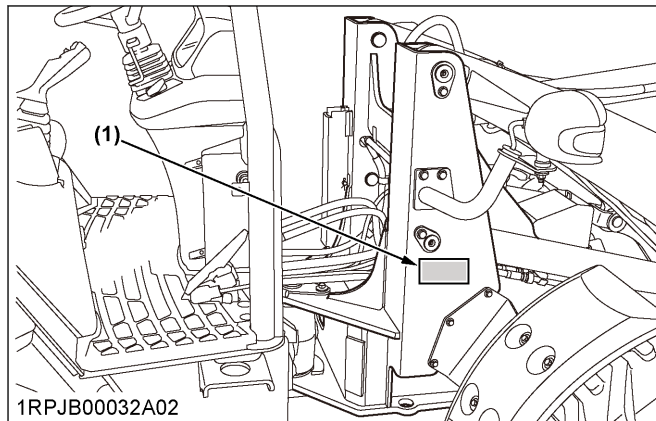
After having carefully read these instructions, you will realize that you can perform much of the routine maintenance by yourself. For service, contact the KUBOTA Dealer shop from which you purchased your product, or your local KUBOTA dealer.

When ordering spare parts from your KUBOTA dealer, always mention the product identification number of the wheel loader and the serial number of the engine.

Note the product identification number of the wheel loader and the serial number of the engine right away in the supplied lines.

Machine Product identification number	
Dealer's name (To be filled in through the owner)	
Date of purchase	

	Model	Serial No.
Engine		

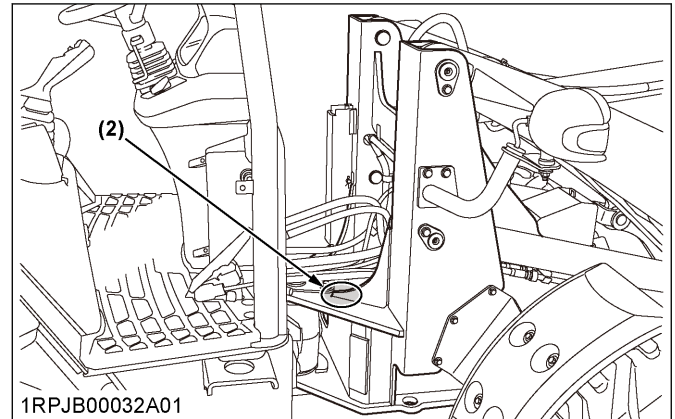


(1)

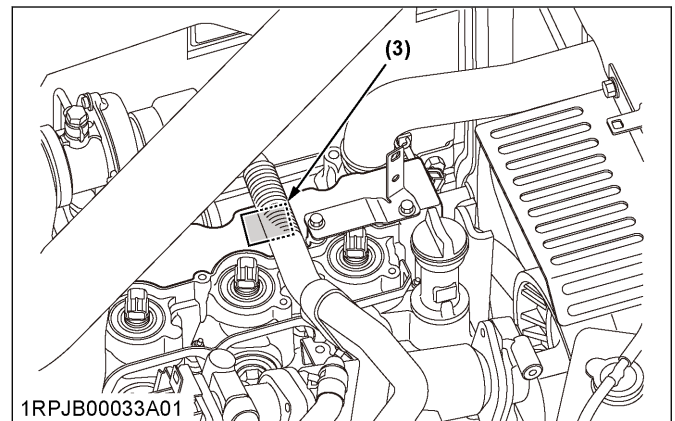
KUBOTA Baumaschinen GmbH STEINHAUSER STR.100 66482 ZWEIBRÜCKEN GERMANY	
MODEL	
PRODUCT IDENTIFICATION NUMBER	
ENGINE No.	

1AARU00129A02

(1) Product identification number and engine number label



(2) Product identification number



(3) Engine serial no.

1. Warranty policy

This wheel loader is warranted under the *KUBOTA Limited Express Warranty*, a copy of which may be obtained from your selling dealer. No warranty shall, however, apply if the product has not been handled

according to the instruction given in the Operator's Manual even it is within the warranty period.

The product(s) described in this operator's manual are designed and manufactured only for the country in which they are initially wholesaled by KUBOTA or one of its affiliated companies.

Neither KUBOTA Corporation nor its affiliated companies provide warranty for any product which is re-sold or retailed in any country other than the country for which the product(s) were designed or manufactured.

2. Procedure for scrapping the wheel loader

To put the wheel loader out of service, correctly follow the local rules and regulations of the country or territory where you reside.

If you ask questions, consult your local KUBOTA Dealer.

3. Service for anti-theft device [KCL only]

This wheel loader is equipped with an electronic key as a theft-prevention measure.

(See ANTI-THEFT DEVICE [KCL ONLY] on page 90)

Anti-theft device restrains a theft, but does not guarantee that the machine will not be stolen.

NOTE :

- **KCL is an abbreviation for Kubota Canada Ltd.**

SPECIFICATIONS

SPECIFICATION TABLE [R540]

Model				R540	
Type				CANOPY	CAB
*1Operating weight		kg (lbs.)		4485 (9888)	4665 (10285)
Bucket capacity		m ³ (cu.yd.)		0.65 (0.85)	
Engine	Manufacturer			KUBOTA	
	Model			Water-cooled V2607-CR-E5-WL	
	Horse power	SAE J1995	kW/rpm (HP/rpm)	38.0 / 2400 (51.0 / 2400)	
		SAE J1349	kW/rpm (HP/rpm)	35.7 / 2400 (47.9 / 2400)	
	Number of cylinders			4	
	Displacement		cc (cu.in.)	2615 (160)	
	Starter		V/kW	12 / 2	
	Battery		V/Ah	12 / 95	
Dimensions	Overall length		mm (ft in.)	5400 (17 ft 9 in.)	
	Overall width (without bucket)		mm (ft in.)	1720 (5 ft 8 in.)	
	Overall height		mm (ft in.)	2455 (8 ft 1 in.)	2475 (8 ft 1 in.)
	Min. ground clearance		mm (in.)	320 (12.6)	
	Wheel base		mm (ft in.)	2000 (6 ft 7 in.)	
	Tread		mm (ft in.)	1355 (4 ft 5 in.)	
	Angle of articulation		Deg	40 each	
	Angle of oscillation		Deg	8 each	
	Loader clearance circle		mm (ft in.)	4175 (13 ft 8 in.)	
Bucket	Hinge pin height		mm (ft in.)	3230 (10 ft 7 in.)	
	Dump height (w/cutting edge)		mm (ft in.)	2430 (8 ft 0 in.)	
	Reach fully raised (w/cutting edge)		mm (ft in.)	780 (2 ft 7 in.)	
	Tipping load	Straight (ISO 14397-1)	kg (lbs.)	2920 (6437)	3070 (6768)

(Continued)

SPECIFICATIONS

Model				R540	
Type				CANOPY	CAB
Bucket	Tipping load	Full turn (ISO 14397-1)	kg (lbs.)	2560 (5644)	2690 (5930)
	Rated operating capacity (ISO 14397-1)		kg (lbs.)	1280 (2822)	1340 (2954)
	Lifting capacity at ground level		kN (lbf)	25.1 (5646)	
	Breakout force (ISO 14397-2)		kN (lbf)	34.5 (7761)	
Fork	Tipping load	Full turn (ISO 14397-1)	kg (lbs.)	1980 (4365)	2080 (4586)
	Rated operating capacity	Firm and level ground (ISO 14397-1)	kg (lbs.)	1580 (3483)	1660 (3660)
		Rough terrain (ISO 14397-1)	kg (lbs.)	1190 (2624)	1250 (2756)
Traveling	Drive system			4WD	
	Tire			365 / 70 R18	
	Traveling speed	Forward	km/h (mph)	0 to 20 (0 to 12.4)	
		Reverse	km/h (mph)	0 to 20 (0 to 12.4)	
	Traction force		kN (lbf)	29.1 (6540)	
Auxiliary	Max. flow rate (theoretical)		L/min (gpm)	54.0 (14.3)	
	Max. pressure		MPa (kgf/cm ²) [psi]	18.5 (189) [2683]	
Others	Fuel tank		L (U.S.gal.)	70 (18.5)	
	Hydraulic oil tank		L (U.S.gal.)	39 (10.3)	
	Hydraulic oil system		L (U.S.gal.)	55 (14.5)	

NOTE :

- The dimensions in the table are based on the machine with std. tires, skid-steer-type quick coupler, standard bucket, and ROPS/FOPS-canopy/cabin. Mean value and value for use on concrete roads are given for tipping load and operating capacity. Specifications subject to change without notice

*1 Operating weight is with 75 kg (165 lbs) operator, 315 kg (695 lbs) standard general purpose bucket, and fully served.

SPECIFICATION TABLE [R640]

Model				R640	
Type				CANOPY	CAB
*1 Operating weight		kg (lbs.)		5070 (11177)	5245 (11563)
Bucket capacity		m ³ (cu.yd.)		0.77 (1.0)	
Engine	Manufacturer			KUBOTA	
	Model			Water-cooled V2607-CR-TE5-WL	
	Horse power	SAE J1995	kW/rpm (HP/rpm)	48.0 / 2400 (64.4 / 2400)	
		SAE J1349	kW/rpm (HP/rpm)	45.6 / 2400 (61.2 / 2400)	
	Number of cylinders			4	
	Displacement		cc (cu.in.)	2615 (160)	
	Starter		V/kW	12 / 2	
	Battery		V/Ah	12 / 95	
Dimensions	Overall length		mm (ft in.)	5480 (18 ft)	
	Overall width (without bucket)		mm (ft in.)	1805 (5 ft 11 in.)	
	Overall height		mm (ft in.)	2480 (8 ft 2 in.)	2500 (8 ft 2 in.)
	Min. ground clearance		mm (in.)	340 (13.4)	
	Wheel base		mm (ft in.)	2000 (6 ft 7 in.)	
	Tread		mm (ft in.)	1400 (4 ft 7 in.)	
	Angle of articulation		Deg	40 each	
	Angle of oscillation		Deg	8 each	
	Loader clearance circle		mm (ft in.)	4221 (13 ft 10 in.)	
Bucket	Hinge pin height		mm (ft in.)	3255 (10 ft 8 in.)	
	Dump height (w/cutting edge)		mm (ft in.)	2385 (7 ft 10 in.)	
	Reach fully raised (w/cutting edge)		mm (ft in.)	825 (2 ft 8 in.)	
	Tipping load	Straight (ISO 14397-1)	kg (lbs.)	3380 (7452)	3520 (7760)
		Full turn (ISO 14397-1)	kg (lbs.)	2960 (6526)	3090 (6812)
	Rated operating capacity (ISO 14397-1)		kg (lbs.)	1480 (3263)	1545 (3406)
	Lifting capacity at ground level		kN (lbf)	34.7 (7806)	

(Continued)

SPECIFICATIONS

Model				R640	
Type				CANOPY	CAB
Bucket	Breakout force (ISO 14397-2)		kN (lbf)	37.9 (8526)	
Fork	Tipping load	Full turn (ISO 14397-1)	kg (lbs.)	2320 (5115)	2410 (5313)
	Rated operating capacity	Firm and level ground (ISO 14397-1)	kg (lbs.)	1850 (4079)	1930 (4255)
		Rough terrain (ISO 14397-1)	kg (lbs.)	1390 (3064)	1450 (3197)
Traveling	Drive system			4WD	
	Tire			405 / 70 R18	
	Traveling speed	Forward	km/h (mph)	0 to 20 (0 to 12.4)	
		Reverse	km/h (mph)	0 to 20 (0 to 12.4)	
	Traction force		kN (lbf)	38.2 (8593)	
Auxiliary	Max. flow rate (theoretical)		L/min (gpm)	67.2 (17.8)	
	Max. pressure		MPa (kgf/cm ²) [psi]	20.5 (209) [2973]	
Others	Fuel tank		L (U.S.gal.)	70 (18.5)	
	Hydraulic oil tank		L (U.S.gal.)	39 (10.3)	
	Hydraulic oil system		L (U.S.gal.)	57 (15.1)	

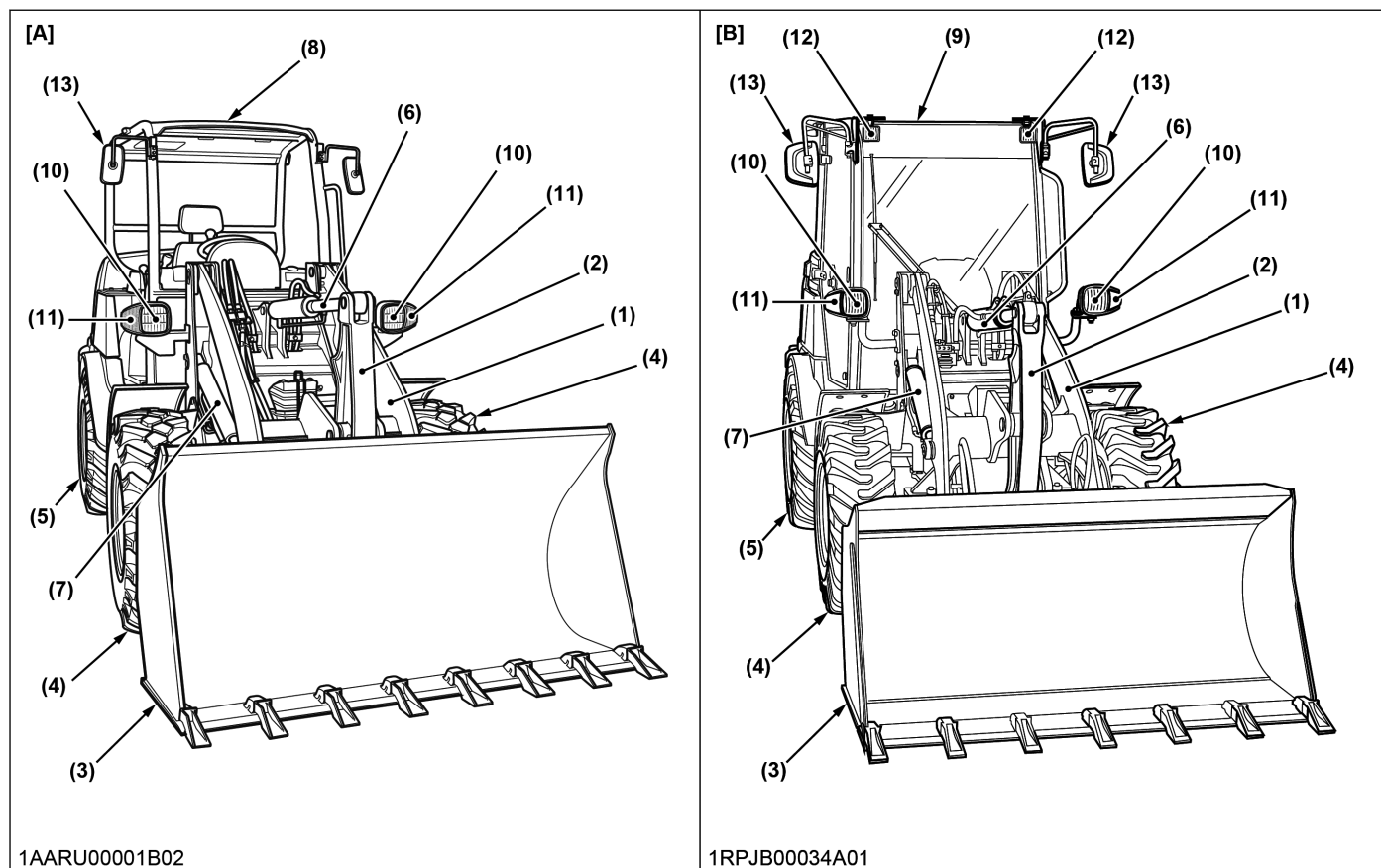
NOTE :

- The dimensions in the table are based on the machine with std. tires, skid-steer-type quick coupler, standard bucket, and ROPS/FOPS-canopy/cabin. Mean value and value for use on concrete roads are given for tipping load and operating capacity. Specifications subject to change without notice

*1 Operating weight is with 75 kg (165 lbs) operator, 340 kg (750 lbs) standard general purpose bucket, and fully served.

MACHINE PARTS

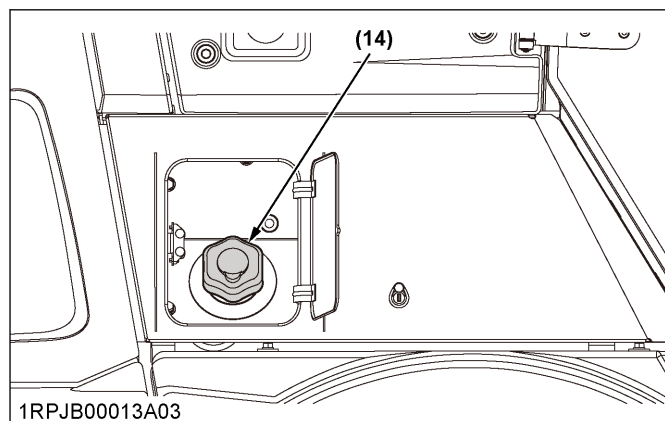
DESCRIPTION OF MACHINE PARTS



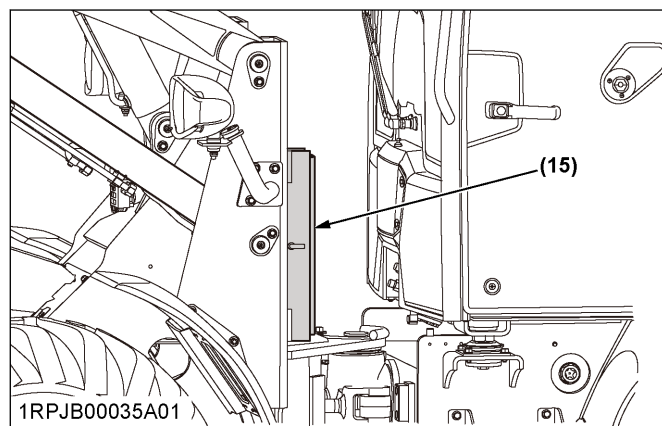
- (1) Lift arm
(2) Bell crank
(3) Bucket
(4) Front wheel
(5) Rear wheel
(6) Bucket cylinder
(7) Lift cylinder
(8) ROPS/FOPS canopy

- (9) ROPS/FOPS cabin
(10) Headlight
(11) Turn signal light / Clearance light
(12) Working light
(13) Rearview mirror
[A] Canopy
[B] Cabin

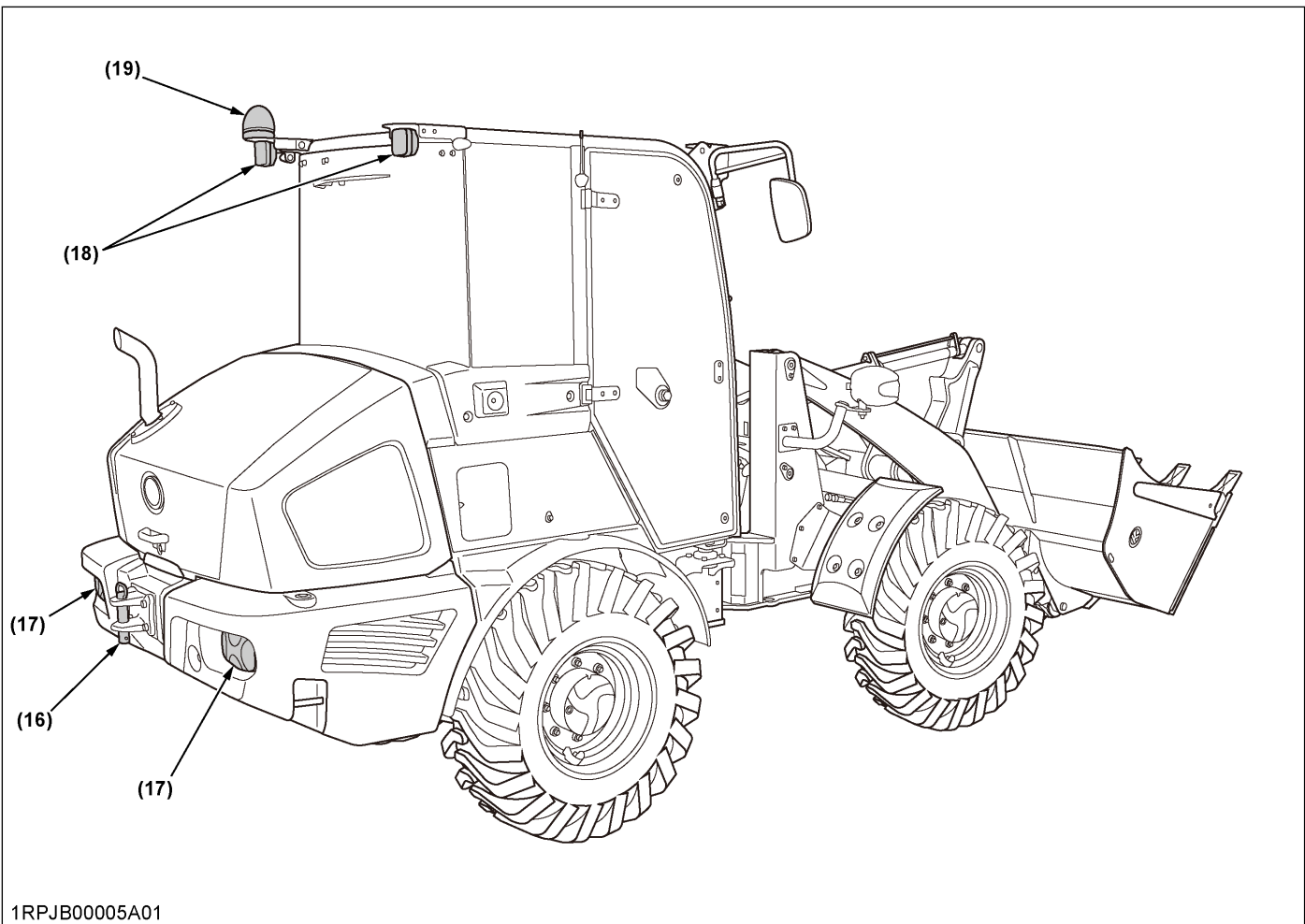
Right side



- (14) Fuel tank cap



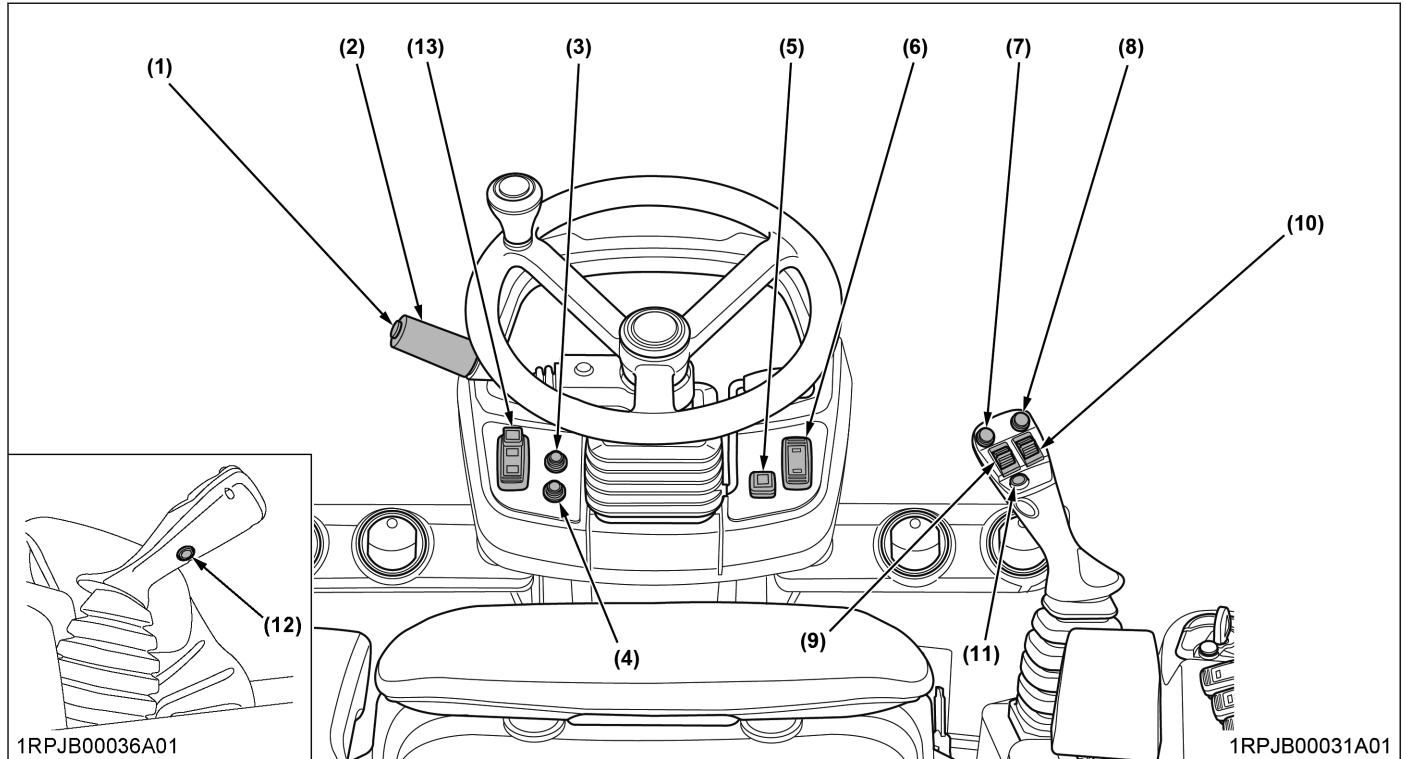
- (15) Lift arm support



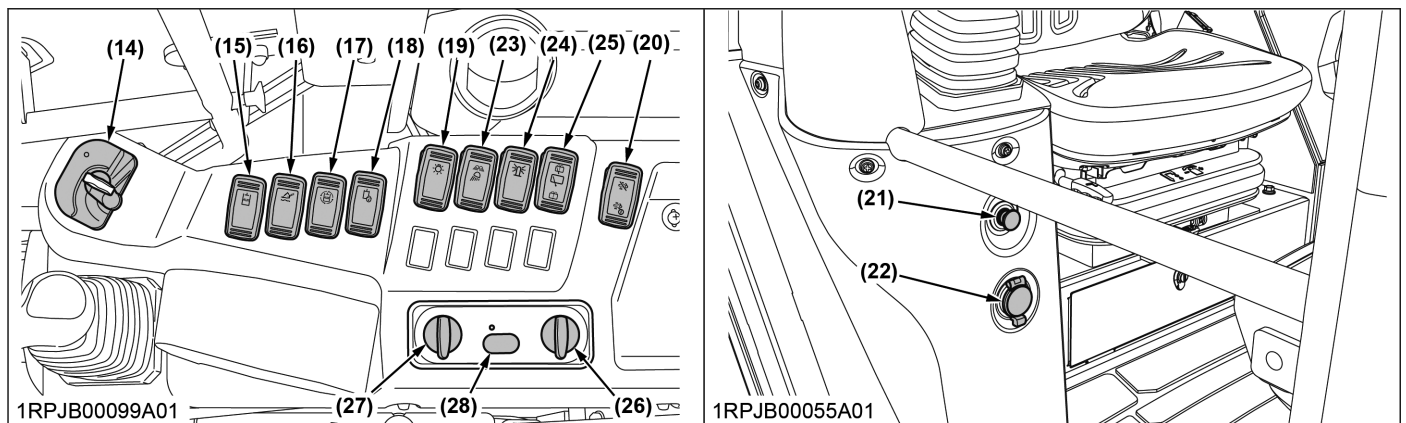
- (16) Towing pin
- (17) Rear combination light (Turn signal, Tail light, Brake light, Back light)
- (18) Rear working light (option)
- (19) Rotary beacon (option)

INSTRUMENT PANEL AND CONTROLS

SWITCHES

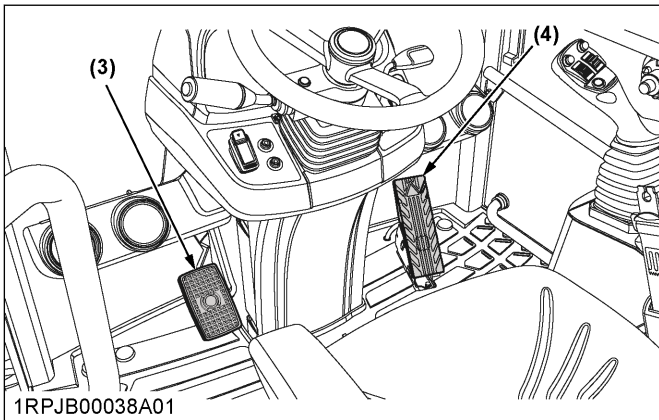
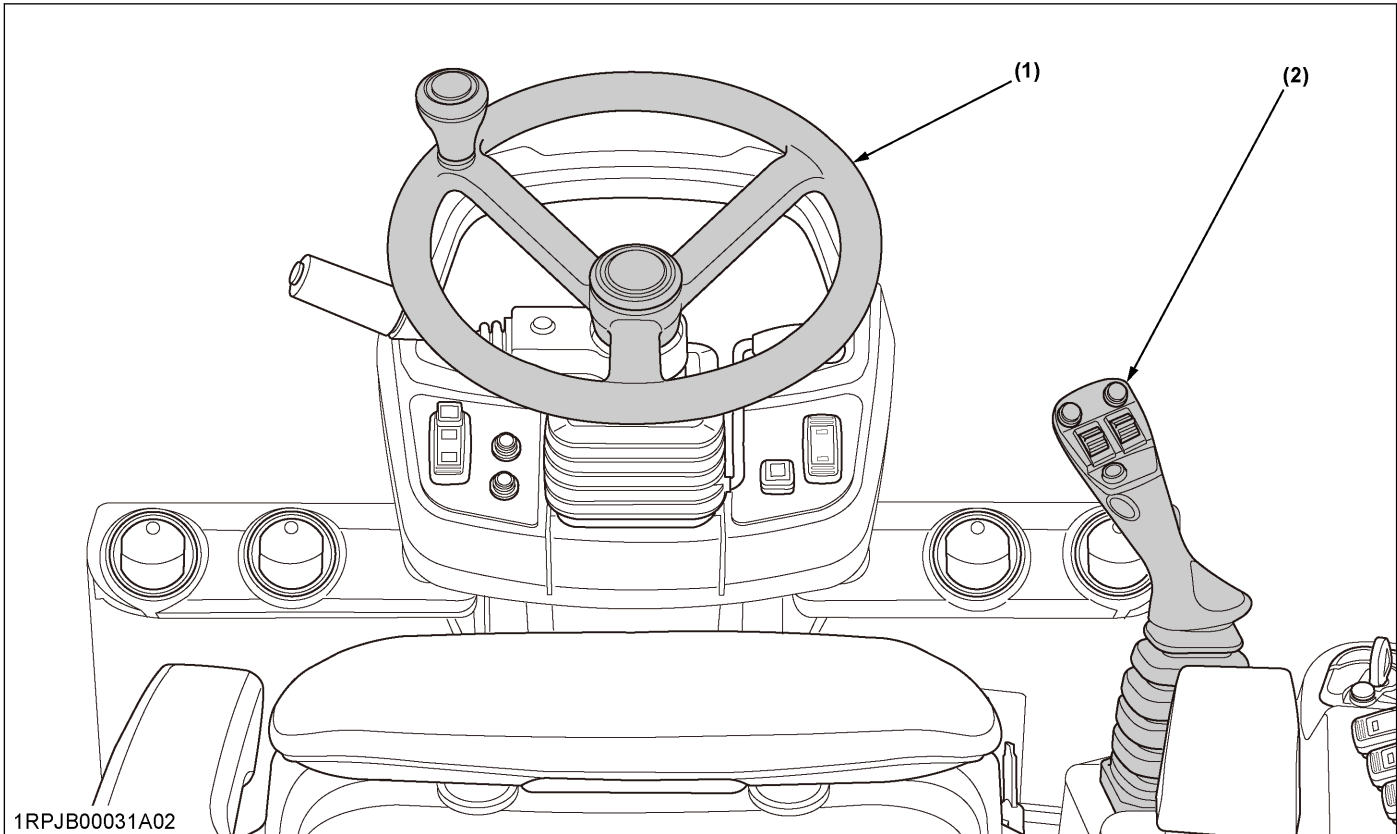


- | | | | | | | | |
|-----------------------------------|----|--------------------------------|----|---------------------------------------|----|-------------------------------------|----|
| (1) Horn switch | 37 | (4) User setting switch | 41 | (7) Speed control switch (down) | 70 | (10) AUX port variable switch | 40 |
| (2) Multi function switch | 37 | (5) Hazard light switch | 38 | (8) Speed control switch (up) | 70 | (11) Neutral switch | 69 |
| (2) Multi-function switch | 49 | (6) Parking brake switch | 36 | (9) Direction switch | 69 | (12) Differential lock switch | 39 |
| (3) Display selector switch | 41 | | | | | (13) Attachment unlock switch | 38 |



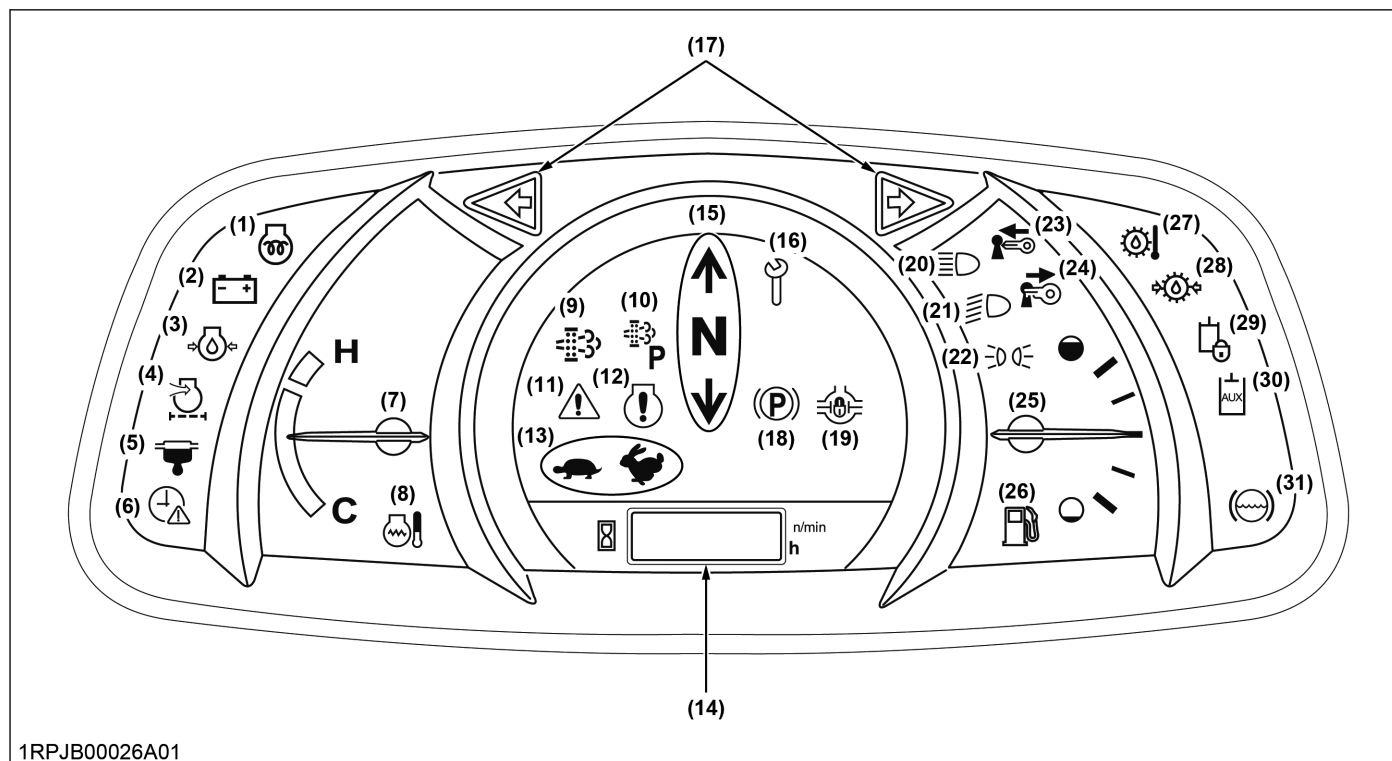
- | | | | | | | | |
|-----------------------------------|----|---|----|---|----|--|----|
| (14) Starter switch | 36 | (19) Headlight switch | 37 | (23) Working light switch | 38 | (26) Blower switch [Cabin type on-ly] | 53 |
| (15) AUX port enable switch | 39 | (20) Diesel particulate filter (DPF) switch | 38 | (24) Beacon light switch | 49 | (27) Temperature control dial [Cab-in type only] | 53 |
| (16) Float switch | 40 | (21) Engine stop knob | 64 | (25) Rear wiper / washer switch [Cabin type only] | 49 | (28) Air-conditioner switch [Cabin type only] | 53 |
| (17) AUX hold switch | 40 | (22) Electrical outlet | 96 | | | | |
| (18) Hydraulic lock switch | 39 | | | | | | |

CONTROL PEDALS AND LEVERS



- (1) Steering wheel
- (2) Multi function operating lever
(control lever)
- (3) Inching and brake pedal
- (4) Accelerator pedal

INSTRUMENT PANEL



- | | | | |
|---|---|--|--|
| (1) Glow plug indicator | (9) Regeneration indicator | (19) Differential lock indicator | (28) HST charge-pressure-warning indicator |
| (2) Battery charge indicator | (10) Parked regeneration indicator | (20) Headlight-high beam indicator | (29) Hydraulic lock indicator |
| (3) Engine oil pressure warning indicator | (11) Warning indicator | (21) Headlight-low beam indicator | (30) AUX operation indicator |
| (4) Air cleaner warning indicator | (12) Engine warning indicator | (22) Clearance light indicator | (31) Brake fluid warning indicator |
| (5) Water separator filled-up indicator | (13) Speed mode indicator | (23) Insert key indicator [for KCL] | |
| (6) Clock setting request indicator | (14) LCD | (24) Pull-out key indicator [for KCL] | |
| (7) Coolant temperature gauge | (15) Forward, backward, and neutral indicator | (25) Fuel gauge | |
| (8) Coolant temperature warning indicator | (16) Periodic check indicator | (26) Fuel stock indicator | |
| | (17) Hazard / turn signal indicator | (27) HST oil-temperature warning indicator | |
| | (18) Parking brake indicator | | |

IMPORTANT :

- When cleaning the display screen, wipe with a soft cloth like those used for cleaning eyeglasses.
- Using a coarse cloth or rubbing too hard may damage the surface.
- Cleaning the display screen with alkaline, acidic, or organic solvents such as alcohol or benzene can damage the screen.

CHECKS BEFORE STARTING THE MACHINE

DAILY CHECK ITEMS

In order to avoid damage, it is important to check the condition of the machine before starting.

WARNING

To avoid personal injury or death:

- Be sure to check and service the machine on a level surface with the engine shut off.

Checks

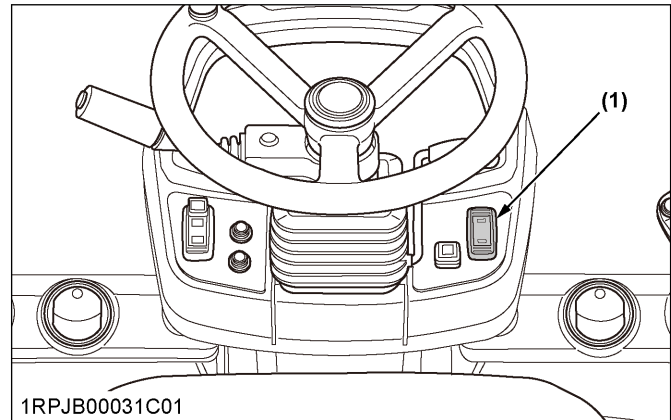
- Go around the machine and check for visual damage and wear.
- Check the coolant level.
(See Checking and replenishing the coolant on page 106)
- Check the fuel level.
- Check the engine-oil level.
- Check the hydraulic-fluid level.
- Check the air-cleaner warning indicator.
(See Checking the dust indicator on page 111)
- Check all control lamps, indicators, and hour meter.
- Check the light system.
- Check the seat belt and the ROPS/FOPS safety device.
- Check the diesel-particulate-filter (DPF) muffler.
- Check the condition of the safety labels.
(See SAFETY LABELS on page 17)

CHECKS FOR THE SWITCHES

1. Parking brake switch

The parking brake is to be used when parking the machine.

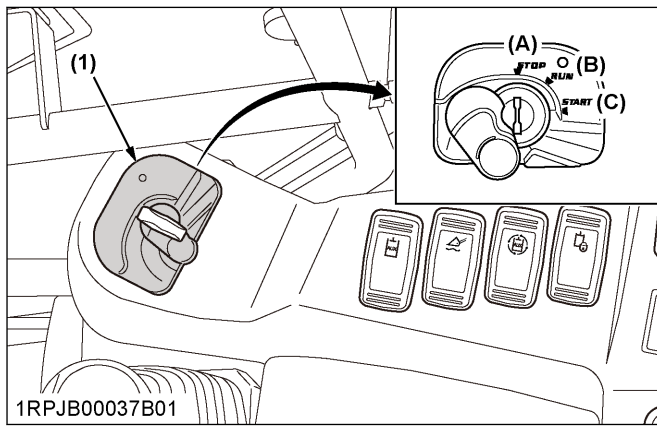
1. When you press the parking-brake-switch on the (P) marked side, the parking brake is applied and the (P) mark on the instrument panel appears.
2. When you press the parking-brake-switch again, the parking brake is released and the (P) mark on the instrument panel lights off.



(1) Parking brake switch

2. Starter switch

- **[STOP]**
You can insert the starter key at the **[STOP]** position.
- **[RUN]**
When turning the starter key one click from the **[STOP]** position to the **[RUN]** position, all the circuitry gets energized to start preheating and the glow-plug-indicator is displayed.
To check for breakage of any light and indicator, however, broken light or indicator lights up and stays on for about 1 second.
- **[START]**
 1. When turning the starter key from the **[RUN]** position another click to the **[START]** position, the starter motor is then activated to get the engine started.
 2. When releasing your hand from the starter key, the starter key returns itself to the **[RUN]** position.
In other words, once the engine has started, be sure to free the starter key.

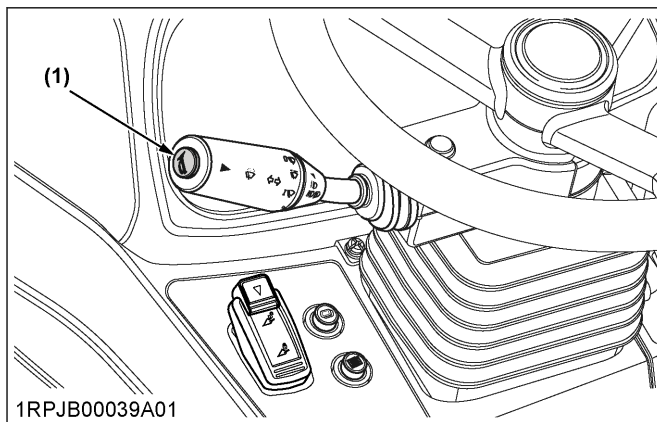


(1) Starter switch

(A) STOP
(B) RUN
(C) START

3. Horn switch

When pressing the horn switch, the horn will beep.
The horn switch is operative even when the starter key is in the [STOP] position.

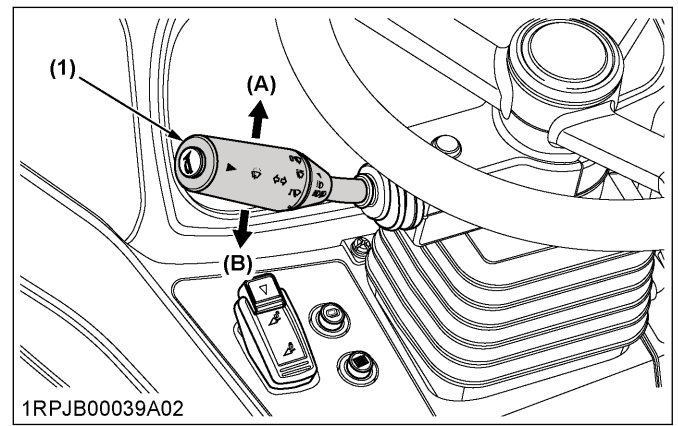


(1) Horn switch

4. Multi function switch

4.1 Turn signal blinking

Operate the multi-function switch to the right or left according to the direction in which the machine is to be turned. The corresponding turn signal will blink.
Be sure to return the multi-function switch to the center position after the turn.

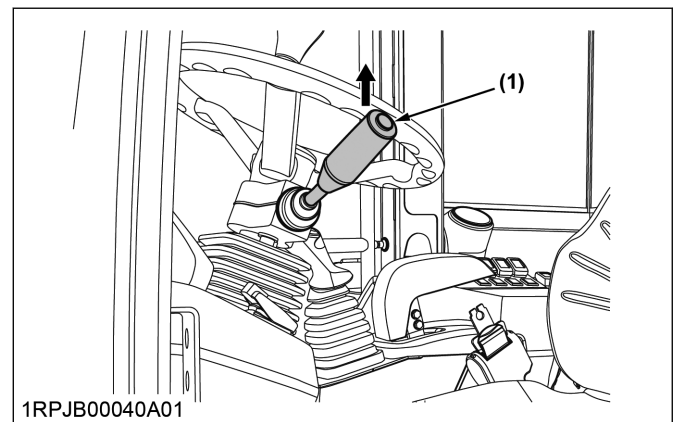


(1) Multi function switch

(A) To blink right turn signal
(B) To blink left turn signal

4.2 High-low beam changing

Pull up the multi-function switch toward the steering wheel, and the high beams light up.
You can switch the high and low beams each other by moving up and down the multi-function switch.



(1) Multi function switch

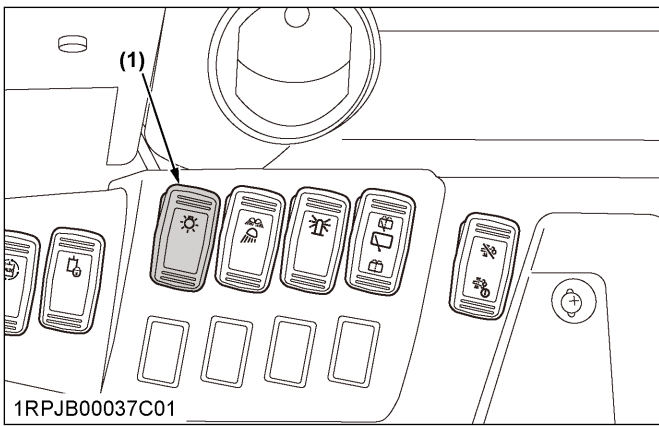
5. Headlight switch

⚠ WARNING

To avoid personal injury or death:

- For night operation, keep all machine-mounted lights operating. Check for burned out lights and replace immediately.

Headlight switch owns 3 positions.
When positioned on your side, the lights stay off.
Move the headlight switch to the first position to turn on the clearance light, and to the second position to turn on the headlights.



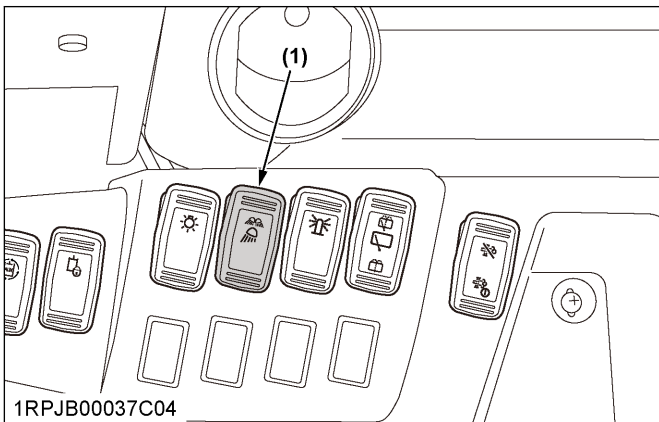
(1) Headlight switch

6. Working light switch

Working-light-switch is operative when the clearance light is lit.

Working-light-switch owns 3 positions.

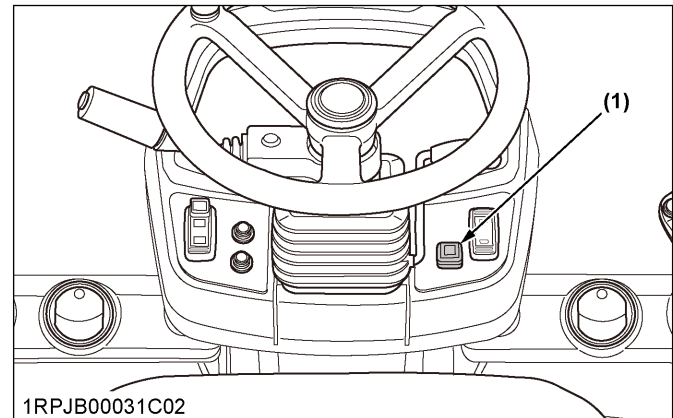
- When positioned on your side, the lights stay off.
- Move the working-light-switch to the first position to turn on the front working light.
- Move the working-light-switch to the second position to turn on both the front working lights and rear working lights.



(1) Working light switch

7. Hazard light switch

Press the hazard-light-switch for the hazard lights to blink.



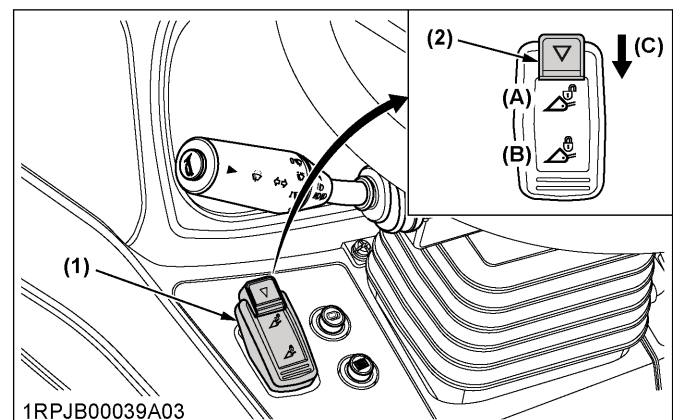
(1) Hazard light switch

8. Attachment unlock switch

The attachment-unlock-switch is applied for hydraulic-quick-coupler.

The attachment-unlock-switch has a guard to protect against inadvertent activation. To press the attachment-unlock-switch, slide the guard. During the attachment-unlock-switch is depressed, an acoustic signal sounds. Apply the attachment-unlock-switch for safety reason when the attachment locking shall be unlocked. The quick coupler is ready for unlocking only while the attachment-unlock-switch is depressed.

For detail procedure, see Attaching the attachments to the quick coupler on page 82.



(1) Attachment unlock switch

(2) Guard

(A) Unlock

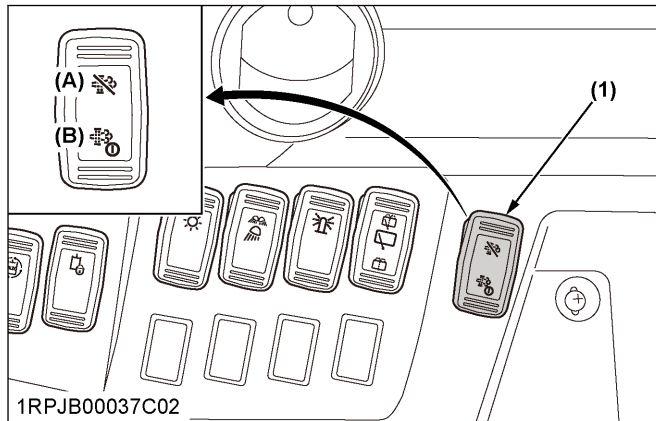
(B) Lock

(C) Slide

9. Diesel particulate filter (DPF) switch

Diesel-particulate-filter (DPF) switch serves to change the DPF regeneration between the "Inhibit Mode" and the "Parked Regeneration Mode".

For detail procedure, see DPF regeneration process on page 56.



(1) DPF switch

(A) Inhibit side
(B) Parked Regeneration side

10. Differential lock switch

! WARNING

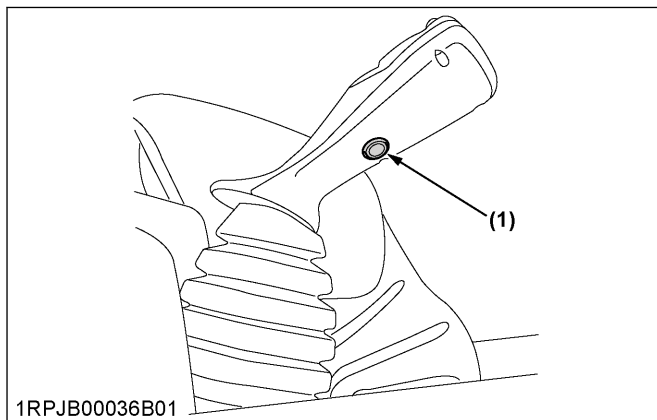
To avoid personal injury or death due to loss of steering control

- Do not lock or unlock the differential while the vehicle is working.
- Do not operate the wheel loader in excess the following speed with differential lock engaged.

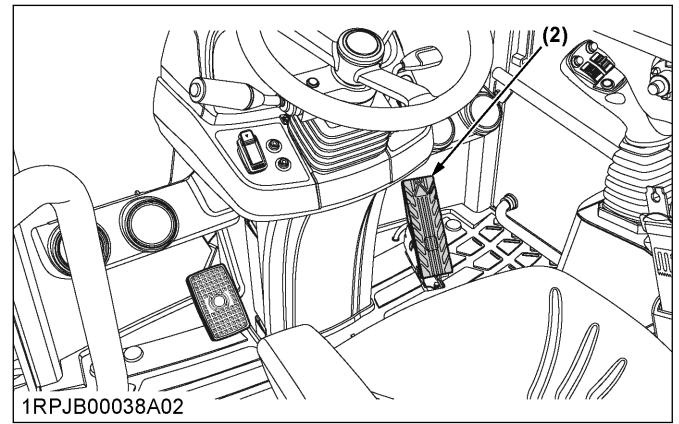
Max. speed	4.6 km/ h (2.9 mph)
------------	------------------------

- Do not lock or unlock the differential when the wheels are spinning, slipping, or losing traction.
- Always unlock the differential as soon as the need for maximum traction has passed and the vehicle is traveling on a good road or highway.

If one of the wheels should slip, release the accelerator pedal and press the differential-lock-switch. Both wheels will turn together, then reduce slippage. Differential lock is available only while the differential-lock-switch is depressed.



1RPJB00036B01



1RPJB00038A02

(1) Differential lock switch

(2) Accelerator pedal

IMPORTANT :

- You can not activate the differential-lock-switch at high-speed-mode.

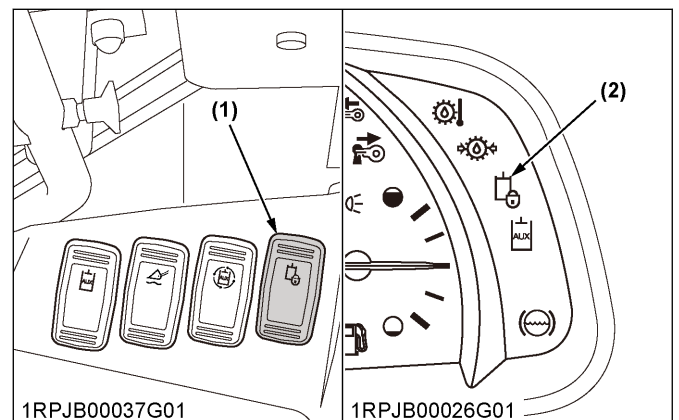
11. Hydraulic lock switch

! WARNING

To avoid personal injury or death:

- To avoid injuries, check safety aspects all around the machine.

When the hydraulic lock switch is engaged, the hydraulic lock indicator light illuminates. When engaged, the lift arm and bucket will not work.



1RPJB00037G01

1RPJB00026G01

(1) Hydraulic lock switch

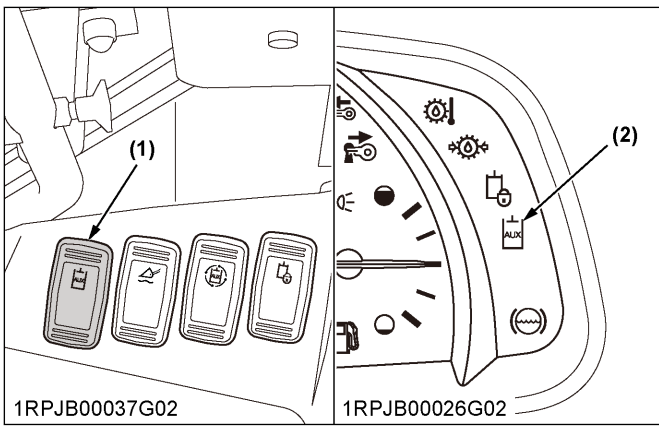
(2) Hydraulic lock indicator

12. AUX port enable switch

Use the AUX-port-enable-switch to enable the AUX port.

1. Press the AUX-port-enable-switch once, and the AUX port is unlocked and the AUX operation indicator on the instrument panel lights up.
2. Pressing the AUX-port-enable-switch again, the AUX port now gets locked.

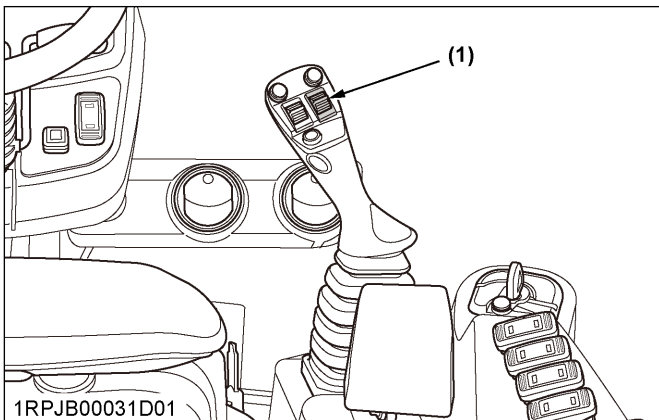
You can use the AUX-port-enable-switch only when the AUX-port-variable-switch on the control lever is in the neutral position.



(1) AUX port enable switch (2) AUX operation indicator

13. AUX port variable switch

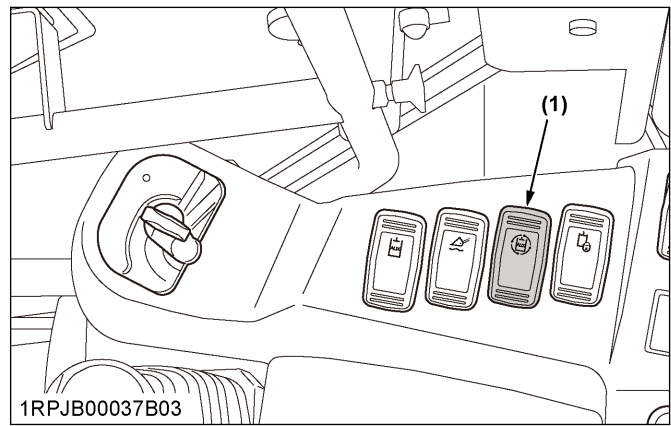
With the AUX port unlocked, flow rate of the hydraulic oil varies depending on the tilt angle of the AUX-port-variable-switch.



(1) AUX port variable switch

14. AUX hold switch

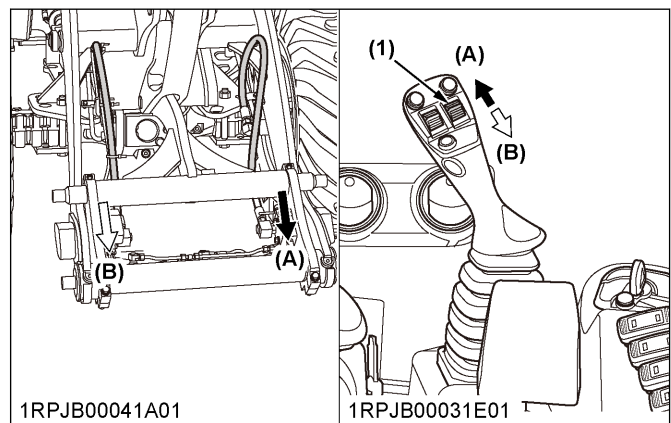
1. Operating the AUX-hold-switch results a maximum oil flow to the port-A.
2. When you operate the AUX-hold-switch again, the oil flow discontinues. Thus, you can operate, for example a sweeper without having to continuously hold the AUX-port-variable-switch forward port-A.



(1) AUX hold switch

NOTE :

- AUX-hold-switch will be canceled, if you operate the AUX-port-variable-switch when press the AUX-hold-switch.



(1) AUX port variable switch

(A) To Port-A
(B) To Port-B

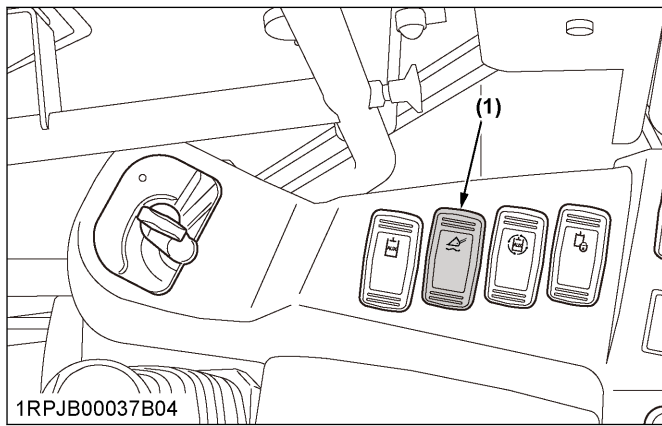
15. Float switch

⚠ WARNING

To avoid personal injury or death:

- Make sure that the bucket is lowered to the ground before putting the lift arms in the "FLOAT" position. Putting the lift arms in the "FLOAT" position while they are off the ground will cause the bucket and lift arms to fall and is extremely dangerous.
- Do not drive the machine forward with the lift arms in the "FLOAT" position.

To fix the float position, press the float switch and the control lever can be held in the float position.

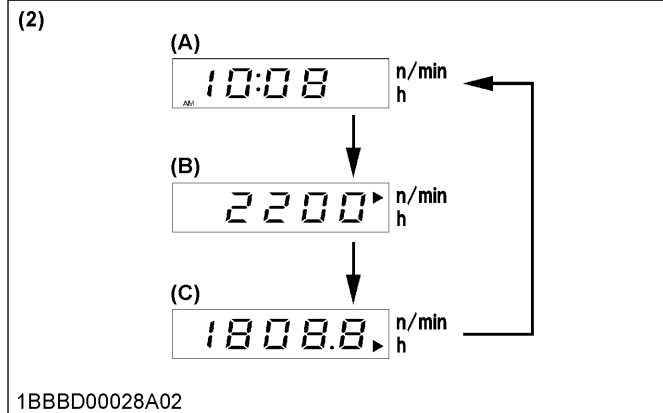
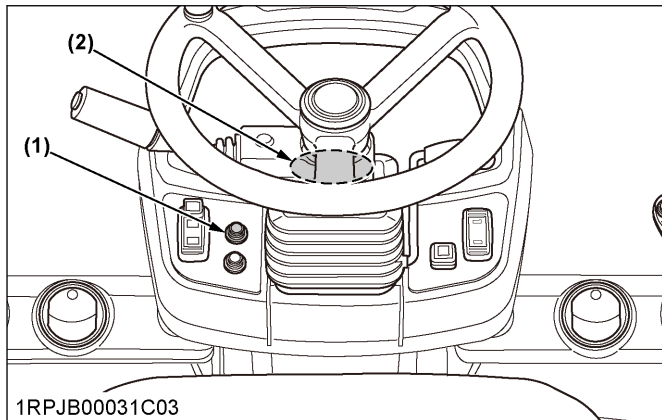


(1) Float switch

16. Display selector switch

When pressing the display-selector-switch, the LCD of the instrument panel will change from 1 indication mode to the other.

Change the 3-mode display according to your jobs.



(1) Display selector switch

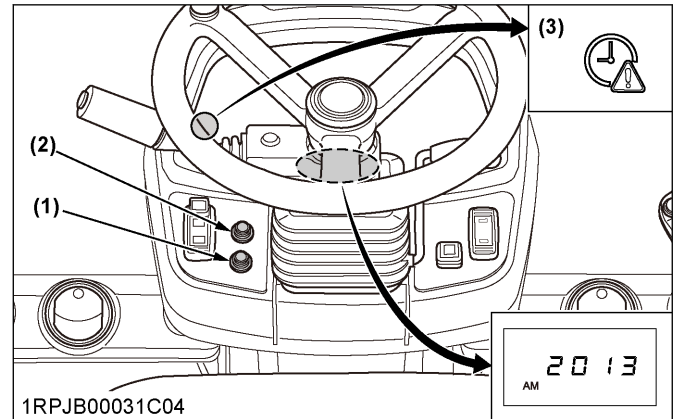
(A) Clock
(B) Tachometer
(C) Hour meter

NOTE :

- With the starter key at the [STOP] position, press the display-selector-switch of the instrument panel, and the LCD shows the hour meter for 15 seconds.

16.1 Setting the clock

- Press the user-setting-switch.
- Select the clock-setting-mode by pressing the display-selector-switch.
The clock-setting-request-indicator  on the instrument panel lights up.



(1) User setting switch

(2) Display selector switch

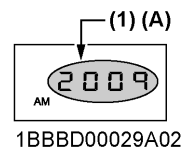
(3) Clock setting request indicator

NOTE :

- Press the display-selector-switch for a long time and the year, month, day, hour, and minute will be selected in this order.
- While setting the clock, the clock-setting-request-indicator  on the instrument panel is blinking.

- Set the year.

- Press the user-setting-switch and the numeric setting will be smaller.
- Press the display-selector-switch and the numeric setting will be larger.



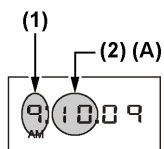
(1) Year

(A) Blinking

User setting switch	Display selector switch
2008	2008
↓	↓
2007	2009
↓	↓
2006	2010

4. Set the month.

- Press the user-setting-switch and the numeric setting will be smaller.
- Press the display-selector-switch and the numeric setting will be larger.



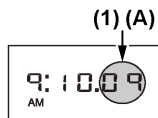
1BBBD00030A02

- (1) One's digit of the year (A) Blinking
(2) Month

User setting switch	Display selector switch
10 ↓	9 ↓
9 ↓	10 ↓
8	11

5. Set the day.

- Press the user-setting-switch and the numeric setting will be smaller.
- Press the display-selector-switch and the numeric setting will be larger.



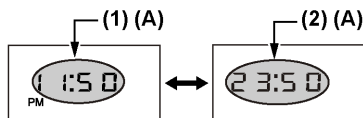
1BBBD00030B02

- (1) Day (A) Blinking

User setting switch	Display selector switch
09 ↓	09 ↓
08 ↓	10 ↓
07	11

6. Change the AM/PM system to the 24-hour system.

- a. Select the AM/PM system or 24-hour system by pressing the display-selector-switch.

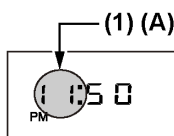


1BBBD00032A02

- (1) AM/PM system (A) Blinking
(2) 24-hour system

7. Set the hour.

- Press the user-setting-switch and the numeric setting will be smaller.
- Press the display-selector-switch and the numeric setting will be larger.



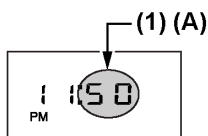
1BBBD00031A03

- (1) Hour (A) Blinking

User setting switch	Display selector switch
11 ↓	10 ↓
10 ↓	11 ↓
9	12

8. Set the minute.

- Press the user-setting-switch and the numeric setting will be smaller.
- Press the display-selector-switch and the numeric setting will be larger.



1BBBD00031A04

- (1) Minute (A) Blinking

User setting switch	Display selector switch
50 ↓	50 ↓
49 ↓	51 ↓
48	52

If you press the display-selector-switch for a long time, the new settings will be decided.

NOTE :

- If the battery is disconnected, the clock-setting-request-indicator  (yellow) will blink for requesting to set the clock.

CHECKS FOR THE INDICATORS

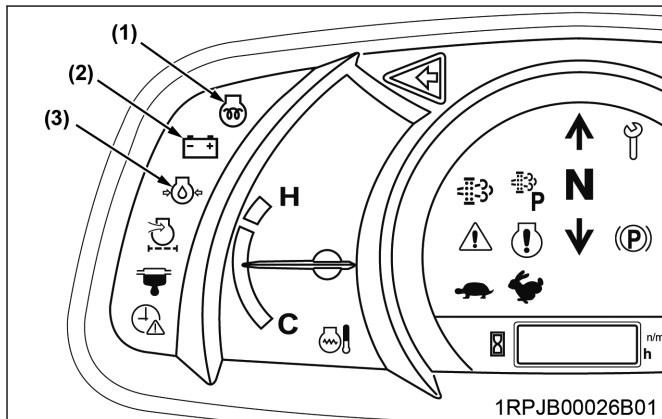
1. Battery charge indicator

The battery-charge-indicator lights up if the charging system fails with the engine running.

When the starter switch is turned to [RUN] with the engine off, the battery-charge-indicator lights up, and when the engine starts, the battery-charge-indicator goes out. If the battery-charge-indicator stays on with the engine running, stop the engine and check the fan belt.

NOTE :

- If there is disconnection or failure in the charging system when the starter key is turned to [RUN], the following symbol will appear.



(1) Glow plug indicator
(2) Battery charge indicator

(3) Engine oil pressure warning indicator

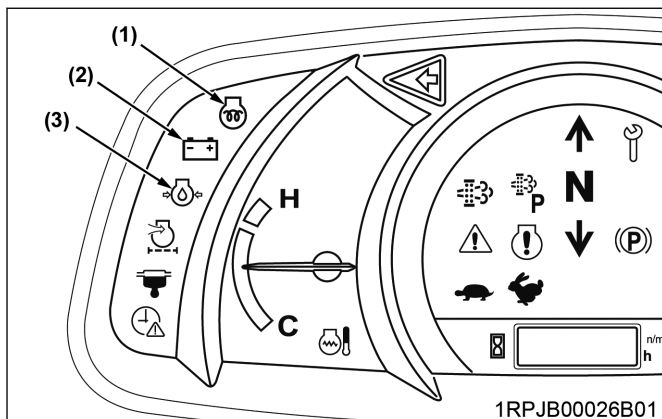
2. Engine oil pressure warning indicator

The engine-oil-pressure-warning-indicator lights up due to failure of the lubricating system with the engine running.

When the starter switch is turned to [RUN] with the engine off, the engine-oil-pressure-warning-indicator lights up, and when the engine starts, the engine-oil-pressure-warning-indicator goes out. If the engine-oil-pressure-warning-indicator stays on with the engine running, stop the engine and check the level of the engine oil.

NOTE :

- If there is disconnection, failure or breakdown in the lubricating system when the starter key is turned to [RUN], the following symbol will appear.



(1) Glow plug indicator
(2) Battery charge indicator

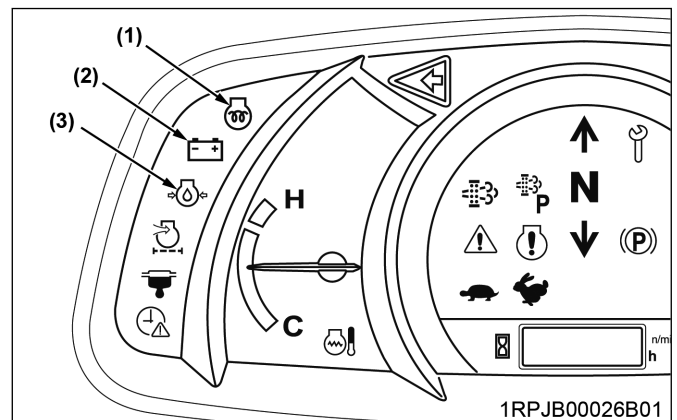
(3) Engine oil pressure warning indicator

3. Glow plug indicator

With the starter key at the [RUN] position, the preheat status of the engine is indicated.

NOTE :

- When the starter switch is turned to the [RUN] position, the engine will be preheated for a given period of time and the glow-plug-indicator will turn on.
- The indication of the glow-plug-indicator appears momentarily when the engine is started, but it does not indicate trouble. This is because the oil-charge-sensor output fluctuates when the engine is started.
- The following symbol appears momentarily when the engine starts. This symbol appearing is not an error.



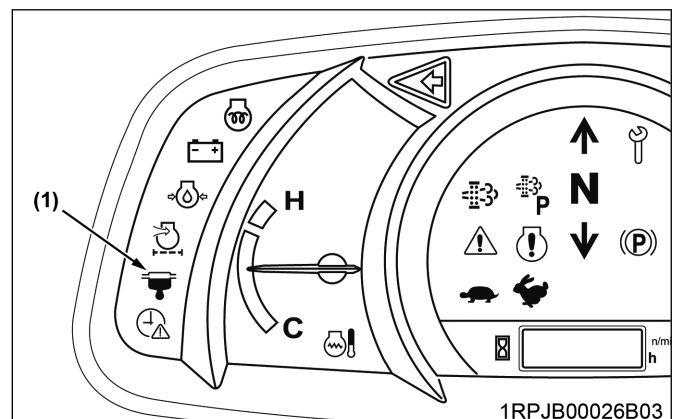
(1) Glow plug indicator
(2) Battery charge indicator

(3) Engine oil pressure warning indicator

4. Water separator filled-up indicator

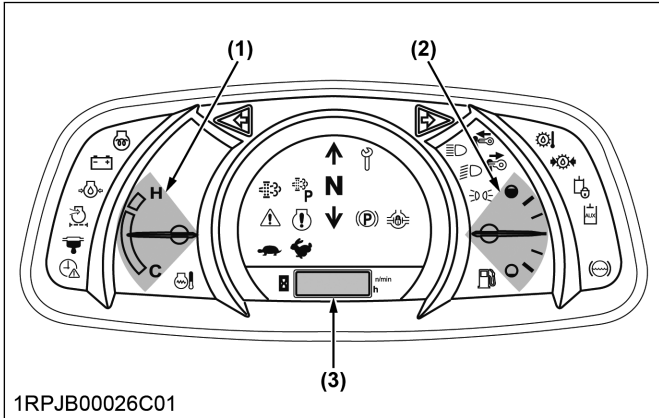
When the water separator is filled up, the water-separator filled-up indicator lights up.

If the water-separator filled-up indicator lights up, drain the water separator according to Draining the water separator on page 110.



(1) Water separator filled-up indicator

5. LCD for normal operation



(1) Coolant temperature gauge (3) LCD
(2) Fuel gauge

NOTE :

- The LCD may be illegible when viewed from a certain angle. The illegible condition is not a display failure.

5.1 Fuel gauge

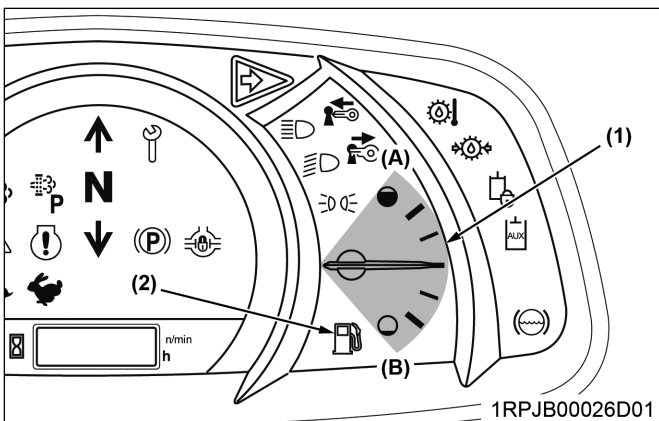
WARNING

To avoid personal injury or death:

- Before adding the fuel, be sure to stop the engine.
- Be sure to keep open flames away from the machine. Otherwise a fire may result.

If the fuel in the tank goes below the prescribed level, the fuel-stock-indicator will turn on.

If fuel-stock-indicator should turn on during operation, refuel as soon as possible.



(1) Fuel gauge (A) Full
(2) Fuel stock indicator (B) Empty

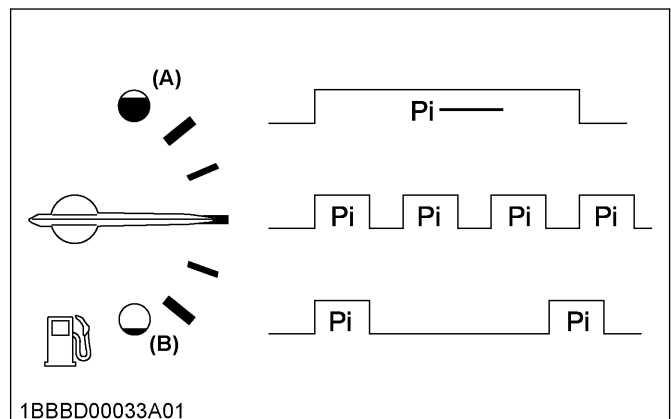
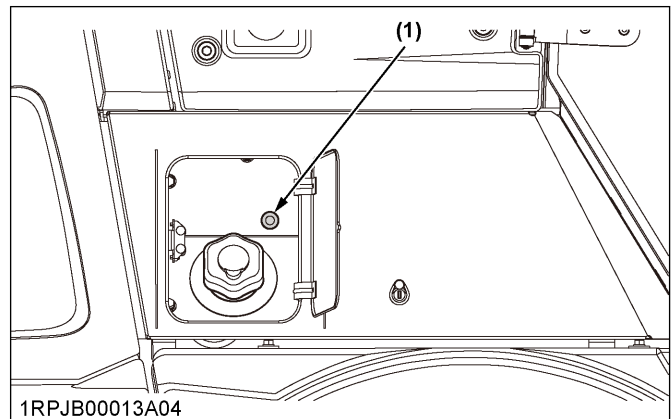
IMPORTANT :

- If the fuel-gauge-indicator is near the , add fuel as soon as possible. If the indicator of fuel gauge is near  and the machine operates on a slope, the engine may run out of fuel.

5.1.1 How to use the fuel level audible indication switch

You can use the fuel-level-audible-indication-switch to check the fuel level when refueling.

- With the starter key at the **[STOP]** position, press the fuel-level-audible-indication-switch. you can check the fuel level with buzzer sound.
- Start refueling the machine.
The buzzer beeping intervals vary according to how much fuel is poured into the tank. As the machine becomes filled up, the buzzer sounds almost continuously.
- While refueling the machine, listen to the buzzer sound to know how much the fuel tank is filled.
If fuel is poured too slowly, the buzzer sound gets interrupted. When fuel is poured again as usual, the buzzer restarts sounding.
- To stop refueling halfway before filling up, press the fuel-level-audible-indication-switch or leave as it is (not refueling) for a while.
The buzzer stops sounding.



(1) Fuel level audible indication switch (A) Full
(B) Empty

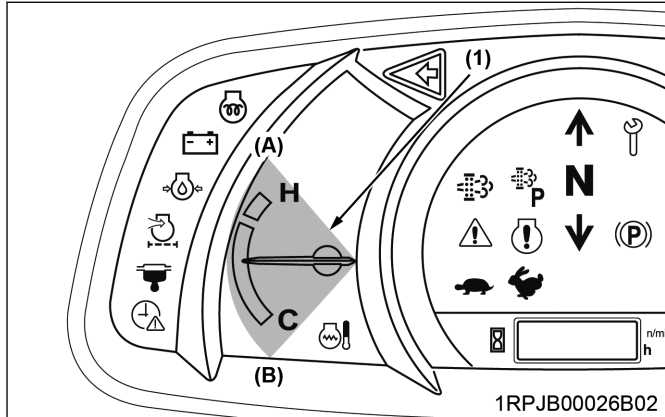
5.2 Coolant temperature gauge

With the starter key at the **[RUN]** position, the coolant-temperature-gauge indicates the cooling water temperature.

WARNING

To avoid personal injury or death:

- Do not open the radiator cap during or just after operation. Hot coolant may gush out and scald you. Wait for the coolant to cool down before opening the radiator cap.



(1) Coolant temperature gauge (A) Hot
(B) Cool

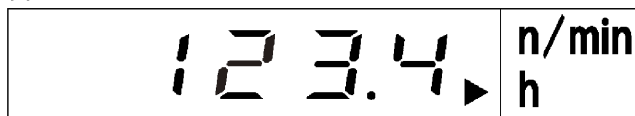
5.3 Hour meter

Hour meter indicates the total operating hours of the machine.

How the indicator works

The meter advances one hour after an hour of operation regardless of rpm of the engine.

(1)



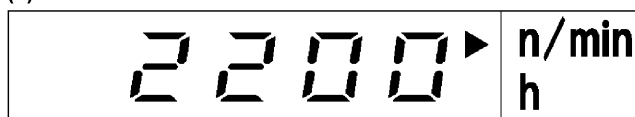
1BBBD00034A02

(1) Operation hour

5.4 Engine tachometer

Engine tachometer indicates the current rpm of the engine.

(1)



1BBBD00035A02

(1) Engine rpm

6. LCD for warning

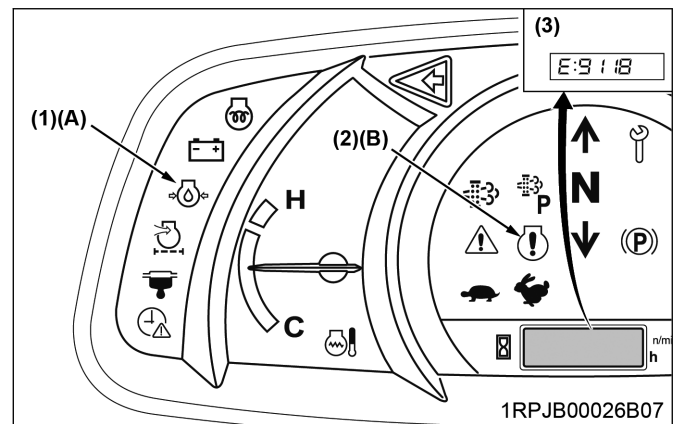
6.1 Engine oil pressure warning indicator

The engine-oil-pressure-warning-indicator lights up due to failure of the lubricating system with the engine running.

When the starter key is turned to the **[RUN]** position with the engine off, the engine-oil-pressure-warning-indicator lights up and the engine-warning-indicator blinks.

When the engine starts, the engine-oil-pressure-warning-indicator and the engine-warning-indicator go out.

If the engine-oil-pressure-warning-indicator stays on with the engine running, stop the engine and check the level of engine oil.



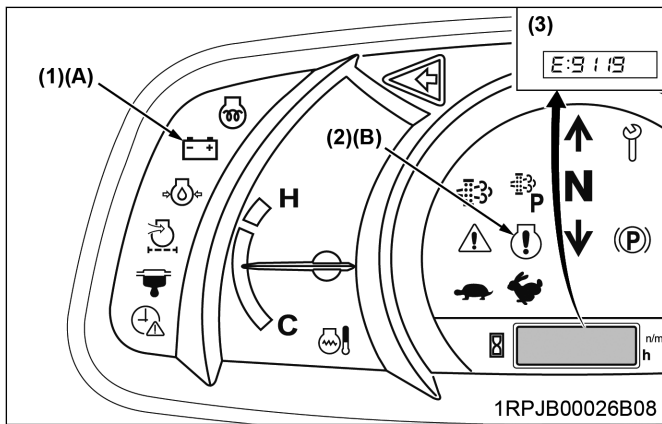
(1) Engine oil pressure warning indicator (A) Lighting
(B) Blinking
(2) Engine warning indicator (red)
(3) Warning message

6.2 Battery charge indicator

The battery-charge-indicator lights up if the charging system fails with the engine running.

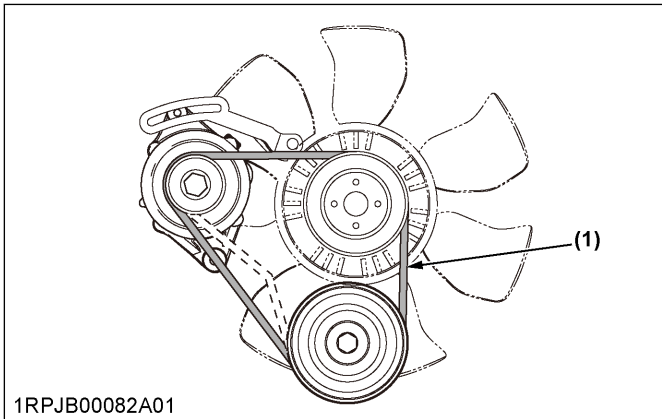
When the starter key is turned to the **[RUN]** position with the engine off, the battery-charge-indicator lights up and the engine-warning-indicator blinks.

When the engine starts, the battery-charge-indicator and the engine-warning-indicator go out.



- (1) Battery charge indicator (A) Lighting
 (2) Engine warning indicator (B) Blinking (red)
 (3) Warning message

If the battery-charge-indicator stays on with the engine running, stop the engine and check the fan belt.
 (See Checking the fan belt tension on page 114.)



- (1) Fan belt

7. Warning indicator

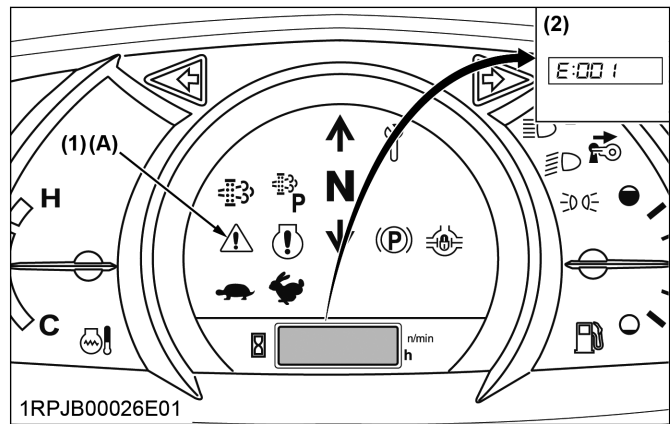
The warning indicator indicates broken wire, short-circuit, fuel shortage, and other problems.

IMPORTANT :

- Do not just look at the meter, but also inspect and correct accordingly.

NOTE :

- The warning indicator starts flashing in red if a serious problem occurs. If the system gets in warning signal, the warning indicator starts flashing in yellow.
- Warnings and errors are displayed and an alarm buzzer beeps.
- Let your KUBOTA dealer inform you of details concerning care and maintenance.

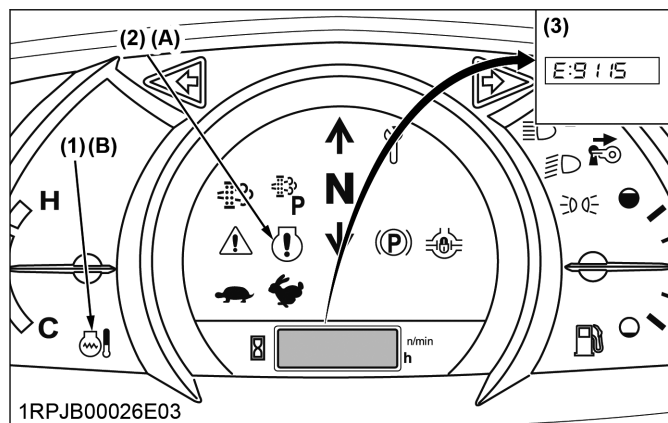
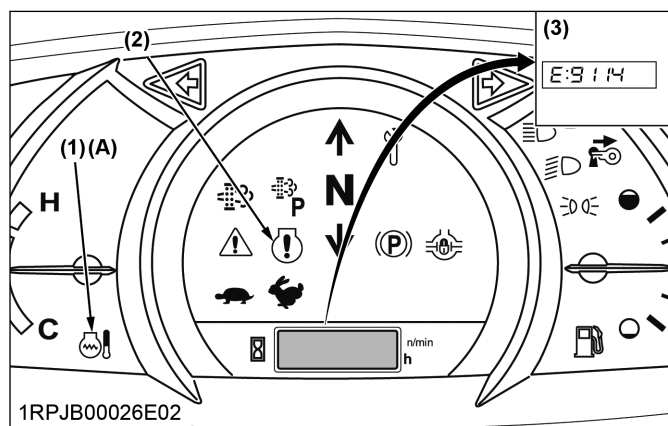


- (1) Warning indicator (red) (A) Blinking
 (2) Warning message

7.1 Overheat warning

- If the coolant temperature becomes elevated, the coolant-temperature-warning-indicator blinks and the warning message "E:9114" appears on LCD as long as the temperature remains elevated.
- If the coolant temperature further increases, the coolant-temperature-warning-indicator lights up, the engine-warning-indicator blinks, and the warning message "E:9115" appears on LCD as long as the coolant temperature remains elevated.

Operate the machine only with reduced loads until the operating temperature is normal again.



- (1) Coolant temperature warning (A) Blinking indicator (B) Lighting
 (2) Engine warning indicator
 (3) Warning message

CHECKS FOR THE SAFETY LEVERS AND THE APPLIANCE

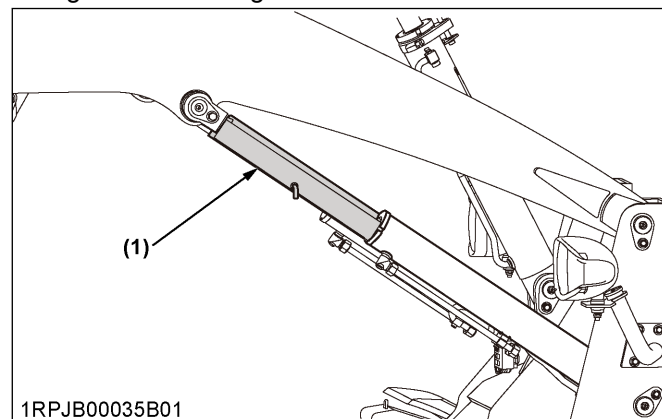
1. Safety key start system

Safety-key-start system is the safety system to prevent the machine from moving suddenly.

The safety-key-start system does not allow the engine to start when the parking brake is released.

2. Lift arm support

The lift-arm-support prevents the loader lift arms from falling when servicing the machine.



(1) Lift arm support device

2.1 Installing the lift arm support

WARNING

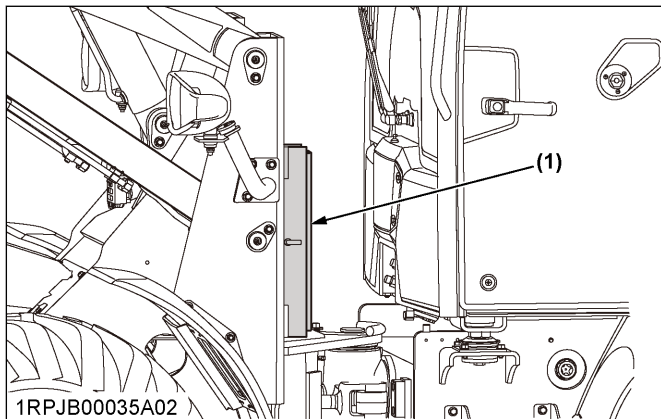
To avoid personal injury or death:

- Before installing the lift-arm-support, remove the front attachment, set the direction switch to the neutral position, and remove the starter key.

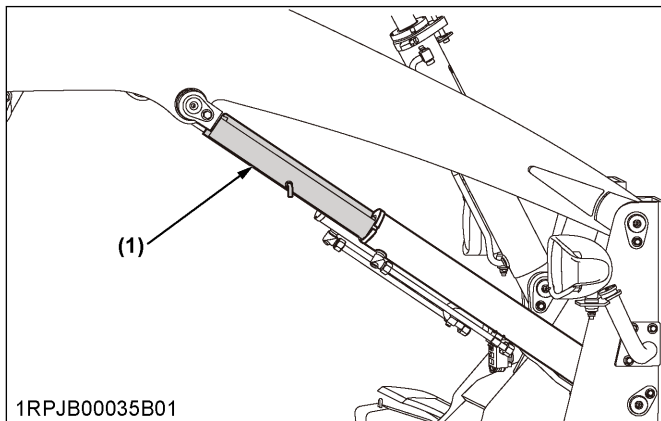
1. Remove the front attachment.
2. Raise the loader lift arms completely.
3. Stop the engine and remove the starter key.
4. Insert the lift-arm-support onto the lift-cylinder-rod.
5. Install the pin and snap pin in the lift-arm-support.

6. Slowly lower the loader lift arms onto the lift-arm-support.

Storage position



Installed position



(1) Lift arm support device

3. Steering frame lock

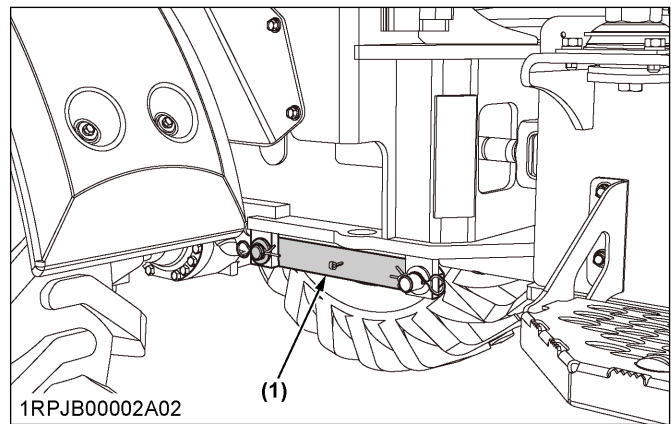
Steering-frame-lock locks the front and rear frames together to prevent the frames from articulating unexpectedly during servicing, hauling, or transporting the machine.



WARNING

To avoid personal injury or death:

- Secure the steering-frame-lock before servicing, hauling, or transporting the machine.



(1) Steering frame lock

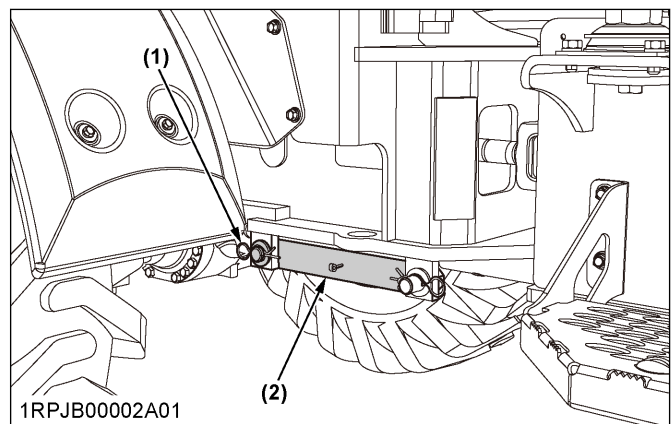
IMPORTANT :

- Store the steering-frame-lock securely after use.

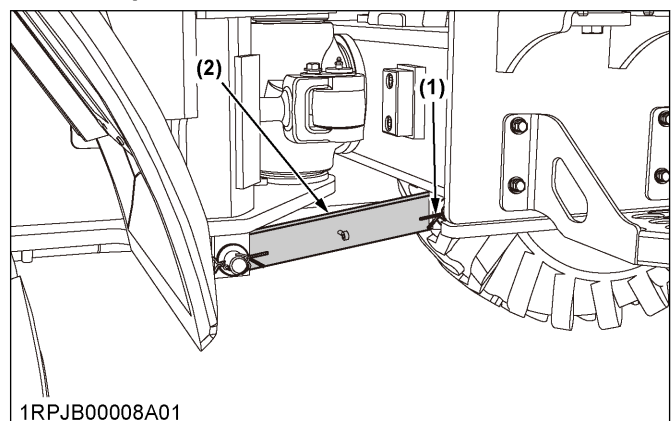
3.1 Attaching the steering frame lock

- Align the front and rear frames.
- Shut off the engine and remove the starter key.
- Attach the steering-frame-lock with snap pins.
- If holes are not aligned, move the steering wheel slightly with the engine off.

Storage position



Attached position



(1) Snap pin

(2) Steering frame lock

CABIN TYPE MACHINE

1. Front wiper / washer system [Cabin type only]

Before moving the windscreen wiper, make sure that the starter key is at the **[RUN]** position and then turn on the front-wiper-system.

Position [0]

The wiper is in neutral.

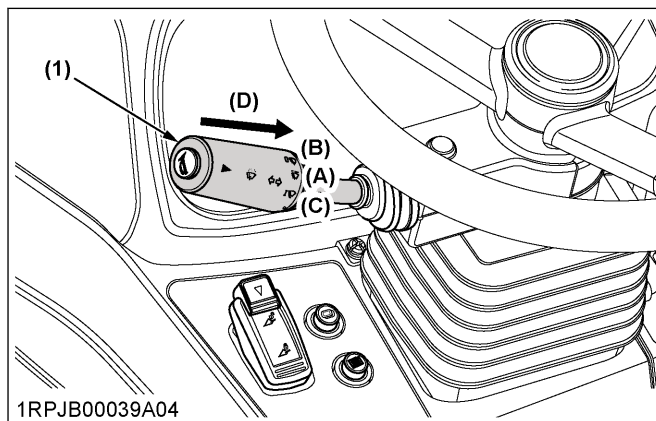
Position

The wiper moves at regular intervals.

Position [I]

The wiper moves at normal speed.

- Push the multi-function switch toward the steering wheel, and the front-washer-system gets starts.
- Do not activate the front-washer-system if the tank for the cleaning fluid is empty. The pump can be damaged.
- Do not activate the front-wiper-system if the window is dry. In this case, make sure that cleaning fluid is applied to the window pane before activating the wiper.
- In frosty conditions, make sure that the wiper blade is not frozen to the glass before switching-on. The motor can be damaged if the wiper system is used under such conditions.



(1) Multi function switch

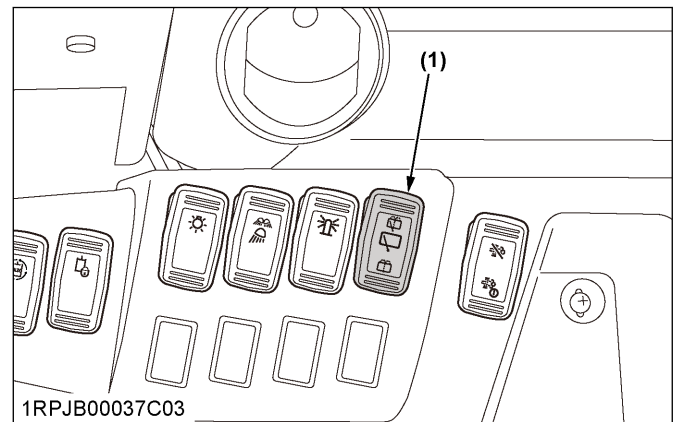
- (A) Position 
 (B) Position 0
 (C) Position I
 (D) Front washer system

2. Rear wiper / washer system [Cabin type only]

1. To move the rear wiper, turn on the rear wiper / washer system for the rear wiper when the starter key in position **[RUN]**.
2. A further push on the rear wiper / washer switch will activate the washer system.

Even when the rear-wiper-switch is in position "OFF", the rear-washer-system functions if it is pressed.

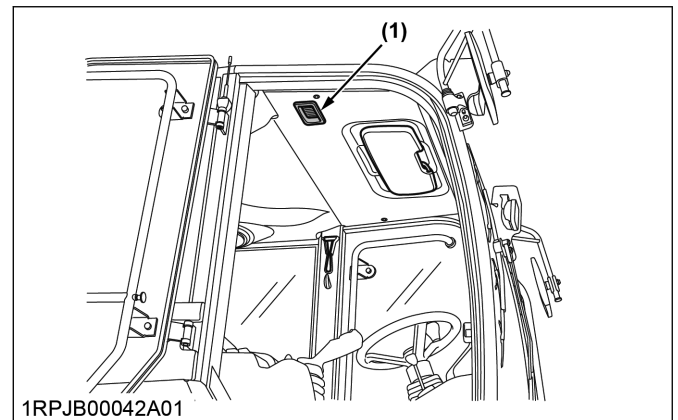
- Do not activate the rear-washer-system if the tank for the cleaning fluid is empty. The pump can be damaged.
- Do not activate the rear-wiper-system if the window is dry. In this case, make sure that cleaning fluid is applied to the window pane before activating the wiper.
- In frosty conditions, make sure that the wiper blade is not frozen to the glass before switching-on. The motor can be damaged if the wiper system is used under such conditions.



(1) Rear wiper / washer switch

3. Interior lamp [Cabin type only]

1. Press the interior lamp itself, and the interior lamp lights up.
2. Press the interior lamp again to turn it off.

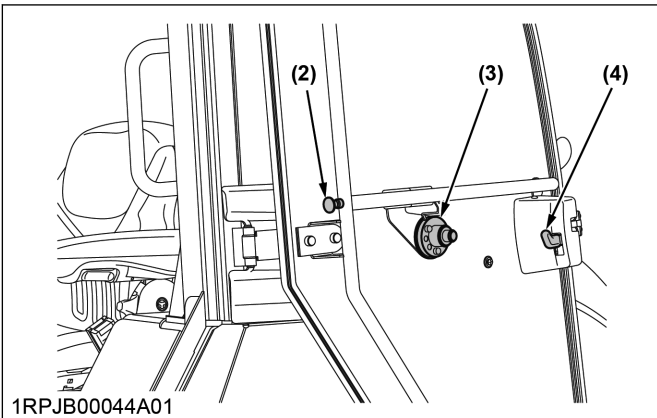
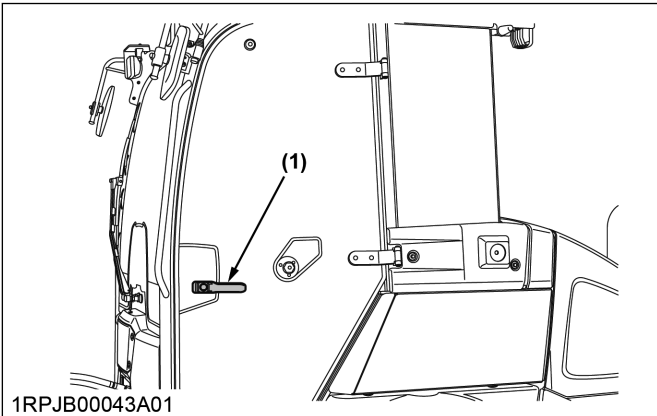


(1) Interior lamp

4. Opening and closing the cabin door [Cabin type only]

1. Unlock the cabin door and pull the door knob.
2. Open the cabin door fully until fixed into place.

3. To close the cabin door, push the release lever down and close the cabin door.

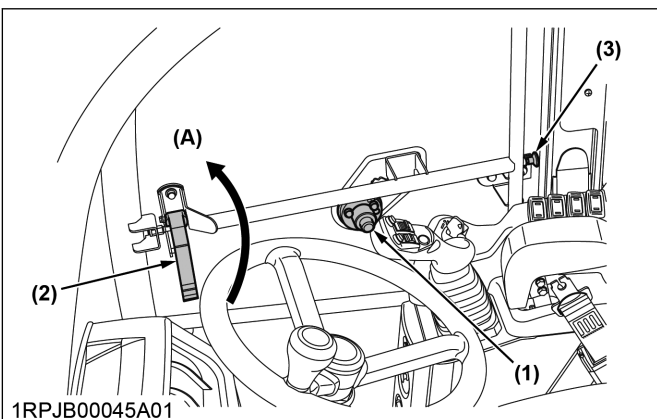


- (1) Door knob (outside) (4) Door knob (inside)
 (2) Release lever
 (3) Release button

4. When leaving the wheel loader, always lock the cabin door.

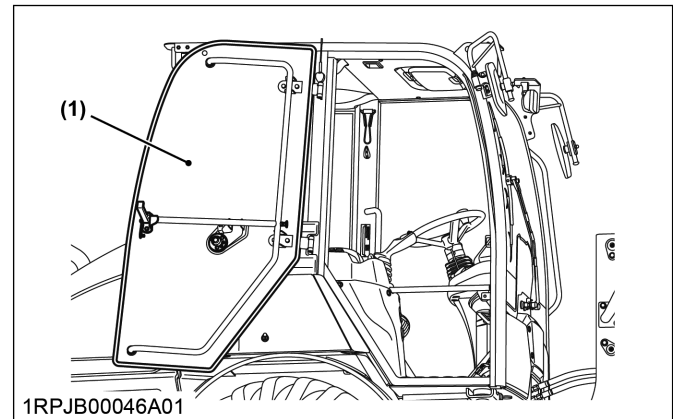
5. Opening and closing the side cabin window [Cabin type only]

1. Press the release button and pull the grip to unlock the side cabin window.



- (1) Release button (A) Pull
 (2) Grip
 (3) Release lever

2. Push side cabin window by release lever to open.



- (1) Side cabin window

3. To close the side cabin window, pull it by the release lever until the lock snaps in at the window frame.

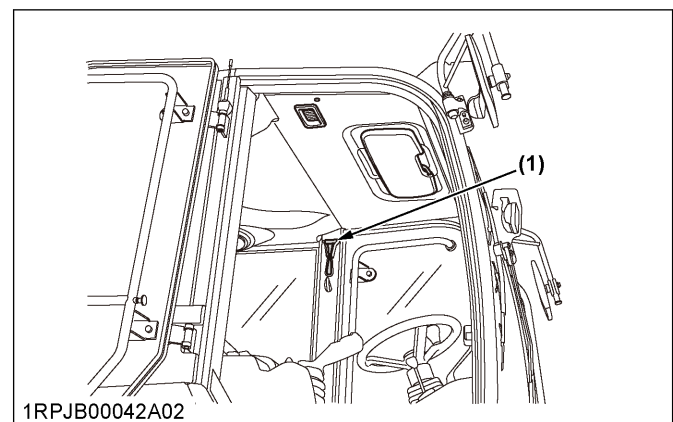
6. Emergency hammer [Cabin type only]

Emergency hammer is for breaking the window pane to escape from wheel loader if the window-rail-locking mechanism should fail.

WARNING

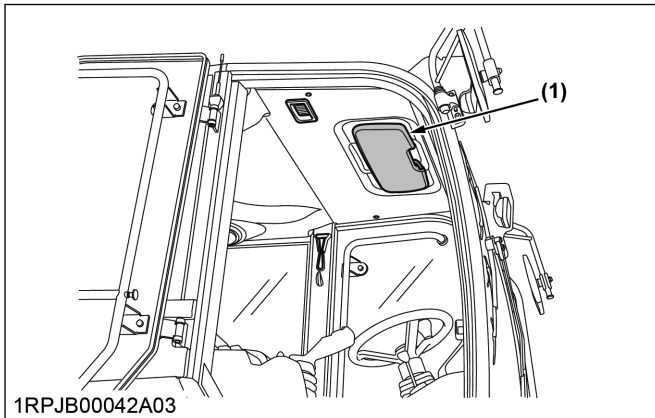
To avoid personal injury or death:

- When breaking the window pane, close your eyes and cover them with an arm.



- (1) Emergency hammer

7. Sun visor [Cabin type only]

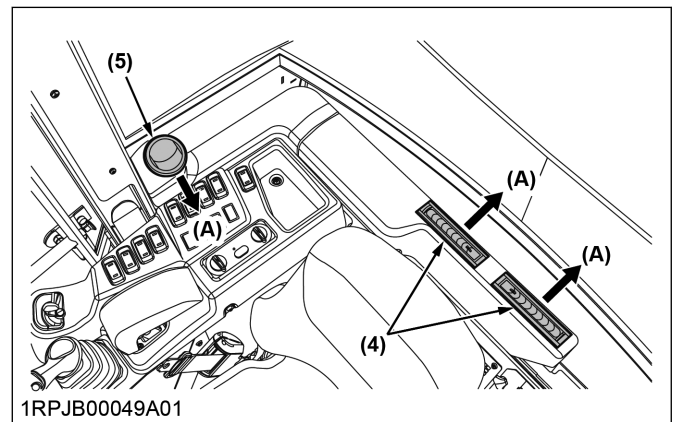
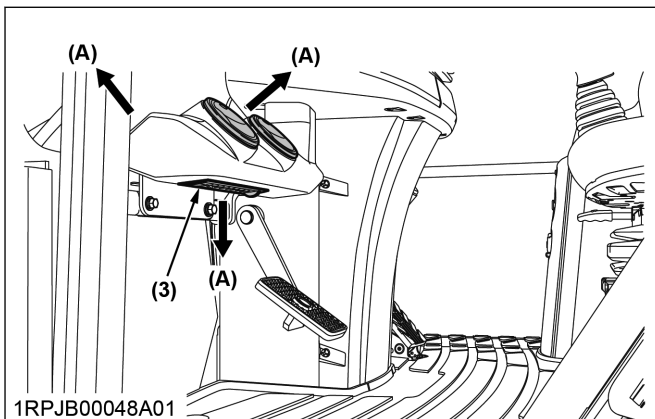
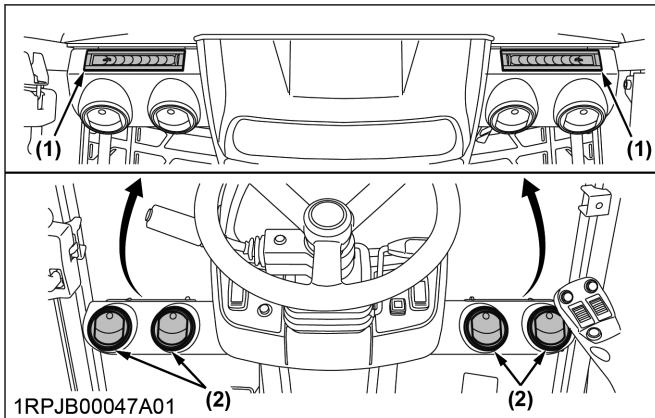


(1) Sun visor

CHECKS FOR THE AIR CONDITIONER

1. Air flow of the air conditioner [Cabin type only]

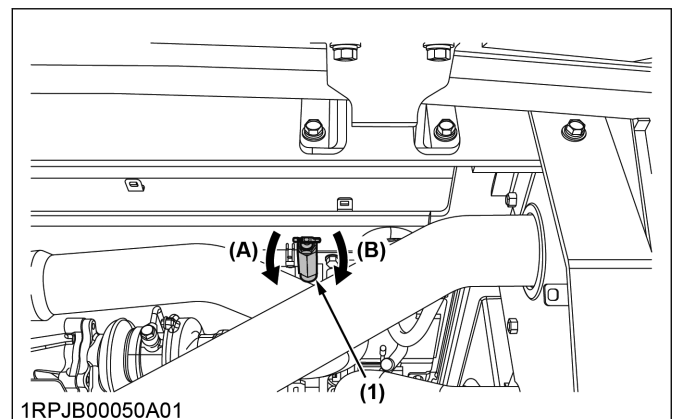
Air in the cabin and fresh air introduced into the cabin flow as shown in the following figure. Adjust the 11 air ports to obtain the desired condition.



- (1) Wind shield (for defrost of front window) (A) Air direction
 (2) Chest area
 (3) Foot area
 (4) Wind shield (for defrost of rear window)
 (5) Chest area (rear)

IMPORTANT :

- Do not pour water directly into the fresh-air-port while washing the vehicle.
- During the summer, turn the heater valve clockwise to close the valve.



- (1) Heater valve
 (A) Open
 (B) Close

1.1 Recirculation / fresh air selection lever [Cabin type only]

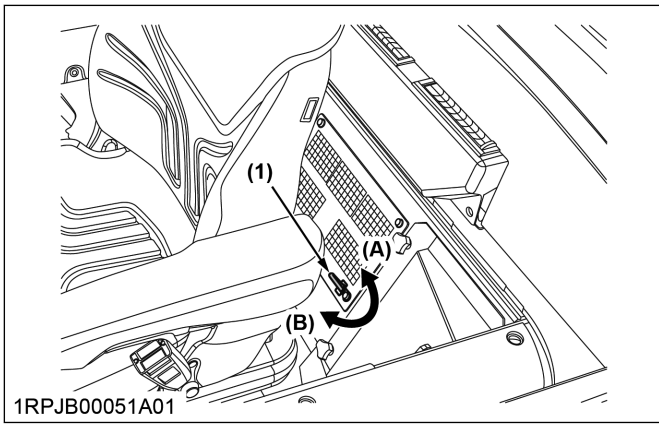
Turn the recirculation / fresh air selection lever, and you can switch "RECIRCULATION" and "FRESH AIR" each other.

FRESH AIR

Fresh air will flow into the cabin. This is helpful when you work in dusty condition or if the glass windows get foggy.

RECIRCULATION

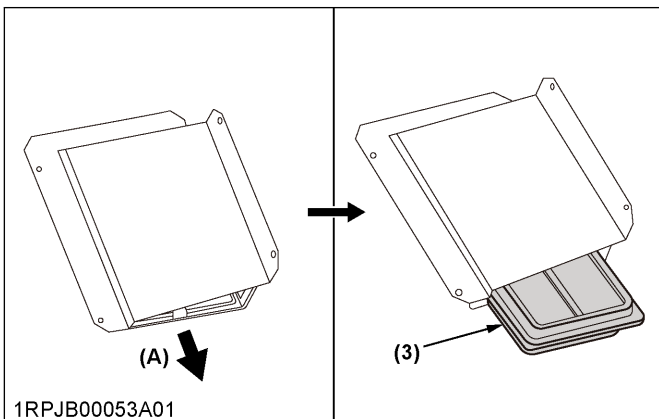
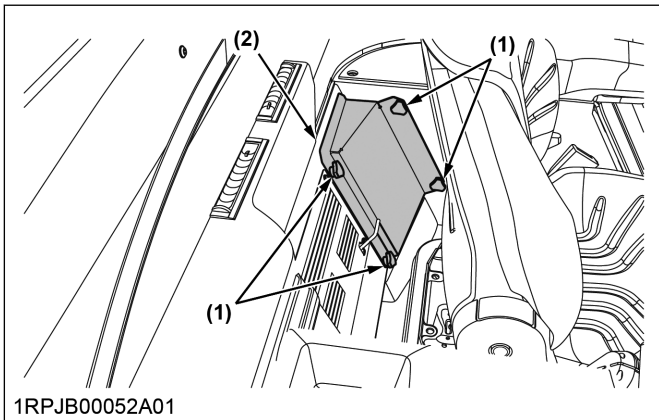
In-cabin air will be recirculated. This is useful for cooling or heating the cabin quickly or keeping it extra cool or warm.



(1) Recirculation / fresh air selection lever (A) RECIRCULATION position
(B) FRESH AIR position

1.2 How to change the filter of air conditioner [Cabin type only]

- To replace the filter, loosen the knob bolts first and then remove the cover as shown in the following figures.



(1) Knob bolt (A) Pull
(2) Cover
(3) Filter

2. Air control vent [Cabin type only]

! WARNING

To avoid personal injury or death:

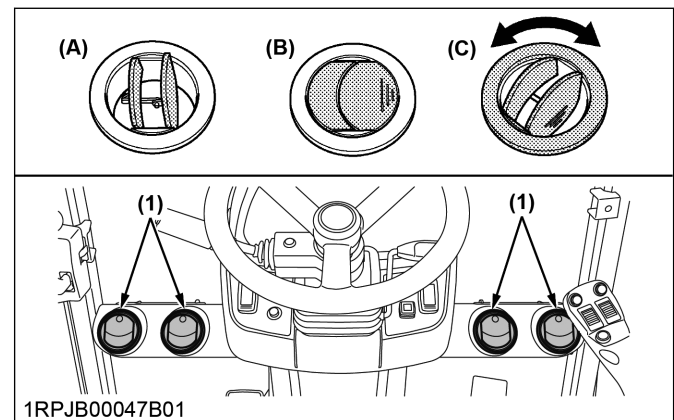
- Daily inspection

Have the wheel loader repaired immediately if any of the following malfunctions are discovered. Such malfunctions may cause burns or injury. They may also cause engine seizure or other serious failure.

- Scratches, cracks, or swelling in water hoses
- Water leakage at water-hose joints
- Missing or damaged water-hose protective wrap or grommets
- Loose mounting bolts and damaged brackets
- Do not touch the water hoses and the heater with your hand. You may get burned.
- If the window fails to defrost in extreme conditions or becomes cloudy when dehumidifying the cabin, wipe off moisture with a soft cloth.

Dashboard air outlet

You can independently adjust the air outlets of dashboard as required.

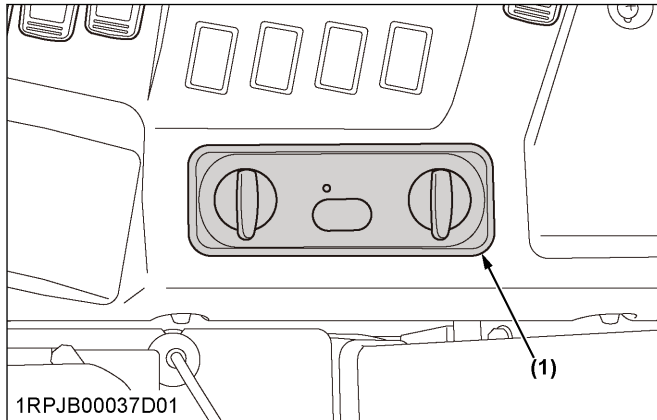


(1) Air outlets (A) Open
(B) Shut
(C) Turn

IMPORTANT :

- Replace the water hoses every 2 years.
- Do not block all the air outlets of the air conditioner. A problem could occur.

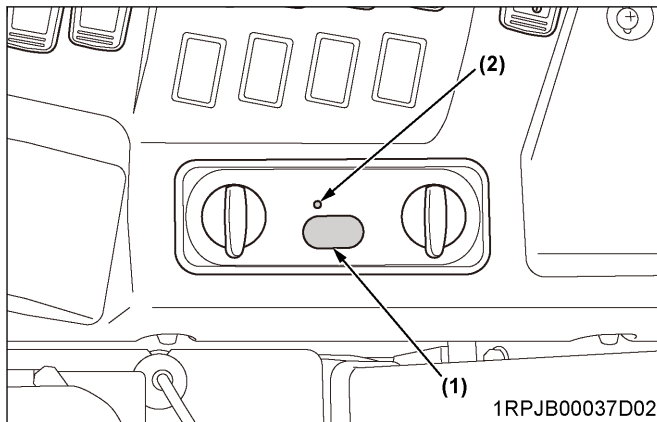
3. Control panel [Cabin type only]



(1) Control panel

3.1 Air conditioner switch and indicator light [Cabin type only]

1. Push the air-conditioner-switch to activate the air conditioner.
An indicator light will light up when the air-conditioner-switch is set to "ON".
2. Push the air-conditioner-switch again to turn the air conditioner off.
The indicator light will go off.



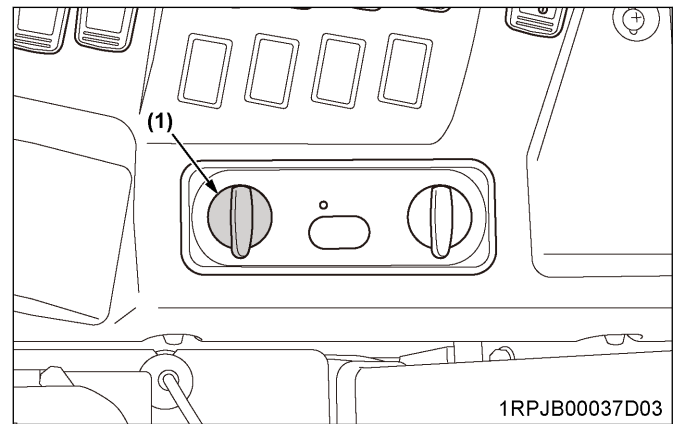
(1) Air conditioner switch

(2) Indicator light

3.2 Temperature control dial [Cabin type only]

Set the temperature-control-dial at the desired position to obtain the desired air temperature.

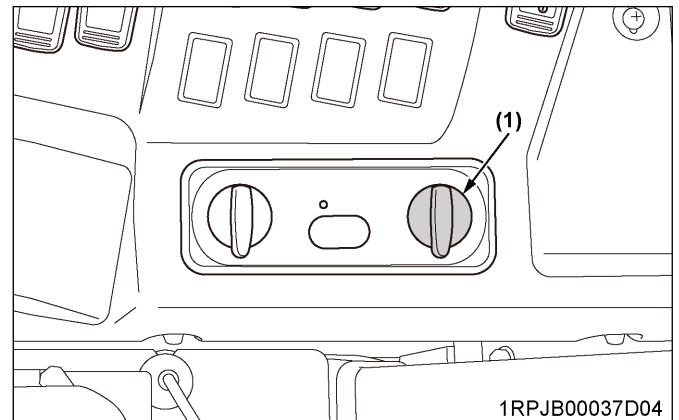
- Turn the temperature-control-lever to the left to obtain cooler air.
- Move the temperature-control-dial to the right to obtain warmer air.



(1) Temperature control dial

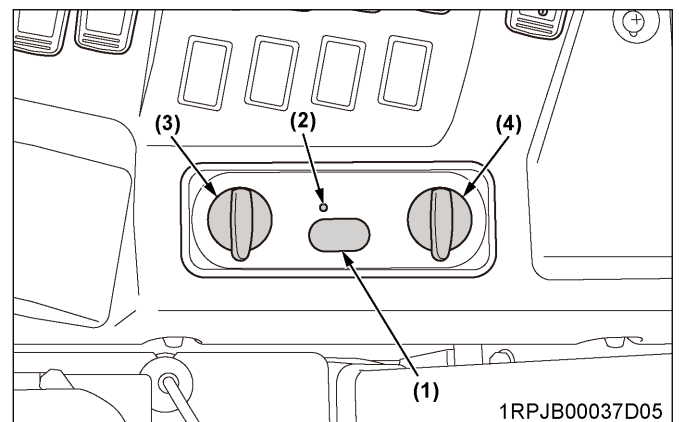
3.3 Blower switch [Cabin type only]

You can change the air volume in 3 steps. At the [3] position of the blower switch, you can obtain the largest air volume.



(1) Blower switch

3.4 Operating the control panel [Cabin type only]



(1) Air conditioner switch

(2) Indicator light

(3) Temperature control dial

(4) Blower switch

Heating

1. Adjust the blower switch ([1], [2], or [3]) and the temperature-control-dial to achieve the desired temperature level.

Dehumidifying-heating

1. Press and turn on the air-conditioner-switch.
2. Turn on the blower switch ([1], [2], or [3]).
3. Adjust the temperature-control-dial to achieve the desired temperature level.

NOTE :

- **Be sure to close the door while the air conditioner is “ON”. Otherwise you may overload the compressor.**

Cooling

1. Press and turn on the air-conditioner-switch.
2. Turn on the blower switch ([1], [2], or [3]).
3. Adjust the temperature-control-dial to achieve the desired temperature level.

NOTE :

- **If the vehicle has been not used for a long time (longer than 1 week) and the air conditioner will be not used, turn on the air-conditioner-switch under the engine idling. This method is to protect the compressor.**

Defrosting or demisting

To defrost or demist the windshield, take the following steps.

1. Open the front air outlet and direct it to the windshield.
2. Set the blower switch to the [3] and the temperature-control-dial to the “WARM” (rightmost) positions, respectively.

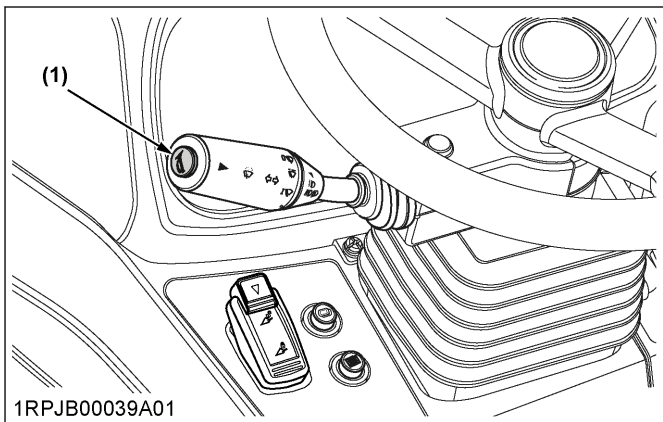
OPERATION OF THE ENGINE

PRECAUTIONS FOR OPERATING THE ENGINE

WARNING

To avoid personal injury or death:

- To avoid the danger of exhaust fumes (carbon monoxide) poisoning, do not operate the machine in a closed building or any closed area without proper ventilation.
- Always start the engine from the operator's seat. Do not start the engine while standing next to the machine. Before starting the engine, sound the horn to get the attention of persons standing nearby.



(1) Horn switch

IMPORTANT :

- Do not use starting fluid or ether.
- In order not to overload the battery and starter, avoid start-ups of more than 10 sec.
- When the engine does not start in 10 sec., please wait 20 sec. or more, before restarting.

EXHAUST AFTERTREATMENT DEVICES

WARNING

To avoid personal injury or death:

- During the diesel-particulate-filter (DPF) regenerating operations, exhaust gases and exhaust-filter components reach temperatures hot enough to burn people, or ignite or melt common materials.

- Keep the machine away from people, animals, or structures which may be susceptible to harm or damage from hot exhaust gases.
- During regeneration, white exhaust gases may be visible. Do not allow the regeneration in a non ventilated garage or confined area.
- During regeneration, do not leave the machine.

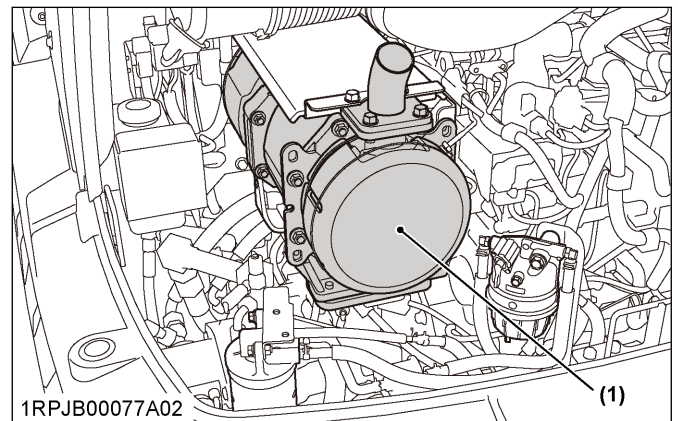
1. Diesel oxidation catalyst and diesel particulate filter (DPF) muffler

The diesel-oxidation-catalyst and diesel-particulate-filter (Hereinafter called DPF) serves to reduce hydrocarbons, carbon monoxide, and other toxic gases, all of which are contained in emissions of the diesel engine, to harmless carbon dioxide and water. The DPF also traps particulate matter (PM).

To meet the emission regulations in your country, the DPF is installed on your wheel loader.

Be sure to read this operator's manual before running in your machine.

It is imperative for the machine owner and operator to handle the DPF in a safe and environmentally responsible manner.



(1) Diesel particulate filter (DPF)

NOTE :

- When the DPF has trapped a specific amount of particulate matter (PM), the engine computer starts the process of regeneration or burning of soot collected by the filter. This burning process is called regeneration.

2. Handling points for DPF regeneration

Fuel

Be sure to use the ultra-low sulfur fuel (S15).

IMPORTANT :

- According to the following temperatures, use the proper fuel as follows.

Temperatures	Fuel
Over -5 °C (23 °F)	No.2-D diesel fuel
Under -5 °C (23 °F)	No.1-D diesel fuel.

- Use of diesel fuel other than ultra-low sulfur fuel may adversely affect the engine and DPF performance.
Use of fuels other than ultra-low sulfur fuel (S15) may not meet regulations for your region.

Engine oil

Use the DPF-compatible oil (CJ-4 or CK-4) for the engine.

IMPORTANT :

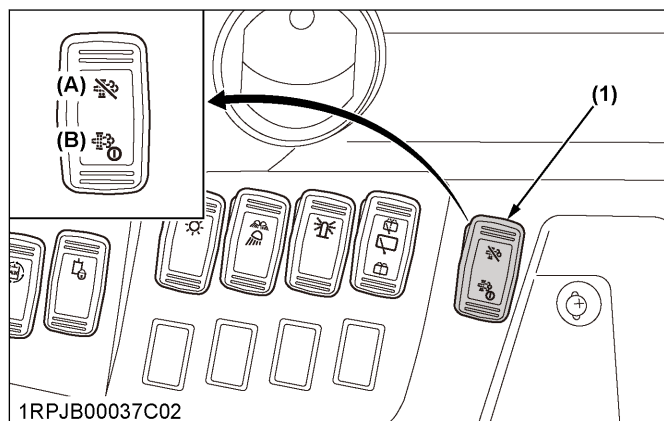
- If any engine oil other than CJ-4 or CK-4 is used, the DPF may become clogged earlier than expected and the fuel economy may drop.

3. DPF regeneration process

DPF regeneration system owns “Parked Regeneration” in which the DPF regenerates while the machine is parked and “Automatic Regeneration” which the DPF can regenerate automatically while working.

When key switch is turned [RUN], the machine will be in the “Auto Regeneration Mode”. By pressing the DPF switch, the mode can be switched to the “Inhibit Mode” or “Parked Regeneration Mode”.

Choose from regeneration modes according to your job condition, usage environment, and other factors.



(1) DPF switch

(A) Inhibit side

(B) Parked Regeneration side

Auto Regeneration Mode

The machine has been set to “Auto Regeneration Mode” by default.

When an amount of PM more than specified has built up in the DPF muffler, the DPF is automatically regenerated whether the machine is in motion or parked.

For jobs not affected by hot gases emitted out of the DPF muffler during regeneration, the “Auto Regeneration Mode” is advisable.

Parked Regeneration Mode

When an amount of PM more than specified has built up in the DPF, the regeneration indicator starts flashing to notify the operator that regeneration is required. Therefore, park the machine in a safe place and start the regeneration.

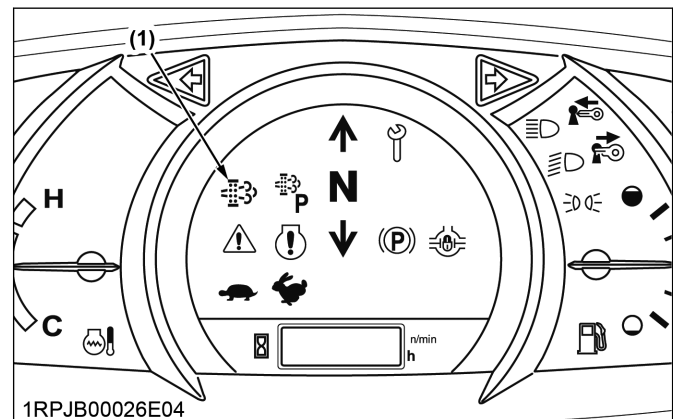
Inhibit Mode

Press the inhibit side of the DPF switch and the inhibit mode is activated.

Even if an amount of PM more than specified has built up in the DPF muffler, the DPF does not regenerate. When the regeneration is needed, the regeneration indicator starts flashing to notify the operator either to active “Auto Regeneration Mode” or to conduct a “Parked Regeneration Mode”, once in a safe area.

For jobs that are performed in the following areas, the “Inhibit Mode” is recommended.

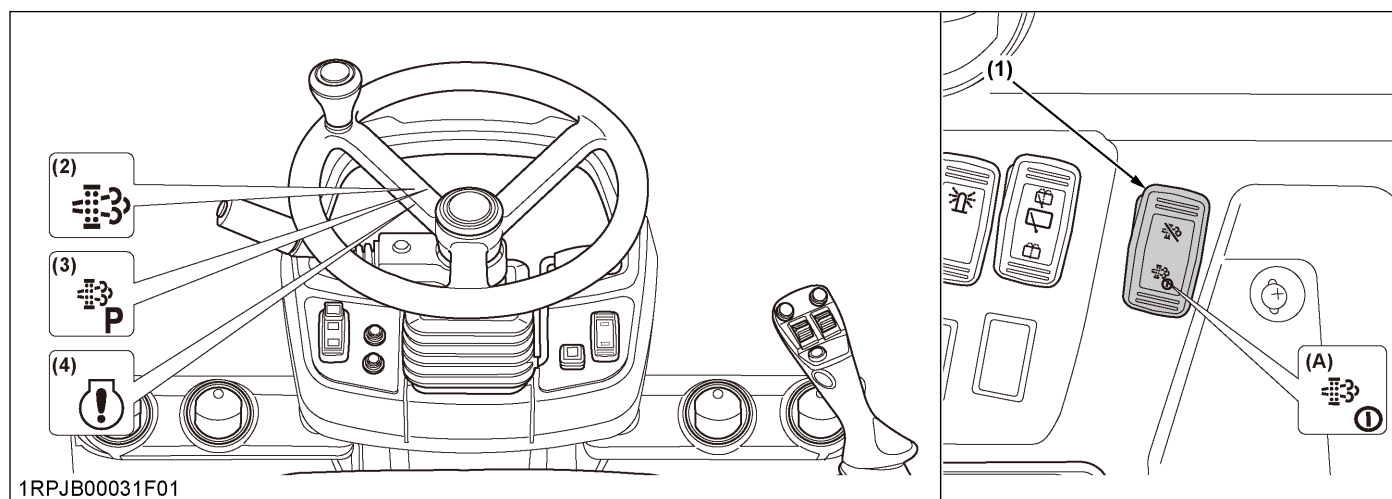
- Poorly ventilated area
- Area that may affect plants and animals because of hot gases that will be emitted



(1) Regeneration indicator

3.1 Operating procedure for Auto Regeneration Mode

3.1.1 Regeneration operating procedure for Auto Regeneration Mode



- (1) DPF switch (3) Parked regeneration indicator (A) Parked Regeneration side
 (2) Regeneration indicator (4) Engine warning indicator

1. The machine has been set to "Auto Regeneration Mode" by default.

 switch lamp	"OFF"	"Auto Regeneration Mode" is activated.
	"ON"	"Inhibit Mode" is activated.

2. When the regeneration indicator starts flashing, a specific amount of PM has built up in the DPF. Continue to operate the wheel loader, and the regeneration process will begin automatically, make sure that you are working in a safe area because DPF and exhaust temperature will rise.

NOTE :

- Even if the "Auto Regeneration Mode" is selected, DPF regeneration may not begin because system requirements have not been satisfied.
- If the engine load is light, regeneration may not begin.

3. When the regeneration conditions are satisfied, the regeneration indicator stops flashing and remains constant "ON".

The regeneration starts automatically whether the wheel loader is in motion or stationary.

4. When the regeneration cycle has completed, the indicator turns "OFF".

NOTE :

- If you press the Inhibit side of the DPF switch during regeneration, the regeneration cycle will be interrupted. The "Inhibit Mode" is now activated.
- During regeneration, if the engine rpm is lowered, the regeneration cycle may be interrupted.

3.1.2 PM warning level and required procedures for Auto Regeneration Mode

During “Auto Regeneration Mode” when the PM level has built up in the DPF, the regeneration cycle will begin automatically. If the regeneration cycle is interrupted or the regeneration conditions are not satisfied, the buzzer starts sounding and the indicator display changes in response to the PM level in order to prompt the operator to perform the required procedure listed in the following table.

IMPORTANT :

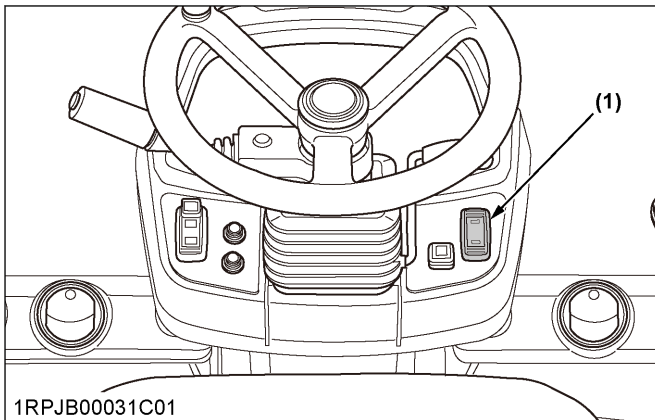
- Once the regeneration level has been reached, immediately perform the required procedure for regeneration.
Interrupting the regeneration cycle or continuing operation by while ignoring the warning signs may cause DPF and engine damage.

Auto regeneration mode

DPF system status				Required procedure	
PM warning level	Buzzer	Engine output	Indicator		
1	Every 60 seconds sounding	sufficient		The regeneration indicator starts flashing.	A specific amount of PM has accumulated in the DPF muffler. Continue to work the machine to raise the DPF temperature. The regeneration cycle begins until regeneration cycle is complete, then the regeneration indicator will turn “OFF”.
				The regeneration indicator will stop flashing and remain on constantly.	
If the regeneration cycle was interrupted or conditions are not satisfied for regeneration, then DPF system is now in the PM-warning-level 2.					
2	Every 60 seconds sounding	sufficient		The regeneration indicator starts flashing.	Start the regeneration, referring to the preceding PM-warning-level 1. Now the parked-regeneration-indicator starts flashing, and the parked regeneration can also be started. If the conditions of regeneration are not met, perform the procedure for parked regeneration cycle. (See Operating the machine for Parked Regeneration Mode on page 59)
				The parked-regeneration-indicator starts flashing.	
If the regeneration fails in the PM-warning-level 2, DPF system becomes in the PM-warning-level 3.					
3 E:9001 1AARU00127A01	Constantly sounds	50%		The regeneration indicator starts flashing.	Immediately discontinue working the machine and begin the procedure for parked-regeneration cycle. (See Operating the machine for Parked Regeneration Mode on page 59) At PM-warning-level 3, the “Auto Regeneration Mode” does not function. If the machine is operated further, then regeneration will be disabled.
				The engine-warning-indicator starts flashing.	
				The parked-regeneration-indicator starts flashing.	
If the parked regeneration is interrupted or the machine is continuously operated in the PM-warning-level 3, DPF system becomes in the PM-warning-level 4.					
4 E:9003 1AARU00128A01	Constantly sounds	50%		The engine-warning-indicator remains constantly “ON”.	Immediately move the machine to a safe place, place the machine in park, and turn “OFF” the engine. Contact your local KUBOTA dealer. At PM-warning-level 4, do not continue to operate the machine. Otherwise, damage will result to the DPF and the engine.

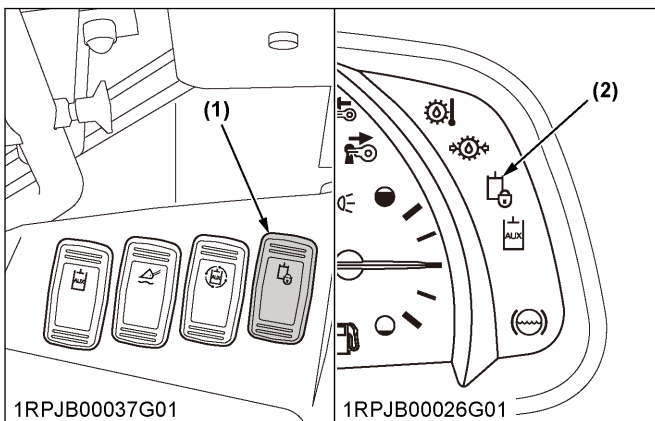
3.2 Operating the machine for Parked Regeneration Mode

1. Park the machine in a safe area away from buildings, people, and animals.
2. Push the parking-brake-switch.



(1) Parking brake switch

3. Activate the hydraulic-lock-switch.



(1) Hydraulic lock switch

(2) Hydraulic lock indicator

4. Make sure that the "Inhibit Mode" is disabled.
5. Return the engine rpm to the idle speed.

Once the parked-regeneration-switch-lamp  starts flashing.

6. Press the "Parked Regeneration" side  of the DPF switch to start the regeneration cycle.
The parked-regeneration-switch-lamp of the DPF switch will remain "ON" constantly during the regeneration cycle.
The engine rpm will automatically rise, and the regeneration process will begin.

7. Make sure that the regeneration indicator  and the parked-regeneration-switch-lamp  stay "ON" while regenerating the DPF.

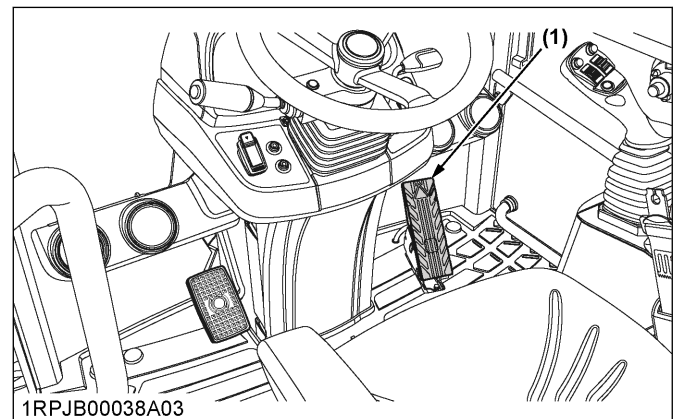
The regeneration indicator and the parked-regeneration-switch-lamp turn "OFF" when the regeneration cycle is complete.

During the regeneration cycle, do not touch the levers and switches operated in this procedure, nor change the engine rpm. Otherwise, the regeneration will be interrupted. Never leave the machine when parked regeneration process is activated.

Once parked regeneration process is complete, the machine may be moved and returned to work.

NOTE :

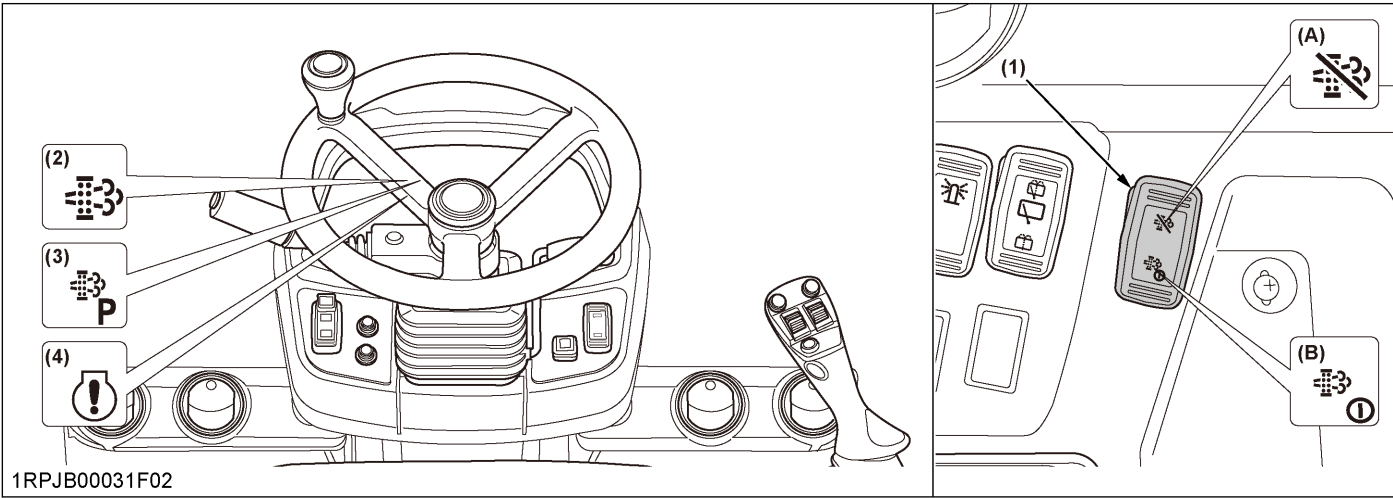
- If the parked regeneration cycle is interrupted, the engine rpm is fixed at the idling level for about 30 seconds. For this period, keep the accelerator pedal at the idle position. Do not move the accelerator pedal. The parked regeneration will function again in 30 seconds.



(1) Accelerator pedal

3.3 Operating procedure for Inhibit Mode

3.3.1 Regeneration operating procedure for Inhibit Mode



- (1) DPF switch
- (2) Regeneration indicator
- (3) Parked regeneration indicator
- (4) Engine warning indicator
- (A) Inhibit side
- (B) Parked Regeneration side

1. The machine has been set to “Auto Regeneration Mode” by default.

 switch lamp	“ON”	“Inhibit Mode” is activated.
	“OFF”	“Auto Regeneration Mode” is activated.

2. When the parked-regeneration-indicator  starts flashing, follow the procedure in Operating the machine for Parked Regeneration Mode on page 59.

3.3.2 PM warning level and required procedures for Inhibit Mode

In the “*Inhibit Mode*”, the buzzer starts sounding and the indicator display changes in response to the PM level in order to prompt the operator to perform the required procedure listed in the following table.

IMPORTANT :

- Once the regeneration level has been reached, immediately perform the required procedure for regeneration.
Interrupting the regeneration cycle or continuing operation by while ignoring the warning signs may cause DPF and engine damage.

Inhibit Mode

DPF system status				Required procedure	
PM warning level	Buzzer	Engine output	Indicator		
1	Not sounding	sufficient		The regeneration indicator starts flashing.	A specific level of PM has built up in the DPF muffler.
2	Not sounding	sufficient		The regeneration indicator starts flashing.	Move the machine to a safe area, then follow the Operating the machine for Parked Regeneration Mode on page 59. At PM warning levels range from 1 to 2, it is also possible to change the DPF switch to “Auto Regeneration Mode” then perform regeneration. (See Regeneration operating procedure for Auto Regeneration Mode on page 57)
				The parked-regeneration-indicator starts flashing.	
If the parked regeneration cycle is interrupted or the machine is continuously operated in the PM-warning-level 2, DPF system becomes in the PM-warning-level 3.					
3 E:9001 1AARU00127A01	Constantly sounds	50%		The regeneration indicator starts flashing.	Immediately stop working the machine, move the machine to a safe area, and then follow the Operating the machine for Parked Regeneration Mode on page 59. If the machine is operated further and the operator ignores the warning signs, then regeneration will be disabled.
				The engine-warning-indicator starts flashing.	
				The parked-regeneration-indicator starts flashing.	
If the regeneration cycle is interrupted or the machine is continuously operated ignoring the warning signs, in the PM-warning-level 3, DPF system becomes in the PM-warning-level 4.					
4 E:9003 1AARU00128A01	Constantly sounds	50%		The engine-warning-indicator remains constantly “ON”.	Immediately move the machine to a safe place, place the machine in park, and turn “OFF” the engine. Contact your local KUBOTA dealer. At PM-warning-level 4, do not continue to operate the machine. Otherwise, damage will result to the DPF and the engine.

4. Tips on diesel particulate filter (DPF) regeneration

• Operation

The higher in speed or load the engine operates, the higher the exhaust temperature rises. As a result, particulate matter (PM) inside the DPF is consumed, therefore the regeneration process occurs less frequently over time.

The lower in speed or load the engine operates, the lower the exhaust temperature. Accordingly, less particulate matter (PM) inside the DPF is consumed, therefore more accumulation of PM will occur, which requires frequent regeneration, therefore avoid prolonged idling if possible.

• Necessary conditions for regeneration

When all of the following conditions are satisfied, the regeneration process will commence. If one of the following conditions is not met, the regeneration cycle will be interrupted:

- The engine coolant temperature
- The DPF temperature
- The engine speed is around 1200 rpm or higher.

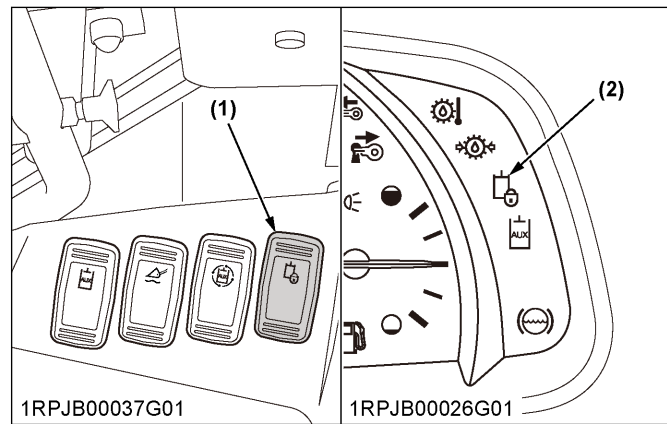
- Usually it takes 15 minutes to 20 minutes to complete the regeneration cycle.

Actual regeneration time may depend on ambient temperature, exhaust temperature, and engine speed.

- It is recommended to perform the regenerating while the engine is warm.
- Do not unnecessarily start and interrupt the regeneration process. Otherwise, a small amount of fuel becomes mixed with the engine oil, which degrades the oil quality.
- While the DPF is being regenerated, the air-flow rate of engine is automatically limited to keep up the exhaust temperature. Because of limit of the air-flow rate of engine, the engine may sound differently, but this sound is normal for this engine.
- Just after the regeneration has ended, the DPF muffler remains hot. It is advisable to keep the engine running for about 5 minutes to allow cooling of the exhaust components.

STARTING THE ENGINE

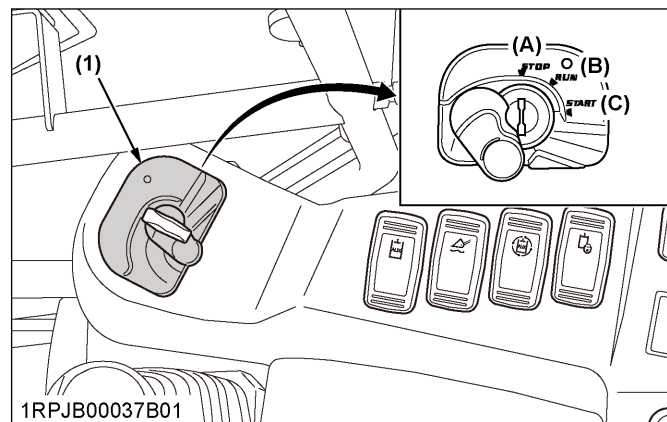
1. Activate the hydraulic-lock-switch by pressing forward.



(1) Hydraulic lock switch

(2) Hydraulic lock indicator

2. Insert the starter key into the starter switch and turn it to the **[RUN]** position.



(1) Starter switch

(A) STOP

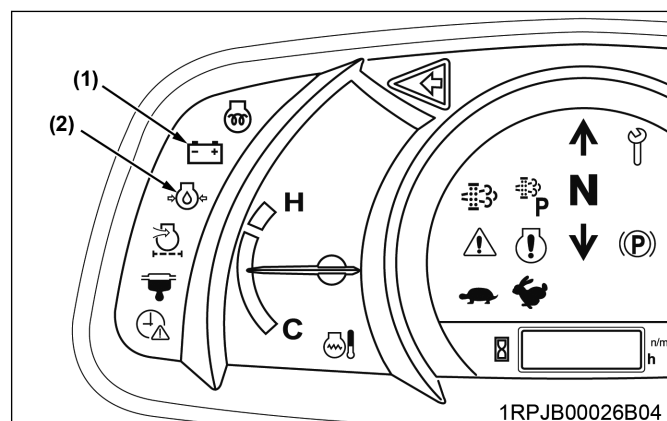
(B) RUN

(C) START

The glow-plug-indicator will light up while the engine is preheated and will go out automatically after preheating is finished.

3. Make sure that the  and  marks appear on the instrument panel.

If the  and  marks do not appear, the system is malfunctioned. Contact your local dealer.



(1) Battery charge indicator

(2) Engine oil pressure warning indicator

- Turn the starter key to the **[START]** position and release after the engine has started.
- Check if all warning indicators except hydraulic-lock-indicator and parking-brake-indicator have gone out. If a warning indicator still should be lit up, stop the engine and then remove the starter key and check for the cause.

IMPORTANT :

- The starter motor consumes large current. Avoid running the starter motor longer than 10 seconds continuously. If the engine fails to start within 10 seconds, once set the starter key to the **[STOP]** position, wait for 20 seconds or longer, and repeat the step 2 through 5.
- If the battery is dead and must be connected to another battery with jumper cable, be sure to use a 12V battery. Never use any 24V batteries.

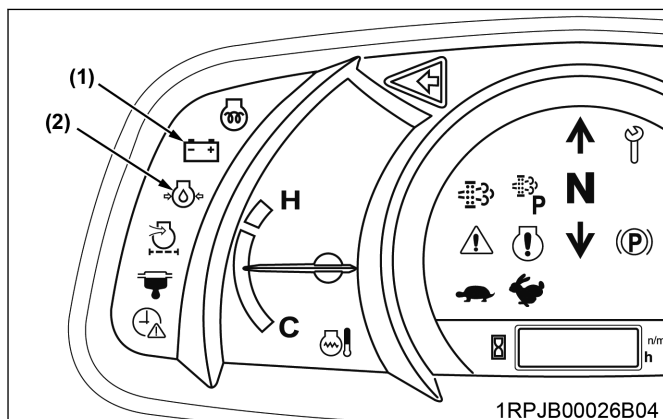
1. Checkpoints after starting the engine

After starting the engine, but before starting operation, check the following points:

- The engine idle allows the engine lubricant to warm up and penetrate every part of the engine.

NOTE :

- This idling is usually called *“Warm-up”*.
- Once the engine has warmed up, check:
 - The engine-oil-pressure-warning-indicator has gone out.
 - The battery-charge-indicator goes out when engine speed is increased.
 - The color of the exhaust is normal and no abnormal noises or vibrations are heard or felt.
 - No fluid is leaking from pipes or hoses.



(1) Battery charge indicator

(2) Engine oil pressure warning indicator

Conditions to stop the engine immediately

If any following conditions should occur, stop the engine immediately.

- The engine rpm increases or decreases suddenly.
- Sudden abnormal noises are heard.
- Exhaust is black.
- Warning indicator for engine oil lights up during operation.

IMPORTANT :

- In the preceding cases, check the machine and ask your local KUBOTA dealer to service.

STARTING THE ENGINE UNDER COLD CONDITIONS

Start the engine in the manner in this section in cold weather.

- Turn the starter switch to the **[RUN]** position (glow position) and hold until the indicator lamp has gone out.
- Move the starter switch to the **[START]** position to crank and start engine.
- Release the starter switch after the engine has started. Starter switch will automatically return to the **[RUN]** position.

IMPORTANT :

- Let the engine warm up after start-up for approx. 10 minutes under no load conditions. If the temperature of hydraulic fluid is too low, the operations or the function of the pressure sensors will be affected. Do not operate the machine under full load before the engine has warmed up enough.
- [R640]**
To protect the machine at low temperatures, the machine is equipped with engine rpm limit control. When the engine rpm is limited, the warning indicator starts blinking. If the engine rpm fails to rise enough after warm up, operate the machine to help the engine to warm up more.

STOPPING THE ENGINE

WARNING

To avoid personal injury or death:

- Do not keep the bucket or attachments in the lifted position, because a person could accidentally touch the levers and cause serious accidents.
- Place the machine on the flat ground.

1. After slowing the engine to idle, turn the starter key to **[STOP]** position.
2. Remove the starter key.

IMPORTANT :

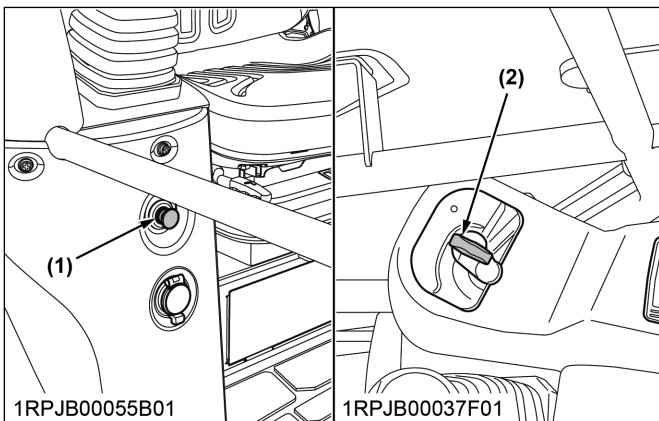
- Do not stop the engine by shutting down the battery power directly with a battery switch or by other means. Doing so may cause failure or malfunction.
- **[R640]**
Make sure that the engine speed is set to idle before stopping the engine. When stopping the engine at a high speed, the turbo charger can be damaged due to an insufficient lubrication.

1. Engine stop knob

IMPORTANT :

- Be sure to return the engine-stop-knob to former position after the engine stops.

The engine stops when the starter key is turned off. If the engine does not stop, pull the engine-stop-knob to stop the engine.



(1) Engine stop knob

(2) Starter key

STARTING THE ENGINE WITH AN AUXILIARY BATTERY

Follow the guidelines in this section when starting the engine with an auxiliary battery.



WARNING

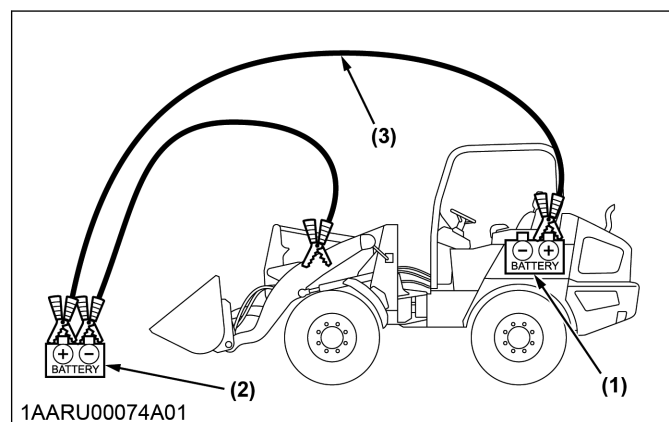
To avoid personal injury or death:

- Battery gases can explode.
Do not smoke and keep sparks and flames away.
- Do not start the engine with an auxiliary battery if machine battery is frozen.
- Do not connect the black jumper cable to the negative (-) terminal of the machine battery.

1. Bring the helping machine with the same battery voltage as near as possible to the machine.

IMPORTANT :

- The machines must not come in contact with each other.
2. Bring the levers and pedal of both machines in the neutral position.
 3. Wear eye protection and rubber gloves.
 4. Make sure that the vent caps are securely in place if equipped.
 5. Connect the terminal of the red jumper cable with the plus (+) terminal of the low battery.
 6. Connect the other end of the cable to the plus (+) terminal of the auxiliary battery.
 7. Connect the black negative cable to the minus (-) terminal of the auxiliary battery.
 8. Connect the other end of the black cable coming from the auxiliary battery to the conductive part of the machine frame as far away as possible from the low battery.
 9. Start the engine of the helping machine and let it run for a while.
 10. Start the machine with the low battery.
 11. Disconnect the jumper cables in the reverse sequence.



(1) Low battery

(2) Auxiliary battery

(3) Jumper cables

IMPORTANT :

- This machine is equipped with a negative (-) ground 12 Volt starting system.
- Only use the same voltage when using an auxiliary battery.
- Using a higher voltage will cause serious damage to the electrical system. When using an auxiliary battery, only the compatible (same) voltage is permissible.

OPERATION OF THE MACHINE

PRECAUTIONS FOR OPERATING THE MACHINE



WARNING

To avoid personal injury or death:

- Follow the safety instructions.
- You may only operate the wheel loader according to its approved use.
- Only trained personnel may operate the wheel loader.

(See PRECAUTIONS FOR OPERATING THE MACHINE on page 9, General precautions on page 7, and PRECAUTIONS FOR SERVICING THE MACHINE SAFELY on page 13)

GUIDE FOR THE OPERATOR

If the operator's working and driving area is obscured, a guide must support the operator.

- The guide must be capable of performing the work which is trying to do.
- Before starting work, the guide and the operator must agree on the necessary signals.
- The guide's position must be clearly visible to the operator.
- The operator must stop the wheel loader immediately if eye contact with the guide is interrupted.
 - As a rule, either the wheel loader or the guide may move, never both at once!

WORKING IN THE VICINITY OF OVERHEAD POWER LINES

When working with the wheel loader in the vicinity of overhead power lines and tram lines, a minimum distance as specified in the following table must be maintained between the wheel loader and its attachments and the power line.

Rated voltage		Safe distance
	up to 1 kV	1.0 m (3 ft 3 in.)
over 1 kV	up to 110 kV	3.0 m (9 ft 10 in.)
over 110 kV	up to 220 kV	4.0 m (13 ft 1 in.)
over 220 kV	up to 380 kV or when rated voltage is unknown	5.0 m (16 ft 5 in.)

If you can not maintain the safe distances, the power lines must be switched off in coordination with their owner or provider and secured against forcing them to live again.

When approaching the overhead power lines, take any possible movements of the wheel loader into consideration.

Unevenness of the ground or sloping the wheel loader can reduce the safe distance.

Wind can cause the overhead power lines to sway, thus reducing the safe distance.

In case of a power cross-over, leave the danger zone with the wheel loader, if possible, by taking suitable measures. If leaving the danger zone with the wheel loader is not possible, do not leave the operator's place, warn any approaching persons of the danger, and set the power switched off.

RUNNING-IN OF THE MACHINE

The operation and care of the new machine influences its life span. Your new machine has been carefully checked and tested before leaving the factory. In spite of carefully check and test, all movable components must run-in during the first 50 work hours. Do not work with full rpm and full loads during first 50 work hours.

It is most important to run-in your machine properly in order to achieve its full performance and longevity. During the running-in, you should adhere to the following points in all cases.

- **Do not work with full engine rpm or full loads during the first 50 working hours**
 - Let the engine warm up sufficiently in the cold season.
 - Do not let the engine rev-up more than necessary.
- **Oil change in the run-in stage**

The lubrication oil plays a specific and important role during the run-in phase of the machine. The numerous movable parts are not yet run-in, so many fine metal particles can be generated and

may cause damage and shorten the life of many components.

Pay attention to the oil-change intervals and complete them sooner than later. For more details on the oil-change intervals, see MAINTENANCE INTERVALS on page 98.

STARTING OF THE MACHINE

1. Precautions for starting the machine

WARNING

To avoid personal injury or death:

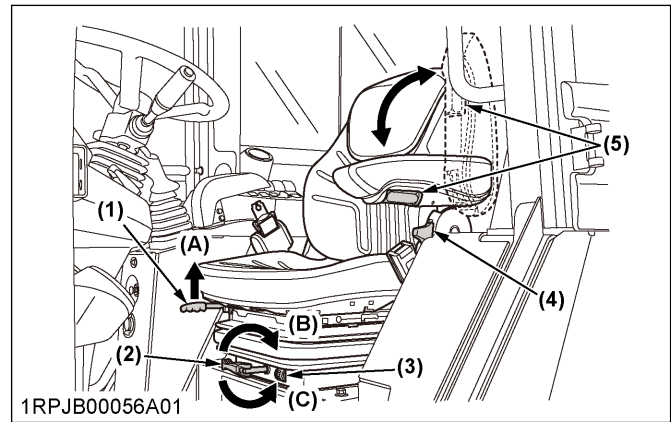
- Mount the machine and dismount the machine only at locations that are equipped with steps and/or handholds.
Before you mount the machine, clean the steps and the handholds.
- Start the engine only from the operator's seat. Never short across the starter terminals or across the batteries.
- Inspect the condition of the seat belt and the mounting hardware.
Replace any parts that are worn or damaged.
Do not use a seat-belt extension on a retractable seat belt.
- Adjust the operator's seat so that full pedal travel can be achieved with the operator's body against backrest of the seat.
- Make sure that the machine is equipped with a lighting system that is adequate for the job conditions.
Make sure that all machine lights are working properly.
- Before you start the engine and before you move the machine, make sure that no one is underneath, on, or close to the machine.

2. Adjusting the operator's seat

WARNING

To avoid personal injury or death:

- Make sure that the operator's seat is completely secured after each adjustment.



- 1RPJB00056A01
- | | |
|--------------------------------------|------------------------|
| (1) Horizontal seat adjustment lever | (A) Pull up |
| (2) Spring adjustment toggle | (B) Turn clockwise |
| (3) Weight indicator | (C) Turn anticlockwise |
| (4) Backrest adjustment lever | |
| (5) Armrest adjustment dial | |

Horizontal seat adjustment

1. Pull the horizontal-seat-adjustment-lever up (A) and move the operator's seat to the desired position by moving it forward or back.
2. Then release the horizontal-seat-adjustment-lever.

Seat height adjustment

You can be adjust the height of operator's seat height to several stop positions.

1. To adjust the height of operator's seat, slowly raise the operator's seat until it automatically engages in the next stop.
When the operator's seat is raised over the highest stop, it will be lowered automatically to the lowest position again.

IMPORTANT :

- Adjust the height of operator's seat in relation to its horizontal position so that the foot controls can be operated safely.
- Make sure that the seat adjuster is engaged.

Spring adjustment depending on operator's weight

You can set the operator's seat to the weight of the operator using the spring-adjustment-toggle. Refer to the weight indicator when choosing your setting.

1. Adjust the operator's seat so that a comfortable cushioning is achieved.
 - **For light-weight operator**
Turning the spring-adjustment-toggle clockwise (B) increases spring tension.
 - **For heavy-weight operator**
Turning the spring-adjustment-toggle anticlockwise (C) reduces spring tension.
2. Adjust the operator's seat so that a comfortable cushioning is achieved.

Backrest adjustment

1. Take the load off the backrest and pull up the backrest-adjustment-lever.

2. Set the backrest to the desired sitting position and release the backrest-adjustment-lever.

IMPORTANT :

- You should adjust the backrest so that the operator can safely operate the control levers with the back resting completely on the backrest.

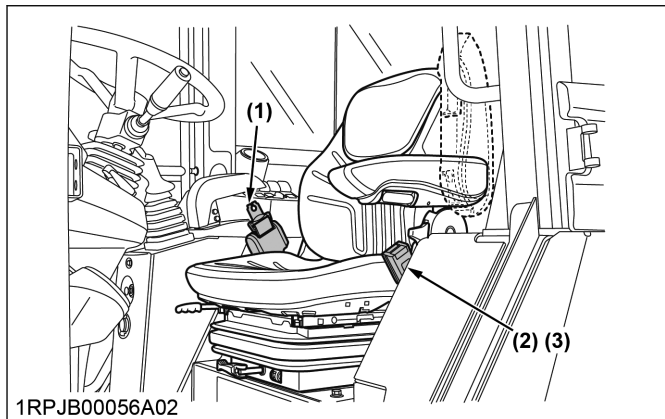
Armrest adjustment

1. Take the load off the armrest and rotate the armrest-adjustment-dial and move the armrest to the desired angle.

3. How to use the seat belt**! WARNING**

To avoid personal injury or death:

- Always use the seat belt with a ROPS/FOPS protection structure. Adjust the operator's seat to the optimal position and buckle it up.
- Always fasten the seat belt securely before starting the engine.



(1) Seat belt
(2) Socket

(3) Button

Fastening the seat belt

1. Pull the seat belt from the retractable (right) side of the operator's seat.
2. Insert the fixture of the seat belt into the socket at the left side of the operator's seat until the fixture clicks deep into position.

Releasing the seat belt

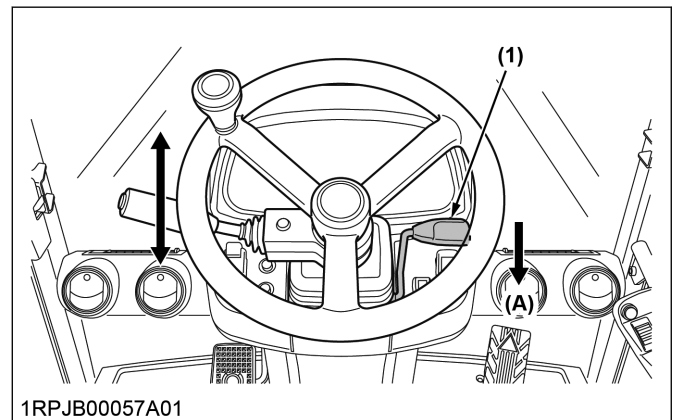
1. Press the red button of the socket to release the seat belt.
The seat belt reels itself and gets retracted to the right side.

4. Adjusting the tilt steering**! WARNING**

To avoid personal injury or death:

- Do not adjust the steering wheel while the machine is in motion.

1. Press down the steering-wheel-tilt-lever, to release the lock so that the steering wheel can be adjusted to desired position.



(1) Steering wheel tilt lever

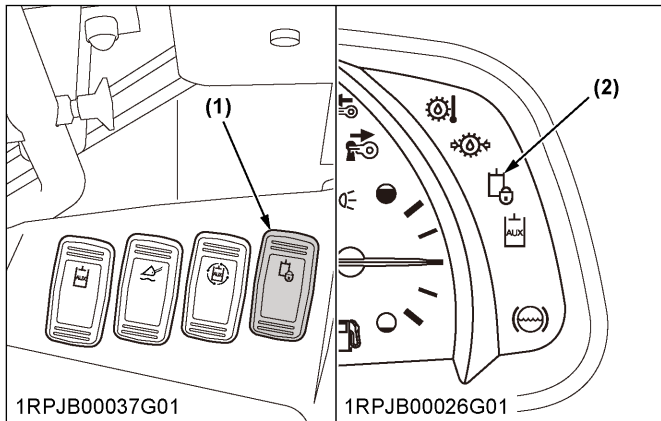
(A) Press down

TRAVELING WITH MACHINE**1. Starting to travel with machine****! WARNING**

To avoid personal injury or death:

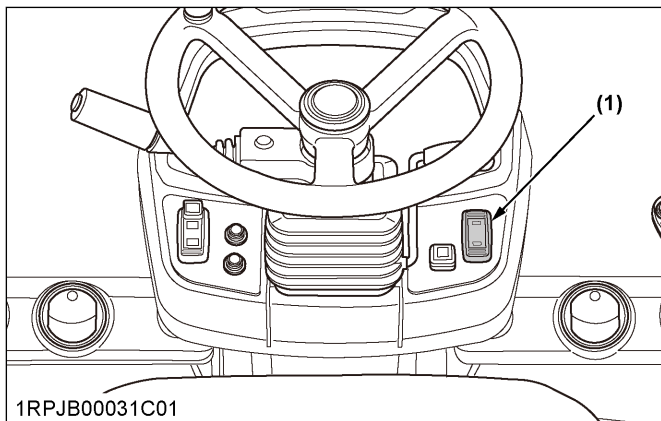
- Fasten the seat belt before operating the machine.
- When transporting a load, keep the loader bucket as low as possible to avoid tip over. Be extra careful when working on inclines.
- Before operating, check the operating area. Make sure that no bystanders are near the machine. Sound the horn before moving.
- To start the machine on a slope, press the accelerator pedal gradually while releasing the inching pedal so that the machine does not move backwards.
- After starting the machine, immediately check that the brake and the steering wheel work normally.
- If a tire has blown, the machine may slip or turnover. To avoid turnover, do not brake or steer hard, brake slowly to stop the machine gradually.

1. Deactivate the hydraulic-lock-switch.



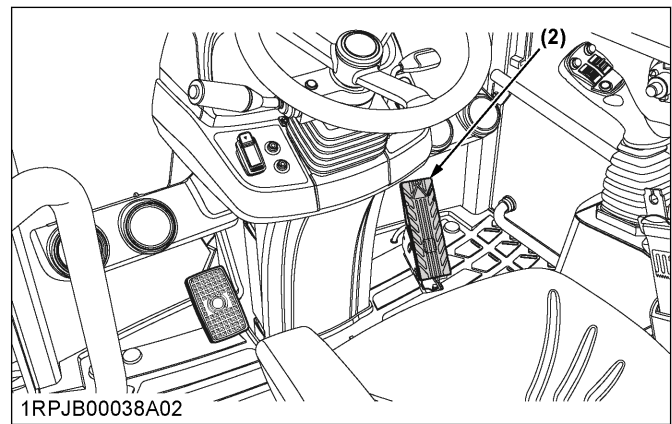
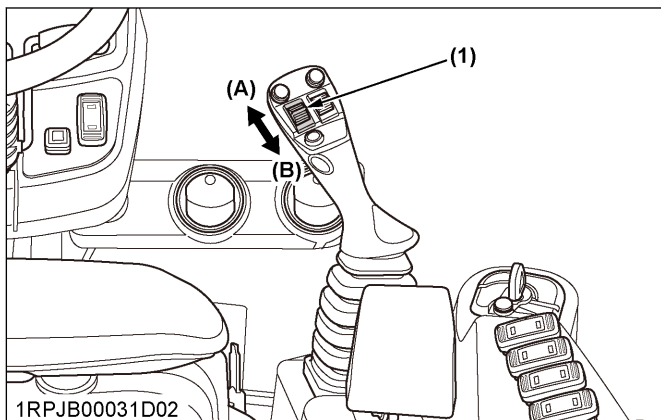
(1) Hydraulic lock switch (2) Hydraulic lock indicator

2. Move the control lever to lift the bucket about 40 cm (16 in.) above the ground and set the bucket in the proper position for travel.
3. Press the parking-brake-switch for releasing the parking brake.
When the parking brake is released, the light on the parking-brake-switch comes off.



(1) Parking brake switch

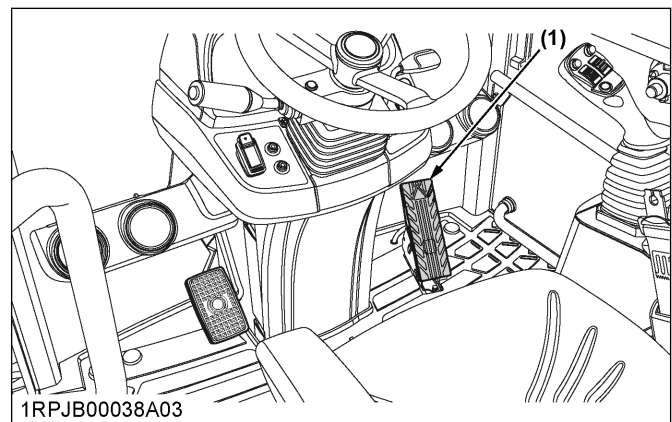
4. Set the direction switch to the desired position, and gradually increase the engine rpm by pressing the accelerator pedal.
Then the machine will move.



(1) Direction switch (A) Forward
(2) Accelerator pedal (B) Backward

2. Accelerator pedal

Accelerator pedal controls the engine rpm. The more the accelerator pedal is pressed, the greater the engine rpm.



(1) Accelerator pedal

NOTE :

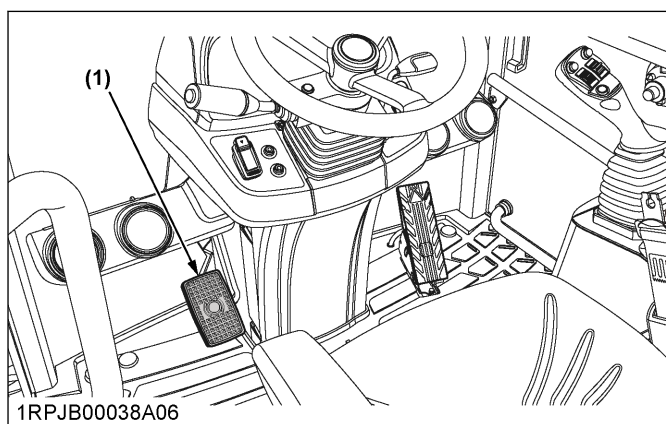
- When the accelerator pedal is released, the engine speed will drop.
- Press the accelerator pedal gradually when starting the machine.

3. Inching and brake pedal

Press the inching-and-brake-pedal down slightly, then the HST pump comes in neutral and cuts off the engine power on the way of the transmission, that is so-called dynamic brake, unique to hydrostatic transmission (HST).

When pressing the pedal which you have pressed further, the disc brake acts together to obtain the strong braking effect.

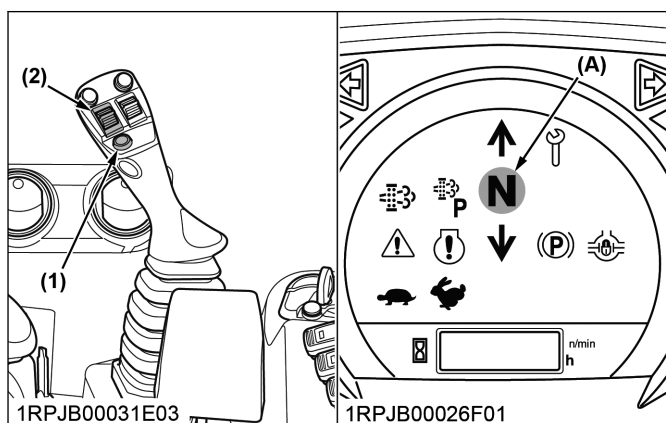
For the details of inching-and-brake-pedal, see Operating the inching and brake pedal on page 85 and Using the inching and brake pedal according to the job on page 86.



(1) Inching and brake pedal

4. Neutral switch

When pressing the neutral switch, the direction switch will be in the neutral position and "N" on the instrument panel goes on.



(1) Neutral switch
(2) Direction switch

(A) Lighting

5. Direction switch

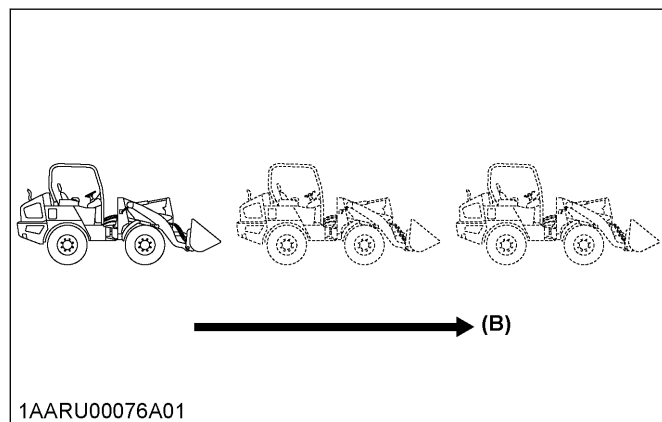
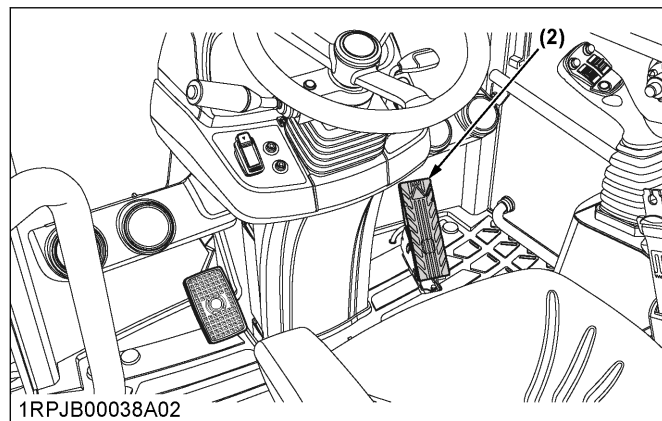
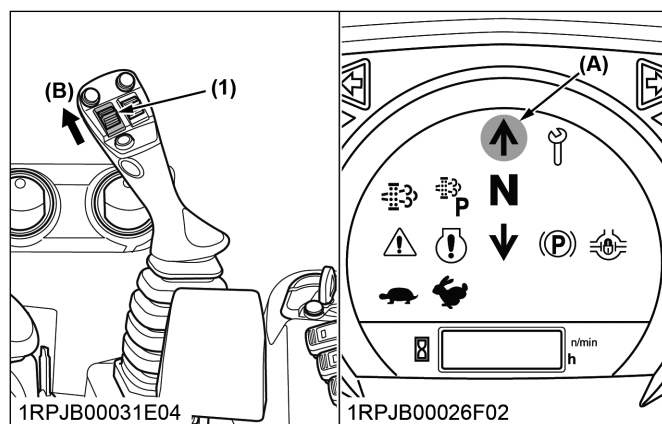
Use the direction switch for changing the running direction of machine, forward or back.

To move forward

Move the direction switch forward and press the accelerator pedal.

NOTE :

- ↑ on the instrument panel goes on.



(1) Direction switch
(2) Accelerator pedal

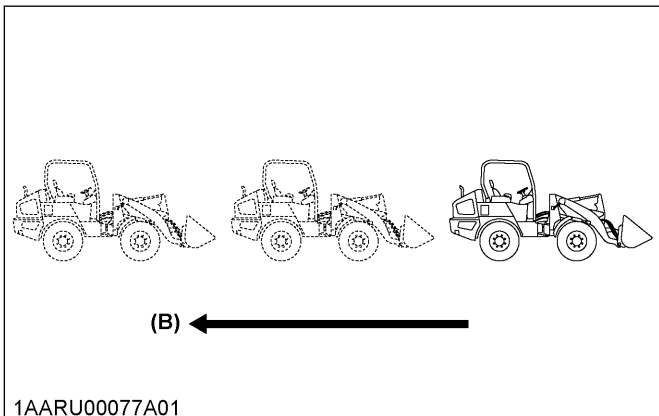
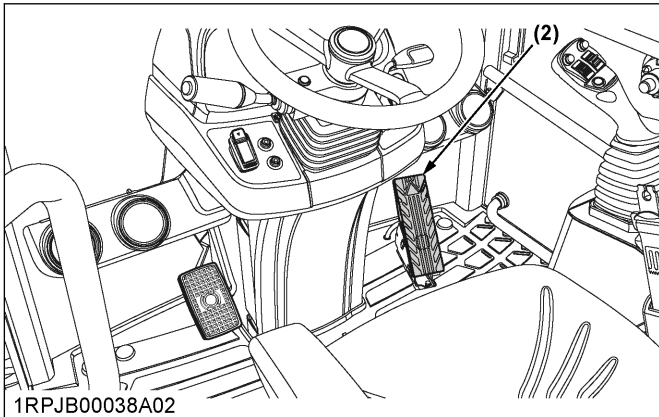
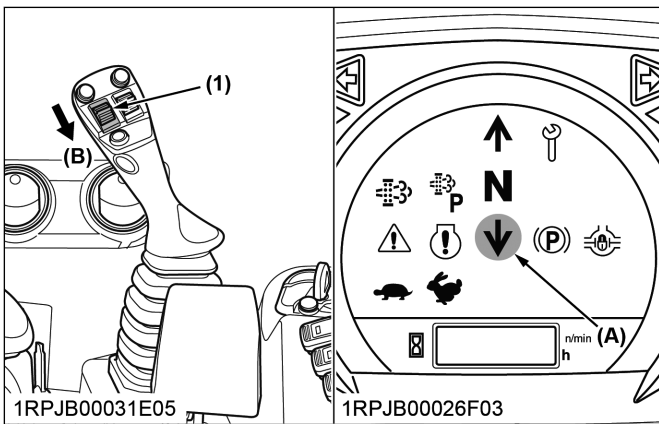
(A) Lighting
(B) Forward

To move backward

Move the direction switch backward and press the accelerator pedal.

NOTE :

- When the machine begins to travel "BACKWARD", the back buzzer starts sounding.
- ↓ on the instrument panel goes on.



- (1) Direction switch (A) Lighting
(2) Accelerator pedal (B) Backward

IMPORTANT :

- If the temperature of hydraulic oil is too low, the reserve alarm may start sounding when switching from the backward to the forward travel. This is not a problem. Just perform a warm-up run, and then the temperature of hydraulic oil rises, and the alarm will stop. If the alarm still keeps sounding, contact your local dealer.
- Do not decelerate the travel speed suddenly by direction switch during driving. There is a risk of being overrun, and the engine may be damaged. If the overrun occurs, the warning indicator flashes.

6. Speed control switch

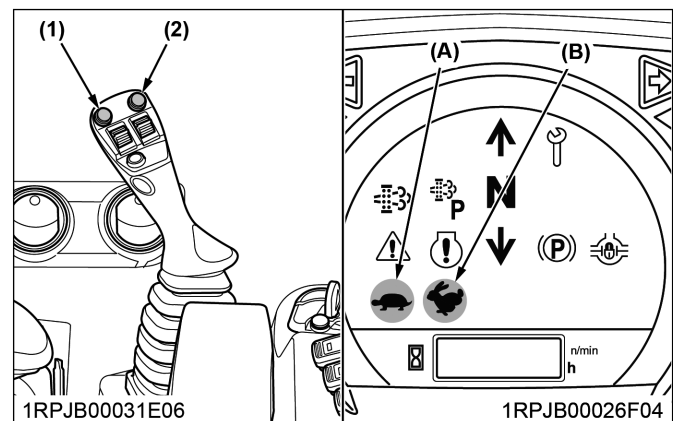
2 speed-control-switches serve to change maximum speed and low speed.

- Press the right speed-control-switch and the maximum speed is as follows.

Maximum speed	20 km/h (12.4 mph)
---------------	-----------------------

- Press the left speed-control-switch, speed is limited to the following values.

Limited speed	4.6 km/h (2.9 mph)
---------------	-----------------------



- (1) Left speed control switch (A) 4.6 km/h (2.9 mph)
(2) Right speed control switch (B) 20 km/h (12.4 mph)

IMPORTANT :

- Do not decelerate the travel speed suddenly by speed-control-switches during driving. There is a risk of being overrun, and the engine may be damaged. If the overrun occurs, the warning indicator flashes.

7. Precautions for turning the machine**! WARNING**

To avoid personal injury or death:

- Do not turn sharply at high speeds. It is dangerous. In the worst possible case, the machine may turn over.
- The steering wheel for this machine will not return of itself to the straight ahead position after turning. Be sure to return the steering wheel to the straight ahead position.
- Steering lose will result if the engine is stopped during travel.
Do not stop the engine during travel.

To steer the machine to either side, turn the steering wheel in the intended direction.

- The front and rear frames of this machine bend at the center pin (the pin connecting the 2 frames) so that when the machine turns, the rear wheels follow the tracks of the front wheels.
- Rotate the steering wheel to follow the turn of the machine. When turning fully, never try to rotate the steering wheel once it reaches its full stroke.

8. Rule to decelerate on a slope

WARNING

To avoid personal injury or death:

- Going up or down a slope diagonally is dangerous because the machine may skid. Always drive or operate straight up or down a slope, or the machine may slip side ways and tip over.
- Use the foot brake together with engine brake if the machine tends to over-run when descending a slope.
- When descending down along slope, use the engine brake. Using the foot brake alone accelerates wear of the brake pad, causes heat buildup, and will result in poor brake performance.

IMPORTANT :

- When driving downhill, there is a risk of being overrun by operating the speed-control-switches or the direction switch.

9. Precautions for traveling on rough roads

WARNING

To avoid personal injury or death:

- Slow down when turning on rough uneven terrain and slopes to avoid tip over.

10. Precautions for traveling on snow

WARNING

To avoid personal injury or death:

- There is the risk of the machine slipping excessively on frozen ground. Install chains on the front wheels. For operation on snow, install chains on both front and rear wheels.

When traveling on snow, it is important to keep the wheels and their related parts in good condition. After traveling, be sure to remove all snow and ice from the wheels and their related parts.

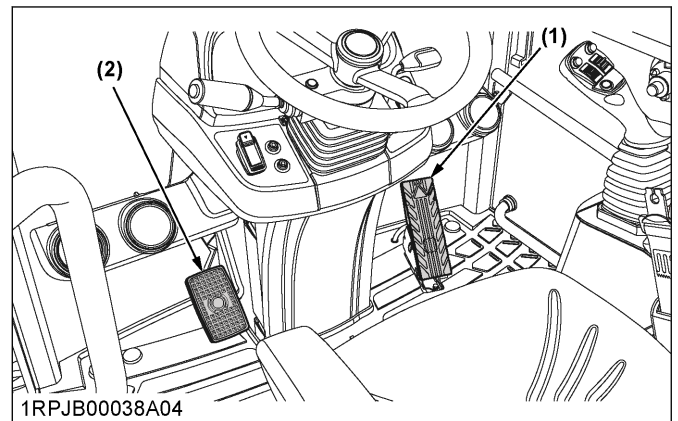
STOPPING THE MACHINE

WARNING

To avoid personal injury or death:

- Choose flat and level ground for parking the machine. It is important to lower the bucket to the ground. If you must park the machine on a slope, be sure to block the tires securely.
- When dismantling the machine, stop the engine, lower the bucket and attachment to the ground, release the hydraulic pressure in the hydraulic system by operating control levers, and remove the starter key.

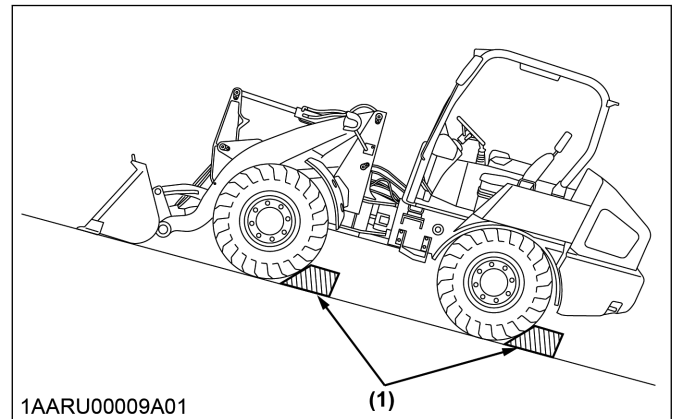
1. Remove foot from the accelerator pedal.
2. Depress the inching-and-brake-pedal and stop the machine.



(1) Accelerator pedal

(2) Inching and brake pedal

3. Stop the engine.
4. Lower the bucket and attachment to the ground.
5. Release the hydraulic pressure in the hydraulic system.
6. Remove the starter key.

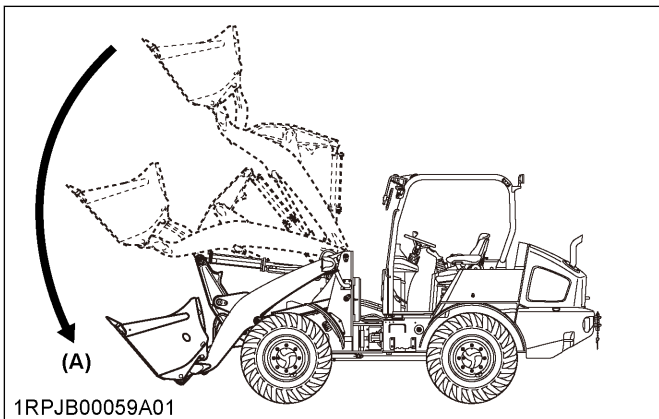
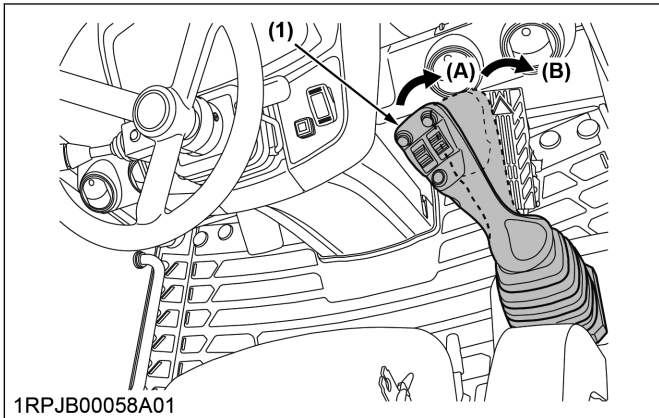


(1) Wheel chock

OPERATING THE LIFT ARM

To lower the lift arms

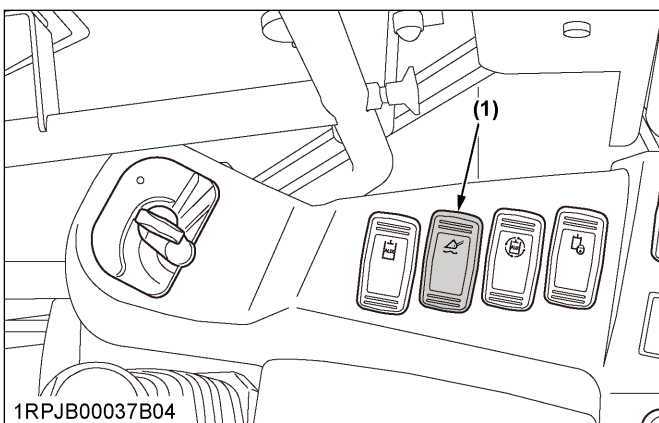
1. Push the control lever forward.
2. Push the control lever to (B), fix the float position.



(1) Control lever

(A) Lower
(B) Float

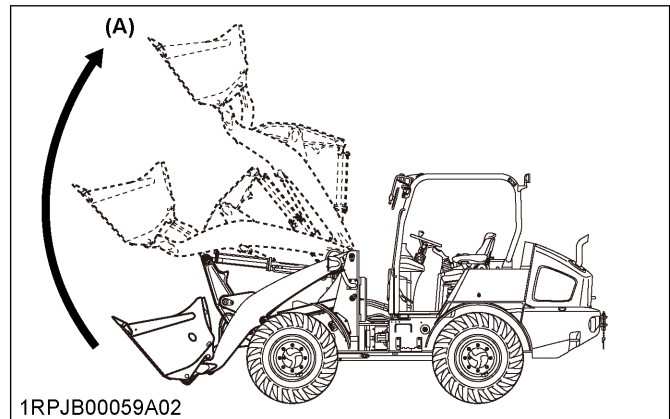
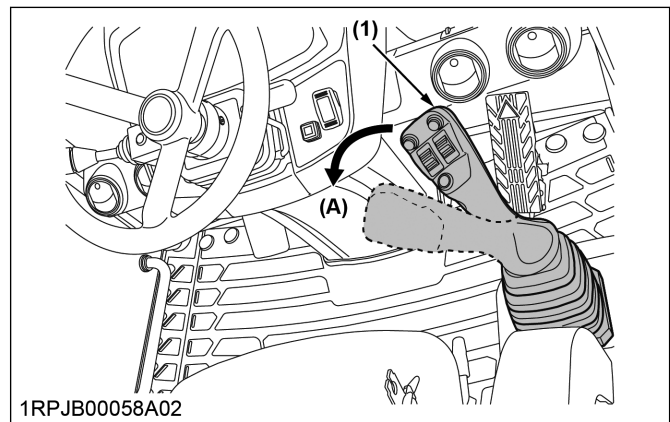
To fix the float position, press the float switch.



(1) Float switch

To raise the lift arms

1. Pull the control lever backward.



(1) Control lever

(A) Raise

NOTE :

- To stop the operation of lift arm, return the control lever to the neutral position.

OPERATING THE BUCKET

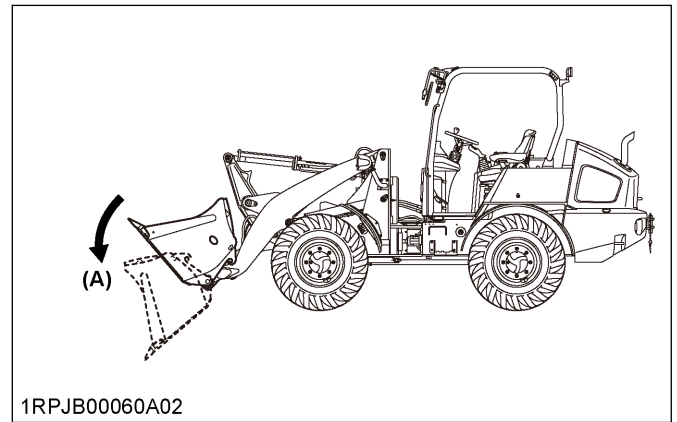
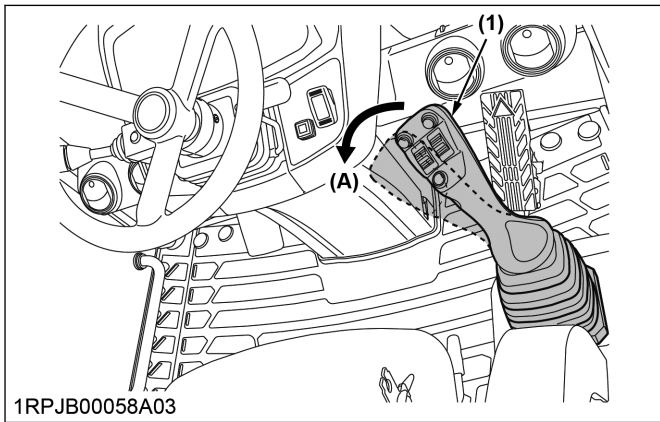
⚠ WARNING

To avoid personal injury or death:

- Do not exceed the rated operating capacity of the unit. If loads exceed the rated operating capacity, the unit can experience a hydraulic imbalance when half or medium "lift-arms-raise" command and "bucket-roll-back" or "auxiliary-hydraulic-control" command are input together, which can result in the lift arms lowering slowly. If you begin to experience the hydraulic imbalance, either place the lift arms control in "NEUTRAL" or input full "RAISE" control, and lift arms lowering will cease.

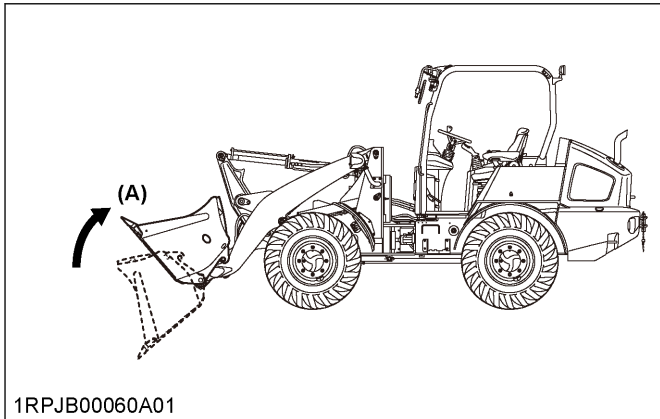
To roll back

1. Tilt the control lever to the left.



(1) Control lever

(A) Dump



(1) Control lever

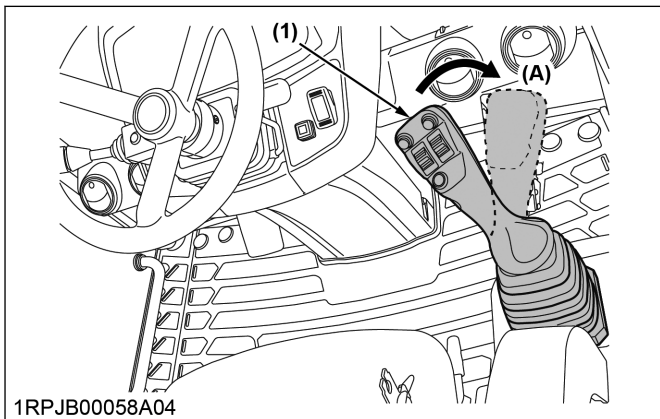
(A) Roll back

NOTE :

- To stop the operation of bucket, return the control lever to the neutral position.

To dump

1. Tilt the control lever to the right.



AUXILIARY PORT OPERATION

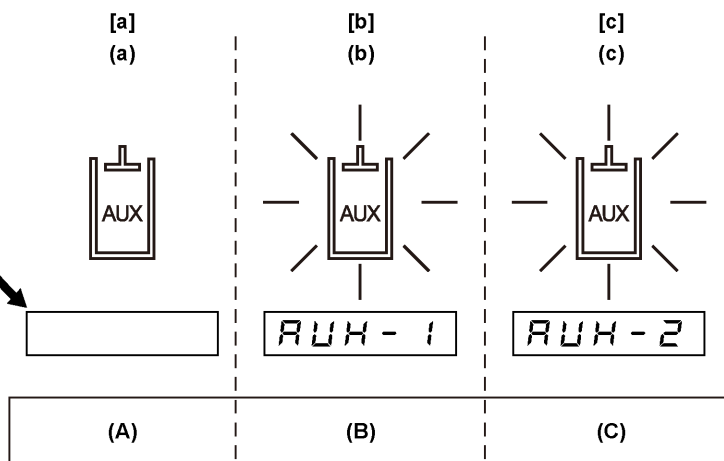
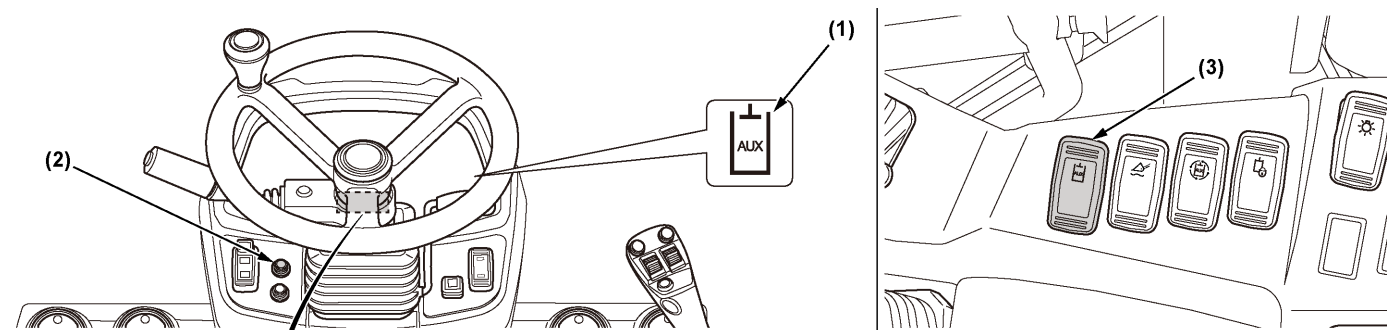
Use the auxiliary-port-enable-switch to operate the hydraulic attachment such as 4in1 bucket.

1. Selecting the action modes

The AUX port has been factory-set to only 1 mode (Mode 1). As necessary, you can preset up to 6 action modes.

1. Select the action mode pressing the AUX-port-enable-switch.

Each time the AUX-port-enable-switch is pressed, the action modes change over one after another, and the icon and action-mode-number on the screen change accordingly.



1RPJB00061A01

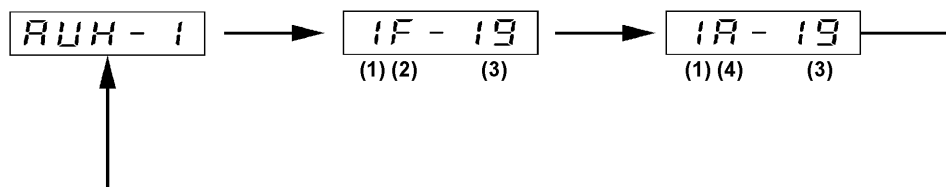
- (1) Indicator
(2) Display selector switch
(3) AUX port enable switch

- [a] Mode 0 (AUX disable (normal screen))
[b] Mode 1
[c] Mode 2
- (a) No lighting
(b) Lighting
(c) Blinking

- (A) No activation
(B) MAX. flow volume
(C) Limited flow volume

Checking the setting volume

1. Press the display-selector-switch when the action-mode-number "AUX-1" is displayed on the screen.
The screen will vary per second.

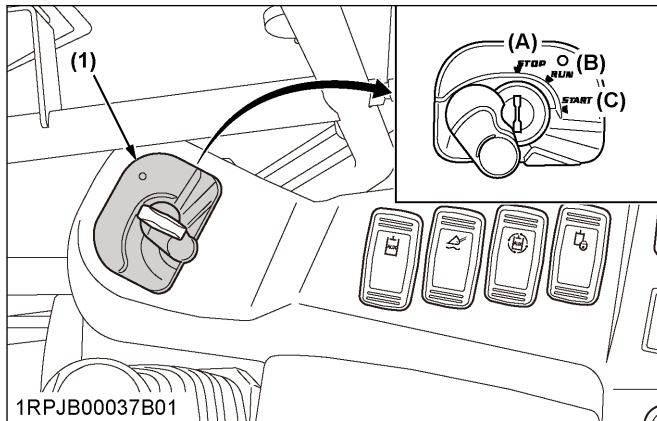


1AARU00080A01

- (1) Memory number
(2) Lever side (forward)
- (3) Flow volume
(4) Lever side (downward)

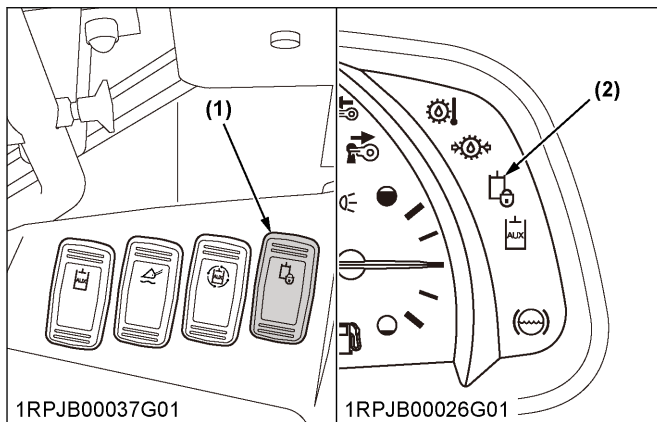
2. Handling the AUX port

1. Turn the starter key to the **[RUN]** position.



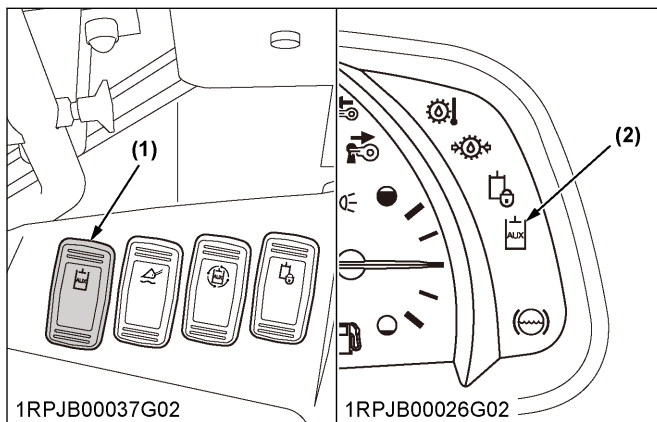
(1) Starter switch
(A) STOP
(B) RUN
(C) START

2. Let the engine warm up after start-up for approx. 10 minutes under no load conditions.
3. Release the hydraulic-lock-switch to "UNLOCK".



(1) Hydraulic lock switch
(2) Hydraulic lock indicator

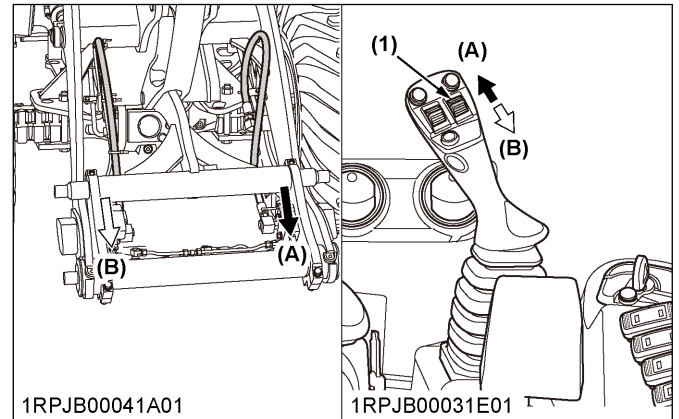
4. Push the AUX-port-enable-switch.



(1) AUX port enable switch
(2) AUX operation indicator

5. Move the AUX-port-variable-switch to send oil to the port as follows.

- Move the AUX-port-variable-switch forward to send oil to the port-A.
- Move the AUX port variable switch downward to send oil to the port-B.

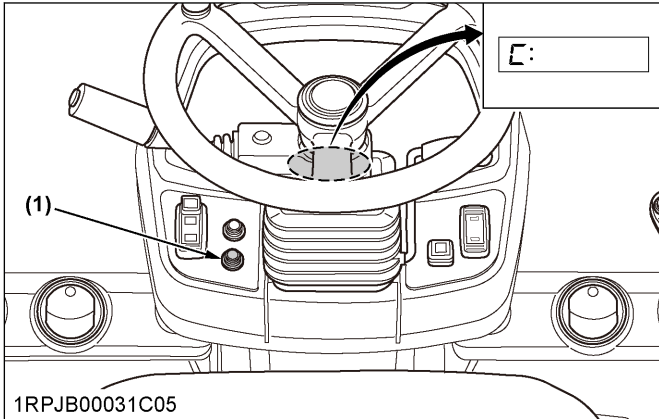


(1) AUX port variable switch
(A) To port-A
(B) To port-B

3. Setting the maximum flow volume

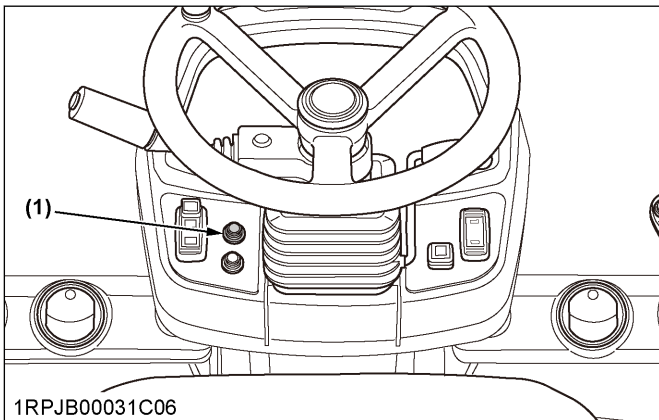
The AUX port has been factory-set to 1 action mode. You can also preset the action modes 2, 3, 4, and 5.

1. With the starter key at the **[RUN]** position, press the user-setting-switch.



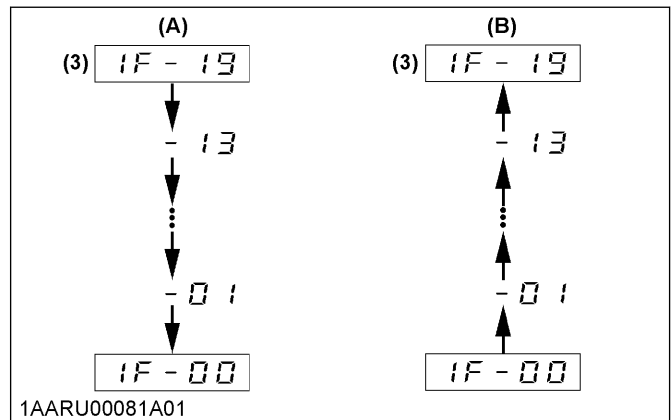
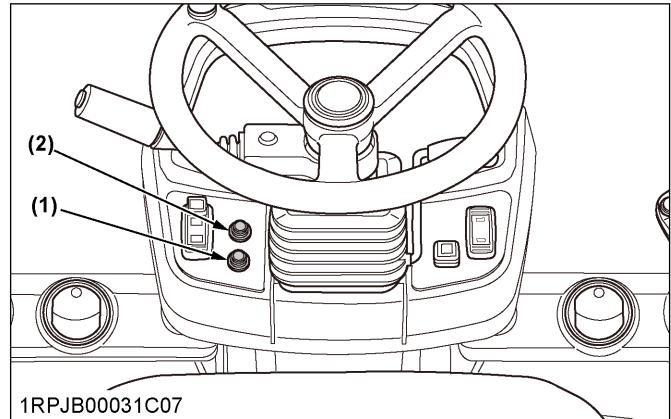
(1) User setting switch

2. Choose the AUX-setting-mode by pressing the display-selector-switch.



(1) Display selector switch

- a. Press the display-selector-switch for a long time.
 - b. Press the display-selector-switch to select your desired AUX-setting-mode number.
 - c. Press the display-selector-switch for a long time again.
3. After setting the AUX-setting-mode, press the user-setting-switch to decrease the volume or press the display-selector-switch to increase the volume.

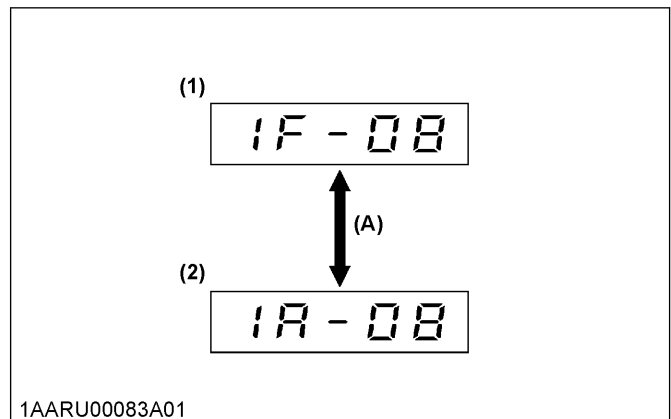


- (1) User setting switch
- (2) Display selector switch
- (3) Max. flow volume value

- (A) Press user setting switch to decrease the volume.
- (B) Press display selector switch to increase the volume.

4. Press the display-selector-switch for a long time to go to the next port and set for this port.

Changing the port



- (1) Value of left side port
- (2) Value of right side port

- (A) Press display selector switch for a long time.

5. Press the user-setting-switch for a long time to go back to step 2 to set for the next action mode.
6. When all the settings of all the action modes have been finished, press the display-selector-switch for a long time to return to step 1.

7. Press the user-setting-switch to return to the normal screen.

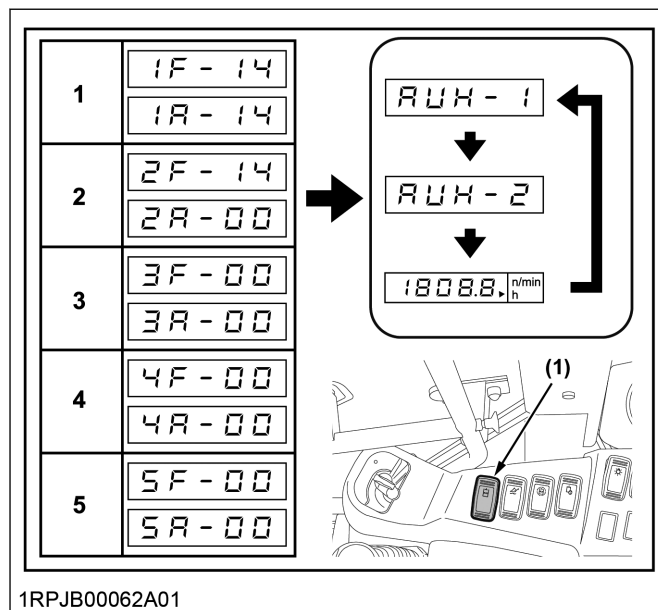
NOTE :

- In an action mode each volumes are set to 0, such action mode is skipped even if selected.

Take the following settings as an example.

Action mode 1	1F-14
	1R-14
Action mode 2	2F-14
	2R-00
Action mode 3	3F-00
	3R-00
Action mode 4	4F-00
	4R-00
Action mode 5	5F-00
	5R-00

Each time the AUX-port-enable-switch is pressed, the display changes from action mode 1, action mode 2, to normal mode in this order.



(1) AUX port enable switch

IMPORTANT :

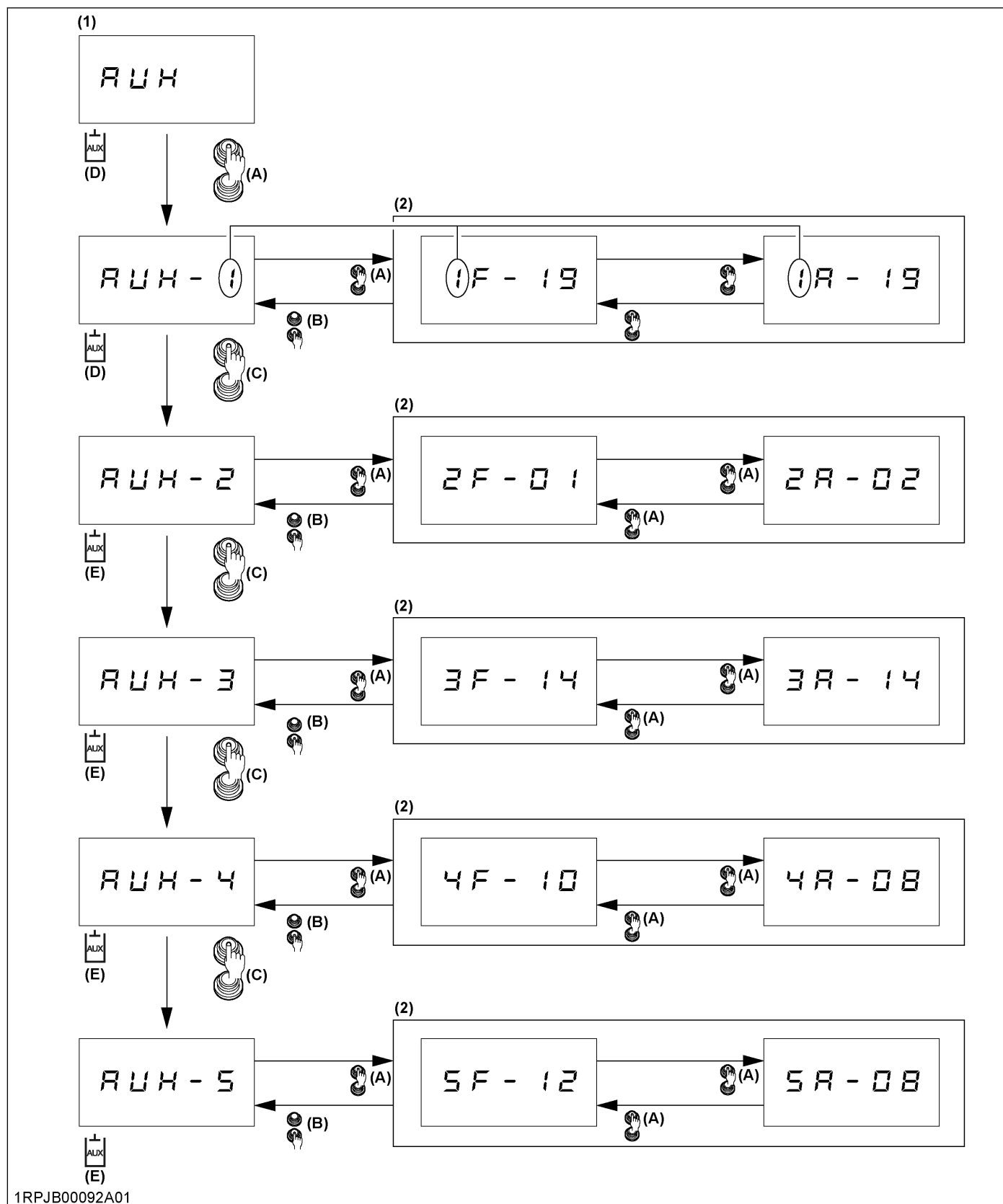
- When the AUX port is not used for a long period, dirt particles can settle in the lower part of the AUX-port lines. When the plugs on the AUX-port lines are removed to connect attachments, drain the following amount of oil before connecting the AUX-port lines.

Oil	Approx. 100 cc (3.4 oz)
-----	-------------------------

NOTE :

- Suppose that the same attachment is mounted on another machine. Even if the same limit setting is performed, their machines cannot achieve the same speed. Perform an optimum setting on each machine.
- Speed of the AUX port fluctuates by getting an attachment relieved at the limited flow volume. Determine the limit level with combined operations of attachments in mind.

AUX port (LH and RH) maximum flow volume setting flow chart



(1) AUX setting

(2) AUX port (LH and RH) maximum flow volume setting (0 to 19)

(A) Push and hold the display selector switch.

(B) Push and hold the user selector switch.

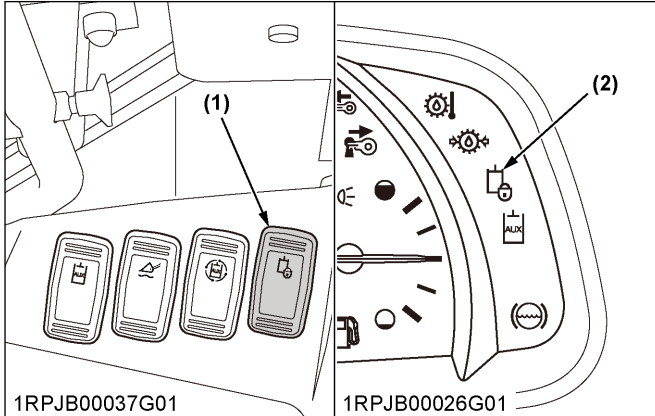
(C) Push the display selector switch.

(D) Lighting

(E) Blinking

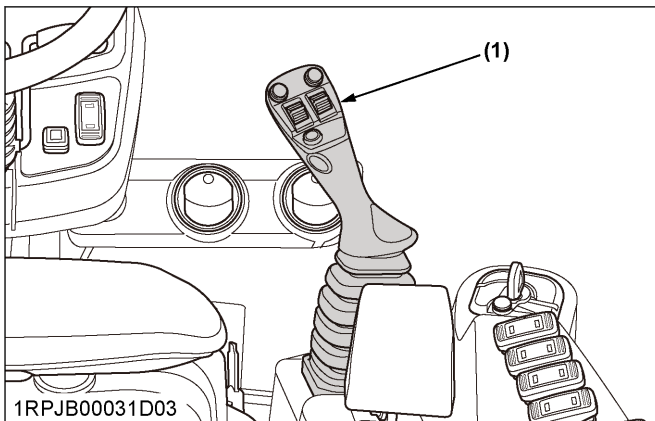
RELEASING THE PRESSURE TRAPPED IN THE HYDRAULIC SYSTEM

1. Lower the attachments to the ground and activate the hydraulic-lock-switch.
2. Turn the starter key to the **[STOP]** position and shut off the engine.
3. After stopping the engine, turn the starter key to the **[RUN]** position.
4. Deactivate the hydraulic-lock-switch.



(1) Hydraulic lock switch (2) Hydraulic lock indicator

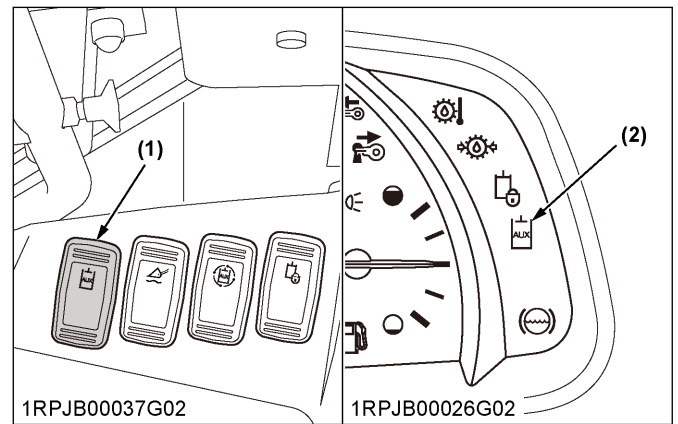
5. Move the control lever to release pressure in the hydraulic system.



(1) Multi function operating lever (control lever)

Releasing the pressure trapped in the AUX port

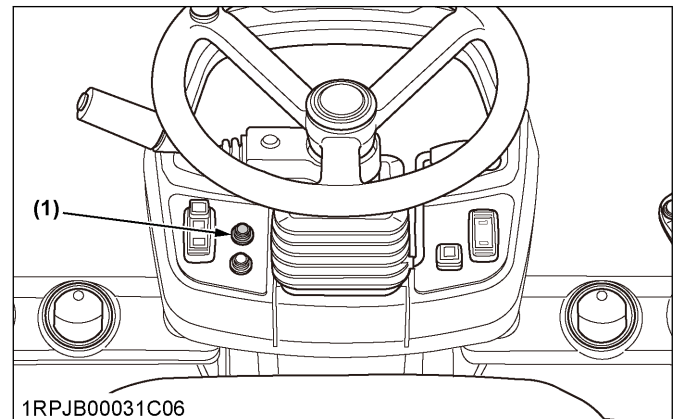
1. Perform the preceding operations of 1 to 4.
2. Turn "ON" the AUX-port-enable-switch.



(1) AUX port enable switch (2) AUX operation indicator

3. Make sure that the flow volume in all the AUX ports is not minimized.

If the pressure is removed after minimizing the flow volume in the AUX port, released pressure is not removed completely and the hose coupler may be unable to connect and disconnect.



(1) Display selector switch

MECHANICAL QUICK-COUPLER

1. Attaching the attachments to the mechanical quick-coupler

This machine utilizes a mechanical quick-coupler for easy connection and disconnection of various attachments.

! DANGER

To avoid personal injury or death:

- Following factors may result in detachment of the attachment or deformation, causing loss of performance, personal injury, or death.
 - Use of attachments that do not comply with **ISO24410**
 - Improper positioning of lever(s)
 - Non-protrusion of pin(s)

WARNING

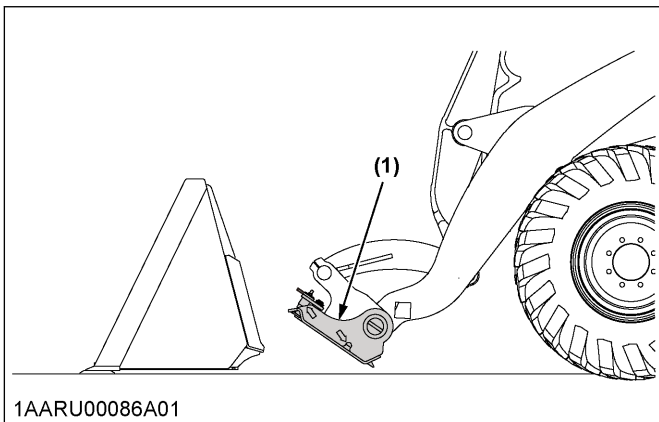
To avoid personal injury or death:

- After attaching the attachment to the mechanical quick-coupler, make sure that the attachment is securely attached to the mechanical quick-coupler, or the attachment may be detached.
- When handling the control lever, you should perform it after setting the parking-brake-switch to the parking position, and lowering the lift arm.

NOTE :

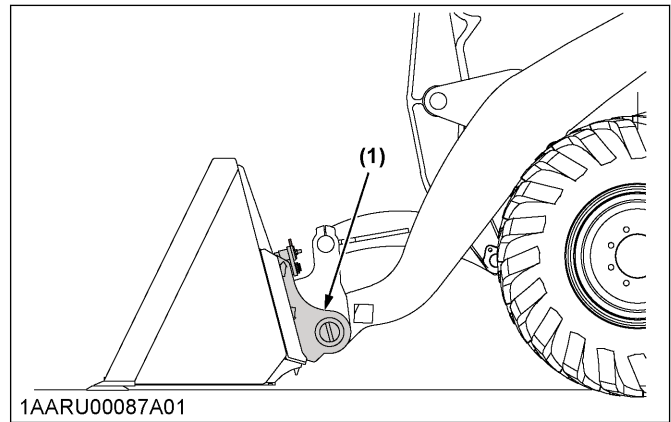
- You should locate the attachments on a level, firm surface when attaching and detaching them from the quick-coupler.

1. To mount an attachment on the machine, pull the levers of the quick-coupler lock pins to the “UNLOCKED” position.
The quick-coupler levers must be all the way up to make sure that the quick-coupler lock pins are fully retracted.
2. Position the machine squarely in front of the attachment and tilt the quick-coupler forward with the bucket cylinder.



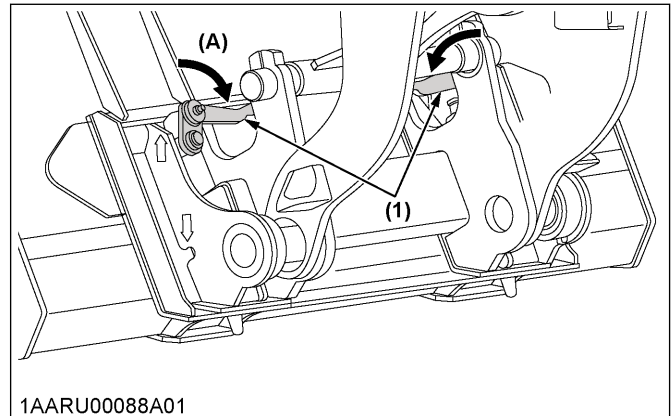
(1) Quick-coupler

3. Ease the quick-coupler mounting plate into the saddle of the attachment.
4. Roll the quick-coupler back using the bucket cylinder and raise the lift arm slightly.
The back of the attachment should rest against the front of the quick-coupler mounting plate and the lift arm should support the weight of the attachment.



(1) Quick-coupler

5. When the attachment is properly seated in the saddle and against the front of the quick-coupler mounting plate, turn off the engine and set the parking brake.
6. Push the quick-coupler levers to the fully “LOCKED” position.
Verify both lock pins are completely engaged in the base of the attachment.



(1) Quick-coupler lever

(A) Lock

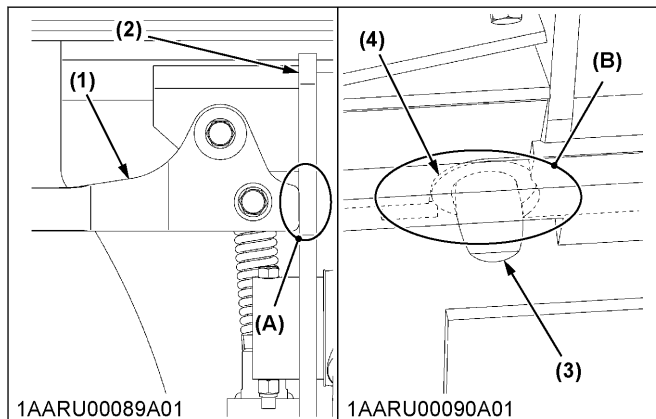
7. With an attachment in place, lift the lift arms and empty out the bucket.

8. Tilt the bucket downwards and verify the lock pins are fully engaged.

DANGER

To avoid personal injury or death:

- The following engagement points are critical.
 - The lock pins of the mechanical quick-coupler have to protrude into and through the pin slots of the attachment on both sides.
- It is critical that the lock pins are in good condition and without visible signs of wear or damage and that the operator aligns the mechanical quick-coupler with the attachment to allow the lock pins to go through the pin slots.
- Push down both quick-coupler levers until they contact the ear plates near the points where the pin bolt goes through the quick-coupler lever ((A) in the following figure).
- Do not operate the machine or attachment unless all of the preceding conditions are met.



- (1) Quick-coupler lever
(2) Ear plate
(3) Lock pin
(4) Pin slot

- (A) The quick-coupler lever contacts the ear plate at the points.
(B) The lock pin protrudes through the pin slot.

9. Visually verify when pushing the quick-coupler levers into locked position that the lock pins protrude through the pin slot.
10. When attaching different attachments, visually inspect for broken or damaged pins. If broken or damaged lock pins are found, replace before using. Use of broken pins may result in detachment or deformation, causing loss of performance, personal injury, or death. You are now ready to use the attachment.

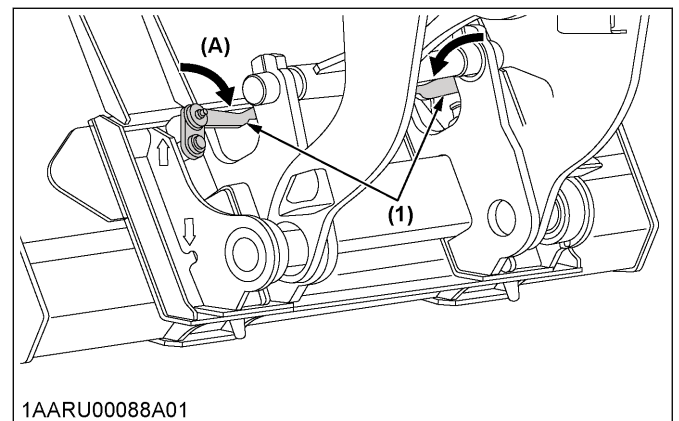
WARNING

To avoid personal injury, death or machine damage:

- Never operate or transport attachments which are not attached completely.
- Always replace damaged hardware immediately.

2. Detaching the attachments from the mechanical quick-coupler

1. Lower the attachment to ground level with the attachment slightly in the rolled back position.
2. Stop the engine.
The parking brake automatically engages.
3. Disconnect the electrical harness and hydraulic lines of the attachment from the lift arms if equipped.
4. Pull the quick-coupler lever up to the unlocked position to release the lock pins.
5. While sitting in the operator's seat of machine, start the engine and slowly move the control lever to the "DUMP" position until the attachment is pushed away from the quick-coupler.
6. Lower the lift arm so that the quick-coupler mounting plate clears the attachment saddle.
7. Back away from the attachment slowly.
8. If an attachment is not going to be attached to the quick-coupler immediately, push the quick-coupler lever to the locked position to prevent damage to the assembly point of quick-coupler lever.



- (1) Quick-coupler lever (A) Lock

HYDRAULIC QUICK COUPLER

This machine utilizes a multi-coupler for easy connection and disconnection of various attachments. By replacing the front attachments, you can use this machine in agriculture, raising stock, landscaping, gardening, and snow removal as well as general civil engineering and construction work.

1. Attaching the attachments to the quick coupler

WARNING

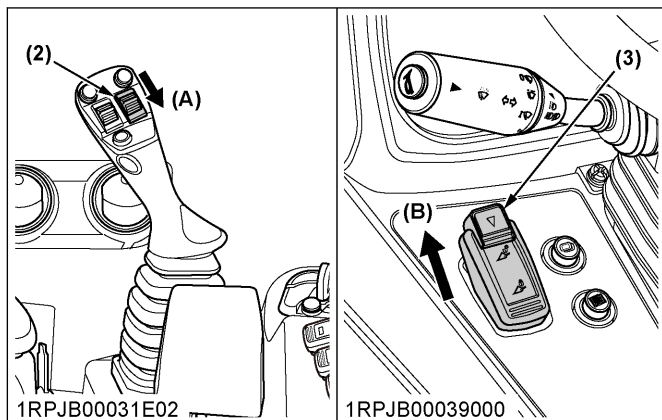
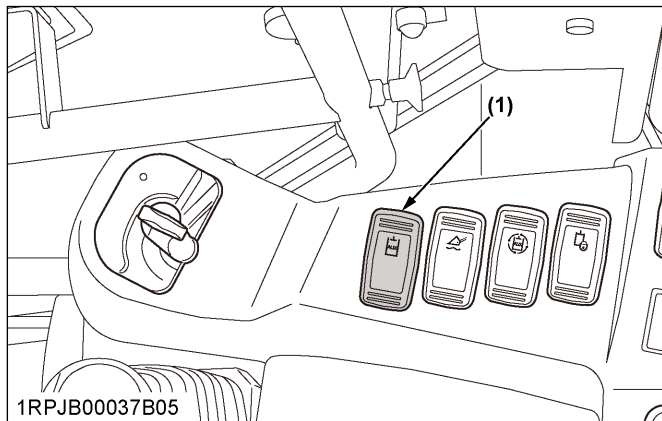
To avoid personal injury or death:

- Keep people away from the machine during connecting and disconnecting the attachment.
- After attaching the attachment to quick-coupler, make sure that the attachment is securely attached to the quick-coupler.
- Install and remove the locking pins of quick-coupler from the operator's seat.
- We will only assume reliability for wheel loader which are operated with the attachments and spare parts specified by KUBOTA.

NOTE :

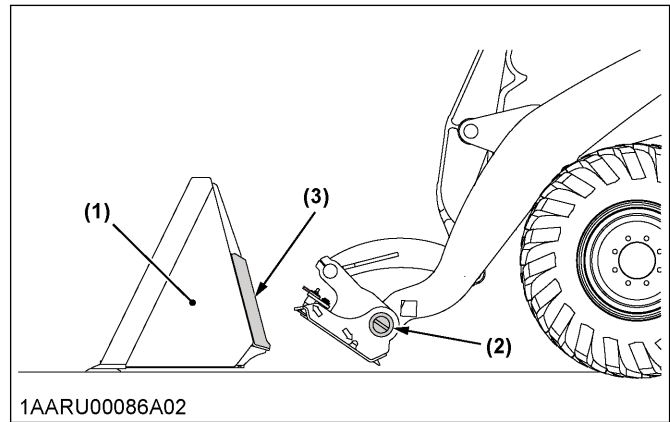
- You should locate the attachments on a level, firm surface when connecting and disconnecting them from the quick coupler.

1. Press the auxiliary-port-enable-switch.
Move the auxiliary-port-variable-switch backward while pressing the attachment-unlock-switch forward in order to retract the locking pins.



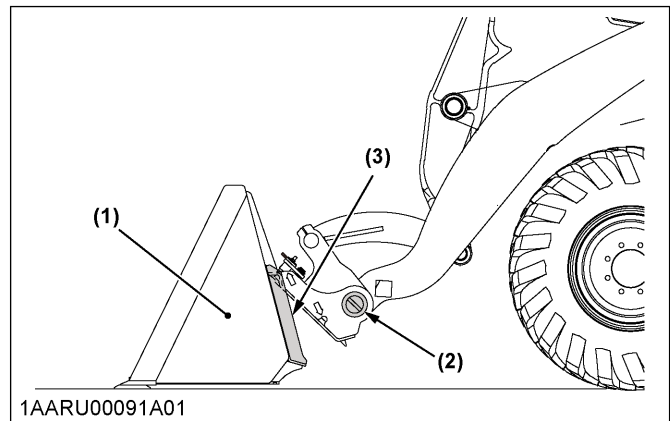
- (1) Auxiliary port enable switch (A) Move backward
- (2) Auxiliary port variable switch (B) Press forward
- (3) Attachment unlock switch

2. Position the machine squarely in front of the attachment.



- (1) Attachment
- (2) Quick coupler
- (3) Attachment bracket

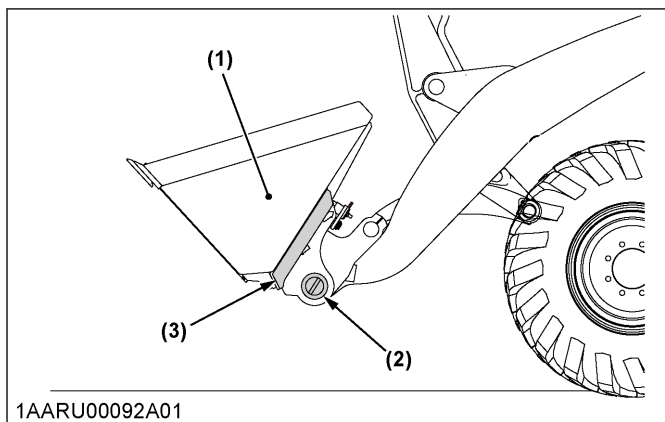
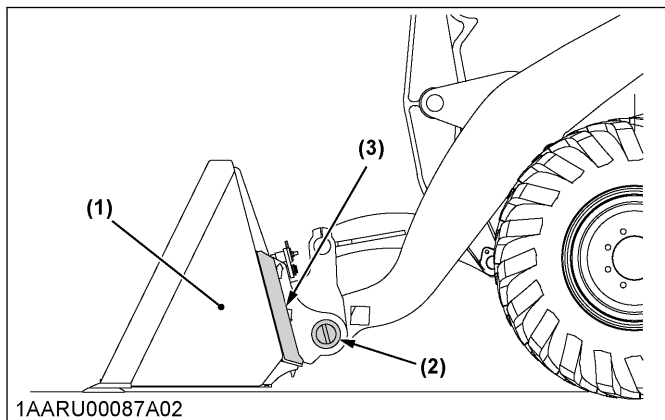
3. Tilt the quick-coupler forward approx. 15 degrees and align the upper attachment points of the attachment bracket.



- (1) Attachment
- (2) Quick coupler
- (3) Attachment bracket

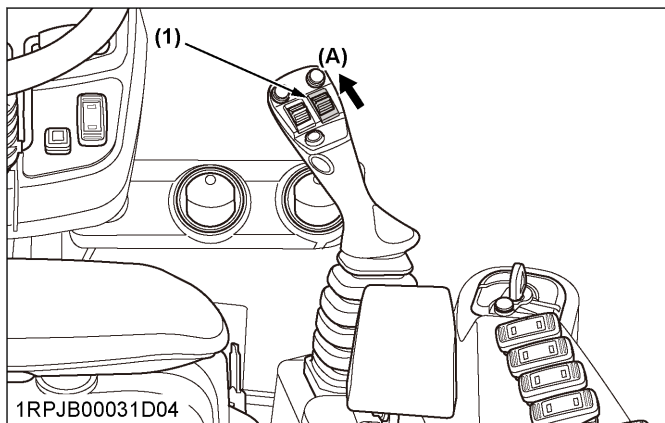
4. Raise the lift arm until the attachment is lifted off the ground.

5. Tilt the attachment bracket backwards to align the locking pins with bores of the attachment bracket.



- (1) Attachment (3) Attachment bracket
(2) Quick coupler

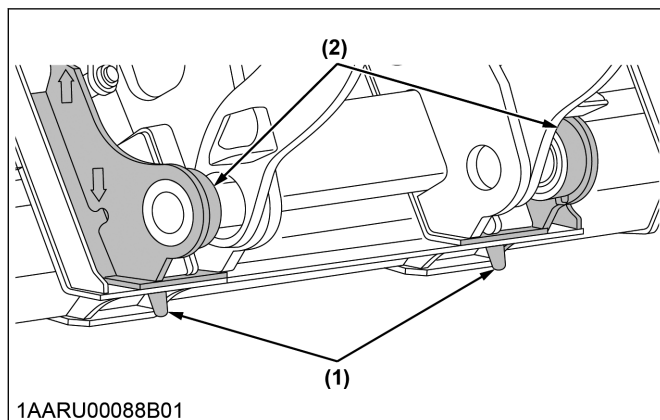
6. Lock the attachment by moving the auxiliary-port-variable-switch forward in order to move the locking pins out into locking position.



- (1) Auxiliary port variable switch (A) Move forward

the ground, so that the front end of machine rises slightly.

- When changing an attachment, the operator should make sure to check visually that the left and right locking pins of attachment bracket are in the lock position.



(1) Locking pin

(2) Attachment bracket



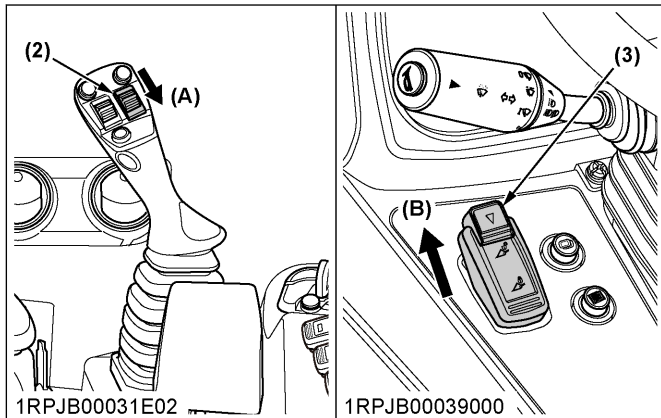
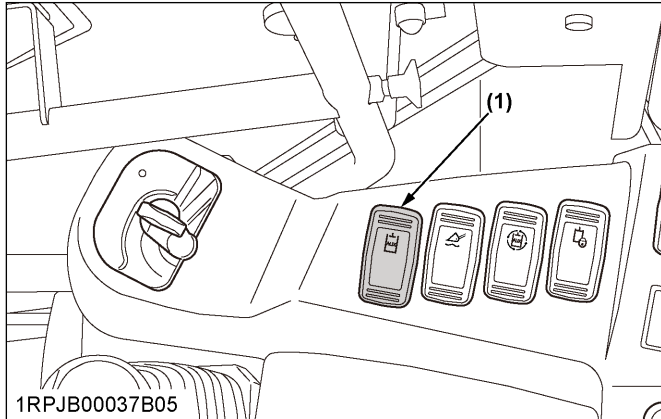
WARNING

To avoid personal injury or death:

- If you are uncertain as to whether or not that the attachment is securely, be sure by pressing the edge of the attachment against

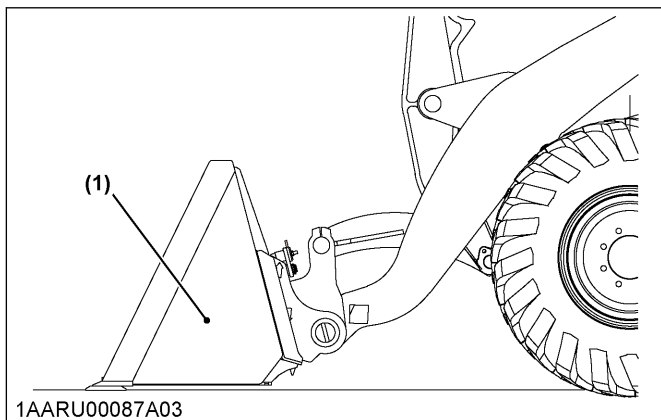
2. Detaching the attachments from the quick coupler

1. Press the auxiliary-port-enable-switch.
Move the auxiliary-port-variable-switch backward while pressing the attachment-unlock-switch forward in order to retract the locking pins.



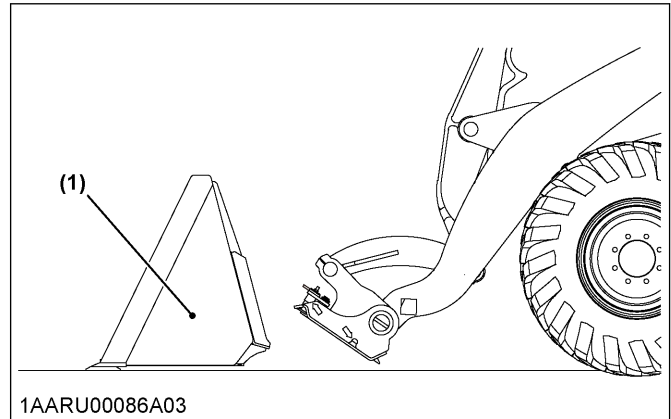
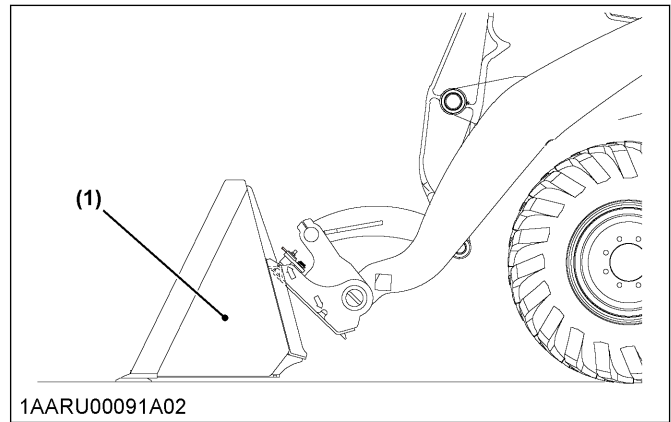
- (1) Auxiliary port enable switch (A) Move backward
(2) Auxiliary port variable switch (B) Press forward
(3) Attachment unlock switch

2. Move the control lever to the left and then lower the lifting arm to disengage from the attachment.



(1) Attachment

3. Reverse away from the attachment.



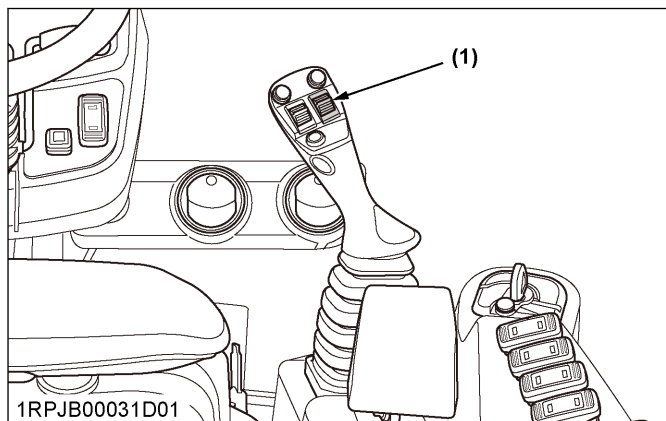
(1) Attachment

CONNECTING AND DISCONNECTING THE HYDRAULIC HOSE

When activating an attachment with a hydraulic cylinder by using AUX port, connect or disconnect hydraulic hoses. At this time, follow the following procedures.

1. Before starting to work, apply the parking brake and stop the engine.
2. Turn the starter switch in **[RUN]** position.

3. Move the auxiliary-port-variable-switch forward and backward several times to release any hydraulic pressure remaining in the circuits.

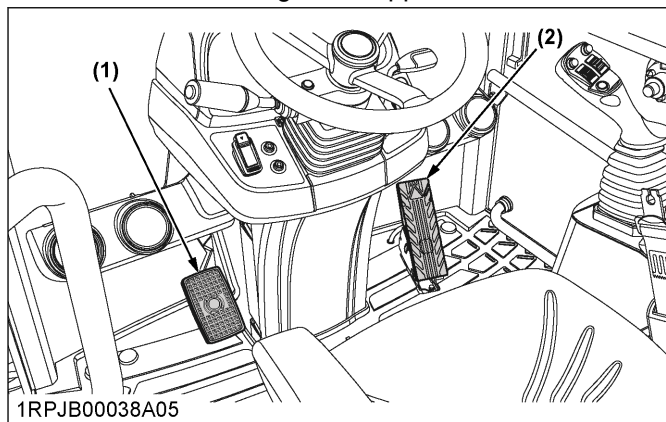


(1) Auxiliary port variable switch

HOW TO USE THE INCHING AND BRAKE PEDAL

1. Operating the inching and brake pedal

Operate the inching-and-brake-pedal as the procedures in this section according to the application.

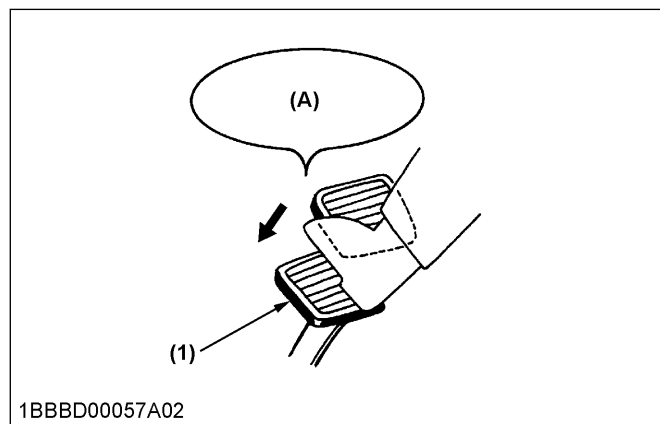


(1) Inching and brake pedal (2) Accelerator pedal

To stop the machine

The inching-and-brake-pedal controls the HST pump and brake.

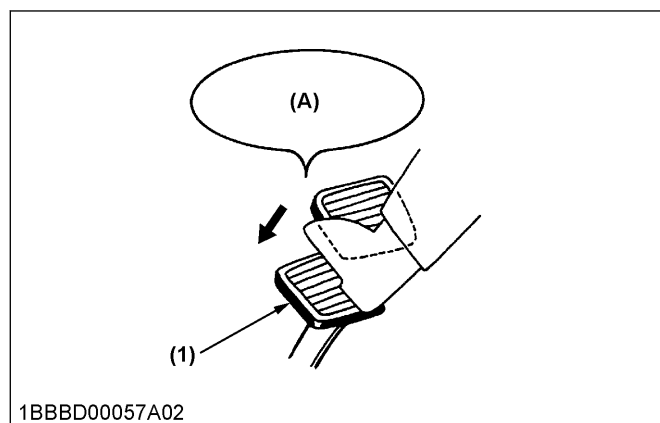
1. To stop the machine completely during work, first press the inching-and-brake-pedal slightly. Oil flow from HST pump comes to 0 and cuts the driving power to slow down or stop the machine.
2. Press the inching-and-brake-pedal completely. The disc brake will be applied to stop the machine completely.



(1) Inching and brake pedal (A) Press with force

To approach slowly

1. Press the inching-and-brake-pedal slightly while pressing the accelerator pedal. The machine approaches slowly.

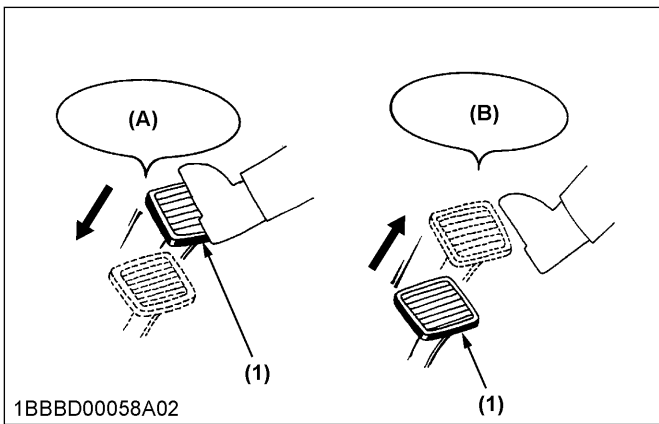


(1) Inching and brake pedal (A) Press slightly

The machine can slowly approach an object by accelerator pedal regulation only, without inching-and-brake-pedal operation.

To scoop during digging

1. In case of the bucket does not raise up during digging, press the inching-and-brake-pedal. Traction force is reduced and lifting force is increased, if the inching-and-brake-pedal is pressed.



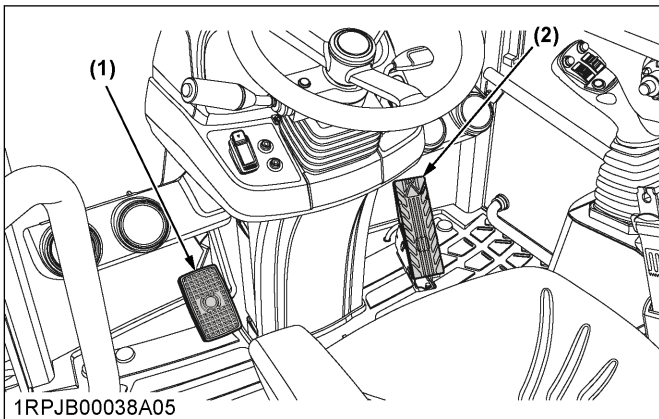
(1) Inching and brake pedal (A) Press fully (B) Release pedal

2. Using the inching and brake pedal according to the job

WARNING

To avoid personal injury or death:

- When traveling with a fully-loaded bucket, do not press the inching-and-brake-pedal all the way. The machine will brake abruptly and cause dangerous loss of balance that may cause an accident.

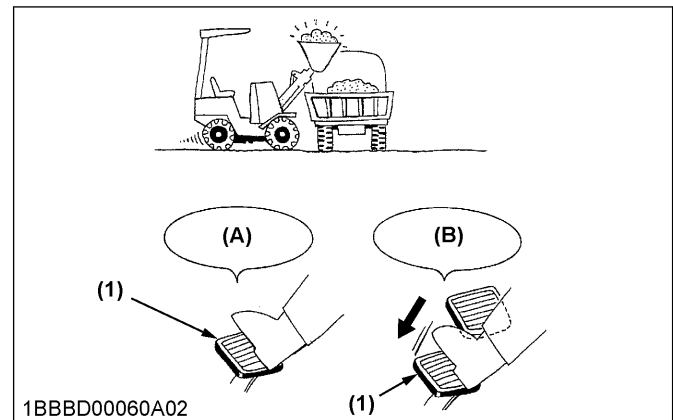
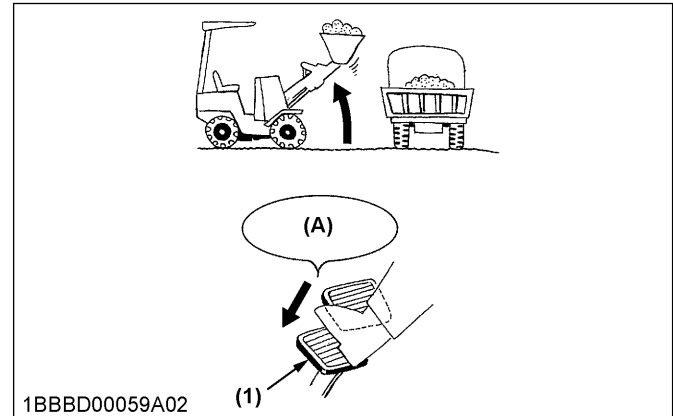


(1) Inching and brake pedal (2) Accelerator pedal

Loading

- Press the inching-and-brake-pedal slightly while pressing the accelerator pedal to approach an object slowly.
You can also perform slow approach of inching-and-brake-pedal by regulating accelerator-pedal operation.
You can operate the bucket at the maximum engine rpm when the inching-and-brake-pedal is used to approach slowly. Bucket-operation-speed is thus maintained.
- Press the inching-and-brake-pedal slightly to allow the machine to approach to the desired stop position.

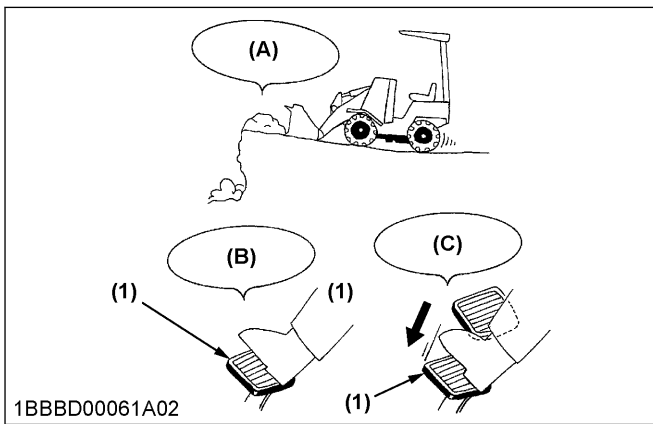
- Then press the inching-and-brake-pedal all the way to stop the machine completely.



(1) Inching and brake pedal (A) Press slightly (B) Press all the way

Refilling

- Press the inching-and-brake-pedal slightly to approach the desired stop position.
- Then press the inching-and-brake-pedal all the way to stop the machine at the exact position.
 - The traveling speed automatically decreases to prevent the engine stalling as the external load increases.
 - During traveling with bucket operation, the traveling speed abruptly increases at the time of dumping operation since the external load changes at that time.
- Use the inching-and-brake-pedal and concentrate the power to the attachment operation near holes or slopes.



- (1) Inching and brake pedal
- (A) Leave one pile
(B) Press slightly
(C) Press all the way

TYPICAL JOBS USING A WHEEL LOADER

⚠ WARNING

To avoid personal injury or death:

- When transporting a load, keep the loader bucket as low as possible to avoid tipping over. Be extremely careful when working on inclines.
- Avoid unreasonable operation such as on dangerous terrain, beyond the load capacity, or beyond the intended use of the machine because it may cause the machine to tip over.
- Slow down before entering ungraded terrain.
- Do not drive the machine close to the edges of ditches or banks which may collapse under the weight of the machine especially when the ground is loose or wet.
- Operating on slopes in rain, in snow, at loose gravel, at soft ground, and so on can be dangerous because such situations will change the ground conditions. Do not operate this machine in questionable ground conditions.
- Never perform digging or shoveling with the machine in the articulated condition.
- Never dig or shovel at high speed. Such operation can cause the machine to lose balance and its rear wheels to lift off the ground, which may cause a serious accident in turn.
- To avoid possible tip over of machine, do not operate the machine in any site whose terrain cannot be ascertained, such as ground covered with weeds or snow. Check for hidden projections, dents, road shoulders, and so on, beforehand, and take care not to approach them during work.
- Be sure to ease up on the accelerator at the end of backfilling grooves, the areas at the edge of

cliffs, the pond banks, or at the end of an ascent. Upon removal of the external load, the machine speed will automatically increase. Reduce speed to avoid entering grooves or tipping over.

- To avoid slip or tipping over of machine, do not operate the machine on ungraded or soft terrain, such as landfills. Grade and compact the site beforehand at all times.

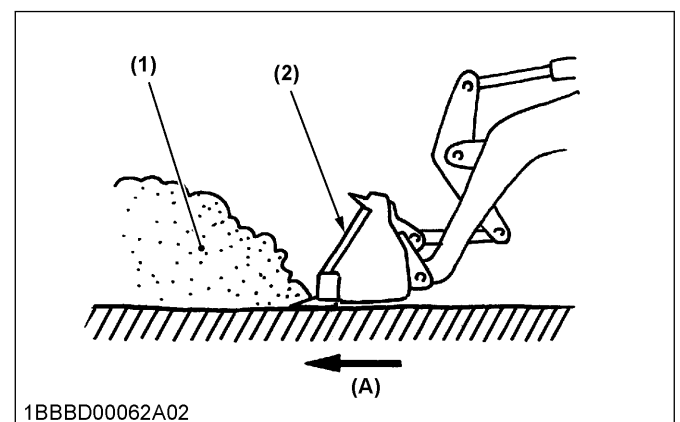
There are some typical jobs using a wheel loader. You can also use the wheel loader to perform other jobs by connection with various attachments.

- **Digging and loading**
(See Loading a sand pile on page 87 and Digging and loading from flat ground on page 88)
- **Refilling**
(See Refilling on page 88)
- **Leveling the ground**
(See Leveling the ground on page 88)
- **Loading onto a truck**
 - Cross loading method
(See Loading onto a truck by cross loading method on page 89)
 - V-shift loading method
(See Loading onto a truck by V-shift loading method on page 89)

1. Digging and loading job

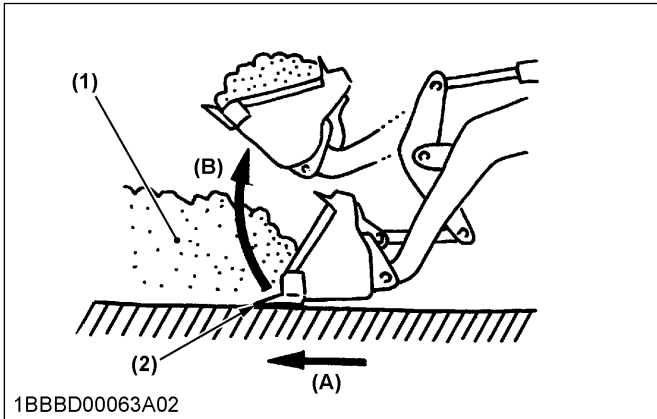
1.1 Loading a sand pile

1. Direct the bucket blade parallel to the ground and advance the machine to drive the bucket into the sand pile.



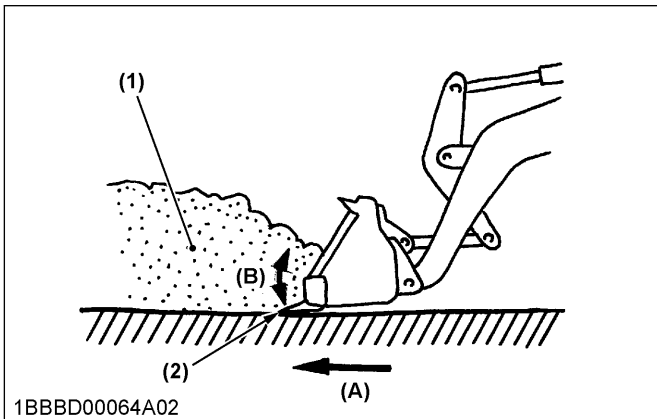
- (1) Sand pile
(2) Bucket
- (A) Drive into sand pile

- When the bucket is sufficiently driven into the sand, lift the bucket while advancing the machine.



- (1) Sand pile (A) Sufficient drive into sand
(2) Bucket (B) Lift

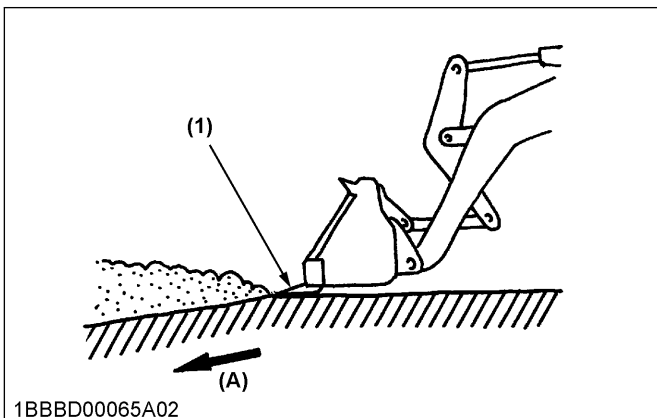
- If the bucket is insufficiently driven into the sand, move the bucket blade up and down while moving forward.



- (1) Sand pile (A) Insufficient drive into sand
(2) Bucket (B) Up and down

1.2 Digging and loading from flat ground

- Direct the bucket blade slightly downward and lower the bucket as you advance the machine.

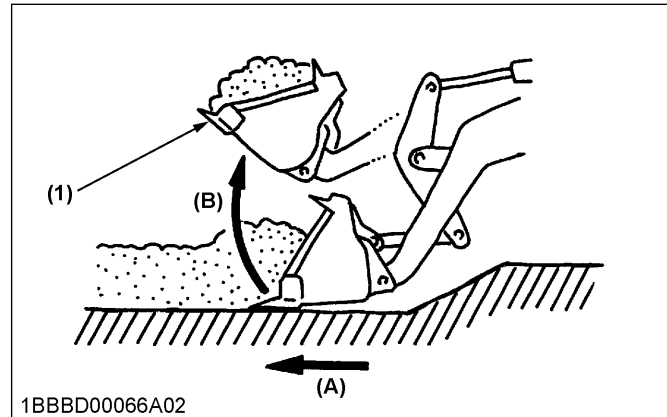


- (1) Bucket blade (A) Driving direction

The recommended digging depth per pass is as follows.

Digging depth per pass	Between 10 cm and 15 cm (4 in. to 6 in.)
------------------------	---

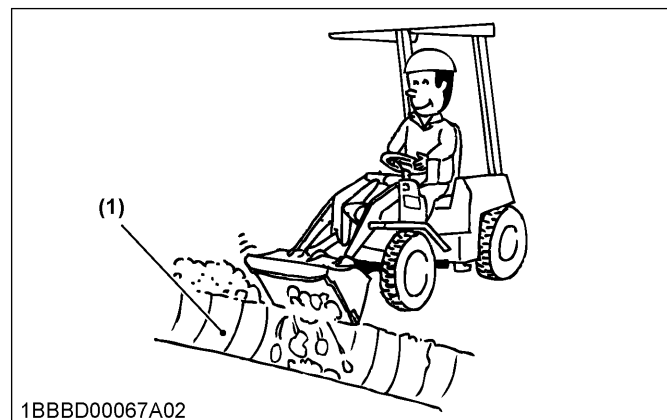
- While adjusting the vertical movement of the bucket, lift the bucket so that sand can be removed by layers. Continue lifting the bucket as you advance the machine.



- (1) Bucket (A) Driving direction
(B) Lift

2. Refilling

- Direct the bucket horizontally and push the piled sand toward the ditch.
- When the bucket reaches the ditch, dump the bucket to discharge the sand into the ditch.

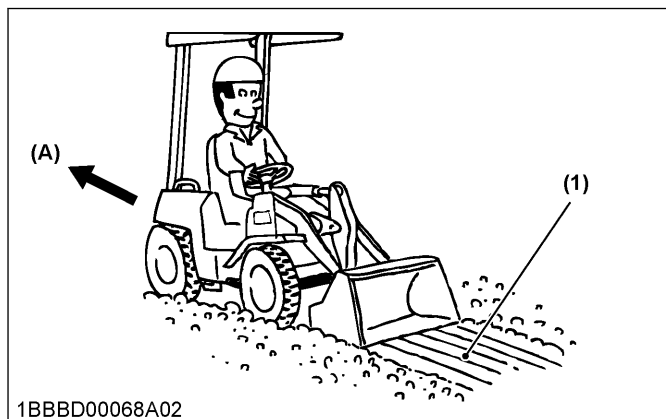


- (1) Ditch

3. Leveling the ground

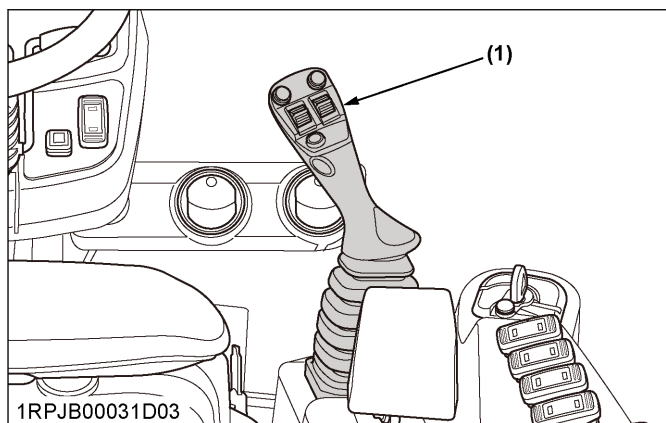
- Dump and tilt the bucket alternately to distribute the soil from the bucket over the ground as you move the machine backward.
- Dump the bucket, lower the bucket, and move the machine backward so that the blade scratches the ground surface.

3. Direct the bucket horizontally, set the lift arms in the "FLOATING" position using the control lever, and level the ground while backing the machine.



(1) Ground surface

(A) Move backward



(1) Control lever

4. Loading method onto a truck

Examine the job site situation and choose the efficient loading method that minimizes the swivel angle and moving distance.

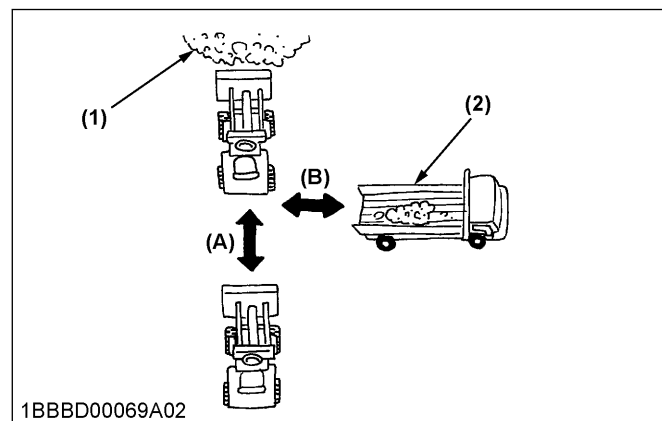
- **Cross loading method**
(See Loading onto a truck by cross loading method on page 89)
- **V-shift loading method**
(See Loading onto a truck by V-shift loading method on page 89)

4.1 Loading onto a truck by cross loading method

Cross-loading method is the fastest and leads to the shortest cycle time.

1. Position a truck perpendicular (90 degrees) to the shoveling direction of the machine.
2. After digging and shoveling with the bucket, move the machine backward.
3. Then drive the truck to a point between the machine and the piled sand.

4. Then, load the sand onto the truck.



(1) Piled sand

(2) Truck

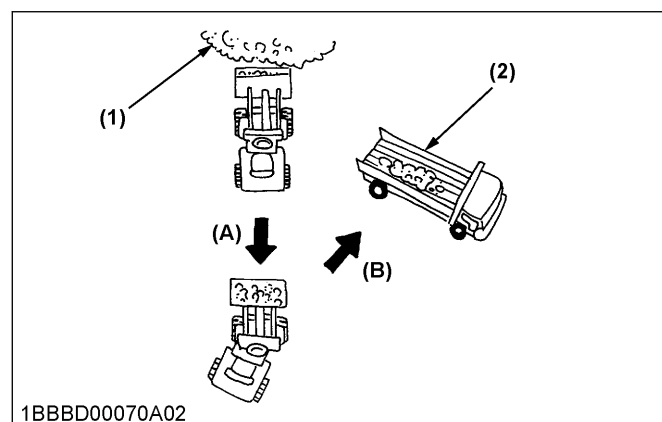
(A) Shoveling direction

(B) Perpendicular to shoveling direction

4.2 Loading onto a truck by V-shift loading method

1. Position a truck at an angle of about 60 degrees from the shoveling direction of the machine.
2. After digging and shoveling with the bucket, move the machine backward and turn the steering wheel to position the machine perpendicular (90 degrees) to the truck.
3. Then move the machine forward to load sand onto the truck.

A smaller angle between the machine and truck will provide a shorter cycle time and more efficient operation.



(1) Piled sand

(2) Truck

(A) Shoveling direction

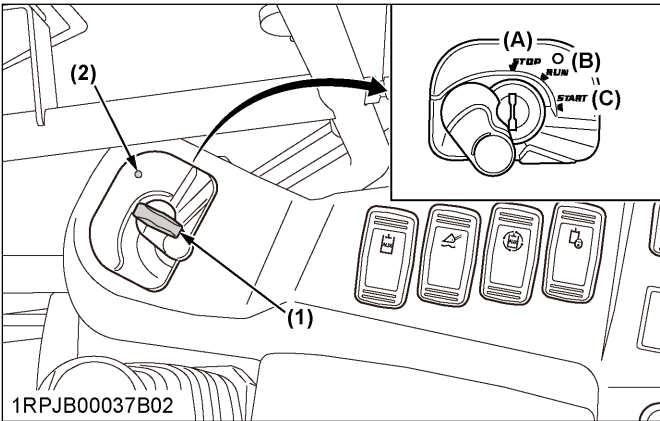
(B) Perpendicular to truck

ANTI-THEFT DEVICE [KCL ONLY]

This machine is equipped with an anti-theft device, which allows you to start the engine with the registered key alone.

If a registered key is stolen, the stolen key can be unregistered. It prevents the stolen key from starting the engine to protect the machine against theft.

With the starter key at [STOP] position, the anti-theft indicator stays on to tell that the anti-theft function is enabled. Be sure that the anti-theft indicator is on before leaving the machine.



(1) Starter key

(2) Anti-theft indicator

(A) STOP

(B) RUN

(C) START

Types of keys

The machine comes with two different types of keys.

 1BBBD00071A01	Black key (individual key)	Black key is used to start the engine. It is possible to start the engine before by inserting the key and turning it to the [START] position. Registering the black key with the machine by using the red key will allow the black key to start the engine. You cannot use a black key that is not registered with the machine to start the engine. Initially 2 keys including a spare key are supplied. The 2 accompanying keys have been already registered. Up to 4 keys can be registered.
 1BBBD00072A01	Red key (registration key)	If you should lose a black key for starting the engine, you can use the red key to register another black key with the machine. You cannot start the engine with the red key. For the method of using the red key, see Registering a black key (individual key) with the machine when a black key is lost [KCL only] on page 90.

NOTE :

- KCL is an abbreviation for Kubota Canada Ltd.

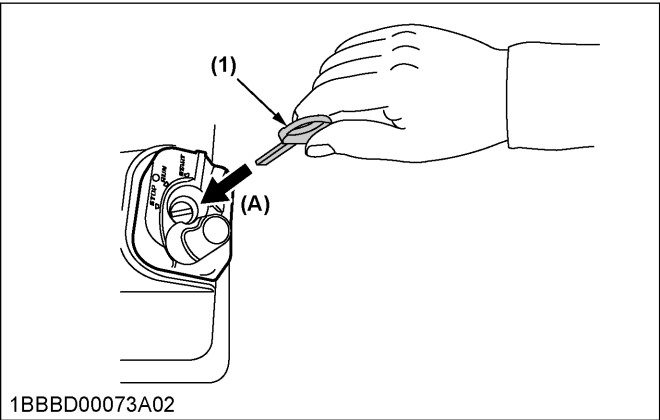
1. Registering a black key (individual key) with the machine when a black key is lost [KCL only]

! WARNING

To avoid personal injury or death:

- Before programming an anti-theft key, be sure to sit on the operator's seat and make sure that all the control levers are in the "NEUTRAL" position. Otherwise, the machine may get moving as soon as the engine is started, which could lead to a dangerous situation.
- The exhaust gas from the engine includes harmful substances such as carbon monoxide. Be careful not to register a black key in a room where the exhaust gases easily build up or in an ill-ventilated place.

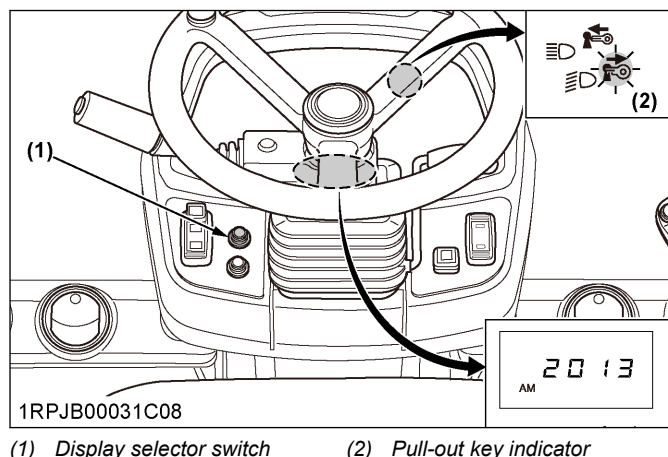
- Insert the red key into the key switch.
 - Do not turn the inserted key. If the inserted key is turned to the [RUN] position, return it to the [STOP] position.



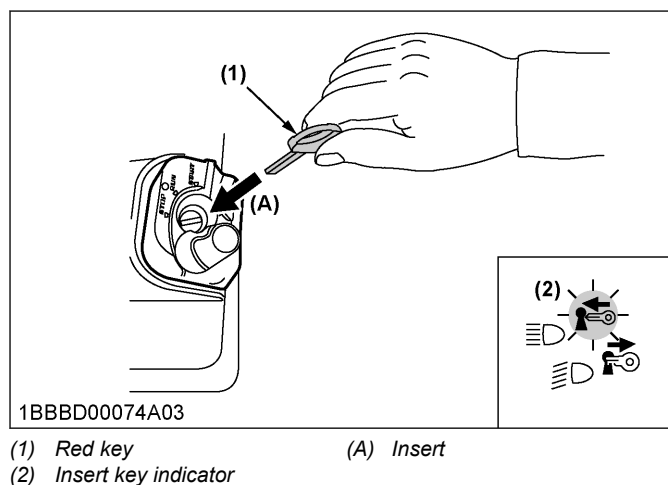
(1) Red key

(A) Insert

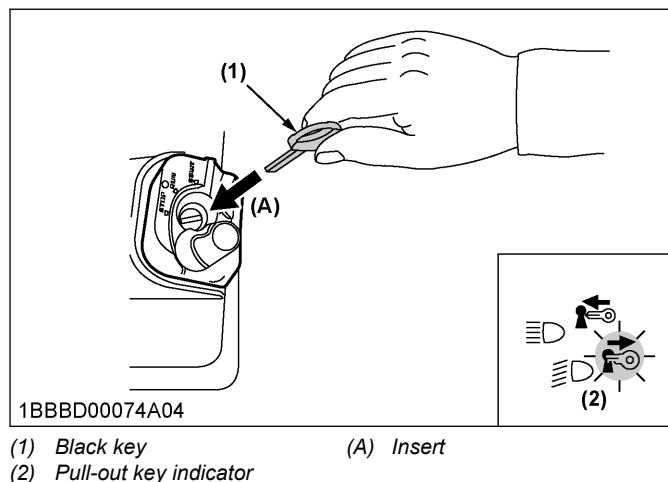
- Press the display-selector-switch once.
Then the pull-out key indicator blinks.



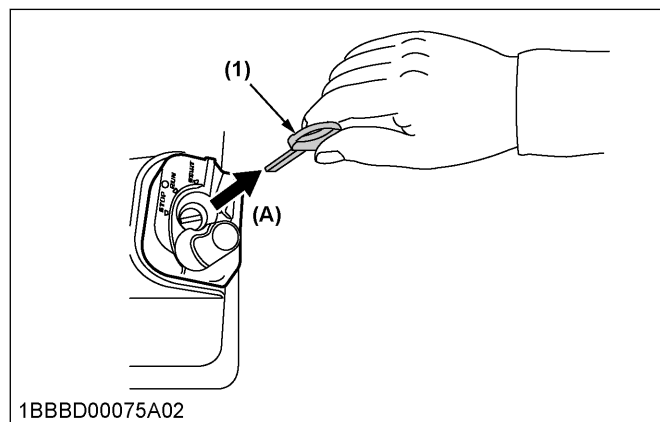
- Pull out the red key from the key switch.
Then the insert key indicator blinks.



- Insert the black key into the key switch.
 - Do not turn the inserted key. If the inserted key is turned to the **[RUN]** position, return it to the **[STOP]** position and return to the step 1.
 Then the pull-out key indicator blinks.



- Pull out the black key.



- When all registration operation has been finished, turn the black key to the **[RUN]** position.

NOTE :

- If a registered black key is stolen or lost, re-register the remaining black key. When re-registering is performed, the stolen or lost black key is unregistered and it becomes impossible to start the engine with the stolen or lost black key.
- If the red key is stolen or lost, it becomes impossible to register or re-register a black key for starting the engine and you should replace the peripheral devices. Therefore store the red key with great care. If the red key gets lost by any case, promptly contact your dealer.
- Use the KUBOTA-specified key ring to hold the black key or red key. Any unspecified key rings may interfere with the signal transfer between the key and the key switch, possibly failing to start the engine or to register a key properly.
- Do not bundle 2 or more keys when using them. Bundling 2 or more keys may cause the interference of the electric wave, possibly failing to start the engine.
- Cut and remove the ring that is used to bundle the keys at the time of delivery. If the keys remain bundled, the engine may start with the red key or re-registering could not be performed properly.
- If an unregistered key is inserted and turned more than 6 times for 1 minute, the alarm sounds for 30 seconds. The alarm keeps sounding even if the key is drawn out.
 - Insert and turn on the registered key. The alarm stops itself.
- If something is wrong with the machine, immediately contact your dealer and get the machine inspected and repaired.

TRANSPORTING BY TRUCK

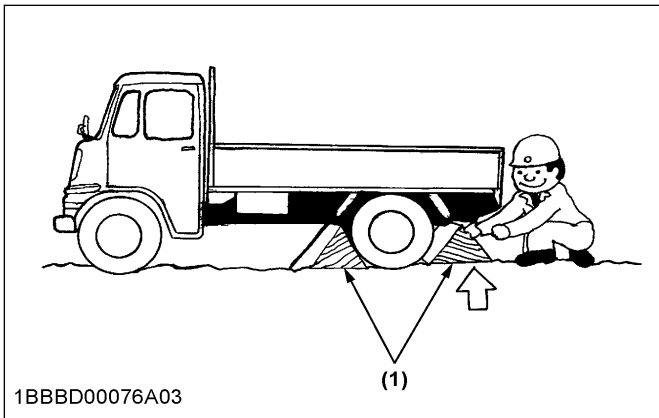
LOADING THE MACHINE ON AND FROM A TRUCK

WARNING

To avoid personal injury or death:

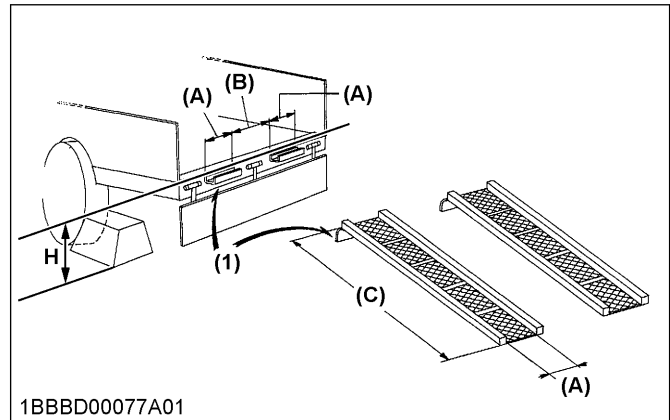
- When loading or unloading the machine on or from a truck, be sure to use strong ramps. Never use wet lumber, and so on.
- Keep the ramps at an angle such that the machine can be kept stable (10 degrees to 15 degrees). Never try to change directions while on the ramps.
- Do not alter the climbing direction when the machine is already on the ramps. If direction of climb needs correcting, first bring the machine down off the ramps and correct the climbing direction.

1. Before loading the machine onto a truck, apply the parking brake of the truck and block the front and rear wheels.



(1) Block

2. Fix the ramps securely to the truck so that the machine and the truck cannot slip.



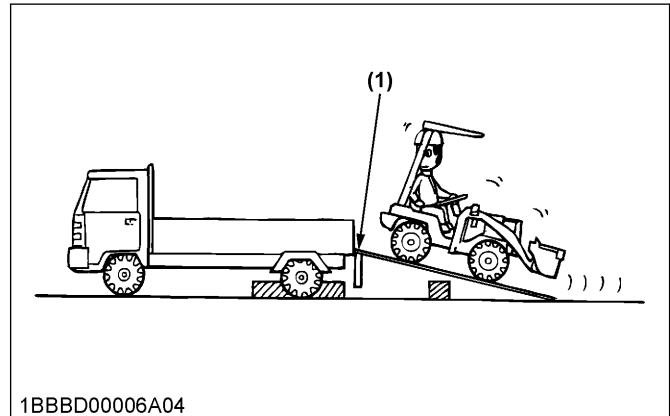
(1) Lock plate

(A) 500 mm to 600 mm
(19.7 inch to 23.6 inch)

(B) 650 mm (25.6 inch)

(C) 4 x H or more

3. Support the rear end of the bed to prevent the front of truck from rising.



(1) Rear end of bed

4. When loading or unloading the machine on or from a truck, keep the bucket about 40 cm (16 in.) up from the ground and reverse the machine at low speed to load it, or advance it at the same speed to unload it.

IMPORTANT :

- When advancing and reversing the machine on the truck bed, be careful not to hit the cabin and the gates.

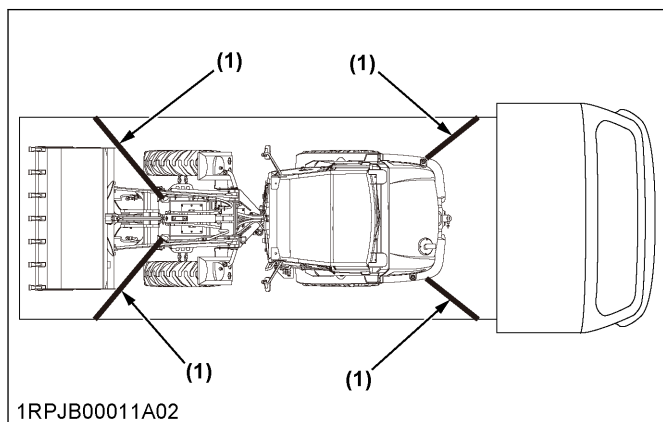
PRECAUTIONS FOR TRANSPORTING



WARNING

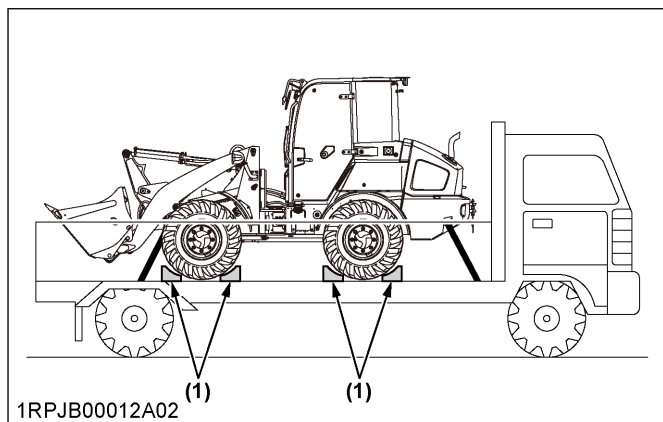
To avoid personal injury or death:

- Before transportation, perform the following to prevent the machine from moving during transportation.
- Check to see that the longitudinal axis of machine aligns with that of the truck bed.
 1. Stop the engine.
 2. Lower the bucket and attachment to the truck bed.
 3. Release the hydraulic pressure in the hydraulic system by operating control levers.
 4. Remove the starter key.
 5. Secure the steering-frame-lock.
 6. Block the wheels of machine.
 7. Securely fasten the machine to the truck with straps or chains.



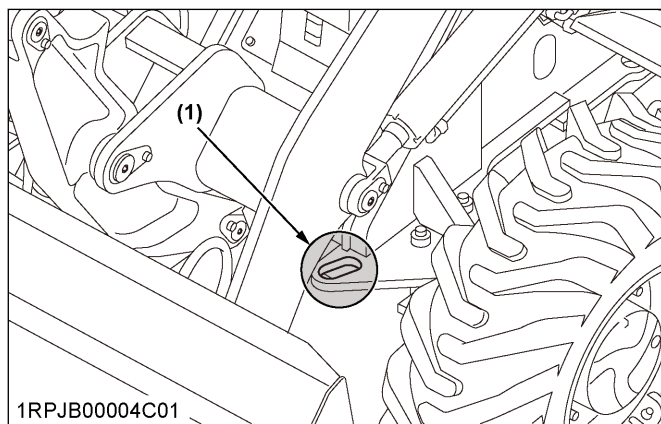
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(1) Strap or chain

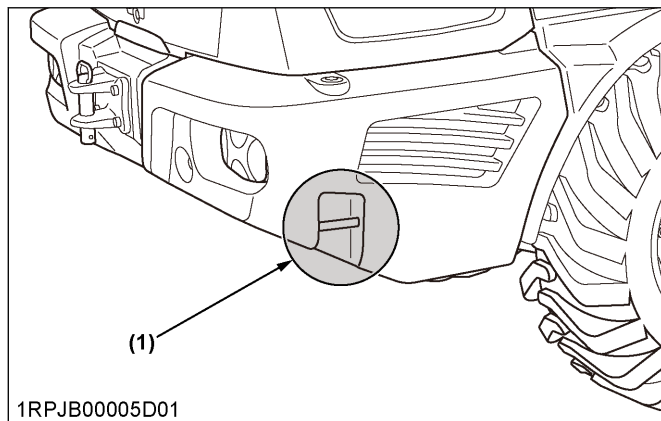


1RPJB00012A02

(1) Block



1RPJB00004C01



1RPJB00005D01

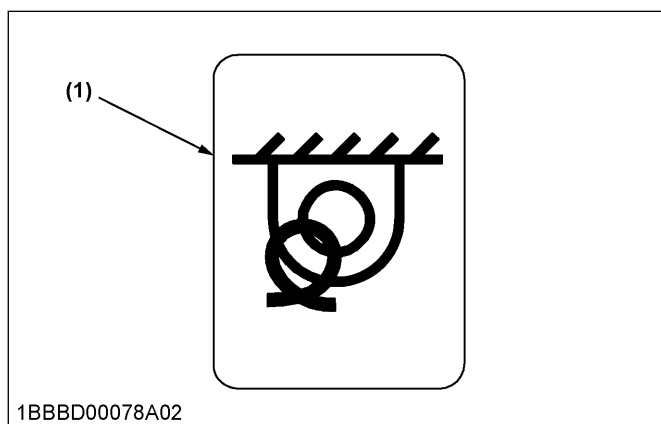
(1) Lug (both sides)



WARNING

To avoid personal injury or death:

- Use the locations indicated by marks in the diagram to tie down the machine



1BBBD00078A02

(1) Diagram to tie down machine

LIFTING THE MACHINE

PRECAUTIONS FOR LIFTING THE MACHINE

DANGER

To avoid serious injury or death:

- This section describe the instructions for safe lifting. Read these instructions carefully before lifting the machine. Make sure that the operating personnel read the operator's manual carefully before lifting.

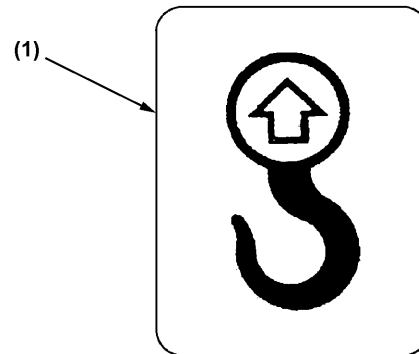
IMPORTANT :

- Select a firm level surface, lower the working equipment to the ground, and stop the engine.
- Secure the front and rear frames using the steering-frame-lock so that the front and rear frames are not articulated.
- Do not lift loads that exceed the maximum rated capacity of the hoist and attaching hardware.
- See specifications for attaching hardware and choose hardware suitable for the weight, size, and configuration of the load.
- Assess the center of gravity of the load, position the hook directly over the load, and lift the load so that it remains horizontal.
- Do not enter and do not allow others to enter the working area under the suspended load and do not move the load over people. Move the load only in an area where the equilibrium can be maintained.
- Always inspect the attaching hardware, including chains, hooks, and master links before each use. Do not use any worn or damaged attaching hardware. If the safety latch is missing, do not use attaching hardware.
- Make sure that the lifting chains, hooks, and master links are strong enough to withstand the load being lifted.

Lifting

IMPORTANT :

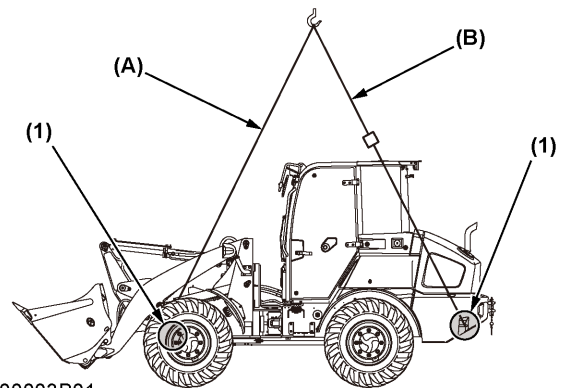
- Make sure that the steering-frame-lock is attached.
- Stop the engine. Remove the starter key from the starter switch.
- Use the locations indicated by marks in the diagram to lift the machine.



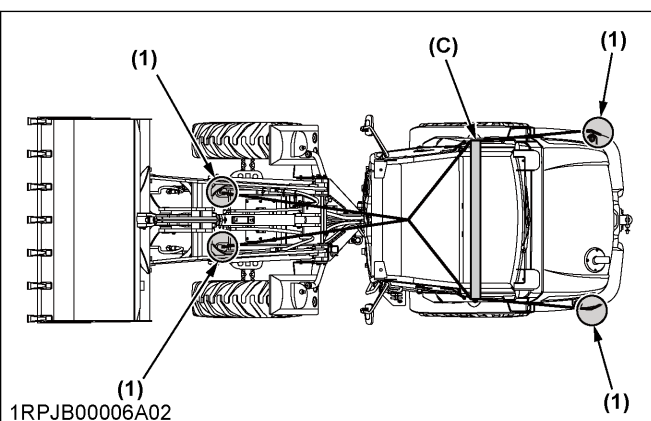
1AARU00004A01

(1) Diagram to lift machine

- Use the specified lifting position as shown in the following figures to lift the machine.



1RPJB00003B01



1RPJB00006A02

(1) Lifting position

- (A) 3.8 m (12 ft 6 in.)
- (B) 4.0 m (13 ft 1 in.)
- (C) 1.5m (4 ft 11 in.)

HANDLING THE WHEEL LOADER IN COLD WEATHER

PREPARATION FOR OPERATION OF THE MACHINE IN COLD WEATHER

- Change the engine oil to one of low viscosity suitable for use in cold weather.
- In cold weather, battery power drops, and electrolyte may freeze if the battery is not sufficiently charged. To prevent electrolyte from freezing, be sure to keep the battery charged at 75% capacity or more. It is also recommended to keep the battery in closed or heated rooms to facilitate next starting.
If the battery-electrolyte level is too low, do not add distilled water after operating, add distilled water before starting the next operation while the engine can be running.
- Add the antifreeze to cooling water in the radiator and the recovery tank while machine is out of operation if ambient temperature drops below 0 °C. The mixing ratio between water and antifreeze is determined by the ambient temperature.

Mixing ratio between water and antifreeze

Ambient temperature °C (°F)	Anti-freeze %	Water %
-5 (23)	30	70
-10 (14)	30	70
-15 (5)	30	70
-20 (-4)	35	65
-25 (-13)	40	60
-30 (-22)	45	55
-35 (-31)	50	50
-40 (-40)	55	45

IMPORTANT :

- Use a permanent-type antifreeze or long-life coolant.
- Be sure to drain the cooling water and deposits completely from the radiator interior before adding a new mixture of water and antifreeze.
- Antifreeze contains anticorrosive. It is not necessary to add a cleaner to the coolant.
- Engine-coolant capacity is as follows.

Coolant capacity	Radiator	Canopy	6.8 L (1.8 U.S.gal.)
		Cabin	8.0 L (2.1 U.S.gal.)
	Recovery tank		1.1 L (0.3 U.S.gal.)

TAKING CARE OF MACHINE AFTER OPERATION IN COLD WEATHER

1. After operation in cold weather, be sure to remove mud or water from the machine body.
2. Park the machine on concrete or where ground is dry.
3. Lay the planks or the mats on the ground and park the machine on them.
If you should park the machine on the ground and the tires freeze during the night, driving will be impossible.
4. Wipe the surface of piston rod of the hydraulic cylinders carefully.
If mud should enter the seal with frozen water, it may be damaged.
5. Drain the water in the fuel system to prevent freezing at night.

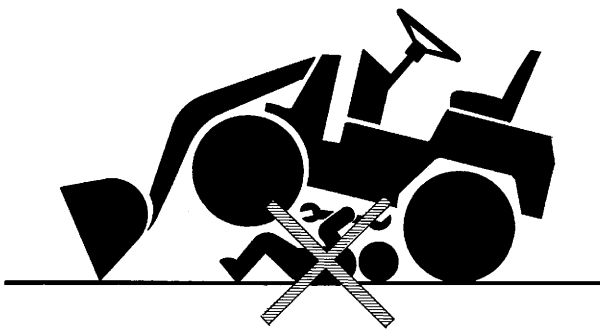
MAINTENANCE

PRECAUTIONS FOR MAINTENANCE

⚠ WARNING

To avoid personal injury or death:

- Place the machine on the flat ground.
- Before servicing or checking the machine, perform the following procedures.
 1. Stop the engine.
 2. Set the direction switch to the neutral position.
 3. Lower the bucket and attachment to the ground.
 4. Release the hydraulic pressure in the hydraulic system.
(For details, see **RELEASING THE PRESSURE TRAPPED IN THE HYDRAULIC SYSTEM** on page 79)
 5. Activate the hydraulic-lock-switch.
 6. Remove the starter key.
 7. Secure the articulation joint with the steering-frame-lock.
- Never get under the machine while it is being lifted with only the bucket. If servicing or checking underneath, support the machine firmly with strong blocks, and so on.
If you do not follow to support the machine firmly, serious injury or death can result.

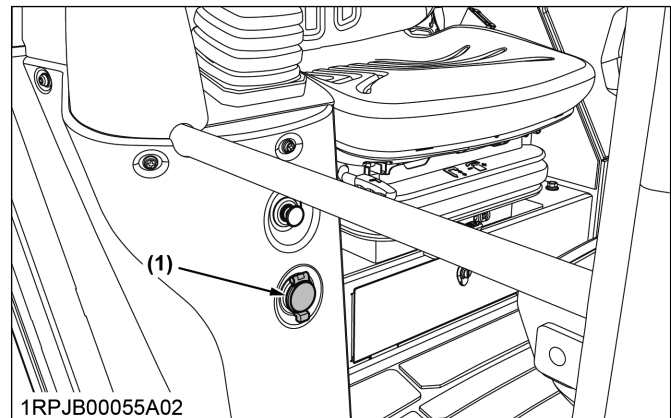


1BBBD00079A01

- Keep clear of articulation area when servicing.
- Keep sparks and naked flames away.
- To avoid the danger of exhaust fume poisoning, do not operate the machine in a closed building without proper ventilation.
- When servicing or checking the electrical system, disconnect the battery cables.
- Wear safety gear such as a hardhat, glasses, and safety shoes.

- Do not carry out any work or modifications on hydraulic components.

- To safely use the machine and prevent any trouble from occurring, be sure to conduct daily inspections and periodic servicing.
- You can use the 12 V socket as a source of power for illumination if you have to check the machine at night.



(1) Electrical outlet (power socket 12 V)

IMPORTANT :

- If you cannot operate and must tow the machine, please contact your local KUBOTA dealer for information about correct towing procedures.
- Major maintenance and service requires a specialist, please contact your KUBOTA dealer.
- Clean the machine so that it is easy to find what is wrong.
- Clean the parts of the hydraulic system and the oil-level-gauge in particular to keep them free of dust and other foreign matter.
- When washing the machine, be careful not to get the electrical parts wet.
- Check or replenish the oil in a place where there is little dust and use a clean oil container to prevent dust from permeating the oil.
- Check or replenish oil when the machine is level.
Use the same brand when replenishing oil.
- After greasing the machine, wipe off all old grease, especially from those parts where sand and dust can accelerate wear.
- When changing the oil, check whether the old oil is abnormally permeated with metal fillings or foreign matter.

- Only use commercially available, noncombustible washing agents. Only wash at the designated places such as oil and grease traps available.

MAINTENANCE INTERVALS

No.	Check points		Meas-ures	Hour meter indicator																Inter-val	Ref. pag e	
				50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800			
1	Coolant	check	Daily check																	106		
		change																		every 2 years	126	
2	Fuel	check	Daily check																	105		
3	Engine oil	check	Daily check																	103		
		change										o							o	every 500 hrs	118	*1
4	Hydraulic oil	check	Daily check																	104		
		replace																	o	every 1000 hrs	122	*1
5	Radiator and oil cooler	check	Daily check																	109		
6	Engine and electrical wiring	check	Daily check																	110		
		check																		every 1 year	125	
7	[Cabin type only] Washer liquid	check	Daily check																	112		
8	Water separator	drain	Daily check																	110		
9	Tire air pressure	check	Daily check																	109		
10	Brake	check	Daily check																	110		
11	Brake fluid	check	Daily check																	107		
		change																		every 2 years	125	*2
12	Fan belt tension	check	Daily check																	110		
		adjust					o					o						o		o	every 250 hrs	114
13	Lubrication points	grease	Daily check																	107		
14	Battery condition	check	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	every 50 hrs	113	
15	[Cabin type only] Air filter	clean					o				o						o		o	every 250 hrs	116	
		replace																	o	every 1000 hrs		
16	[Cabin type only] Air conditioner condenser	clean					o				o						o		o	every 250 hrs	-	
17	Water separator filter element	replace					o				o						o		o	every 250 hrs	117	
18	Radiator hoses and clamps	check					o				o						o		o	every 250 hrs	115	
		replace																		every 2 years	127	
19	Air cleaner element	Outer element	clean					o				o					o		o	every 250 hrs	115	
		replace																	o	every 1000 hrs	123	*1

@

(Continued)

No.	Check points		Measures	Hour meter indicator																	Interval	Ref. page		
				50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	1000				
19	Air cleaner element	Inner element	replace																	○	every 1000 hrs	123	*1	@
20	Fuel line and intake air line	check						○					○					○		○	every 250 hrs	116		@
		replace																			every 2 years	126	*3	
21	[Cabin type only] Air conditioner pipes and hoses	check																			every 1 years	-		
		replace																			every 2 years	127	*2	
22	Wheel nuts	check and tighten	⊙					○					○					○		○	every 250 hrs	116		
23	End plate bolt of center shaft	check and tighten											○							○	every 500 hrs	117		
24	Fuel filter	replace											○							○	every 500 hrs	120	*1	@
25	Engine oil filter	replace											○							○	every 500 hrs	118	*1	
26	Hydraulic return filter element	replace											○							○	every 500 hrs	120	*1	
27	Oil for front / rear axle differential case	check											○							○	every 500 hrs	119		
		change						⊙												○	every 1000 hrs	120	*1	
28	HST oil filter	change																		○	every 1000 hrs	121	*1	
29	Hydraulic suction filter element	replace																		○	every 1000 hrs	122	*1	
30	Engine valve clearance	adjust																		○	every 1000 hrs	123	*2	
31	Injector	check																			every 1500 hrs	123	*2	@
32	Oil separator element	replace																		○	every 1500 hrs	124		@
33	EGR cooler	check																			every 1500 hrs	124	*2	@
34	Alternator and starter motor	check																			every 2000 hrs	124		
35	EGR system	check																			every 3000 hrs	124	*2	@
36	[R640] Turbo charger	check																			every 3000 hrs	124	*2	@

(Continued)

MAINTENANCE

No.	Check points	Measures	Hour meter indicator																	Interval	Ref. page	
			50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	1000			
37	DPF	clean																		every 6000 hrs	124	*1 @
38	AFS (air flow sensor)	check																		every 1 year	125	*2
39	[R640] Boost sensor	check																		every 1 year	125	*2
40	Condition of DPF muffler	check																		every 1 year	125	*2
41	DPF differential pressure sensor and piping for gas leak	check																		every 1 year	125	*2
42	DPF exhaust gas temperature	check																		every 1 year	125	*2
43	EGR and piping for gas leak	check																		every 1 year	125	*2
44	Antifrost heater for oil separator (CCV heater)	check																		every 1 year	125	*2
45	Brake hose	check																		every 1 year	125	*2
		replace																		every 2 years	125	*2
46	Rubber parts of master cylinder	replace																		every 2 years	125	*2
47	Radiator system	rinse																		every 2 years	-	
48	Oil separator related rubber piping	replace																		every 2 years	126	*2
49	DPF differential pressure sensor rubber piping (front and back)	replace																		every 2 years	127	*2
50	Suction pipe downstream the AFS (air flow sensor)	replace																		every 2 years	127	*2
51	[R640] Boost sensor pressure rubber piping	replace																		every 2 years	127	*2
52	EGR cooler hose	replace																		every 2 years	127	*2
53	Coolant hoses and hose clamps	replace																		every 2 years	-	
54	Hydraulic hoses	replace																		every 2 years	-	
55	[Cabin type only] Refrigerant (gas)	check																		service as required	-	
56	Plastic parts and synthetic leather	clean																		service as required	131	

IMPORTANT :

- Perform the job indicated by © at the first operation.
- The listed @ marked items are registered as emission related critical parts by KUBOTA in the U.S.EPA non-road emission regulation. As the engine owner, you are responsible for the performance of the required maintenance on the engine according to the preceding instruction.
Please see the Warranty Statement in detail.

- **When using biodiesel, be sure to check the maintenance requirements of biodiesel fuel as the intervals will change in some of the items.**
- *1 This maintenance is appeared on the meter panel at each specified maintenance hours.
- *2 Consult your local KUBOTA dealer for this service.
- *3 Replace only if necessary.

PERIODIC SERVICE

OPENING AND CLOSING OF COVERS

1. Precautions for opening and closing the covers

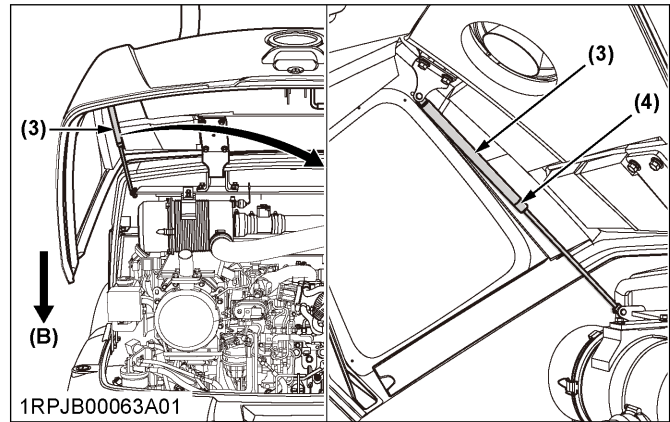
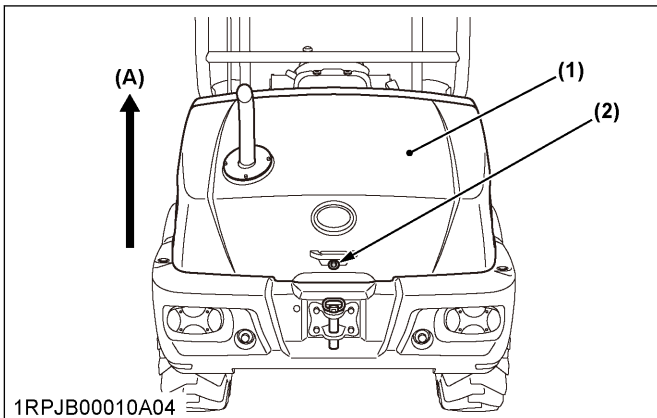
WARNING

To avoid personal injury or death from contact with moving parts:

- Never open the engine cover while the engine is running.
- Do not touch the muffler or the exhaust pipes while they are hot. Severe burns could result.

2. Opening and closing the engine cover

1. Insert the starter key into the key hole and turn it clockwise to unlock the engine cover.
2. Push the key hole.
3. Pull up the hood until it will be held.
4. To close the engine cover, release the lock of the gas damper.
5. Lower the hood and hold it down tightly.
6. Turn the starter key counterclockwise to lock the engine cover.



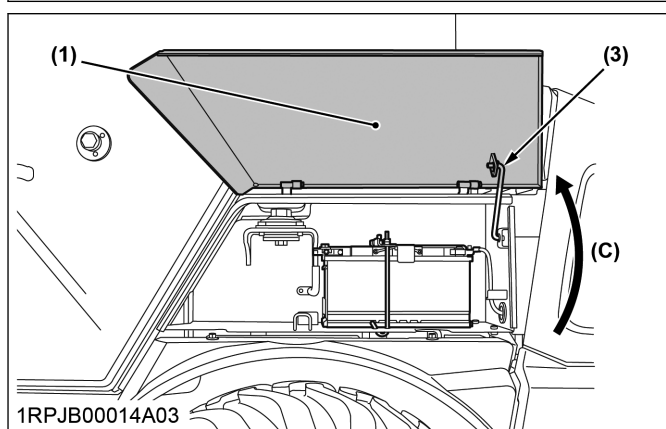
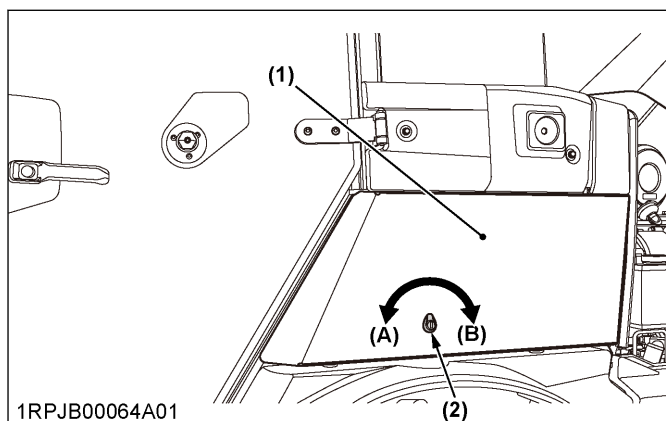
- | | |
|------------------|-----------|
| (1) Engine cover | (A) Open |
| (2) Key hole | (B) Close |
| (3) Gas damper | |
| (4) Lock | |

3. Opening the side cover

1. Insert the starter key into the key hole and turn it clockwise to unlock the side cover.
2. Pull up the side cover until it will be held.

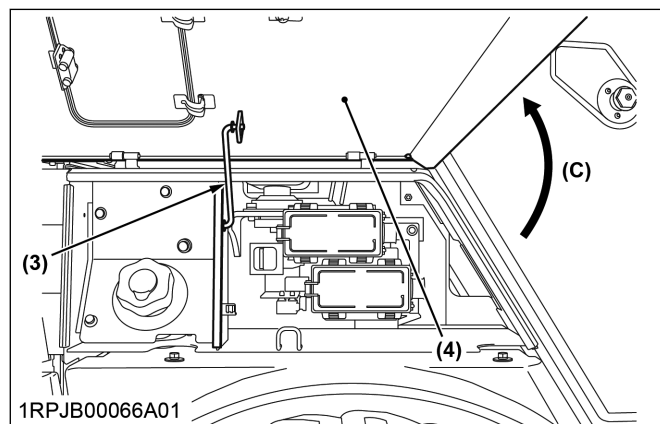
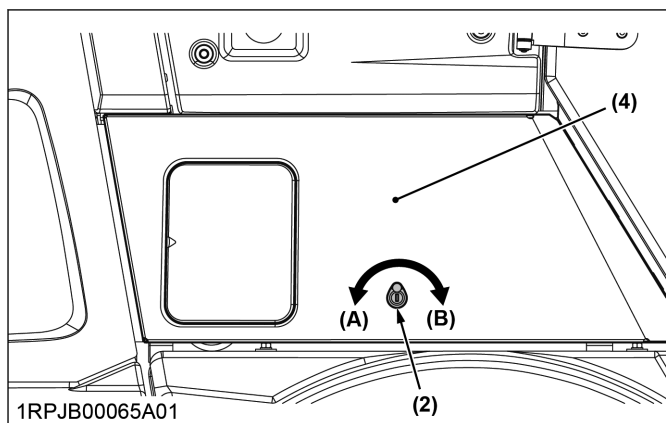
3. Fix the catches to prevent the side cover from dropping.

Left side



- (1) Left side cover
(2) Key hole
(3) Catch
(A) Lock
(B) Unlock
(C) Pull up

Right side



- (2) Key hole
(3) Catch
(4) Right side cover
(A) Lock
(B) Unlock
(C) Pull up

DAILY CHECK

It is extremely important to maintain your machine properly to prevent trouble.

- Walk around the machine and carefully check all hydraulic hoses and connections, the hydraulic cylinders, and the fuel pipes for leaked oil, fuel, or water.

If there are any leaks, take proper measures to stop them. If repair is impossible, contact your KUBOTA dealer.

- Check for loose bolts and nuts, and tighten if necessary. Especially check for the wheel nuts.
- Check the electrical circuit for any damage, shorts, or loose connections.

1. Checking and replenishing the engine oil

⚠ WARNING

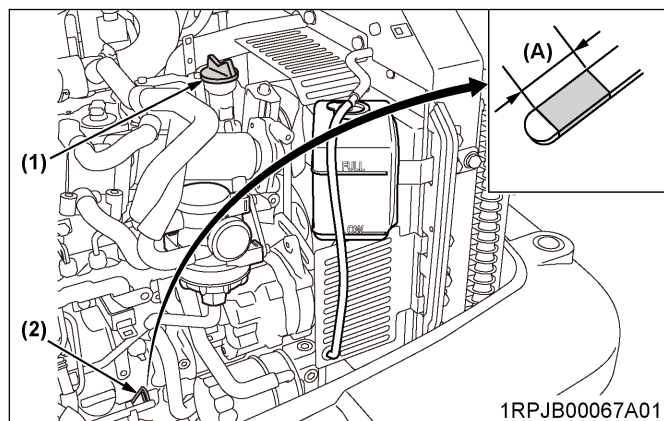
To avoid personal injury or death:

- Be sure to stop the engine before checking the level of engine oil.

When checking the level of engine oil, make sure that the machine body is level.

- Insert the oil dipstick all the way into the oil port.
- Draw out the oil dipstick and check the level of engine oil.

3. Add the engine oil if necessary.



(1) Oil port
(2) Oil dipstick

(A) Proper oil level

Engine oil capacity

9.0 L
(2.4 U.S.gal.)

2. Check the level of hydraulic oil in the oil-level-gauge.

If the level of hydraulic oil is between the upper and lower marks, the amount of the hydraulic oil is appropriate.

IMPORTANT :

- Use engine oil with the correct viscosity according to the outside temperature.
- After stopping the engine and remove the starter key, wait 5 minutes, then check the level of engine oil. Place the machine on level ground.
- A small amount of fuel used for DPF-regeneration may get mixed with the engine oil, which can increase the level of engine oil slightly.
- Do not try to repeat or interrupt the DPF-regeneration process unnecessarily. Repeating or interrupting of the DPF-regeneration can increase the small amount of fuel that gets mixed with the engine oil, thereby degrading it.
- If the oil rises above the oil-level-gauge upper limit, it means the oil has been diluted too much, resulting in a trouble. In such case, immediately change the oil for new one.

2. Checking and replenishing the hydraulic oil

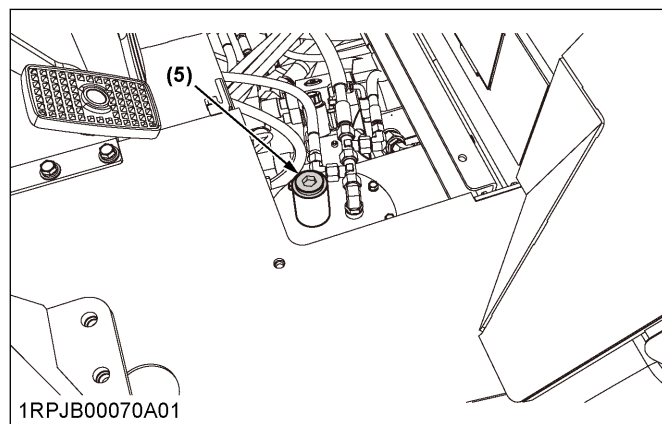
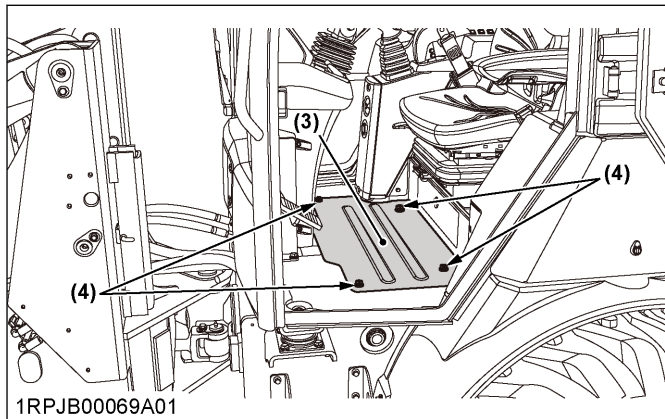
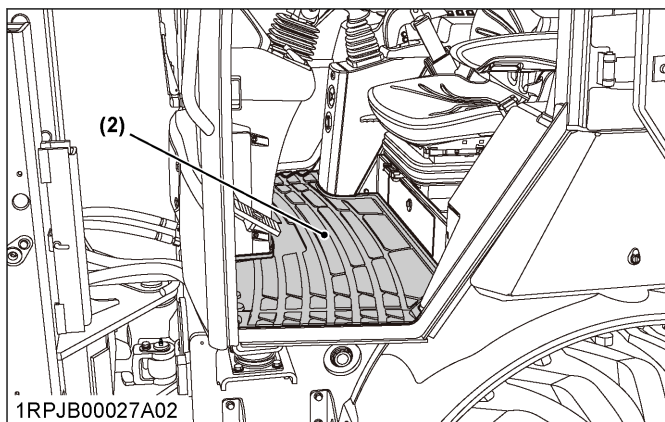
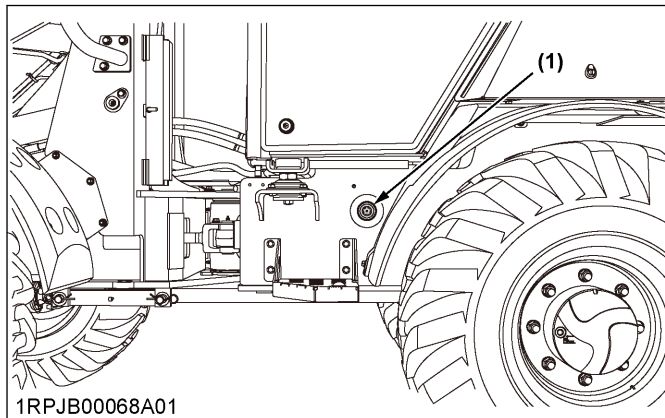
WARNING

To avoid personal injury or death:

- Never open the oil port immediately after the engine has stopped or hydraulic oil may escape, causing scalding.

1. Stop the machine on flat ground, lower the bucket to the ground, and roll back the bucket.

3. If the level of hydraulic oil is below the lower mark, add the hydraulic oil through the oil port.



- (1) Oil level gauge
(2) Mat
(3) Cover
(4) Bolts
(5) Oil port cap

[R540]

Hydraulic oil volumes	Hydraulic tank	39 L (10.3 U.S.gal.)
	Whole oil volumes	55 L (14.5 U.S.gal.)

[R640]

Hydraulic oil volumes	Hydraulic tank	39 L (10.3 U.S.gal.)
	Whole oil volumes	57 L (15.1 U.S.gal.)

IMPORTANT :

- When refilling the hydraulic oil, clean the area around the oil port and use the same brand of hydraulic oil of the same manufacturer.
- Never mix hydraulic oils of different manufacturers.

3. Checking and replenishing the fuel



WARNING

To avoid personal injury or death:

- Before refueling, always set the parking brake, stop the engine, lower the bucket and attachment to the ground, release the hydraulic pressure in the hydraulic system by operating the control levers, and remove the starter key.
- While refueling the wheel loader, smoking, naked flames, and operation of other sources of ignition are prohibited. Serious personal injury or death could result.

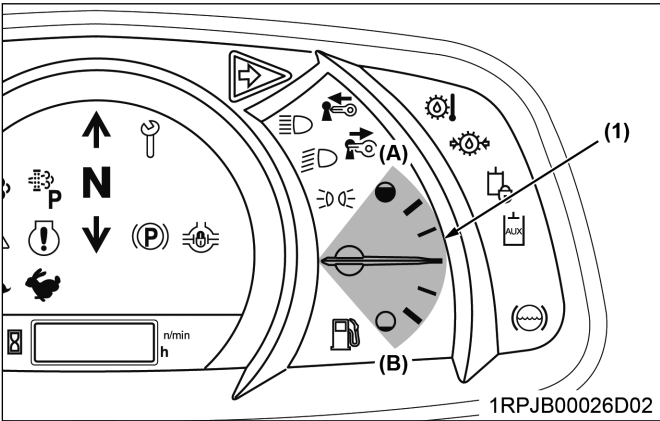
IMPORTANT :

- Use proper diesel fuel according to temperatures as follows.

Temperature	Diesel fuel
Over -5 °C (23 °F)	No.2-D diesel fuel
Under -5 °C (23 °F)	No.1-D diesel fuel

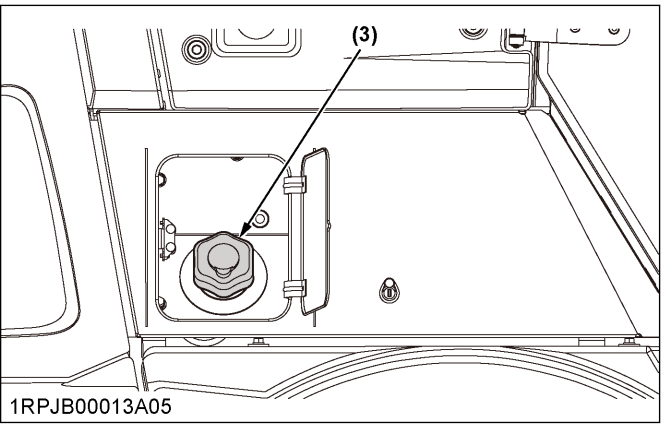
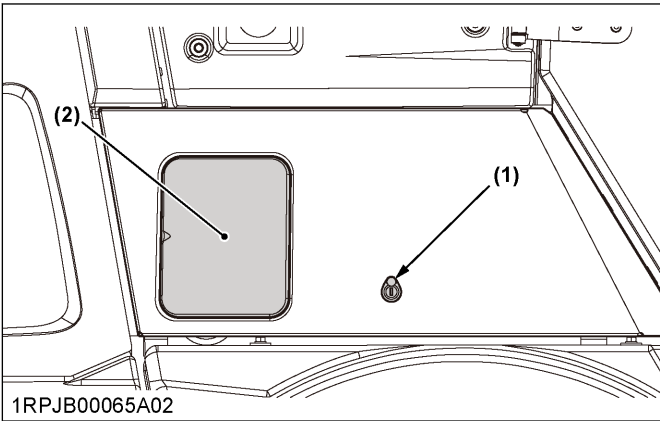
- **Make sure that the fuel tank is not run on empty. Air will enter the fuel system, and must be purged before restarting. (See Bleeding the fuel system on page 131)**
- **To prevent accumulations of condensed water in the fuel tank, fill the fuel into the fuel tank before parking overnight.**

1. Turn the starter switch to the **[RUN]** position.
2. Check the fuel level by the fuel gauge.



(1) Fuel gauge (A) Full (B) Empty

3. Add the fuel if necessary.
 - a. Open the cover.
 - b. Remove the fuel-tank-cap.
 - c. Fill the fuel tank.

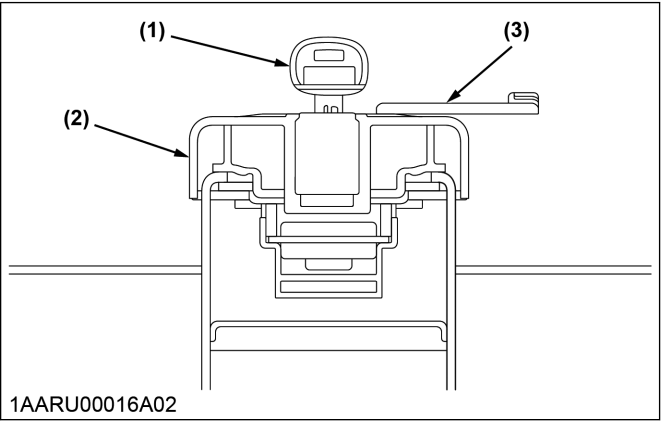


(1) Key hole (2) Cover (3) Fuel tank cap

Fuel tank capacity	70 L (18.5 U.S.gal.)
--------------------	-------------------------

IMPORTANT :

- **Avoid fuel spills and overfilling the fuel tank.**
- **Every time after operation is over, fill the fuel tank fully. Be sure to replace the fuel-tank-cap and tighten it up, and lock the cover.**
- **To open the fuel cap, keep the key inserted.**



(1) Starter key (2) Fuel tank cap (3) Tank cap cover

4. Checking and replenishing the coolant



WARNING

To avoid personal injury or death:

- **Do not remove the radiator cap while the coolant is hot. When the coolant is cool, rotate the radiator cap to the first stop to allow excessive pressure to escape. Then remove the radiator cap completely.**

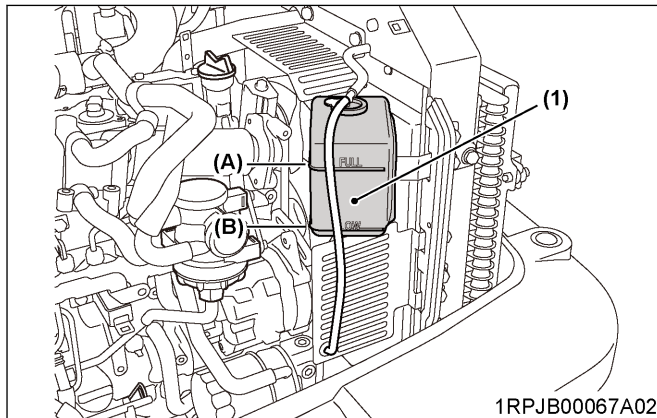
The radiator is equipped with a recovery tank. When the coolant level in the radiator drops, coolant is added automatically from the recovery tank. It is necessary to

check the water level in the recovery tank and refill coolant if necessary.

1. Check the coolant level in the recovery tank.
Do not disconnect the hose but remove the radiator cap.
If the coolant level is between the **[FULL]** and the **[LOW]** marks, the condition is normal.
2. Refill the recovery tank with water if necessary.

IMPORTANT :

- Do not fill the recovery tank above the **[FULL]** mark.
- Add only coolant (mixture of water and antifreeze).



(1) Recovery tank (A) FULL (B) LOW

3. If the coolant level drops quickly, water may be leaking somewhere, be sure to find the cause of leakage.

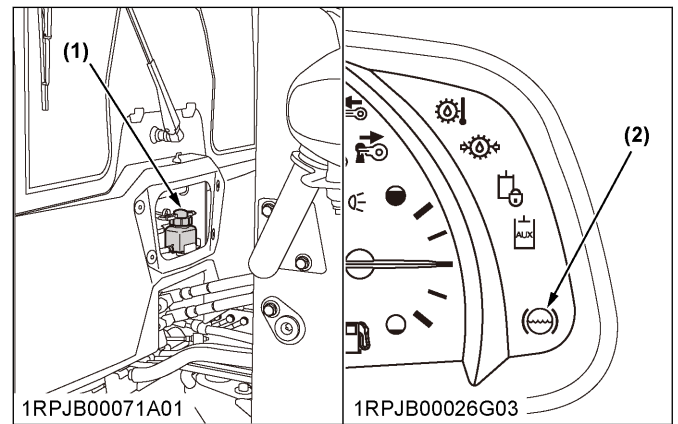
5. Checking and refilling the oil in the brake fluid reservoir

! WARNING

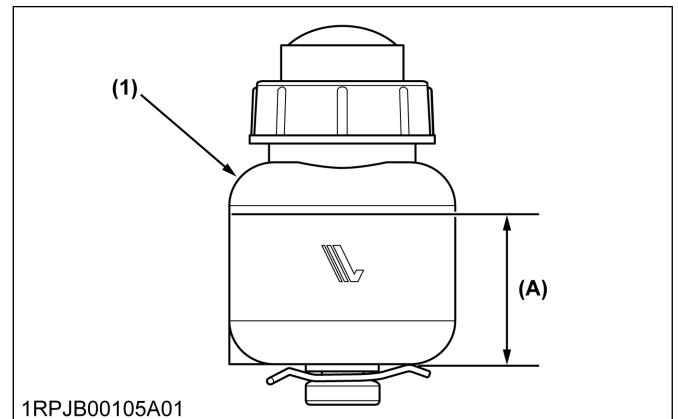
To avoid personal injury or death:

- Only use the hydraulic oil that meets **ISO VG 22**. Use of incorrect hydraulic oil will cause damage to the brake system and potential brake failure.

1. Turn the starter switch to **[RUN]** position.
2. Check whether the brake-fluid-warning-indicator light up.
3. If the brake-fluid-warning-indicator light up, check the brake-fluid reservoir and refill brake fluid up to a height of 35 mm (1.4 in.) from the bottom.



(1) Brake fluid reservoir (2) Brake fluid warning indicator



(1) Brake fluid reservoir (A) 35 mm (1.4 in.)

IMPORTANT :

- If a large amount of brake fluid has to be refilled, check the brake system for leaks before using the machine again.
- If the brake-fluid-warning-indicator lights up a short time after adding brake fluid, there is leak in the brake system.
The machine may only be started again after the fault has been repaired.

6. Applying the grease to the grease fittings

! DANGER

To avoid serious personal injury or death:

- Keep clear of articulation joint during service work.

! WARNING

To avoid personal injury or death:

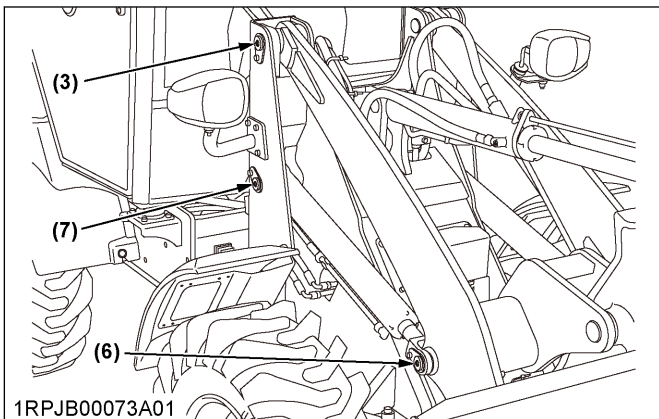
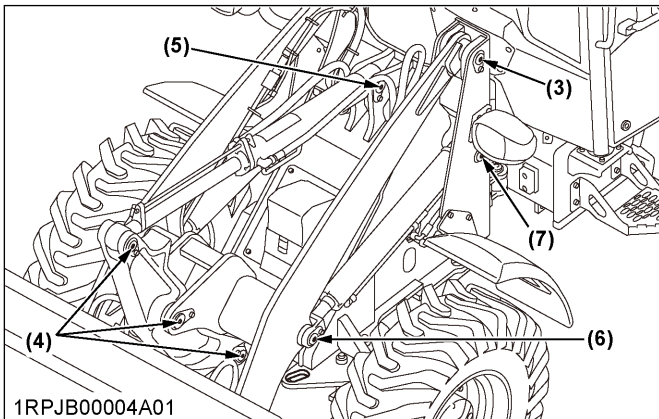
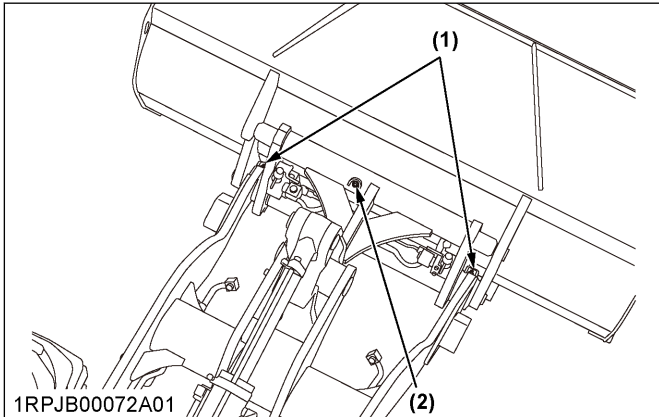
- Before greasing, always stop the engine, lower the bucket and attachment to the ground, release the hydraulic pressure in the hydraulic

system by operating the control levers, and remove the starter key.

- Always remove the bucket and attachment and use the lift-arm-support when servicing the machine with the loader lift arms raised.

Greasing the front attachments

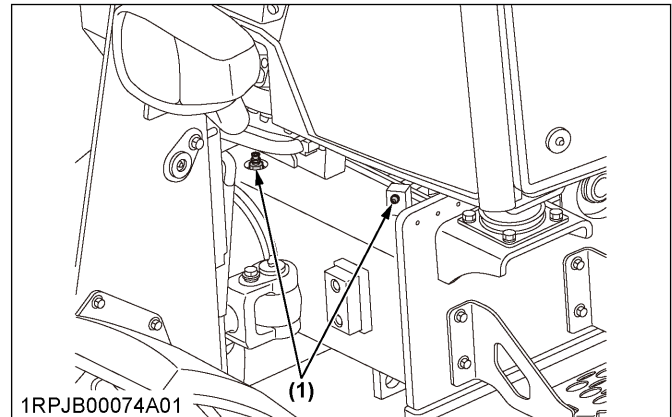
1. Apply the grease to the grease fittings on the front attachments indicated by the arrows in the following illustrations.



- | | |
|--|---|
| (1) Quick coupler pin (2 places) | (6) Lift cylinder rod pin (2 places) |
| (2) Bucket link pin (1 place) | |
| (3) Lift arm attachment pin (2 places) | (7) Lift cylinder bottom pin (2 places) |
| (4) Bell crank arm pin (3 places) | |
| (5) Bucket cylinder bottom pin (1 place) | |

Greasing the rear frame

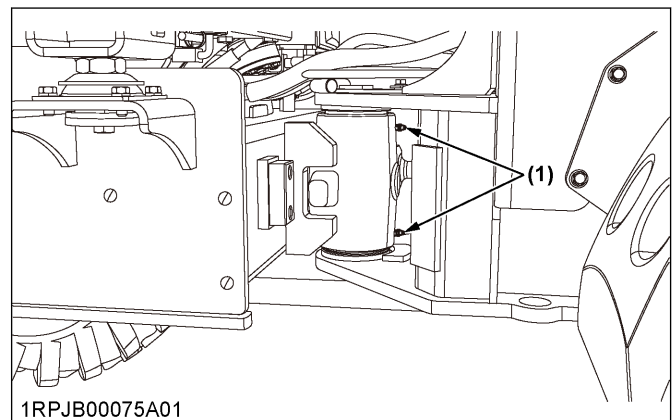
1. Apply the grease to the rear frame at 1 grease fitting.



- (1) Grease fitting

Greasing the articulation joint

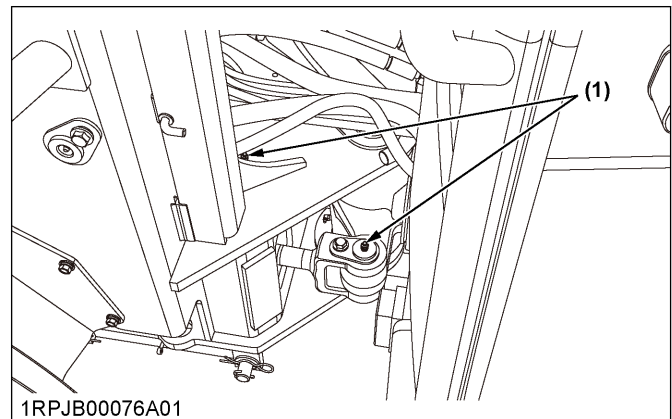
1. Apply the grease to the articulation joint at 2 grease fittings.



- (1) Grease fitting

Greasing the steering cylinder bearing

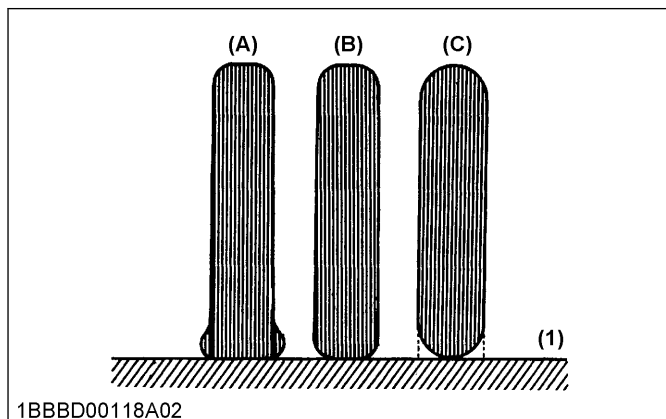
1. Apply the grease to the steering-cylinder-bearing at the 2 grease fittings.



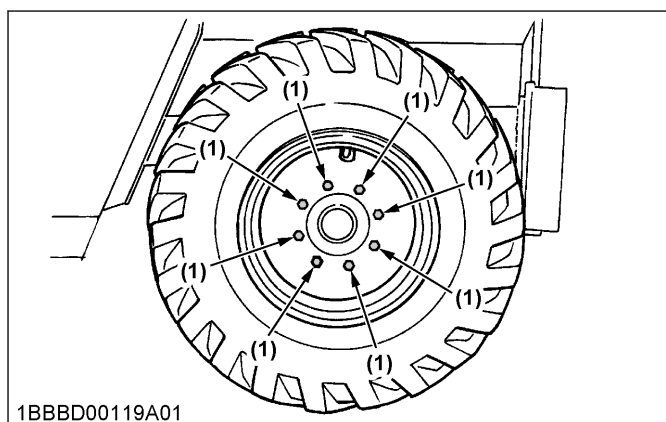
- (1) Grease fitting

7. Checking the pressure and wear of tire and the wheel nuts

1. Check the pressure and wear of tire and the wheel nuts according to Checking the tire pressure on page 132 and Changing the tires on page 132.



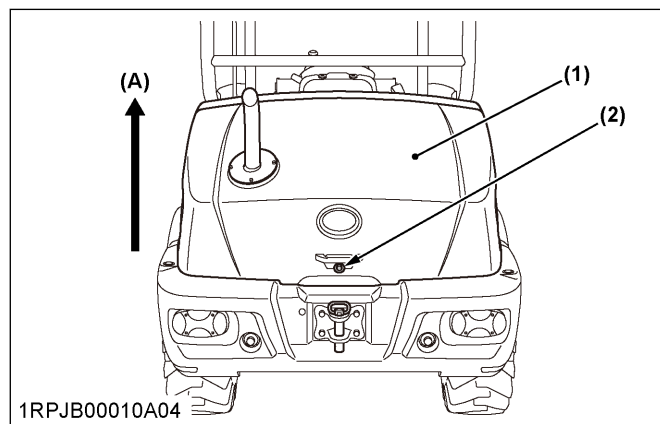
- (1) Ground level
- (A) Deficient
(B) Correct
(C) Excessive



(1)	Wheel nut	Tightening torque	490 N·m (360 ft·lbs)
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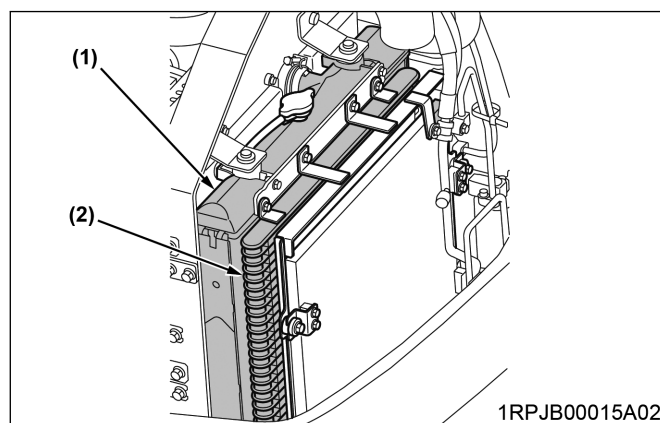
8. Checking and cleaning the radiator and the oil cooler

1. Open the engine cover.
(See Opening and closing the engine cover on page 102)



- (1) Engine cover
(2) Key hole
- (A) Open

2. Check the fins and ribs for clogging.
If the fins or ribs are clogged, you should clean out them with a jet of compressed air or water.
3. Check the cooling-water hoses for damage.
4. If the cooling-water hoses are broken or cracked, change them.
5. Also, check to see that the hose clamps are tight.



- (1) Radiator grill
(2) Oil cooler

NOTE :

- Clean the fins and the ribs of radiator and oil cooler in order not to overheat the engine and allow free flow of air through the cooling elements.
- Pressure of compressed air must be as follows.

Pressure of compressed air	Under 205 kPa (2.1 kgf/cm ²) [30 psi]
----------------------------	--

- When cleaning the radiator and oil cooler with compressed air, the fins can be damaged. Pay attention not to damage.

9. Checking the steering

1. Start the engine.

- Turn the steering wheel left and right and check the operation.
- If any abnormality is found, ask your KUBOTA dealer to inspect the steering further.

10. Checking the gear locked parking brake

WARNING

To avoid personal injury or death:

- Do not dismount the machine while checking the parking brake.

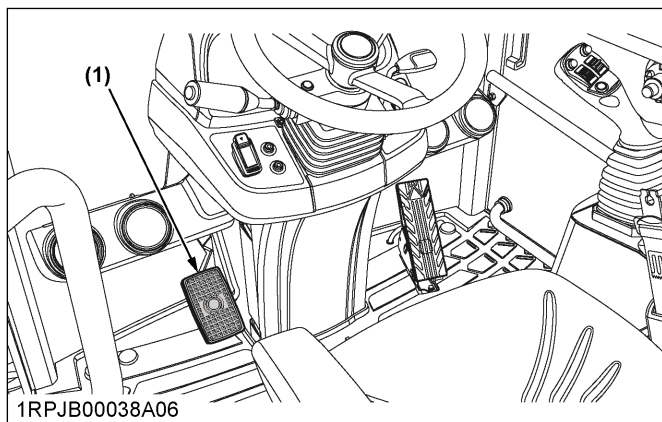
- Confirm that the machine (wheel loader unit only) can surely be parked on the slope as follows.

Slope	About 15 degrees Slope rises by 2.7 meters (8 ft 3 inch) every 10 meters (32 ft 10 inch).
-------	--

- If the machine moves, consult your local KUBOTA dealer.
Always engage the parking brake before dismounting the wheel loader.

11. Checking the disc brake

- Actuate the inching-and-brake-pedal during operation so that the disc brake of machine brakes.
- If the disc brake fails to work effectively, ask your KUBOTA dealer to adjust it.



(1) Inching and brake pedal

12. Checking and cleaning the engine and the electrical wiring

WARNING

To avoid personal injury or death:

- Always stop the engine and remove the starter key before cleaning the wiring, cables, and engine.

- Before starting the engine, check whether flammable substances have gathered on the battery, the cables and wiring, the muffler, or the engine.
Remove flammable substances thoroughly.
- Check the electrical circuitry for disconnections, shorts, or loose terminals.

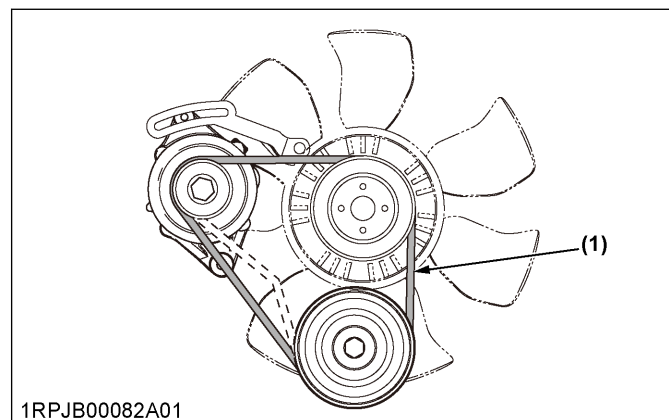
13. Checking the fan belt

WARNING

To avoid personal injury or death:

- Stop the engine and remove the starter key before checking the fan belt.

- Check the fan belt for cracks and proper tension.
(See Checking the fan belt tension on page 114)



(1) Fan belt

14. Washing the whole machine

IMPORTANT :

- Do not wash the machine with the engine running. Water could enter the air cleaner and damage the engine.
Make sure that the air cleaner is kept dry.
- Remove the mud before washing the machine.

- Wash the whole machine carefully.

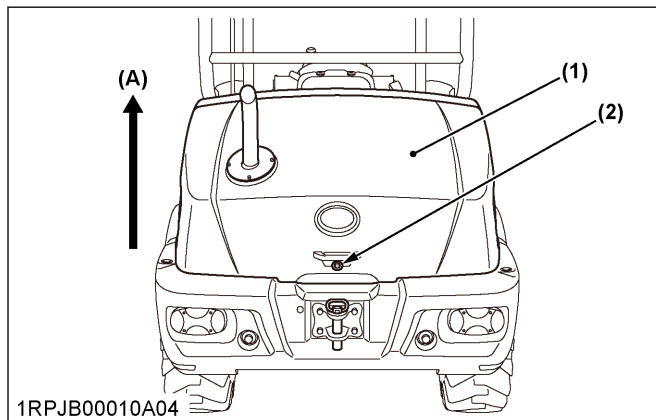
15. Draining the water separator

IMPORTANT :

- If the water separator is full with water, it means that there may be water in the fuel filter. In such case, drain the fuel filter.

(See Draining the fuel filter by draining the water separator on page 130)

1. Open the engine cover.
(See Opening and closing the engine cover on page 102)



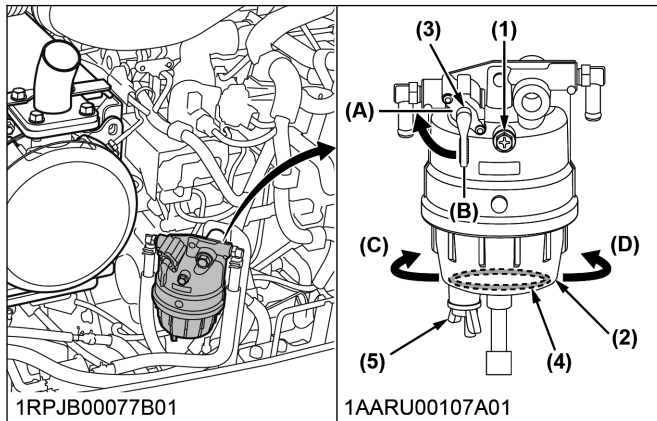
- (1) Engine cover (A) Open
(2) Key hole

2. Check the red float.
When the separated water is entering the sediment cup, the red float moves upwards.
3. When the red float moves upwards, close the shutoff-valve so that no fuel can run out.
4. Now loosen the drain plug, and drain the water.

IMPORTANT :

- Collect drained water in an oil pan or the like.

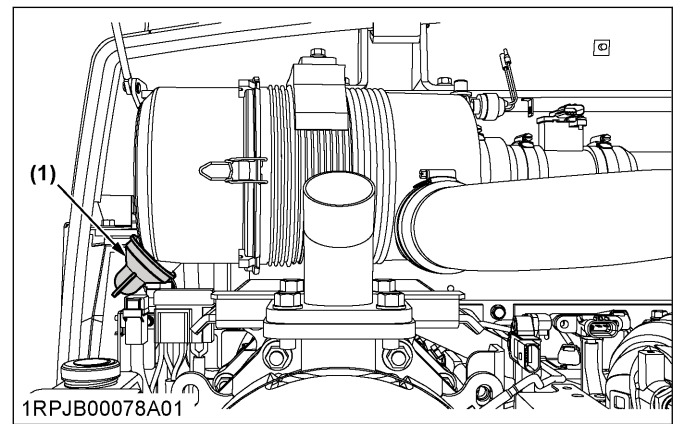
5. Finally, do not forget to open the shutoff-valve after drain of the water was over.



- (1) Screw (A) Close
(2) Cup (B) Open
(3) Shutoff-valve (C) Loosen
(4) Red float (D) Tighten
(5) Drain plug

16. Cleaning the evacuator valve

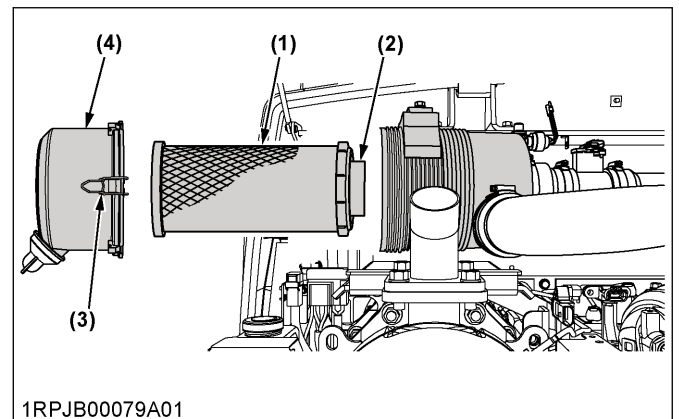
1. Open the evacuator valve to get rid of large particles of dust and dirt.



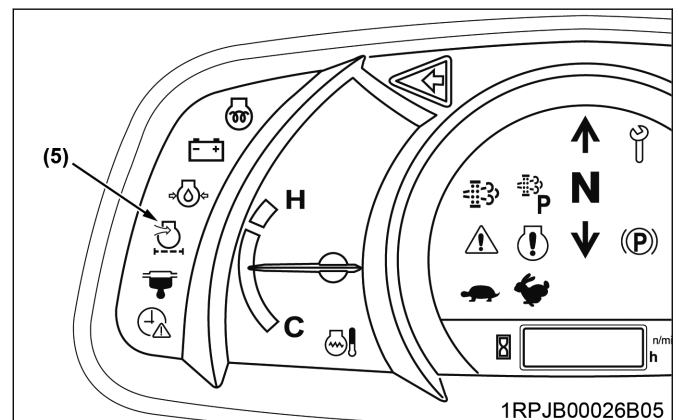
- (1) Evacuator valve

17. Checking the dust indicator

1. If the air-cleaner warning indicator on the instrument panel lights up, clean the air-cleaner element immediately.
(See Cleaning and checking the air cleaner element on page 115)



- (1) Outer filter element (4) Air cleaner cover
(2) Inner element
(3) Clamp



- (5) Air cleaner warning indicator

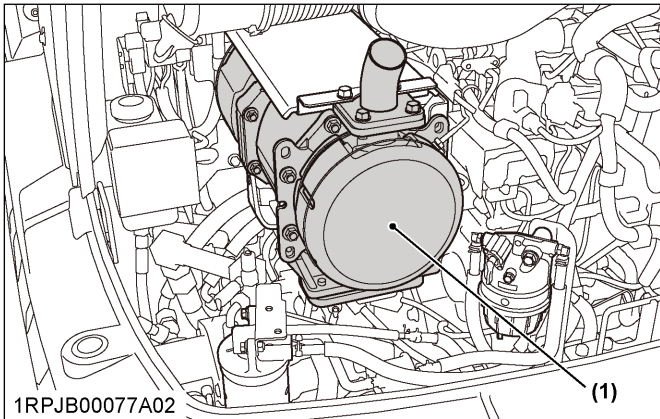
18. Checking the diesel particulate filter (DPF) muffler

WARNING

To avoid personal injury or death:

- Before checking or cleaning the DPF muffler, stop the engine and wait long enough until it is cooled down.

1. Check to see if nothing flammable is deposited around the DPF muffler.
Otherwise a fire may result.

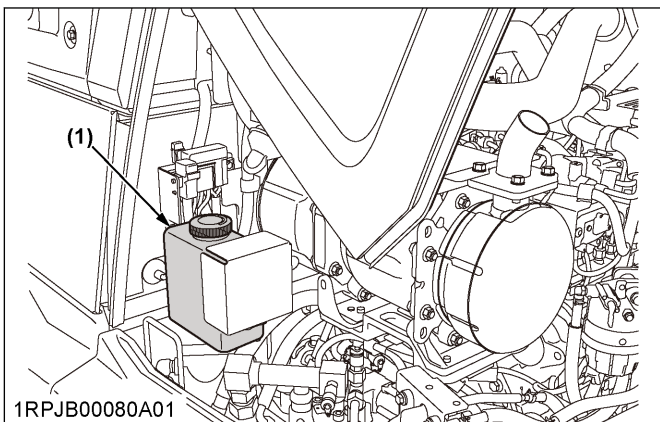


(1) DPF muffler

19. Checking the washer liquid [Cabin type only]

If the windows washer is switched on with the washer-liquid-tank empty, the motor may be damaged. Always keep the washer-liquid-tank filled.

1. Check the level of washer liquid in the washer-liquid-tank.



(1) Washer liquid tank

IMPORTANT :

- Get the washer-liquid-tank half filled before working on a slope or a rough ground. The

liquid may leak out when the machine bounces.

Half filled washer liquid tank

About 0.8 liter (0.2 U.S.gal.)

20. Checking and tightening the loose bolts and the nuts

1. Check the bolts and nuts and tighten them if necessary.

21. Checking the electrical wiring for short-circuits and loose terminals

WARNING

To avoid personal injury or death:

- Never wear metal rings or metal watch bands. You can be as a ground for the electric circuit and get a burn on your hand or arm.
- Know the electrical circuit before you connect or disconnect an electrical component. A wrong connection can cause injury or damage. Only qualified electricians are allowed to work on the electrical system.

1. Check the electrical system carefully because any faults will cause malfunctions or serious damage.

22. Checking the lamps and the instruments

1. Check that the lamps flash and light normally.
2. Check that the instruments, alarm lamps, and warning lights work normally.

23. Testing the horn

1. Check that the horn works.

24. Checking the machine for leaks

1. Check the machine for leaks in the fuel system, the radiator, the hydraulic system, and the engine.

25. Checking and cleaning after operating in muddy areas

1. If the machine is used in muddy areas, immediately wash it with water to remove the mud and dirt.
2. After washing the machine, check the universal joint.

SERVICE EVERY 50 HOURS

1. Checking the battery condition



DANGER

To avoid the possibility of a battery explosion:
For refillable-type battery, follow the following instructions.

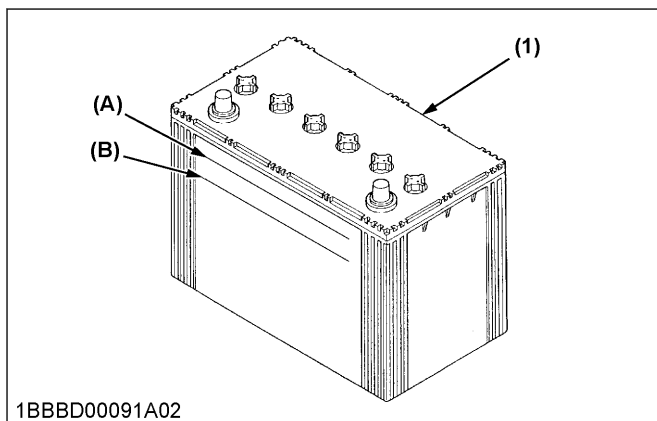
- Do not use or charge the refillable-type battery if the fluid level is below the “**LOWER**” (lower-limit-level) mark. Otherwise, the component parts of battery may prematurely deteriorate, which may shorten the service life of battery or cause an explosion. Check the fluid level regularly and add distilled water as required so that the fluid level is between the “**UPPER**” and “**LOWER**” levels.



WARNING

To avoid personal injury or death:

- Never remove the vent caps while the engine is running.
- Keep the electrolyte away from eyes, hands, and clothes. If you are splattered with the electrolyte, wash it away completely with water immediately and get medical attention.
- Wear the eye protection and rubber gloves when working around the battery.
- Before inspecting or dismantling the battery, be sure to turn off the engine and turn the starter switch to the [STOP] position.
- When removing the battery, always disconnect the negative ground cable first. When installing a battery, always connect the ground cable last. Proper order to connect the ground cables prevents a possible explosion caused by sparks.
- Always wear eye protection when working with the battery.



(1) Battery

(A) Upper level

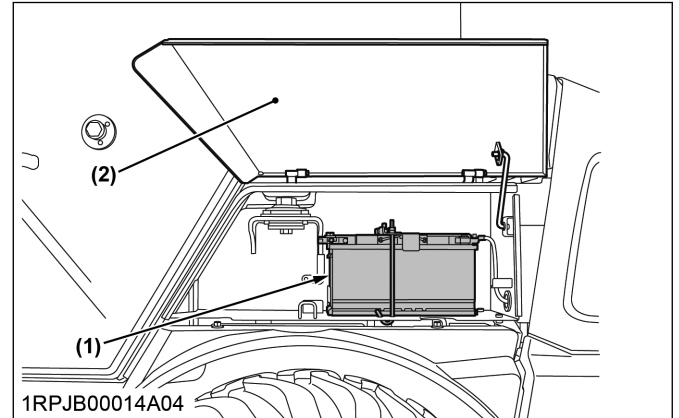
(B) Lower level

Mishandling the battery shortens the service life and adds to maintenance costs.

The original battery is maintenance free, but needs some servicing.

If the battery is weak, the engine will be difficult to start and the lights will be dim. It is important to check the battery periodically.

The battery is in the left side cover. See Opening the side cover on page 102 for how to open the left side cover.



(1) Battery

(2) Left side cover

- Check the battery condition by reading the indicator.

IMPORTANT :

- The factory-installed battery is of non-refillable type. If the indicator turns white, do not charge the battery but replace it with new one.

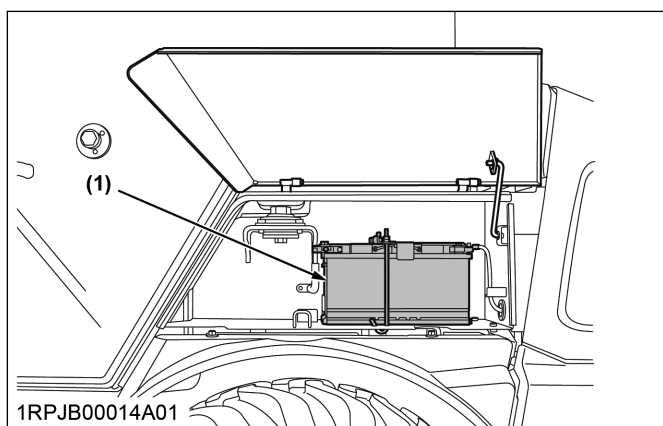
1.1 Charging the battery



WARNING

To avoid personal injury or death:

- When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.
- When charging the battery, make sure that the vent caps are securely in place if equipped.
- When disconnecting the cable from the battery, start with the negative terminal first. When connecting the cable to the battery, start with the positive terminal first.
- Never check the battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.



(1) Battery

1. To slow charge the battery, connect the positive terminal of battery to the positive terminal of charger and the negative to the negative, then recharge in the standard fashion.

A boost charge is only for emergencies. It will partially charge the battery at a high rate and in a short time. When using a boost-charged battery, it is necessary to recharge the battery as early as possible.

Failure to recharge the battery will shorten the service life of battery.

The battery is charged if the indicator display turns green from black.

When exchanging an old battery for a new one, apply a battery of equal specification.

Battery type	Volts (V)	Capacity
59533	12	95 (at 20H.R (A.H))

Battery type	Reserve capacity (min)	Cold cranking amps	Normal charging rate (A)
59533	165	720	6.5

1.2 Storing the battery

When storing the machine for long periods of time, follow the procedure in this section.

1. Remove the battery from machine.
2. Adjust the electrolyte to the proper level.
3. Store the batter in a dry place out of direct sunlight.

The battery self-discharges while it is stored. Recharge it once every 3 months in hot seasons and once every 6 months in cold seasons.

SERVICE EVERY 250 HOURS

Perform inspection and servicing for every 50 hours of operation at the same time.

1. Checking the fan belt tension



WARNING

To avoid personal injury or death:

- Only check the fan belt with the engine off and the starter key removed.

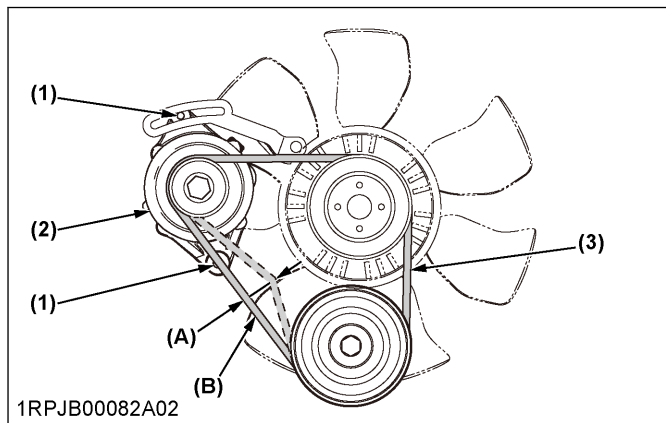
1. Press the fan belt in the middle with a fingertip by the following force value.

The belt tension is proper if the belt deflects the following length.

Fingertip force	About 10 kg (22.5 lbs.)
Fan belt tension	About 7 mm (0.3 in.)

2. If the tension of fan belt is improper, adjust the tension of fan belt by loosening the bolts and shifting the alternator.
3. Check the pulleys and the fan belt for damage and wear.
Carefully check to see if the fan belt fits snugly into the V-belt grooves.

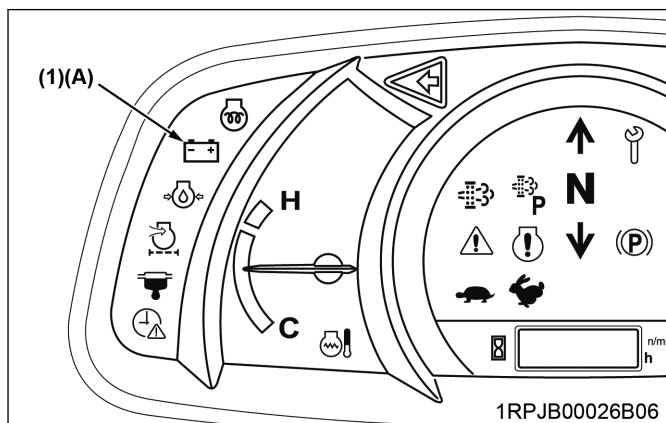
- If the fan belt has been stretched too much, nicked, or cracked, replace it.



- (1) Bolt
(2) Alternator
(3) Fan belt
- (A) About 7 mm (0.3 in.)
(B) About 10 kg (22.5 lbs.)

IMPORTANT :

- If the engine is running with a loose fan belt, the belt may slip, causing engine overheating or insufficient battery recharging. Always keep the fan belt properly tightened.
- If the fan belt should break, the battery-charge-indicator lights up. Immediately stop the engine.



- (1) Battery charge indicator
(A) Lighting

2. Checking the radiator hoses and the clips

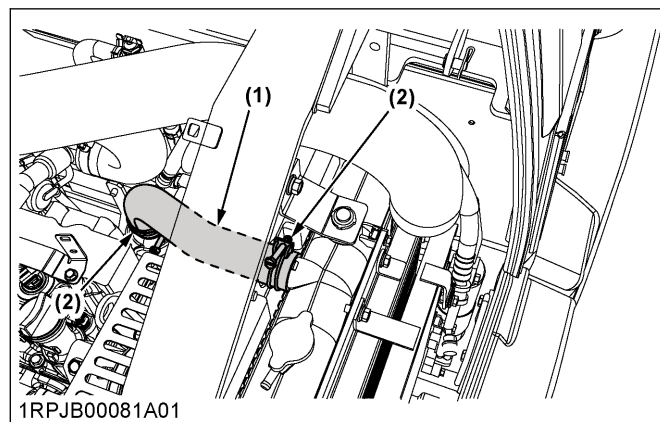
Check to see if the radiator hoses are in good condition and the clips are properly fixed every 250 hours of operation or 6 months, whichever comes first.

! WARNING

To avoid personal injury or death:

- Do not check the radiator hoses until the engine has cooled down.

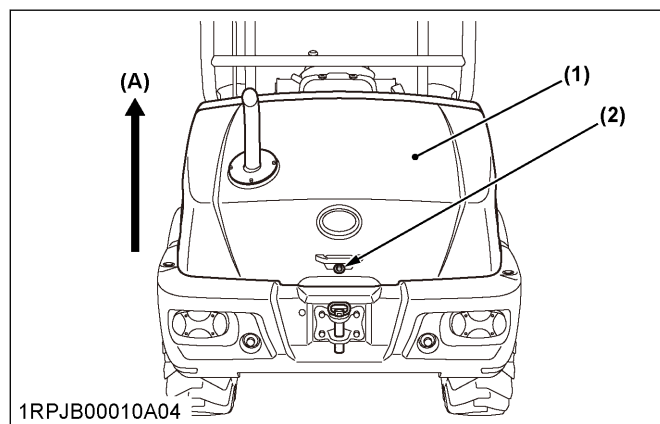
- If the clips are loose or water leaks, tighten the clips securely.
- Replace the hoses and the hose clamps every 2 years or earlier if checked and found that hoses are swollen, hardened, or cracked.



- (1) Radiator hoses
(2) Clips

3. Cleaning and checking the air cleaner element

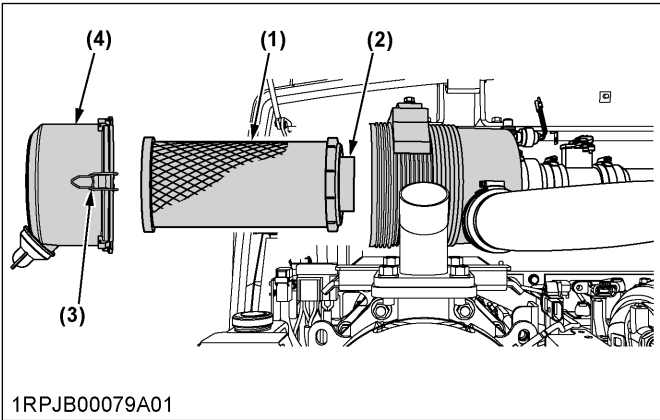
- Open the engine cover.
(See Opening and closing the engine cover on page 102)



- (1) Engine cover
(2) Key hole
(A) Open

- Remove the air-cleaner cover and the outer-filter element.
- Clean the outer-filter element.
- Clean the interior without removing the inner element.

5. Reassemble the outer-filter element and the air-cleaner cover.
- During reassembly, take care to install the air-cleaner cover so that its “TOP” mark (arrow) faces upwards.



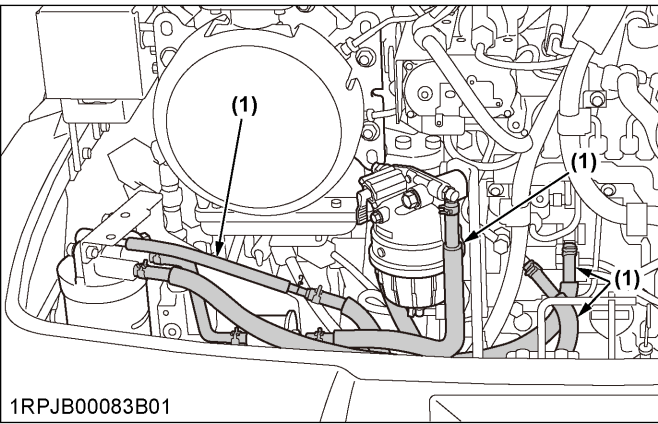
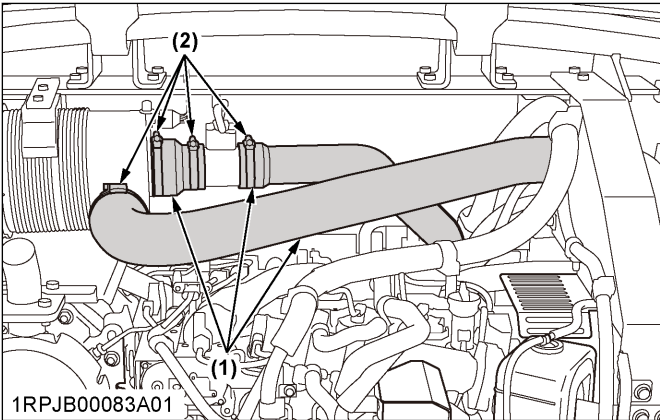
- (1) Outer filter element
(2) Inner element
(3) Clamp
(4) Air cleaner cover

IMPORTANT :

- If you use the machine in an excessively dusty environment, inspect and clean or replace the air-filter elements more often than indicated in **MAINTENANCE INTERVALS** on page 98.
- The air-filter elements are dry elements. Do not oil the elements.
- Do not operate the machine without the air filter installed.

4. Checking the fuel line and the intake air line

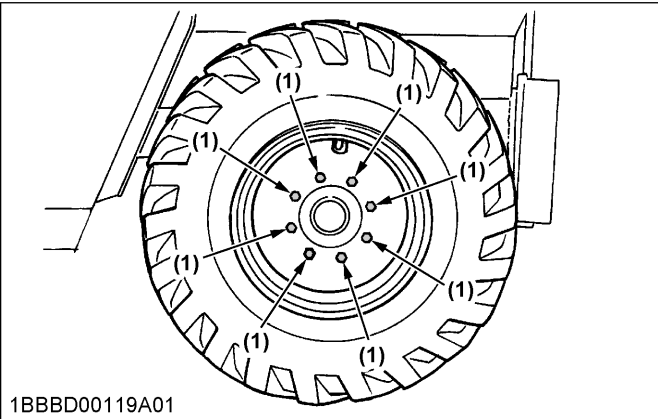
1. Check to see that all lines and hose clamps are tight and not damaged.
2. If hoses and hose clamps are found worn or damaged, replace or repair them at once.



- (1) Hose
(2) Hose clamp

5. Checking the wheel nuts

1. Check the wheel nuts according to Changing the tires on page 132.



(1)	Wheel nut	Tightening torque	490 N · m (360 ft · lbs)
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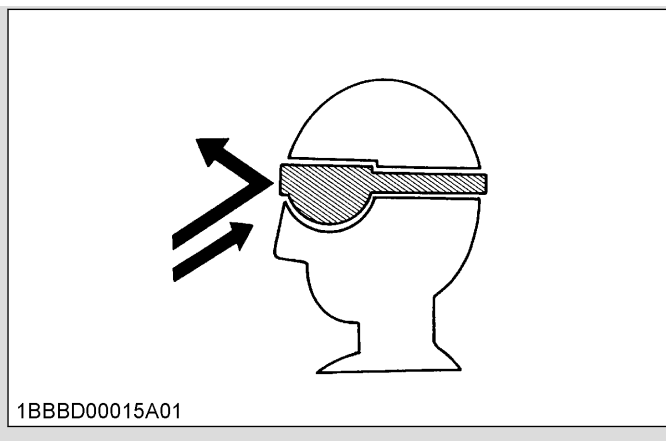
6. Cleaning the air cleaner element



WARNING

To avoid personal injury or death:

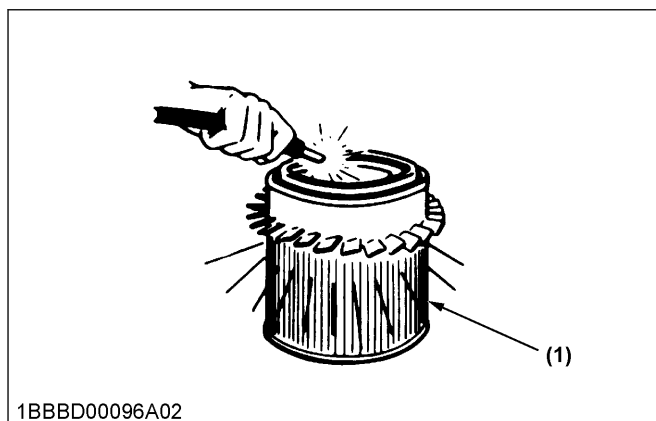
- Wear the eye protectors when cleaning with compressed air.



If the air-cleaner element is only dusty, you can clean it with compressed air.

1. Blow the air-cleaner elements with compressed air. The pressure of air should not exceed the following value and you should blow the cartridge to clean from inside to outside until the dust deposits are removed.

Air pressure	Under 43 psi
--------------	--------------



(1) Air cleaner element

2. If the air-cleaner element is heavily clogged or oily, change it.

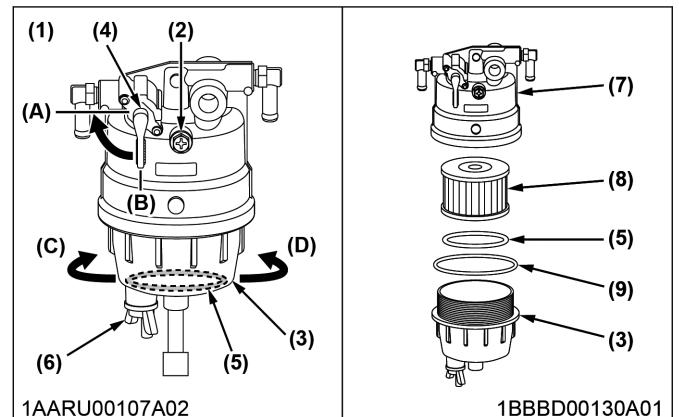
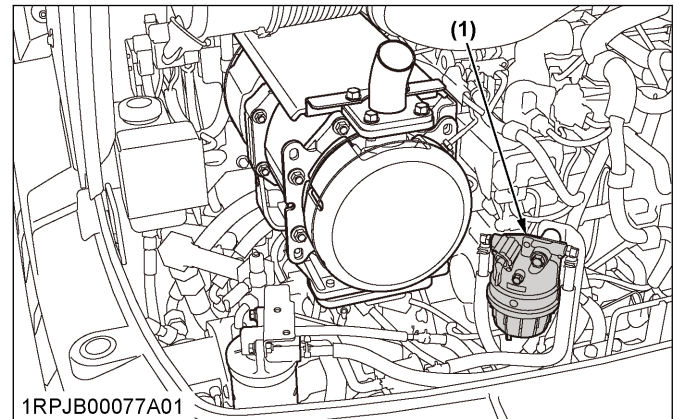
IMPORTANT :

- If the engine performance is still too low after cleaning the air-cleaner elements or the exhaust is colored black, replace the air-cleaner elements.

7. Replacing the water separator filter element

1. Set the water shutoff-valve to the "CLOSE" position.
2. Loosen and remove the cup properly and replace the water-separator-filter element.
3. Check the condition of the O-ring and replace if necessary.
4. Tighten up the cup properly.

5. Set the shutoff-valve to the "OPEN" position.



- (1) Water separator
(2) Screw
(3) Cup
(4) Shutoff-valve
(5) Float
(6) Drain plug
(7) Head cover
(8) Water separator filter element
(9) O-ring

- (A) Close
(B) Open
(C) Loosen
(D) Tighten

IMPORTANT :

- When reattaching the water-separator-filter element, be careful to keep off the dust and dirt.
- Collect drained water in an oil pan or the like.

IMPORTANT :

- After exchange of the water-separator filter, purge the fuel system of air.
(See Bleeding the fuel system on page 131)

SERVICE EVERY 500 HOURS

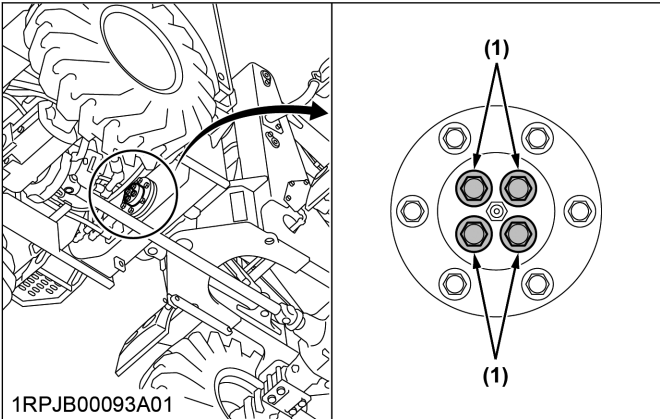
Perform inspection and servicing for every 50 and 250 hours of operation at the same time.

1. Checking the end plate of center shaft

The end plate is fixed on the tip of the center shaft.

The end plate is located inside the front side of the rear frame.

1. Fasten the end plate bolts of the center shaft.



(1)	End plate bolt	Tightening torque	282 N·m (207 ft·lbs)
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2. Changing the engine oil

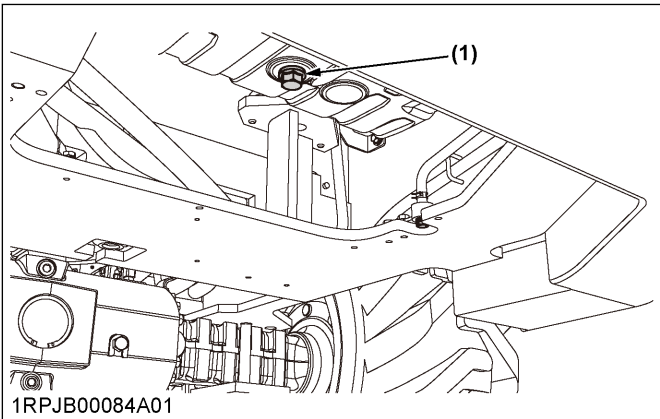
**WARNING**

To avoid personal injury or death:

- Always stop the engine before changing the engine oil.
- Never open the oil-drain-plug immediately after the engine has stopped, or hot engine oil may escape, causing scalding.

1. Remove the oil-drain-plug at the engine-oil-drain and drain the engine oil.

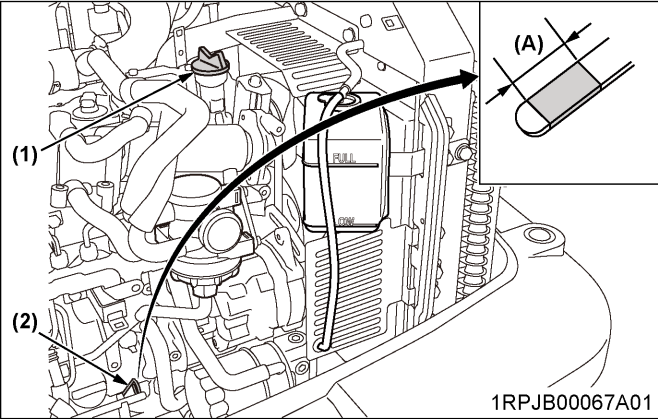
Oil drain plug (hexagon nut)	22 mm (0.9 in.)
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(1) Oil drain plug

2. After the engine oil is fully drained, refit the oil-drain-plug with a new seal.
3. Fill the engine oil into the oil port up to the correct level.
4. Idle the engine for a short while.

5. About 5 minutes after stopping the engine, check the level of engine oil with the oil dipstick.



(1) Oil port
(2) Oil dipstick

(A) Proper oil level

Engine oil capacity	9.0 L (2.4 U.S.gal.)
---------------------	-------------------------

- IMPORTANT :**
- Use the engine oil of appropriate viscosity according to ambient temperature.
 - Change the engine oil once every 6 months regardless of the running time on the machine.
 - Change the oil filter when you change the engine oil.

3. Replacing the engine oil filter cartridge

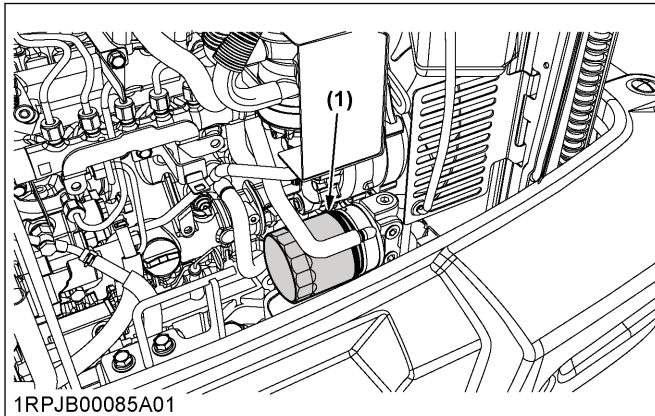
**WARNING**

To avoid personal injury or death:

- Always stop the engine before replacing the engine-oil-filter cartridge.
- Never remove the oil filter immediately after the engine has stopped, or hot engine oil may escape, causing scalding.

1. Replace the engine-oil-filter cartridge at the same time engine oil is changed.

2. Use the supplied filter wrench to remove the oil filter.



(1) Engine oil filter cartridge

3. Apply a thin layer of engine oil to the gasket of the oil filter and firmly tighten it in place by hand.
4. Top up the engine oil if necessary.
5. Idle the engine briefly.
6. Check the level of engine oil about 5 minutes after switching off the engine with the oil dipstick.

4. Checking and replenishing the oil in the front and the rear axle differential case and the reduction gear case

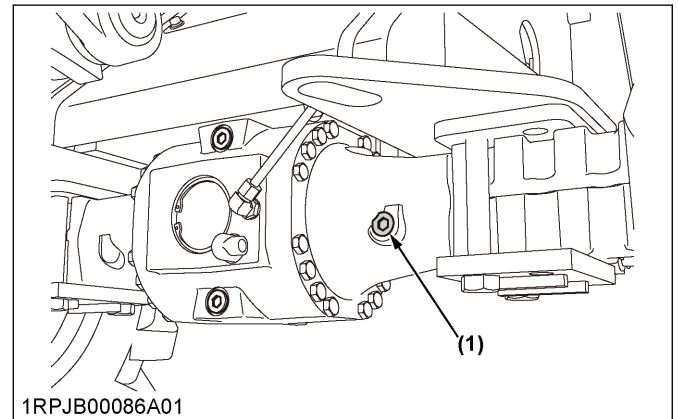
WARNING

To avoid personal injury or death:

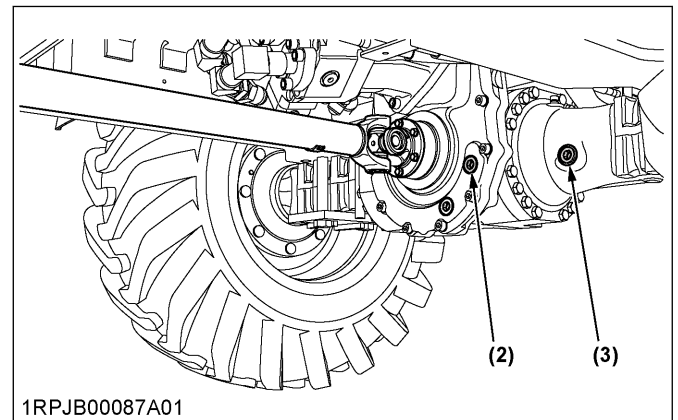
- Before changing the oil in the front and rear axle-differential-case, always stop the engine and lock the direction switch in neutral.
- Always remove the bucket and attachment, and use the lift-arm-support-device when servicing the machine with the loader lift arms raised to avoid serious personal injury.

1. Remove the oil-port plug, check the oil level in the front and the rear axle case.
The oil level in the axle cases must be at the lower rim of the thread.
2. Add the axle-cases-oil if necessary.
3. Screw in and tighten the oil-port-plug.

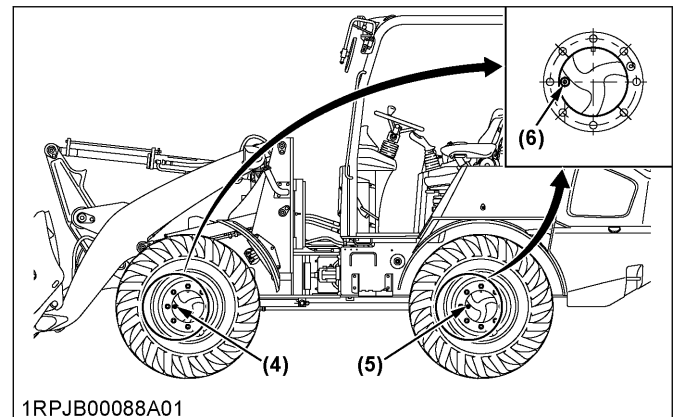
Front



Rear



Side



(1)		Front axle case
(2)		Reduction gear case
(3)	Oil port plug	Rear axle case
(4)		Front axle case (both sides)
(5)		Rear axle case (both sides)
(6)	Oil plug	

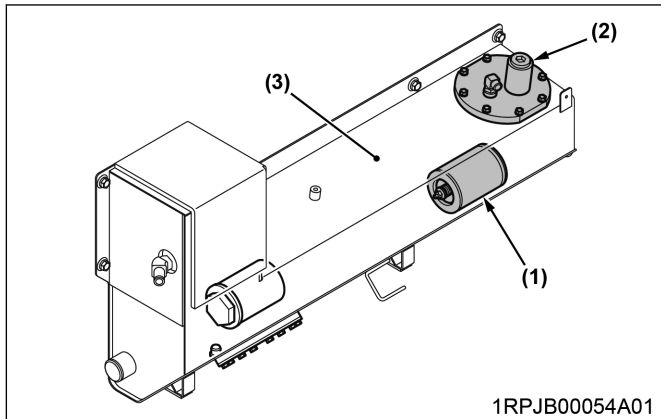
5. Replacing the return filter

! WARNING

To avoid personal injury or death:

- Never remove the filter immediately after the engine has stopped, or hot hydraulic oil may escape, causing scalding.

1. Remove the cover on the hydraulic-oil-tank.
2. Loosen the return filter with a wrench and remove the return filter.
3. Tighten the new return filter.



- (1) Return filter
(2) Cover
(3) Hydraulic oil tank

IMPORTANT :

- After changing the return filter, start the hydraulic system briefly and then check the oil level.

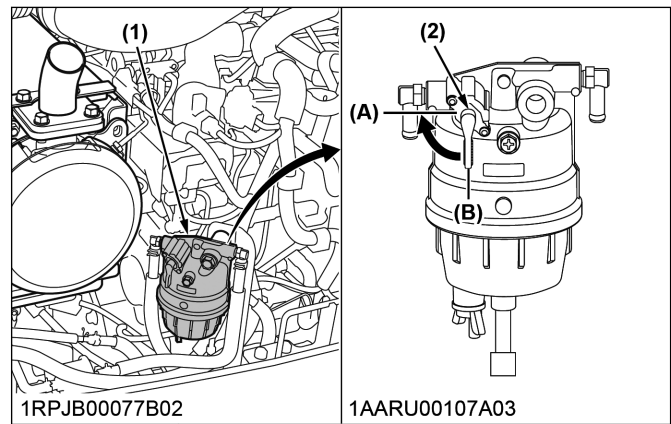
6. Replacing the fuel filter

! WARNING

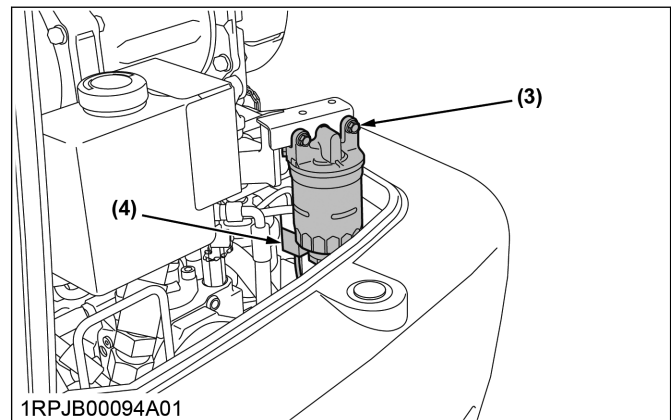
To avoid personal injury or death:

- Always stop the engine before changing the fuel filter.
- Keep sparks and flames away from the diesel fuel, or serious personal injury results. Allow the engine to cool completely.

1. Close the shut-off valve on the water separator.
2. Unplug the water-sensor connector on the fuel filter.
3. Remove the fuel-filter element.
4. Wet the rubber seal of the new fuel-filter element with fuel.
5. Install a new fuel-filter element and tighten by hand.
6. Plug the water-sensor connector.
7. Open the shut-off valve on the water separator.
8. Bleed the fuel system.
(See Bleeding the fuel system on page 131)



- (1) Water separator
(2) Shut-off valve
(A) Close
(B) Open



- (3) Fuel filter
(4) Water sensor connector

SERVICE EVERY 1000 HOURS

Perform inspection and servicing for every 50, 250, and 500 hours of operation at the same time.

1. Changing the oil for the front and the rear axle differential case and the reduction gear case

! WARNING

To avoid personal injury or death:

- Before changing the oil in the front and rear axle-differential-case, always stop the engine and lock the direction switch in neutral.
- Always remove the bucket and attachment, and use the lift arm support-device when servicing the machine with the loader lift arms raised to avoid serious personal injury.

1. Place a collection vessel under the axle.

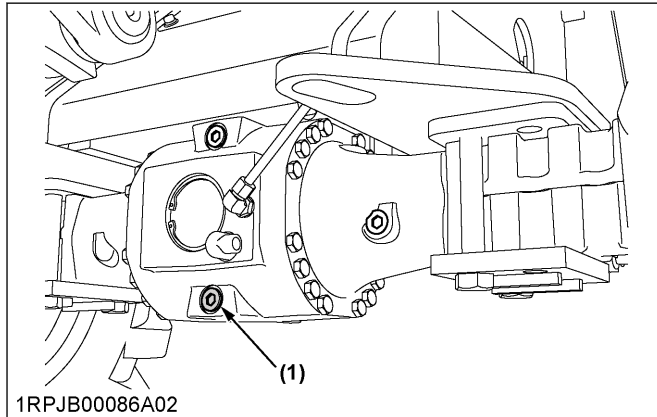
Collection vessel capacity

5 liters
(1.3 U.S.gal.)

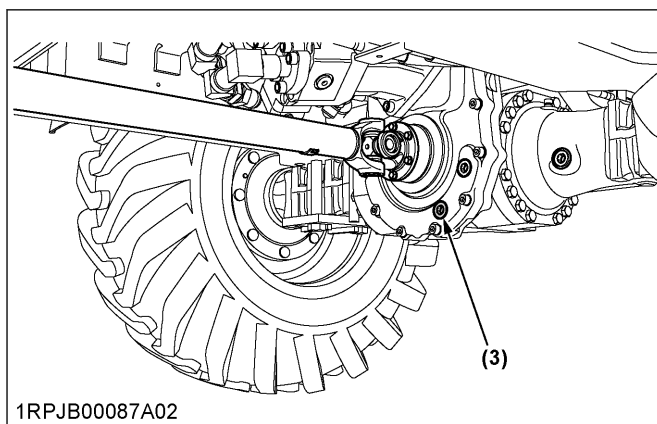
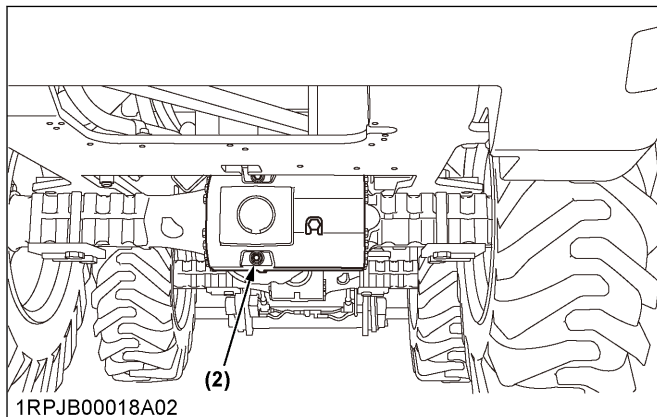
2. Remove the drain plug and drain the oil.

Drain plug	10 mm (0.4 inch) socket head
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Front

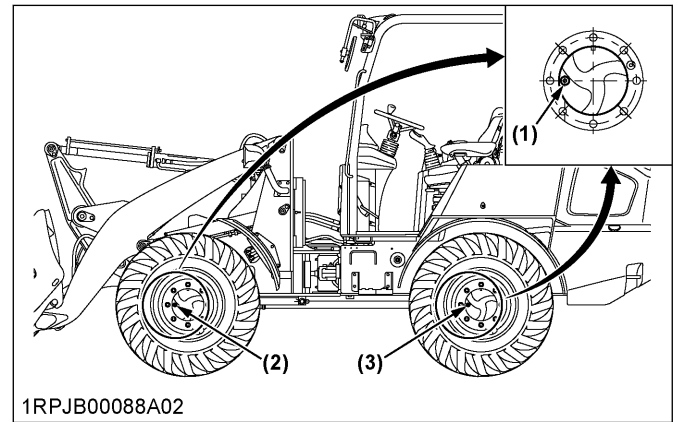


Rear



(1)	Drain plug	Front axle case
(2)		Rear axle case
(3)		Reduction gear case

3. Turn the wheel by 90 degrees, so that the oil plug (1) is in the middle position.



(1) Oil plug

(2)	Oil port plug	Front axle case (both sides)
(3)		Rear axle case (both sides)

4. Fill in oil to the bottom edge of the thread hole on the oil port.

5. Screw in and tighten the oil-port-plug.

Axle case oil capacity	Front/rear axle case	4.5 L (1.2 U.S.gal.)
	Reduction gear case	0.6 L (0.16 U.S.gal.)
	Reduction gear case at wheel (each)	0.9 L (0.24 U.S.gal.)

2. Replacing the HST oil filter

! WARNING

To avoid personal injury or death:

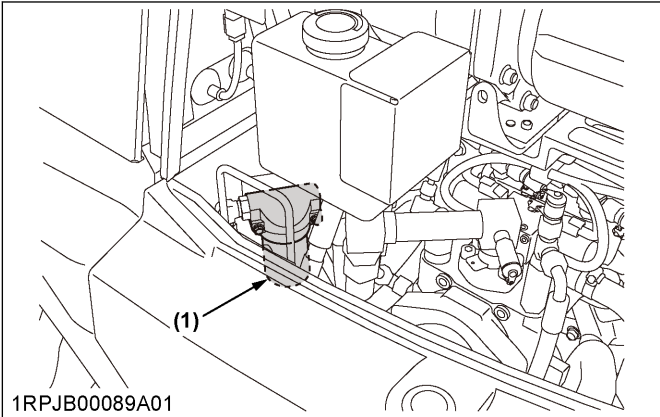
- Never remove the filter immediately after the engine has stopped, or hot hydraulic oil may escape, causing scalding.

1. Loosen the nut located at the bottom of the HST-oil-filter and remove the HST-oil-filter.

Hexagon nut	24 mm (0.9 in.)
-------------	--------------------

2. Replace HST-oil-filter to new one.

Hexagon nut	Tightening torque	73.6 N · m to 83.4 N · m (54.5 ft · lb to 61.5 ft · lb)
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(1) HST oil filter

IMPORTANT :

- After changing the HST-oil-filter, start the hydraulic system briefly and then check the oil level.

3. Changing the hydraulic oil and the suction filter

! WARNING

To avoid personal injury or death:

- Always stop the engine before changing the hydraulic oil.
- Never open the drain plug immediately after the engine has stopped, hot hydraulic oil may escape, causing scalding.

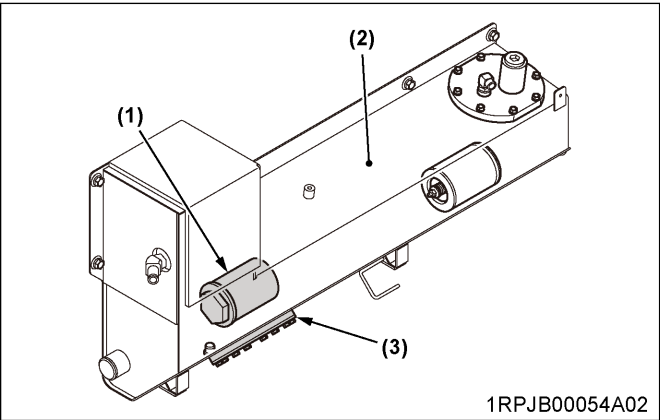
1. Remove the drain plug from the bottom of the hydraulic-oil-tank and drain the hydraulic oil.

Drain plug	Hexagon head screws 8 mm (0.3 in.)
------------	------------------------------------

2. Remove the bolt from the tank-bottom-cover and then remove the tank-bottom-cover.

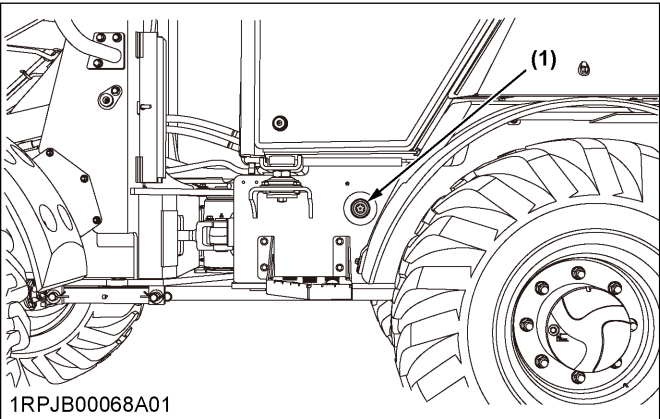
3. Replace the suction filter.

Suction filter	Hexagon nut 60 mm (2.4 in.)
----------------	-----------------------------



(1) Suction filter
(2) Hydraulic oil tank
(3) Bottom cover

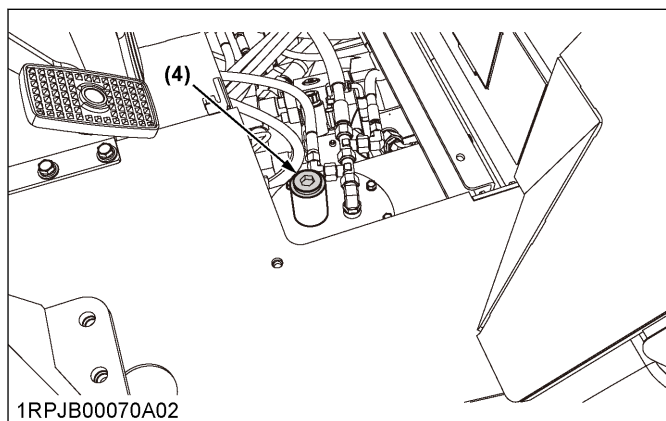
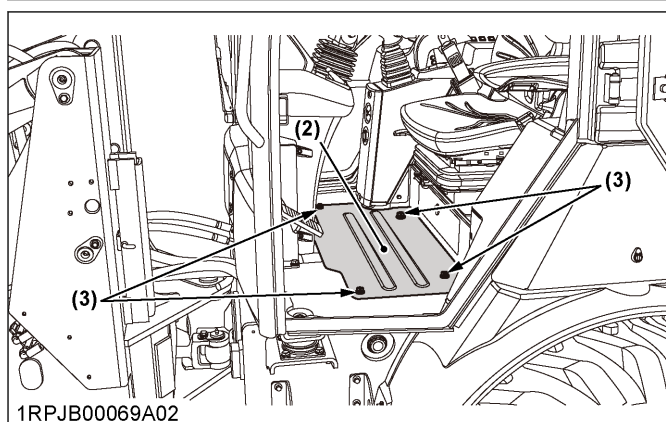
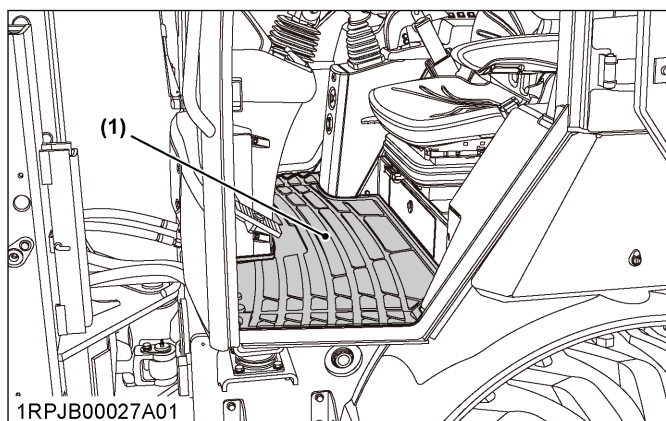
4. Check the gasket of the tank-bottom cover for damage and replace it if necessary.
5. Retighten the drain plug, and attach the tank-bottom-cover.
6. Open the access flap and the oil-port-cap for the hydraulic-oil-tank and fill hydraulic oil up to the specified amount, and then close the oil-port-cap and the access flap.
7. Run the engine at idle speed and set the direction switch to the neutral position.
8. Then operate the control lever and the steering wheel for about 5 minutes.
9. Stop the engine and make sure that the quantity of hydraulic oil is sufficient through the oil-level gauge.



(1) Oil level gauge

10. Take up the mat, remove the bolts, and detach the access flap.

Hydraulic oil port is under the floor.



- (1) Mat
(2) Access flap
(3) Bolts
(4) Oil port cap

[R540]

Hydraulic oil volumes	Hydraulic tank	39 L (10.3 U.S.gal.)
	Whole oil volumes	55 L (14.5 U.S.gal.)

[R640]

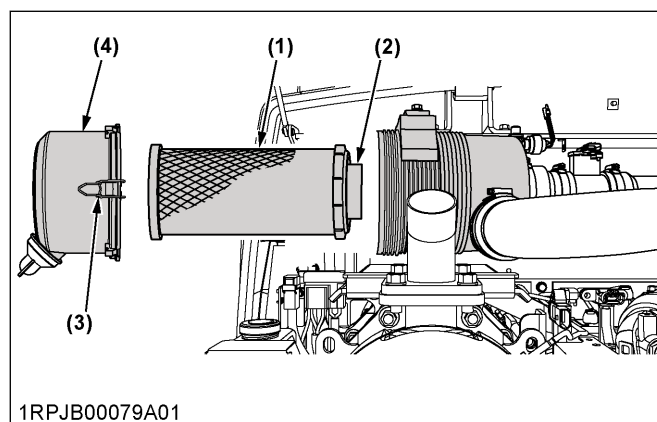
Hydraulic oil volumes	Hydraulic tank	39 L (10.3 U.S.gal.)
	Whole oil volumes	57 L (15.1 U.S.gal.)

IMPORTANT :

- If there are deposits in the hydraulic-oil-tank, wipe them all with a clean rag and diesel oil.
- Use great caution not to admit any foreign particles into the hydraulic-oil-tank.

4. Replacing the air cleaner element

1. Open the engine cover, and remove the air-cleaner cover and both air-cleaner elements.
2. Change both air-cleaner elements and clean the inside of the air-cleaner cover.
3. Reinstall the air-cleaner elements and the air-cleaner cover being careful to install the cover so that its "TOP" mark (arrow) faces upwards.



- (1) Outer element
(2) Inner element
(3) Clamp
(4) Air cleaner cover

5. Adjusting the engine valve clearance

Consult your local KUBOTA dealer for adjusting the engine valve clearance.

SERVICE EVERY 1500 HOURS

Perform all 50, 100, and 500 hour servicing at the same time.

1. Checking the injector

Consult your local KUBOTA dealer for checking the injector.

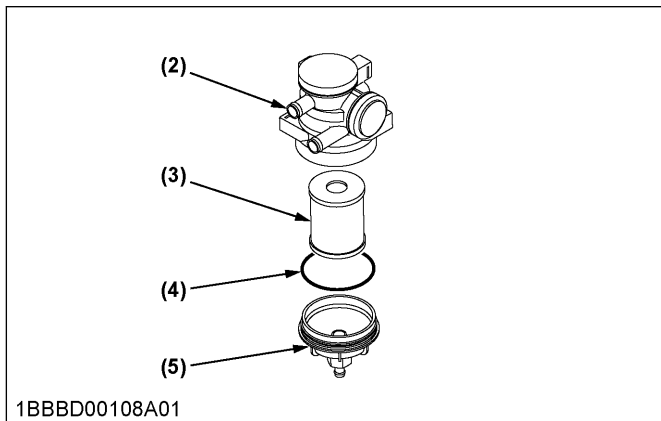
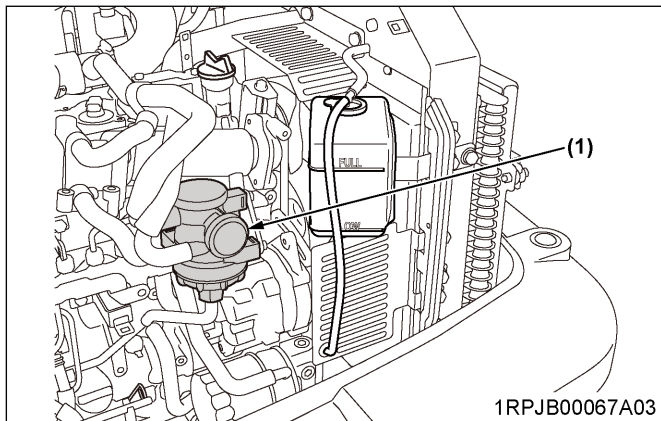
2. Replacing the oil separator element

WARNING

To avoid personal injury or death:

- Be sure to stop the engine before replacing the oil-separator element.

1. Remove the cover and remove the oil-separator element.
2. Wipe off the oil and the carbon in the case with a clean rag.
3. Fit a new oil-separator element and O-ring.
4. Tighten the cover until a cover comes in contact with body.



- (1) Oil separator
(2) Body
(3) Oil separator element

- (4) O-ring
(5) Cover

3. Checking the EGR cooler

Consult your local KUBOTA dealer for checking the EGR cooler.

SERVICE EVERY 2000 HOURS

Perform inspection and servicing for every 50, 250, 500, and 1000 hours of operation at the same time.

1. Checking the alternator and the starter motor

1. After every 2000 hours of use, check and maintain the alternator and the starter motor.
It is just about the time the brushes would become worn.
It is recommended to ask your KUBOTA dealer to test and overhaul the alternator and the starter motor.
If you often use the lights during work, inspect the alternator every 1000 hours.

SERVICE EVERY 3000 HOURS

Perform all 50, 250, 500, 1000, and 1500 hour servicing at the same time.

1. Checking the EGR system

Consult your local KUBOTA dealer for checking the EGR system.

2. Checking the turbocharger [R640 only]

Consult your local KUBOTA dealer for checking the turbocharger.

SERVICE EVERY 6000 HOURS

Perform all 50, 250, 500, 1000, 1500, 2000, and 3000 hour servicing at the same time.

1. Cleaning the diesel particulate filter (DPF)

The longer the DPF operates, the more ash (burnt residue) is collected in the DPF. Too much ash build-up adversely affects the DPF performance.

Consult your local KUBOTA dealer to clean up the DPF.

IMPORTANT :

- To clean up the DPF, a specific machine is required. Do not try to clean it in any other way, such as disassembling, shaking, and heating because toxic chemicals may be present inside of the DPF.

ANNUAL SERVICING

1. Checking the electrical leads and the terminals

1. Check if all accessible electrical leads, connectors, and terminals are the good condition and fit firmly.
2. Repair or replace damaged parts.
3. Check the fuse box and the fuse holders for oxidation and soiling, and clean if necessary.

2. Checking the exhaust manifold for cracks, gas, leakage, and mounting screw

Consult your local KUBOTA dealer for checking the exhaust manifold for cracks, gas, leakage, and mounting screw.

3. Checking the intake air line for air leaks

Consult your local KUBOTA dealer for checking the intake-air-line for air leaks.

4. Checking the air-flow-sensor (AFS)

Consult your local KUBOTA dealer for checking the air-flow-sensor (AFS).

5. Checking the boost sensor [R640 only]

Consult your local KUBOTA dealer for checking the boost sensor.

6. Checking the condition of diesel particulate filter (DPF) muffler

Consult your local KUBOTA dealer to check the condition of DPF muffler.

7. Checking the diesel particulate filter (DPF) differential pressure sensor and rubber piping for gas leak

Consult your local KUBOTA dealer to check the DPF-differential-pressure-sensor and rubber piping for gas leak.

8. Checking the diesel particulate filter (DPF) exhaust gas temperature sensor

Consult your local KUBOTA dealer to check the DPF-exhaust-gas-temperature-sensor.

9. Checking the EGR piping for gas leak

Consult your local KUBOTA dealer for checking the EGR piping for gas leak.

10. Checking the brake hose

Consult your local KUBOTA dealer for checking the brake hose.

11. Checking the antifrost heater for oil separator (CCV heater)[Option]

Consult your local KUBOTA Dealer for checking the antifrost heater for oil separator (CCV heater).

BIENNIAL SERVICING

Perform inspection and servicing for annual operation at the same time.

1. Replacing the brake hose

Consult your local KUBOTA dealer for replacing the brake hose.

2. Changing the brake fluid

Consult your local KUBOTA dealer for changing the brake fluid.

3. Replacing the rubber parts of master cylinder

Consult your local KUBOTA dealer for replacing the rubber parts of master cylinder.

4. Replacing the fuel hoses and the clamps



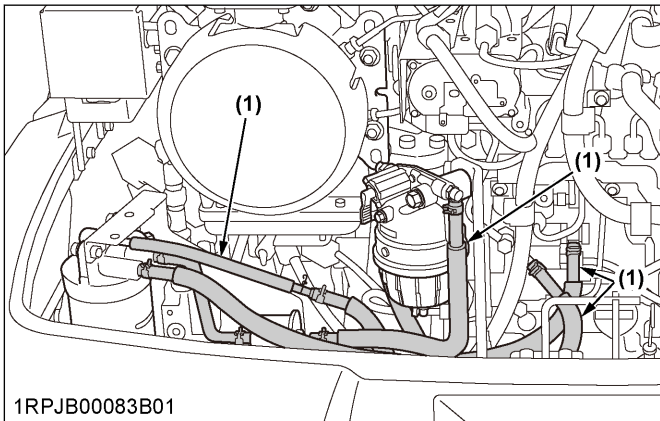
WARNING

To avoid personal injury or death:

- A broken fuel line will cause the fuel to leak. Be sure to check the fuel line. Fire or injuries may result if a fuel line is leaking.
- Make sure that the engine is cool before disconnecting fuel lines.

Rubber parts like the fuel lines are likely to age even if the engine is not used regularly. Therefore, it is necessary to replace fuel lines with new ones once every 2 years or sooner if they are damaged.

1. Regularly check that the fuel lines and clamps are not loose or damaged.
2. When the fuel line has been replaced, be sure to bleed air from the fuel line.



(1) Hose

IMPORTANT :

- When replacing the fuel lines, take special care to prevent dirt and other foreign matter from entering the fuel system. Entry of foreign matter in the fuel system will likely cause serious damage.

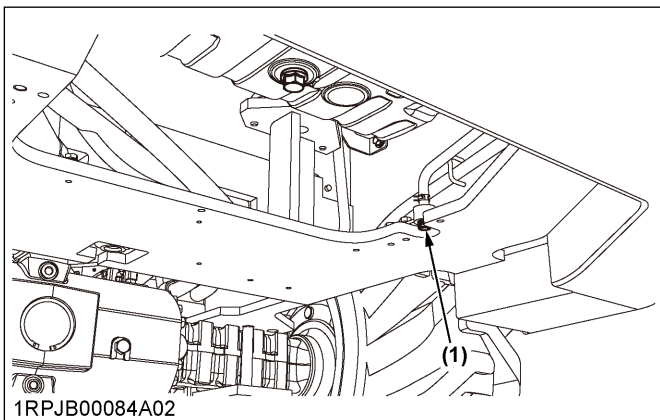
5. Changing the coolant

WARNING

To avoid personal injury or death:

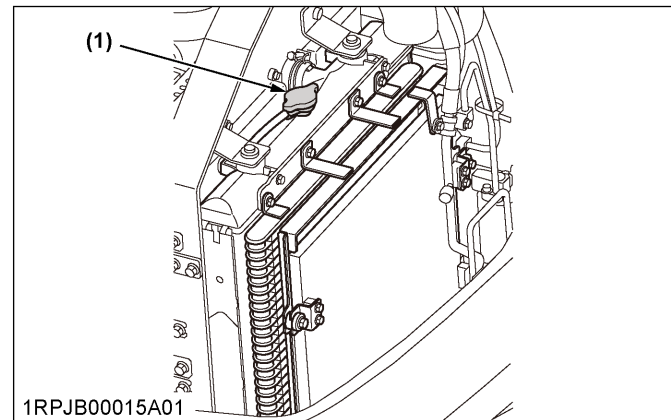
- Never open the plug immediately after the engine has stopped, or hot coolant may rush out, causing scalding.

1. Open the plug under the radiator to drain the coolant.



(1) Plug

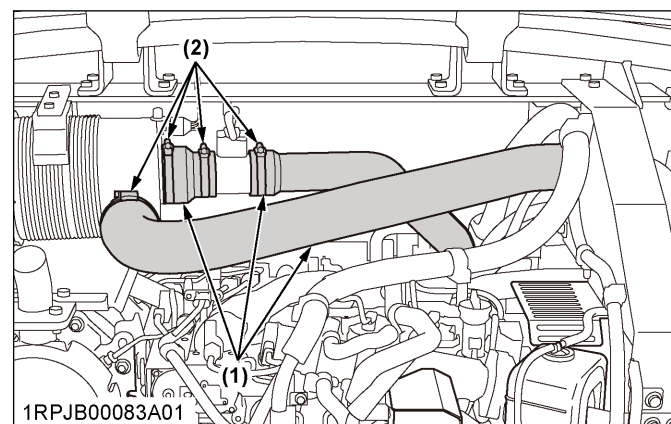
2. To drain the recovery tank, disconnect the pipe at the bottom of the recovery tank.
3. Clean the radiator interior by pouring the water into the supply port and keeping the plug open until clean water flows out of it.
4. Close the plug and fill the radiator and recovery tank with a mixture of antifreeze and water (50%/50%).
5. After filling, idle the engine for about 5 minutes, stop the engine, and make sure that the coolant level is up to the filling nozzle of the radiator.



(1) Radiator cap

6. Replacing the intake air line

1. Replace the hoses and clamps, if necessary.
(See Checking the fuel line and the intake air line on page 116)



(1) Hoses

(2) Hose clamps

7. Replacing the rubber piping related oil separator

Consult your local KUBOTA dealer for replacing the rubber-piping-related-oil-separator.

8. Replacing the diesel particulate filter (DPF) differential pressure sensor rubber piping (front and back)

Consult your local KUBOTA dealer to replace the diesel-particulate-filter (DPF) differential pressure sensor rubber piping (front and back).

9. Replacing the suction pipe downstream the air-flow-sensor (AFS)

Consult your local KUBOTA dealer to replace the suction pipe downstream the AFS.

10. Replacing the boost sensor pressure rubber piping [R640 only]

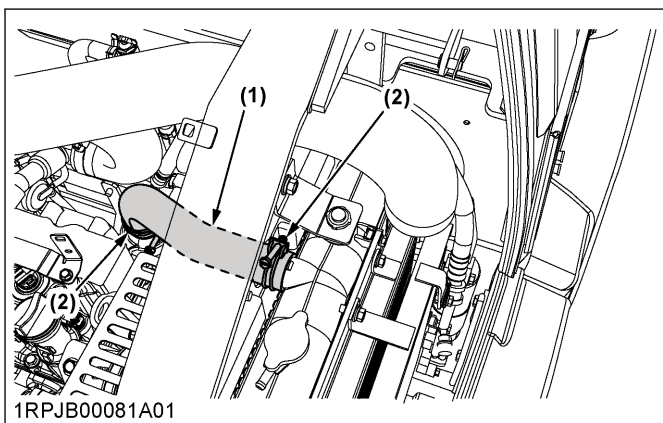
Consult your local KUBOTA dealer for replacing the boost-sensor-pressure-rubber-piping.

11. Replacing the EGR cooler hose

Consult your local KUBOTA dealer for replacing the EGR-cooler-hose.

12. Replacing the radiator hoses (water pipes)

1. Replace the radiator hoses and the clips.
(See Checking the radiator hoses and the clips on page 115)



(1) Radiator hoses

(2) Clips

PERIODIC PARTS REPLACEMENT

1. Replacing the air conditioner pipes and hoses [Cabin type only]

CAUTION

To avoid personal injury:

- Do not touch the water hoses or the heater with your hand. You may get burned.

1. Replace the pipes and the hoses of air-conditioner every 2 years.
If the hoses or the pipes of air-conditioner are swollen, hard, or cracked, you should replace them. Consult your local KUBOTA dealer for replacing the air-conditioner pipes and hoses.

SERVICING AS REQUIRED

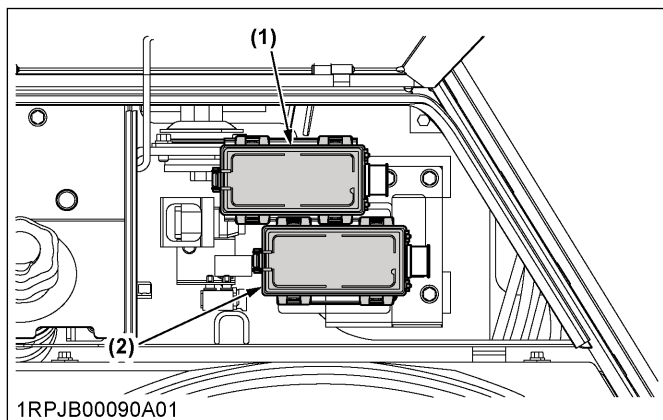
1. Replacing and repairing the electrical system

Damage to cables and loose connections of the electrical system cause malfunctioning and lead to short circuits, leakage, and fires.

1. Replace and repair the electrical system such as fuse as quickly as possible if necessary.

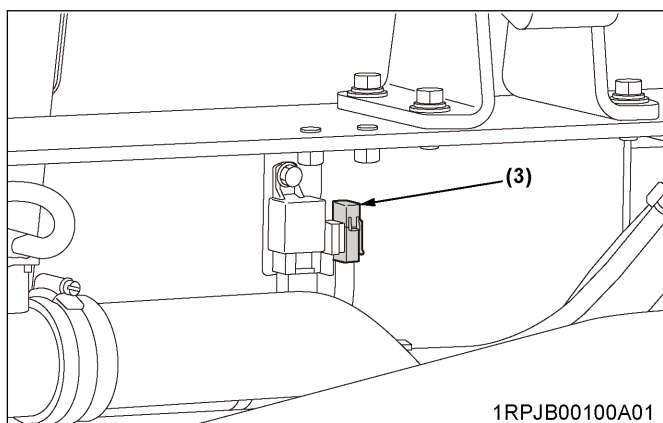
- **Fuse**

See Replacing the fuses on page 128.



(1) Fuse box A

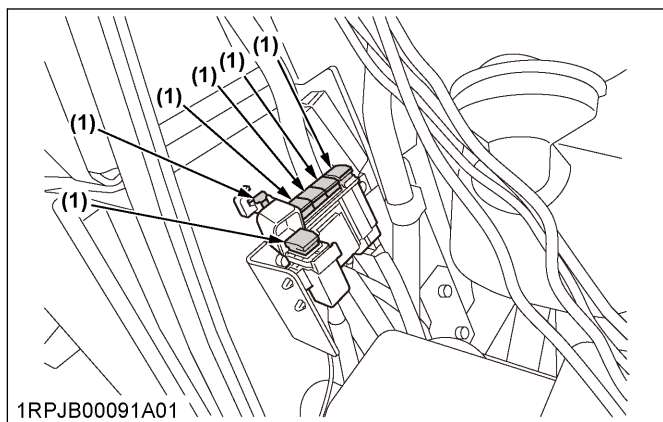
(2) Fuse box B



(3) Fuse box C (option)

- **Slow blow fuse**

See Replacing the slow blow fuses on page 130.



(1) Slow blow fuse

1.1 Replacing the fuses



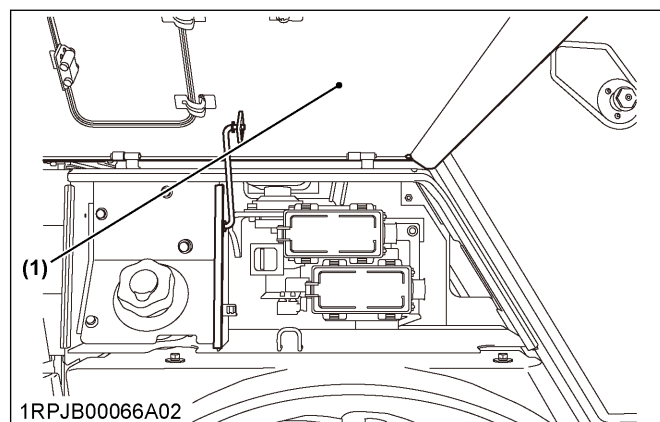
WARNING

To avoid personal injury or death:

- Before replacing a fuse, be sure to turn off the starter switch.

Fuse box A and B

1. Open the right side cover.
(See Opening the side cover on page 102)

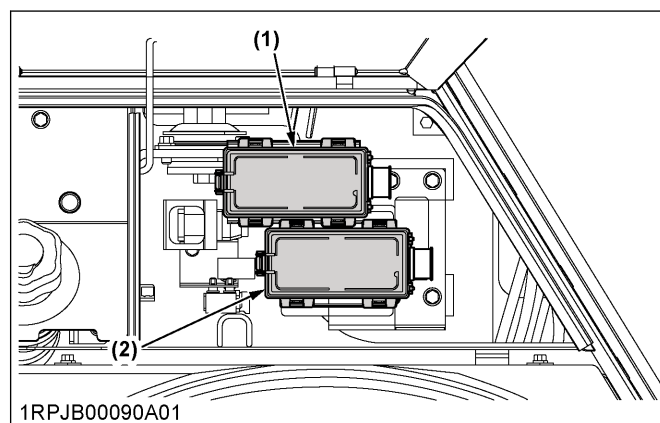


(1) Right side cover

2. Remove the cover of the fuse box.
3. Replace the blown fuse using a new one of the same capacity.
Fuse capacities and their circuits are as follows.

NOTE :

- A fuse puller is located in both fuse boxes.
- Fuses



(1) Fuse box A

(2) Fuse box B

– Fuse box A

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)

1RPJB00095A01

	Rating	Applied circuit
(1)	30 A	Front wiper switch / Horn switch
(2)	30 A	Blower motor
(3)	5 A	Instrument panel (+B)
(4)	20 A	Main ECU power
(5)	10 A	Horn
(6)	15 A	Beacon light
(7)		not used
(8)	5 A	Interior light
(9)		not used
(10)	30 A	Front wiper
(11)		not used
(12)		not used
(13)		not used
(14)	10 A	Head lamp LH
(15)	10 A	Head lamp RH
(16)	5 A	Clearance lamp LH / Tail lamp LH
(17)	5 A	Clearance lamp RH / Tail lamp RH
(18)	5 A	Starter (signal)
(19)	5 A	Horn (sub)
(20)		not used
(21)	15 A	Air ride power
(22)		not used
(23)		not used
(24)		not used
(25)		not used
(26)		not used

– Fuse box B

	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)
	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)

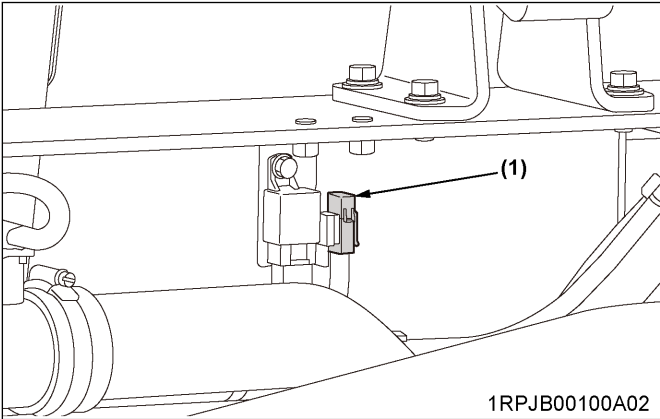
1RPJB00095A02

	Rating	Applied circuit
(27)	15 A	Rear wiper / Rear washer
(28)	15 A	Radio (AC)
(29)	15 A	Electrical outlet
(30)	10 A	Compressor
(31)		not used
(32)	10 A	Stop lamp
(33)	20 A	High beam
(34)	15 A	Hazard lamp
(35)	20 A	Head lamp
(36)		not used
(37)		not used
(38)		not used
(39)		not used
(40)	5 A	Flasher
(41)	5 A	Fuel pump
(42)	5 A	Relay float
(43)	5 A	Main ECU (AC)
(44)	10 A	Alternator
(45)	30 A	Work lamp
(46)	30 A	Electrical outlet (sub, +B)
(47)	5 A	Headlamp switch
(48)		not used
(49)		not used
(50)		not used
(51)	5 A	Engine ECU
(52)	10 A	Reverse lamp / Reverse buzzer

Fuse box C [Option]

1. Open the engine cover.
(See Opening and closing the engine cover on page 102)

2. Open the fuse box cap.
3. Replace the blown fuse using a new one of the same capacity.
- Fuse capacity and its circuit are as follows.

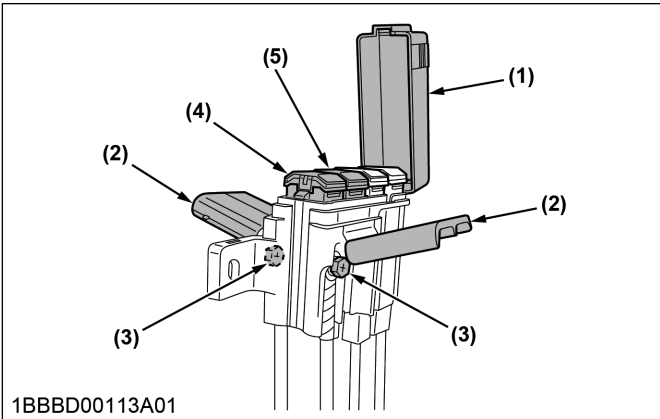


(1) Fuse box C

	Rating	Applied circuit
(1)	20 A	CCV heater

1.2 Replacing the slow blow fuses

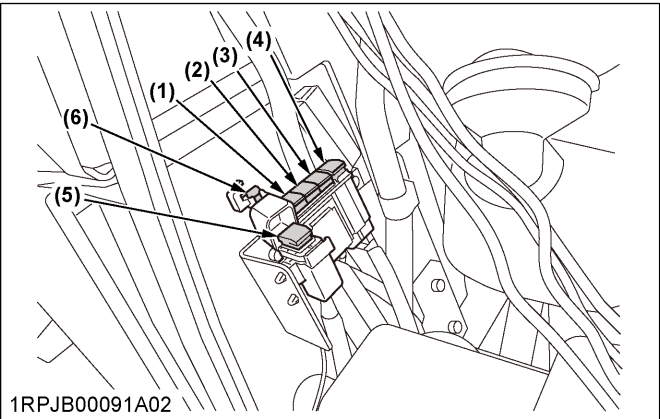
1. Disconnect the negative cord of the battery.
2. Remove the slow-blow-fuse case.
3. Open the slow-blow-fuse-case cap and the cover then remove the bolts and draw out the slow-blow-fuse 1 and 2.



(1) Slow blow fuse case cap (3) Bolt
(2) Cover

(4)	Slow blow fuse 1	Alternator
(5)	Slow blow fuse 2	Main 1

• Slow blow fuse



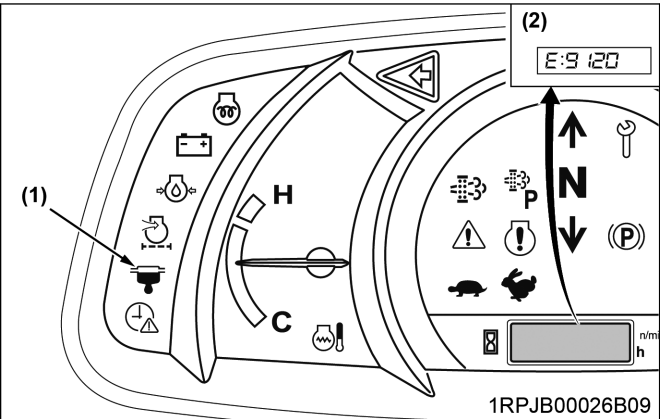
	Rating	Applied circuit
(1)	100 A	Alternator
(2)	60 A	Main 1
(3)	50 A	Main 2
(4)	50 A	Main 3
(5)	30 A	Engine ECU
(6)	10 A	Main ECU (+B)

IMPORTANT :

- The main fuse protects the entire electrical system. If the main fuse or another fuse has blown, determine why it blew and repair anything necessary. Never bridge the fuses, always replace them with a new fuse of the same rating.

2. Draining the fuel filter by draining the water separator

If the water-separator filled-up indicator lights up and the error code “E:9120” appears on the meter panel, immediately take the steps in this section to drain the fuel filter after stopping the engine.

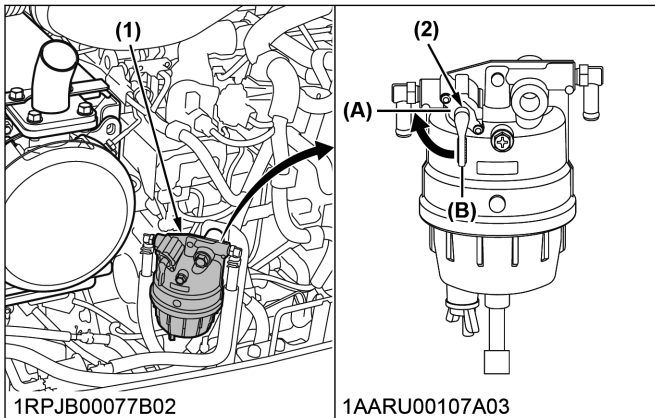


(1) Water separator filled-up indicator (2) Error code

IMPORTANT :

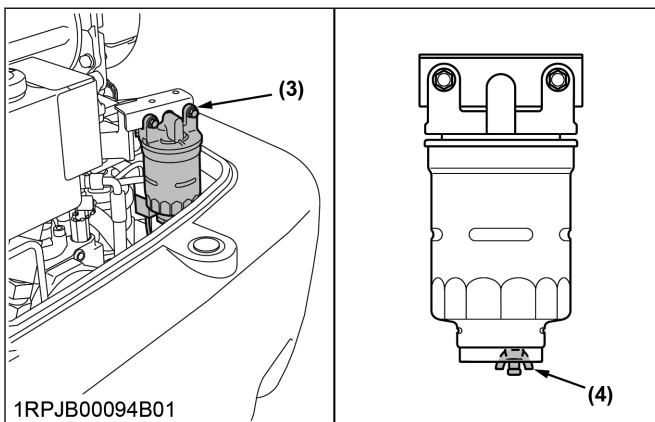
- If you do not drain the fuel filter immediately after the alarm, the engine may be seriously damaged.
- Without the fuel filter drained, the cleaning efficiency of the DPF (6000 hours) will be reduced and the DPF longevity will be shorter than expected.

1. Close the shutoff-valve on the water separator.
2. Remove the drain bolt.
Take much care not to lose the drain bolt.
3. Open the shutoff-valve on the water separator.
4. After draining the water completely, close the shutoff-valve on the water separator.
5. Attach the drain bolt.
6. Open the shutoff-valve on the water separator.



(1) Water separator
(2) Shut-off valve

(A) Close
(B) Open



(3) Fuel filter

(4) Drain bolt

IMPORTANT :

- After draining the fuel filter, drain the water separator as soon as possible.

3. Bleeding the fuel system**WARNING**

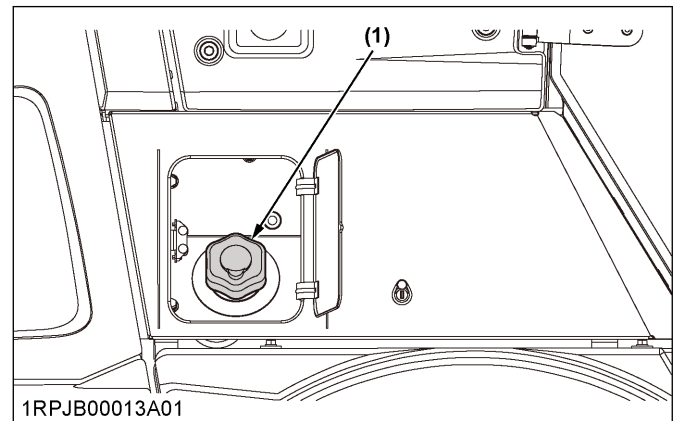
To avoid personal injury or death:

- Keep sparks and flames away from the fuel, or serious personal injury may result.

After the fuel tank has been run on empty or maintenance and service work has been performed, you cannot start the engine again after refueling. This is because air has entered the fuel system. It is necessary to bleed the fuel system in the procedure in this section.

Also after replacing the fuel filter, bleed the fuel system.

1. Fill the fuel tank with fuel.
(See Checking and replenishing the fuel on page 105)



(1) Fuel tank cap

Fuel tank capacity

70 L
(18.5 U.S.gal.)

2. Turn the starter switch to the **[RUN]** position.
The fuel pump starts working to supply fuel into the line. About 10 seconds later, the air will be bled out from the line.
3. Start the engine.

NOTE :

- The engine may sometimes stall after starting if air bleeding was not complete. If engine stalling should occur, repeat step 2 and step 3.

4. Cleaning the plastic parts and synthetic leather

- Use a soft cloth when wiping plastic parts or synthetic leather.
- If the plastic or synthetic leather is very dirty, use a soft cloth dipped in a mild detergent that has been diluted with water.

- Wipe off any remaining moisture or detergent with a soft cloth that has been moistened with water and then thoroughly wrung out.
- Cleaning the plastic parts with alkaline, acidic, or organic solvents such as alcohol or benzene can damage them.

SERVICE FOR TIRES

1. Precautions for handling the tires

WARNING

To avoid personal injury or death:

- Before changing the tires, stop the engine, lower the bucket and attachment to the ground, release the hydraulic pressure in the hydraulic system by operating the control levers, and remove the starter key.
- To change the tires, place the machine on blocks suitable for the weight of the machine. Only qualified personnel must change tires and mount tires on rims.
- Before adding the air, install the tire correctly on the machine or put the tire in a retaining device (tire-inflation-cage). Do not inflate tires above the recommended pressure shown in the following table.

Type	R540			
Tire size	Bucket		Pallet forks	
	front	rear	front	rear
365 / 70 R18	3.0 bar (43 psi)	2.0 bar (29 psi)	3.5 bar (50 psi)	2.0 bar (29 psi)
360 / 80 R20	2.5 bar (36 psi)	2.0 bar (29 psi)	3.0 bar (43 psi)	2.0 bar (29 psi)

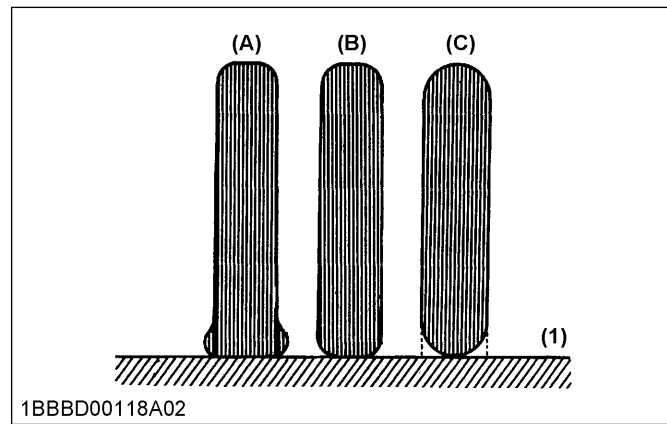
Type	R640			
Tire size	Bucket		Pallet forks	
	front	rear	front	rear
405 / 70 R18	3.0 bar (43 psi)	2.0 bar (29 psi)	3.75 bar (54 psi)	2.5 bar (36 psi)
360 / 80 R20	3.0 bar (43 psi)	2.0 bar (29 psi)	3.5 bar (50 psi)	2.0 bar (29 psi)

2. Checking the tire pressure

Check the tires and rims for damage and eliminate problems before starting operation.

If the air pressure in the tire is too high or too low, the life of the tire will be shortened. Check the air pressure in tires routinely.

1. Check the tire pressure.



(1) Ground level

(A) Deficient
(B) Correct
(C) Excessive

Type	R540			
Tire size	Bucket		Pallet forks	
	front	rear	front	rear
365 / 70 R18	3.0 bar (43 psi)	2.0 bar (29 psi)	3.5 bar (50 psi)	2.0 bar (29 psi)
360 / 80 R20	2.5 bar (36 psi)	2.0 bar (29 psi)	3.0 bar (43 psi)	2.0 bar (29 psi)

Type	R640			
Tire size	Bucket		Pallet forks	
	front	rear	front	rear
405 / 70 R18	3.0 bar (43 psi)	2.0 bar (29 psi)	3.75 bar (54 psi)	2.5 bar (36 psi)
360 / 80 R20	3.0 bar (43 psi)	2.0 bar (29 psi)	3.5 bar (50 psi)	2.0 bar (29 psi)

Deficient (A)

Insufficient low tire pressure.

Too small amount of air in the tire can cause the tire to obtain excessive slack, which hastens wearing down of the tread.

Correct (B)

Correct tire pressure.

Excessive (C)

Excessively high tire pressure.

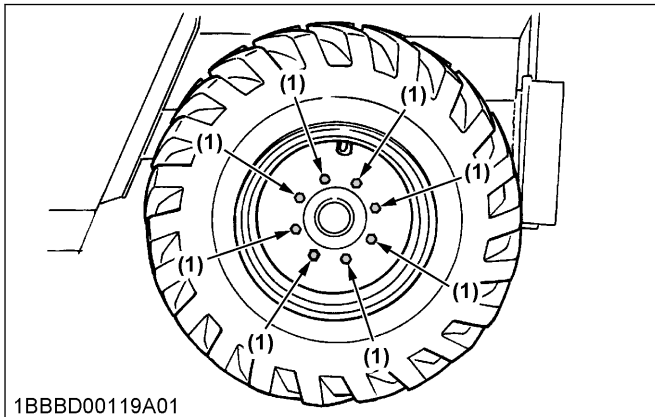
Too high tire pressure causes the tractive force of the machine to decrease or the tire to slip. There is also the risk of a blow out.

3. Changing the tires

Removal

1. Loosen the wheel nuts, each by one turn on the wheel to be removed.
2. Lift the machine so that the wheel to be removed is just raised off the ground.

- Place the machine on jackstands.
- Then remove the wheel nuts and remove the wheel from the axle.

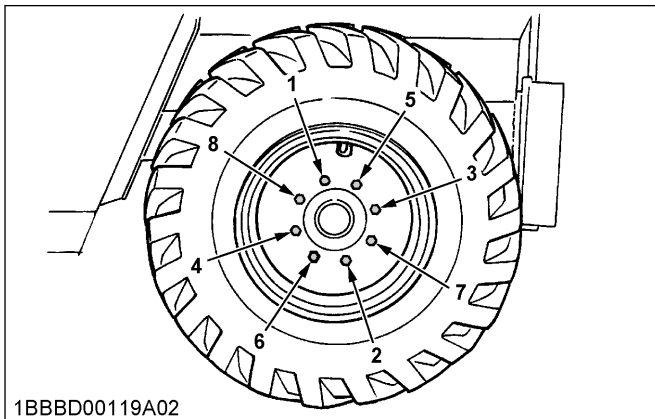


(1) Wheel nut

Fitting

- Mount the wheel on axle and lightly tighten the wheel nuts.
- Lower the machine to the ground, and tighten the wheel nuts to the specified torque in the order shown in the following table and figure.

Order of tightening the wheel nuts

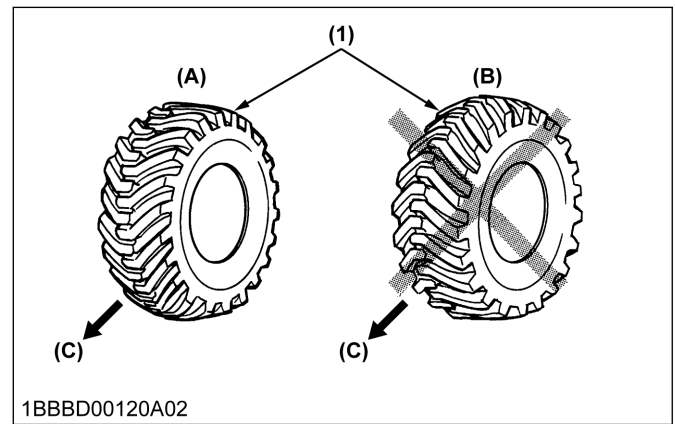


Wheel nut	Tightening torque	490 N · m (360 ft · lbs)
-----------	-------------------	-----------------------------

4. Mounting the tires

Off-road tires are used to provide strong traction and buoyancy on soft ground.

- Tires should only be mounted on a rim by qualified personnel with the proper equipment. When mounting, ensure that the tread pattern is mounted in the correct direction. (See the following figure).



(1) Tire
(A) Correct
(B) Incorrect
(C) Forward

5. Tire chains

Tire chains are not applicable for 20 inches size tire.

Type	R540	
Tire size	365 / 70 R18	360 / 80 R20
Tire chains	Applicable	Not applicable

Type	R640	
Tire size	405 / 70 R18	360 / 80 R20
Tire chains	Applicable	Not applicable

COMPLETION OF OPERATION AND STORING

STORING THE MACHINE

**WARNING**

To avoid personal injury or death:

- Before storing, perform the following procedure.
 1. Stop the engine.
 2. Lower the bucket and attachment to the ground.
 3. Release the hydraulic pressure in the hydraulic system by operating the control levers.
 4. Remove the starter key.

- Wash carefully and do not splash the water over the air cleaner.

Measures before completion of operation

1. Wash and clean each part of the machine, and store the machine indoors.
Never leave the machine outdoor.
If you must store the machine outdoors, choose a flat place, lay planks, park the machine, and cover it completely.
2. Add oil and grease, and change oil.
3. Apply grease sufficiently to the piston rods of the hydraulic cylinders where they are exposed.
4. Remove and store the battery separately.
5. Check the antifreeze in the coolant.
Add the antifreeze for adequate protection when temperatures down to the following values.

Temperature	-25°C (-13 °F)
-------------	-------------------

Measures during storing

1. Recharge the battery regularly.

Restarting after storing

1. Remove the grease applied to the piston rods of the hydraulic cylinders.
2. Check all oil levels, the sediment trap of the fuel system, the tire pressure and the functioning of the disc brake, and the parking brake.
3. Run the engine with no load and operate all the functions of the hydraulic system.

CAUTION WHEN WASHING THE MACHINE

- Stop the engine before washing the machine. If you wash the machine while running the engine, splashing water will get into the air cleaner through its intake and cause engine trouble.

RECOMMENDED OILS

RECOMMENDED OIL LIST

IMPORTANT :

- The hydraulic oil used from the factory is the following product.
- The brake fluid used from the factory is the following product.
- Use the following engine oil.
- Use the following oil in front and rear axle cases for all seasons.

Hydraulic oil used from the factory	ROWE Hightec Formula GT
Brake fluid used from the factory	ROWE Hightec HLP22 VG 22
Engine oil	API service classification CJ-4 or CK-4
Oil in front and rear axle cases	TOTAL TRANSMISSION T.H.F.I.

Recommended oils

	Application	Viscosity	KTC*1 recommends	Shell	ExxonMobil
Gear oil	All-weather gear oil	80W API GL-4	TOTAL DYNATRANS FR		
Hydraulic oil	In winter or by low temperatures	SAE 5W SAE 10W			
	In summer or by high ambient temperatures	SAE 30 SAE 40 SAE 50			
	All-weather hydraulic oil	SAE 10W-40			
Brake fluid		ISO VG 22			
Grease				Shell Alvania EP2	Mobilux EP2
Fuel				Diesel Fuel No.2-D S15	
Fuel under -5 °C				Diesel Fuel No.1-D S15	

*1 KTC is an abbreviation for Kubota Tractor Corporation.

NOTE :

- Engine oil
 - Use the engine oil of suitable American-petroleum-institute (API) service classification and proper SAE engine-oil standards according to the ambient temperatures.

Above 25 °C (77 °F)	SAE 30 or SAE 10W-30, SAE 15W-40
0 °C to 25 °C (32 °F to 77 °F)	SAE 20 or SAE 10W-30, SAE 15W-40
Below 0 °C (32 °F)	SAE 10W or SAE 10W-30, SAE 15W-40

- See the following table for the suitable API classification engine oil and the fuel.

Fuel	Engine oil classification (API classification)
	Oil class of engines except external DPF
Ultra low sulfur fuel [$< 0.0015\%$ (15 ppm)]	CJ-4 or CK-4

- Fuel
 - Use the ultra-low-sulfur-diesel-fuel of the following concentrations only for the engine.

RECOMMENDED OILS

Ultra low sulfur diesel fuel	Below 0.0015% (15 ppm)
------------------------------	------------------------

- **Minimum cetane number is 45. Cetane number greater than 50 is preferred, especially for the following temperatures or elevations.**

Temperatures	Below -20 °C (-4 °F)
Elevations	Above 1500 m (5000 ft)

- **Diesel fuels specified to the following are recommended.**

Diesel fuel	EN 590 or ASTM D975
-------------	---------------------

- **The following product is a distillate fuel of lower volatility for engines in industrial and heavy mobile service.
Refer to SAE J313 JUN87.**

Distillate fuel	No. 2-D
-----------------	---------

- **Indicated capacities of water and oil are manufacture's estimate.**

IMPORTANT :

- **If you use different fuel or engine oil, the cleaning efficiency of the DPF (6000 hours) will be reduced and the DPF longevity will be shorter than expected.**
- **Filters must trap sulfate additives of fuel and lubricant (Zn, Pb, Na, K, Ca, Mg, Cu, Ba, P, and so on) as ash during combustion.**
Control the fuel carefully to prevent the additives such as the fuel tank anti-oxidants, the water remover, the antifreeze, and so on from being mixed into fuel.

BIODIESEL FUEL (BDF)

B0-B20 Biodiesel fuels (BDF): mixed diesel fuels containing 20% or less biodiesel can be utilized under the following conditions.

IMPORTANT :

- **Refueling and handling fuel should be done with caution in order to avoid contact with the fuel and spillage that could create a potential environmental or fire hazard. Wear appropriate protective equipment when refueling.**

Applicable BDF:

1. Blended diesel fuels containing 6% thru 20% BDF (B6 - B20) which comply with American Society for Testing and Materials (ASTM) D7467 Standard, as revised, can be used without adversely affecting the performance and durability of the engine and fuel system components.
2. Any mineral oil diesel fuel, if used, must conform to ASTM D975 (or the European EN590) Standard, as revised. B100 fuel used to make Biodiesel blended fuels must meet ASTM D6751 (or EN14214) Standard, as revised. The final blended fuel B20 must conform to ASTM D7467 Standard, as revised. Straight vegetable oil is NOT allowed in any blended fuel.
3. Allowable blended fuel is mineral oil diesel fuel blended with B100 (i.e. 100% BDF). The blended fuel ratio shall be less than 20% B100 and 80% or more diesel fuel. The B100 source used for Biodiesel blends must be purchased from an accredited BQ-9000 marketer or producer. More information about qualified marketer(s) and producer(s) can be found at <http://www.bq-9000.org>.

Preparation:

1. Before using BDF concentrations greater than B5, you are advised to replace the engine oil, engine oil filter and fuel filter with new oil and filters. For replacement procedures, refer to the "PERIODIC SERVICE" section.

Product Warranty, Emission and Other Precautions:

1. The engine emission control system was certified according to current regulations based on the use of non-BDF. When using BDF, the owner is advised to check applicable local and federal emission regulations and comply with all of them.
2. BDF may cause restricted or clogged fuel filters during cold weather conditions, resulting in the engine not operating properly.
3. BDF encourages the growth of microorganisms which may cause degradation of the fuel. This in turn may cause fuel line corrosion or reduce fuel filter flow earlier than expected.
4. BDF inherently absorbs moisture which may cause degradation of the fuel earlier than expected. To

avoid this, drain the water separator and fuel filter port often.

5. Do not use Biodiesel concentrations higher than 20% (i.e. greater than B20). Engine performance and fuel consumption will be affected, and degradation of the fuel system components may occur.
6. Do not readjust the engine fuel control system as this will violate emission control levels for which the equipment was approved.
7. Compared with soybean-based and rapeseed-based feedstock, palm oil-based feedstock has a thicker consistency (i.e. higher viscosity) at lower temperatures. Consequently, fuel filter performance may be reduced, particularly during cold weather conditions.
8. The Kubota Warranty, as specified in the Owner's Warranty Information Guide, only covers defects in product materials and workmanship. Accordingly, any problems that may arise due to the use of poor quality fuels that fail to meet the above requirements, whether biodiesel or mineral oil based, are not covered by the Kubota Warranty.

Routine handling:

1. Avoid spilling BDF onto painted surfaces as this may damage the finish. If fuel is spilled immediately wipe clean and flush with soapy water to avoid permanent damage.
2. When using BDF, you are advised to maintain a full tank of fuel, especially overnight and during short term storage, to reduce condensation within the tank. Be sure to tighten the fuel cap after refueling to prevent moisture build up within the tank. Water in the Biodiesel mixture will damage fuel filters and may damage engine components.

Maintenance Requirements when using BDF B0 thru B5:

Follow the oil change intervals recommended by referring to the "MAINTENANCE" section. Extended oil change intervals may result in premature wear or engine damage.

Maintenance Requirements when using BDF B6 thru B20:

The maintenance interval for fuel related parts changes.

See the table below for the new maintenance interval.

RECOMMENDED OILS

Items		Interval	Remarks
Water separator filter element	Replace	Every 125 hrs	
Fuel filter cartridge	Replace	Every 250 hrs	
Fuel line	Check	Every 125 hrs	
	Replace	Every 1 year	Consult your local KUBOTA Dealer for this service.

Long Term Storage:

1. BDF easily deteriorates due to oxygen, water, heat and foreign substances. Do not store B6 thru B20 longer than 1 month and B5 longer than 3 months.
2. When using B6 thru B20 and storing the machine longer than 1 month, drain the fuel from the tanks and replace with light mineral oil diesel fuel. Subsequently, run the engine at least 30 minutes to remove all of the Biodiesel from the fuel lines.
3. When using B5 fuel and storing machine longer than 3 months, drain the fuel from the tanks and replace with light mineral oil diesel fuel. Subsequently, run the engine at least 30 minutes to remove all of the Biodiesel from the fuel lines.

TROUBLESHOOTING

TROUBLESHOOTING OF THE ENGINE AND OTHER SYSTEMS

If the machine does not show the desired performance, or when trouble arises, see the following table and undertake appropriate measures.

Trouble		Cause	Countermeasure
Engine	Starting difficulties	Fuel is too viscous.	- Check the fuel tank and the filter. - Remove the impurities and the water. - If necessary, replace the filter and the fuel.
		Air or water in the fuel system	- Remove the water from the fuel tank. - Check the bolts and nuts of the fuel-pipe joint for looseness. - Purging of the fuel system. (For fuel filter and supply pump, see Bleeding the fuel system on page 131)
		Fuse is blown out.	Check the fuse and replace it with a same-capacity one as required.
		Oil viscosity is so high that the engine runs sluggishly in winter.	Use the engine-block heater (option).
		Battery is almost dead and insufficient compression.	Recharge or replace the battery.
	Insufficient engine power	Low fuel level	Check the fuel and add if necessary.
		Clogged air cleaner	Clean the air-cleaner element.
	Engine suddenly stops.	Low fuel level	- Check the fuel and add if necessary. - Purge the fuel system.
	Abnormal exhaust gas color	Poor fuel	Use high-quality fuel.
		Too much engine oil	Drain the engine oil to prescribed oil level.
	Water temperature in red zone (overheating)	Damaged seal of the water pump	Replace.
		Worn or torn V-belt	Adjust or replace.
		Thermostat is damaged.	Replace.
		Coolant level is too low.	Fill to prescribed level.
		Radiator grill or fins are clogged.	Clean.
		Coolant is contaminated with rust from the cylinder head or crank case.	Replace the coolant fluid and add anti-rust.
		Damaged radiator cap (causing evaporation)	Replace.
		Corroded coolant pipes	Clean.
		Continuous operation under full load	Reduce the load.
		Cylinder-head gasket is damaged (causing coolant loss).	Replace.
		Engine-oil level is too low.	Fill to prescribed level.
		Maladjustment of fuel injection	Readjust ignition timing.
		Use of poor fuel	Purge and use prescribed fuel.
Hydraulic system	Power of lift arms, bucket, or drive unit is too low.	Hydraulic-oil-level is too low.	Add oil.
		Leakages of hoses and / or joints	Replace hose or joint.
		Hydraulic-unlock-switch is not pressed.	Press the hydraulic-unlock-switch.

(Continued)

TROUBLESHOOTING

Trouble		Cause	Countermeasure
Electric system	 mark appears in the instrument panel.	Electric system is malfunction.	Check the error-code number of LIST OF ERROR CODE NUMBERS on page 141 and contact your local dealer.

LIST OF ERROR CODE NUMBERS

Error code number	Problem or failure	Machine condition				Provisional measure and correction
		Engine performance			Machine performance	
		Acceleration limited	Engine out-put limited	Engine stop-ped		
E:001	Meter CAN commu-nication	-	-	-	The Controller Area Network (CAN) has developed a fault. Measured values may be in-correct and switches may not function.	Immediately contact your local dealer.
E:014	Hydraulic-oil temper-ature has reached a specified level.	-	-	-	---	1. Stop the engine and check the level in the hy-draulic-oil tank and for a hydraulic oil leak. 2. Fill to proper level. 3. If “E:014” still appears, immediately contact your local dealer.
E:016	Fuel sensor system	-	-	-	The fuel-level-indicator does not appear on the meter. Other functions of the machine are still operative.	Immediately contact your local dealer.
E:018	Hydraulic oil temper-ature sensor	-	-	-	The HST oil-temperature warning indicator does not light up on the meter panel. Other functions of the machine are still operative.	Immediately contact your local dealer.
E:019	Accelerator pedal sensor	⊙	-	-	The machine fails to move.	Immediately contact your local dealer.
E:022	Hydraulic lock	-	-	-	Lock is not active.	Immediately contact your local dealer.
E:023	Speed control switch	-	-	-	It is impossible to change the speed setting by the speed-control-switch.	Immediately contact your local dealer.
E:024	Differential lock	-	-	-	Differential lock does not work.	Immediately contact your local dealer.
E:025	Parking brake	-	-	-	Parking brake is not active. The machine would be in neu-tral.	Immediately contact your local dealer.
E:026	Solenoid for traveling forward	-	-	-	Solenoid for traveling forward is not active and the machine would be in neutral.	Immediately contact your local dealer.
E:027	Solenoid for traveling backward	-	-	-	Solenoid for traveling back-ward is not active and the ma-chine would be in neutral.	Immediately contact your local dealer.
E:028	Direction switch	-	-	-	The machine is locked in neu-tral.	Immediately contact your local dealer.
E:029	AUX port knob	-	-	-	AUX port does not work.	Immediately contact your local dealer.
E:031	Solenoid valve for AUX forward SW	-	-	-	AUX port is not active.	Immediately contact your local dealer.
E:032	Solenoid valve for AUX backward SW	-	-	-	AUX port is not active.	Immediately contact your local dealer.
E:033	Electrical power sup-ply	-	-	-	AUX port is not active.	Immediately contact your local dealer.

(Continued)

TROUBLESHOOTING

Error code number	Problem or failure	Machine condition				Provisional measure and correction
		Engine performance			Machine performance	
		Acceleration limited	Engine out-put limited	Engine stop-ped		
E:034	The 5 V power supply of sensor is short-circuited	-	-	-	The majority of systems fail. The engine may be started and the machine may move. But do not try any jobs.	Immediately contact your local dealer.
E:035	Starting the engine	-	-	-	---	-
E:036	CRS CAN communication	⊙	-	-	Engine speed is at idling and it is not possible to drive at any speed.	Immediately contact your local dealer.
E:037	Braking system	-	-	-	The parking brake is not engaged. The machine is in neutral.	Immediately contact your local dealer.
E:9001	Requirement for DPF regeneration.	-	⊙	-	DPF must be regenerated, but low engine rpm is unable to start DPF regeneration.	1. Rev up the engine rpm to start DPF regeneration or start the parked regeneration. 2. If “E:9001” still appears, immediately contact your local dealer.
E:9003	Requirement for DPF regeneration.	-	⊙	-	DPF must be regenerated, but unable to start DPF regeneration.	Immediately contact your local dealer.
E:9004	Requirement for DPF replacement.	-	⊙	-	DPF must be replaced.	Immediately contact your local dealer.
E:9100	Rpm sensor system	○	○	-	---	Immediately contact your local dealer.
E:9101	Fuel or rail pressure system	⊙	⊙	⊙	---	Immediately contact your local dealer.
E:9102	SCV system	⊙	⊙	-	---	Immediately contact your local dealer.
E:9103	Intake air temperature sensor system	-	-	-	---	Immediately contact your local dealer.
E:9105	Fuel temperature sensor system	-	-	-	---	Immediately contact your local dealer.
E:9106	Injector system	⊙	⊙	○	---	Immediately contact your local dealer.
E:9107	Intake air pressure sensor system	-	○	-	---	Immediately contact your local dealer.
E:9108	Battery voltage system	⊙	⊙	○	---	Immediately contact your local dealer.
E:9109	Sensor voltage system	⊙	⊙	○	---	Immediately contact your local dealer.
E:9110	Main relay system	-	-	-	---	Immediately contact your local dealer.
E:9112	Atmospheric pressure sensor system	-	○	-	---	Immediately contact your local dealer.
E:9113	EGR valve system	-	⊙	-	---	Immediately contact your local dealer.
E:9114	Coolant temperature warning	-	-	-	---	1. For correction, see the Coolant temperature gauge on page 45. 2. If “E:9114” still appears, immediately contact your local dealer.

(Continued)

Error code number	Problem or failure	Machine condition				Provisional measure and correction
		Engine performance			Machine performance	
		Acceleration limited	Engine out-put limited	Engine stop-ped		
E:9115	Engine overheat warning	-	○	-	---	1. For correction, see the Coolant temperature gauge on page 45. 2. If “E:9115” still appears, immediately contact your local dealer.
E:9117	Air heater system	-	-	-	---	Immediately contact your local dealer.
E:9118	Engine oil pressure system	-	-	-	---	1. Stop the engine. 2. Immediately contact your local dealer.
E:9119	Charging system failure	-	-	-	---	1. Stop the engine and check the V-belt. 2. Let the engine run until error code goes out. 3. If “E:9119” still appears, immediately contact your local dealer.
E:9120	Fuel filter water warning	-	-	-	---	1. Stop the engine and check and drain the fuel filter. 2. If “E:9120” still appears, immediately contact your local dealer.
E:9121	Engine ECU	○	○	○	---	Immediately contact your local dealer.
E:9122	ECU communication failure	○	○	-	---	Immediately contact your local dealer.
E:9200	Mass air flow sensor system	-	○	-	---	Immediately contact your local dealer.
E:9203	Intake air throttle	-	-	-	---	Immediately contact your local dealer.
E:9204	Differential pressure sensor system	-	-	-	---	Immediately contact your local dealer.
E:9205	Exhaust temperature sensor (DOC inlet)	-	-	-	---	Immediately contact your local dealer.
E:9206	Exhaust temperature sensor (DOC outlet)	-	-	-	---	Immediately contact your local dealer.
E:9207	Exhaust temperature sensor (DPF outlet)	-	-	-	---	Immediately contact your local dealer.
E:9208	All the exhaust temperature sensors break down at once.	-	-	-	---	Immediately contact your local dealer.
E:9211	DOC response is unusual.	◎	◎	-	---	Immediately contact your local dealer.
E:9212	DPF regeneration timeout	-	-	-	---	Immediately contact your local dealer.
E:9213	DPF regeneration error Water temperature is low.	-	-	-	---	Immediately contact your local dealer.
E:9214	DPF regeneration cycle occurs too often.	-	◎	-	---	Immediately contact your local dealer.

(Continued)

Error code number	Problem or failure	Machine condition				Provisional measure and correction
		Engine performance			Machine performance	
		Acceleration limited	Engine out-put limited	Engine stop-ped		
E:9300	Engine fuel system (rail pressure / leak-age)	⊙	⊙	-	---	1. Check the fuel level and see if the fuel filter is clog-ged. 2. If “E:9300” still appears, immediately contact your local dealer.
E:9301	Engine fuel system (rail pressure)	⊙	⊙	-	---	1. Check the fuel level and see if the fuel filter is clog-ged. 2. If “E:9301” still appears, immediately contact your local dealer.
E:9302	Engine fuel system (leakage)	⊙	⊙	-	---	1. Check the fuel level and see if the fuel filter is clog-ged. 2. If “E:9302” still appears, immediately contact your local dealer.
E:9303	Engine fuel system (supply control valve)	⊙	⊙	-	---	1. Check the fuel level and see if the fuel filter is clog-ged. 2. If “E:9303” still appears, immediately contact your local dealer.
E:9304	Engine fuel system (supply pump)	⊙	⊙	-	---	1. Check the fuel level and see if the fuel filter is clog-ged. 2. If “E:9304” still appears, immediately contact your local dealer.
E:9305	Engine air intake system (poor air in-take)	⊙	⊙	-	---	1. Check to see if any air-in-take hose is disconnected and if the air-cleaner ele-ment is clogged. 2. If “E:9305” still appears, immediately contact your local dealer.
E:9306	Engine air intake system (boost pres-sure is too low)	⊙	⊙	-	---	1. Check to see if any air-in-take hose is disconnected and if the air-cleaner ele-ment is clogged. 2. If “E:9306” still appears, immediately contact your local dealer.
E:9307	Engine-exhaust tem-perature (DOC inlet) is not as specified.	-	-	⊙	---	1. Check the fuel level and see if the fuel filter is clog-ged. 2. Check to see if any air-in-take hose is disconnected and if the air-cleaner ele-ment is clogged. 3. If “E:9307” still appears, immediately contact your local dealer.

(Continued)

Error code number	Problem or failure	Machine condition				Provisional measure and correction
		Engine performance			Machine performance	
		Acceleration limited	Engine output limited	Engine stopped		
E:9308	Engine-exhaust temperature (DOC outlet) is not as specified.	-	-	◎	---	1. Check the fuel level and see if the fuel filter is clogged. 2. Check to see if any air-intake hose is disconnected and if the air-cleaner element is clogged. 3. If “E:9308” still appears, immediately contact your local dealer.
E:9309	Engine-exhaust temperature (DPF outlet) is not as specified.	-	-	◎	---	1. Check the fuel level and see if the fuel filter is clogged. 2. Check to see if any air-intake hose is disconnected and if the air-cleaner element is clogged. 3. If “E:9309” still appears, immediately contact your local dealer.
E:9310	Starter turn-on limited	-	-	◎	The starter is limited for its activation in response to any other error.	Immediately contact your local dealer.
E:9320	Particulate control device (PCD) malfunction	-	-	-	Repair the particulate control device (PCD).	Immediately contact your local dealer.
E:9321	NOx control device (NCD) malfunction	-	-	-	Repair the NOx control device (NCD).	Immediately contact your local dealer.
E:9400	Other failures	○	○	○	---	Immediately contact your local dealer.

◎ Sure to happen

○ May happen

APPENDIX

SERVICE HOUR METER

When the hour meter reaches the hours circled in the following maintenance list, a maintenance message appears.



No.	Check points		Measures	Hour meter indicator						Intervals	
				50	100	250	500	600	750		1000
1	Engine oil		change				○			○	every 500 hrs
2	Hydraulic oil									○	every 1000 hrs
3	Air cleaner element	Outer element	replace							○	every 1000 hrs
		Inner element								○	every 1000 hrs
4	Fuel filter cartridge		replace				○			○	every 500 hrs
5	Engine oil filter						○			○	every 500 hrs
6	Front/rear axle oil		change							○	every 1000 hrs
7	Hydraulic return filter		replace				○			○	every 500 hrs
8	Hydraulic suction filter									○	every 1000 hrs
9	HST oil filter									○	every 1000 hrs
10	DPF		clean								every 6000 hrs

NOTE :

- The maintenance (periodic check) message can be automatically disappeared.

The maintenance message reappears on the hour meter when the hour meter reaches next designated hour in the preceding table.

IMPORTANT :

- In case that the service-hour-meter replaced due to any trouble with it, the meter is set to “0”. Contact your KUBOTA dealer for details.

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