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English (Australia)
Code No. V0652-5811-4

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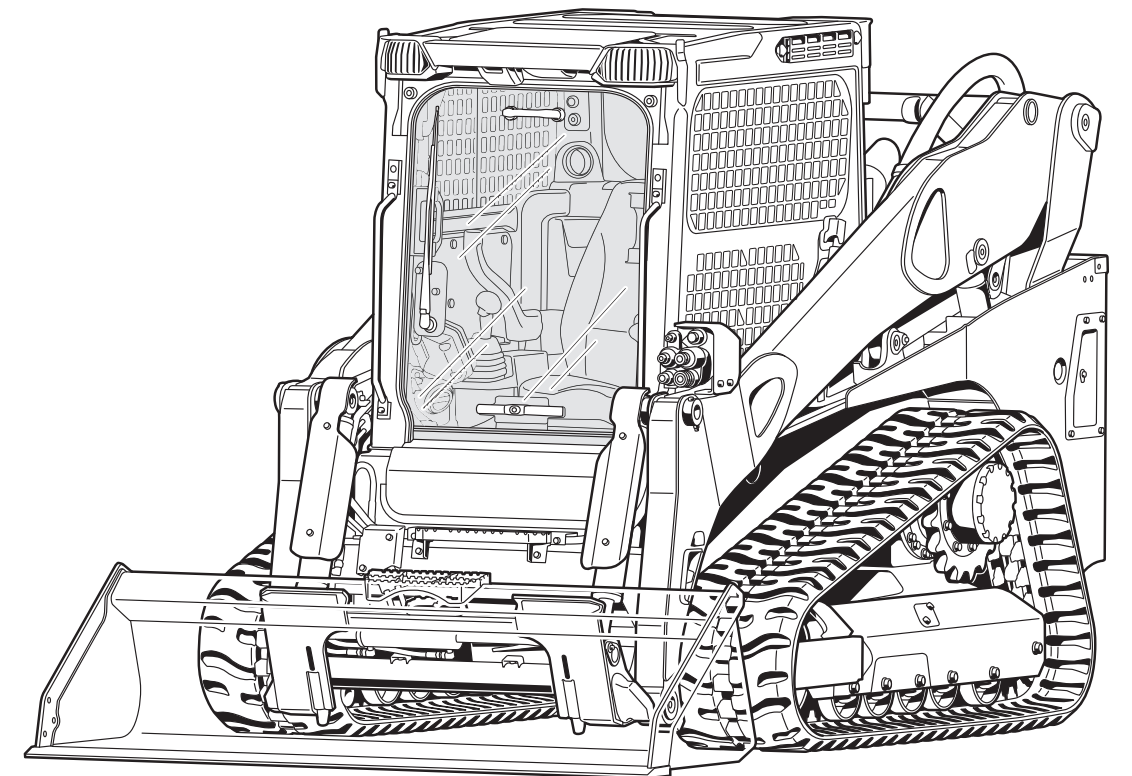
OPERATOR'S MANUAL

KUBOTA

CTL

Compact
Track
Loader

MODEL
SVL97-3



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READ AND SAVE THIS MANUAL



ABBREVIATION LIST

Abbreviations	Definitions
AFS	Air Flow Sensor
API	American Petroleum Institute
ASTM	American Society for Testing and Materials, USA
AUX	Auxiliary
CCV	Closed Crankcase Ventilation
CRS	Common Rail System
CTL	Compact Track Loader
DIN	Deutsches Institut für Normung, GERMANY (German Institute for Standardization)
DOC	Diesel Oxidation Catalyst
DPF	Diesel Particulate Filter
EGR	Exhaust Gas Re-circulation
EN	European Standard
FCC	Federal Communication Commission
FOPS	Falling Objects Protective Structure
ISED	Innovation, Science and Economic Development Canada
ISO	International Organization for Standardization
JIS	Japanese Industry Standard
MAF	Mass Air Flow
MIL	Military Specification and Standard
OPC	Operator Presence Control
OSHA	Occupational Safety and Health Administration
P/L	Pressure Limiter
PCV	Positive Crankcase Ventilation
ROPS	Roll-Over Protective Structure
rpm	Revolutions Per Minute
rps	Revolutions Per Second
SAE	Society of Automotive Engineers, USA
SCV	Suction Control Valve
SMV	Slow Moving Vehicle

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.

	Caution		Forward		Acknowledge
	Engine, Electrical Preheat		Backward		Cancel
	Engine Lubricating Oil Pressure		Turn Right		Air conditioner
	Coolant Temperature		Turn Left		Blower
	Hydraulic Oil Temperature		Lift Arm Raise		Hot(Temperature control dial)
	Hydraulic Lock		Lift Arm Lower		Cool(Temperature control dial)
	Hydraulic Unlock		Loader Bucket, Dump		DEF (AdBlue)
	AUX Hydraulics		Loader Bucket, Rollback		SCR system warning
	High-Flow		Loader Bucket, Float		DEF (AdBlue) quality warning
	AUX Hold		Loader Bucket, Self leveling		Thawing DEF (AdBlue)
	AUX Electrical Power		Quick Hitch Lock		Ride control
	Fuel		Quick Hitch Unlock		Auto-idle
	Diesel Fuel		Horn		Decel pedal
	Fast (Speed Indicator)		AUX electrical mode change		Fill level hydraulic oil
	Slow (Speed Indicator)		Track response indicator		
	Battery Charge		Service indicator		
	DPF Standby / Regeneration		Display touch disabled indicator		
	Engine Rev up		Menu switch		
	Inhibit DPF Regeneration		Camera		
	Parking Brake		Gauge		
	Front Working Light		Audio		
	Rear Working Light		Home switch		
	Beacon light		Sorting the items		
	Wiper		Default sort		
	Washer and wiper		Memo		
	Lock		User		
	Unlock		Return switch		

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.

OTHERS

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AdBlue®	AdBlue is a registered trademark of the VDA - Verband der Automobilindustrie e.V. (The German Association of the Automotive industry).

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SAFE OPERATION

Careful operation is your best safeguard against an accident.

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

Every user, however experienced, should carefully read and understand the *Safe operation* section for the machine, the attachments, and the accessories before operating the machine. The owner is obliged to inform the operators of instructions to the machine, the attachments, and the accessories in detail.

Keep this manual in the storage place.

(See Where to keep the operator's manual on page 180)

PRECAUTIONS BEFORE OPERATION OF THE MACHINE

1. General precautions

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

- Obey the safety labels on the machine.
- Inspect the seat belt regularly and replace it if it is frayed or damaged.



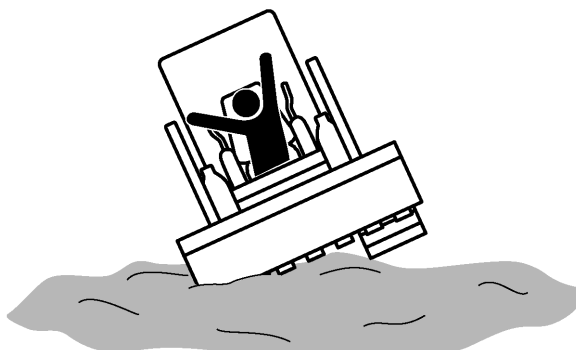
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- Always sit in the operator's seat when starting the engine or operating the levers or controls.
- Do not operate the machine while under the influence of alcohol, medication, controlled substances, or while fatigued.
- Check the surrounding area carefully before using the machine or when attachments are being connected.

To avoid any danger of electrocution, never operate the machine near power lines before confirming the power is off and all local and national safety regulations. Never approach a machine or load that is contacting a power source such as power lines.

Electrocution can occur by coming into contact with a machine that is near power lines.

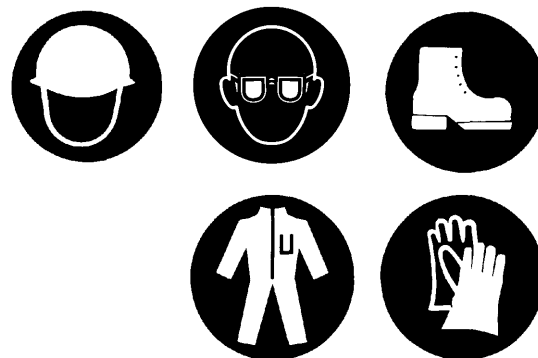
- Check for buried pipes and cables before digging.
- Check for hidden holes, obstacles, soft underground, and overhangs. Do not enter soft ground.



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- During machine use, do not allow any persons within the working range.
- Do not allow anyone to use the machine until they have been informed of the work to be performed and they have read and understood the operator's manual.
- Do not wear baggy, torn, or oversized clothing when working with the machine. Baggy, torn, or oversized clothing can get caught in rotating parts or control elements which can cause accidents or injuries.

Wear adequate safety clothing. For example, safety helmet, safety shoes, eye protection, ear protection, and working gloves as necessary and as prescribed by law or statutes.



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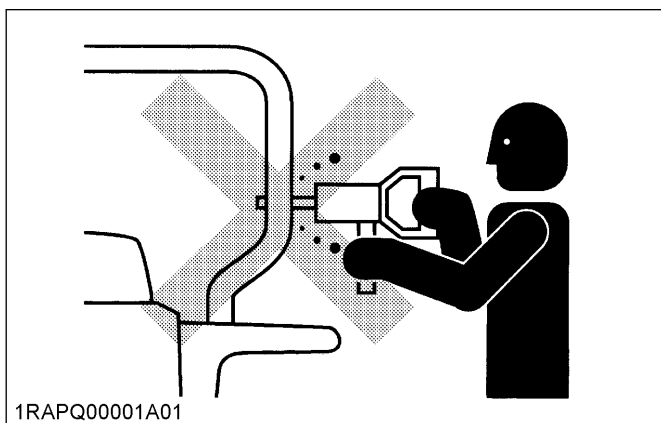
- Do not allow passengers to ride on any part of the machine at any time. The operator must remain in the seat of the machine during operation.

! SAFE OPERATION

- Check the levers, pedals, and mechanical parts for correct adjustments and wear. Replace worn or damaged parts immediately. Check the nuts and bolts regularly for correct torque.
- Keep your machine clean. Heavy soiling, grease, dust, and grass can cause fires, accidents, or injuries.
- Before starting the machine, be absolutely sure that the machine has been filled with fuel, lubricated, greased, and undergone all necessary maintenance.
- Do not modify the machine, otherwise it could lead to unforeseen safety problems.
- Make sure that the attachments, particularly those utilizing quick-hitch, are securely mounted. Use only attachments authorized by Kubota.

2. Precautions of 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 the ROPS or the FOPS. Combination of the seat belt and the ROPS or the FOPS will reduce the risk of personal injury or death if the machine is upset. Do not modify structural members of the ROPS or FOPS by welding, drilling, bending, grinding, or cutting, as such modifying may weaken the structure.



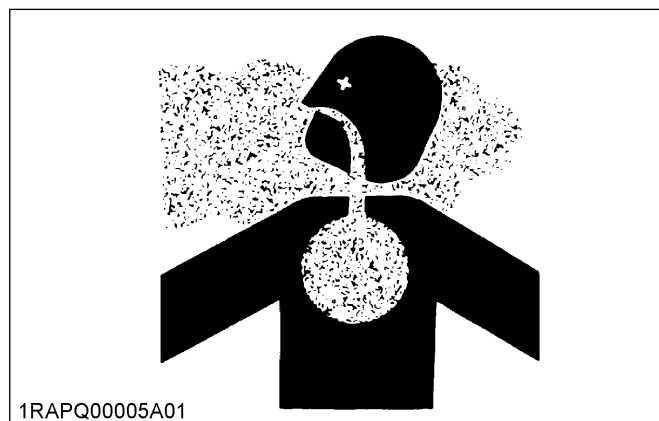
If any component is damaged, replace it. Do not repair the component.

If the ROPS or FOPS is loosened or removed for any reason, make sure that all parts are reinstalled correctly. Tighten mounting bolts to proper torque.

- The ROPS and the FOPS level 1 structure complies with ISO 3471, ISO 3449, and OSHA regulations.

PRECAUTIONS FOR OPERATING THE MACHINE

- Mount and dismount the machine safely. Always face the machine. Always use handrails and available steps and maintain 3 points of contact. Do not grab or hold any of the control levers, pedals, or switches. Do not jump on or off the machine, whether stationary or in motion.
- After the machine warms up, run it through each work cycle to ensure proper operation.
- Start and control the machine only from the operator's seat. The operator should not lean out of his or her seat when the engine is running.
- Before starting the engine, make sure that the armrests are in the raised position, the control levers are in their neutral position, and the seat belt is fastened correctly.
- Always thoroughly check the surrounding area for any possible conditions that could create a dangerous situation.
 - Make sure that you read the operator's manual to thoroughly understand the operating conditions and limitations of the machine.
 - To avoid damage and to prevent accidents, always use the buddy system and ask the other person to check clearances and other possible dangers that may be obstructed from view.
 - Never allow people to approach the vicinity of the turning radius of the machine.
 - Be cognizant of blind spots to the rear and always check behind you before backing up.
- Only operate the machine in well-ventilated area to avoid poisoning from carbon monoxide, an odorless, colorless gas that is deadly.



- Never remove any of the safety features on the machine.
 - Make sure that all safety features, including guards, protective devices, doors, and cabin are functioning normally, properly secured, and in good condition. Repair and replace any lost or damaged protective features.
 - Carefully read the operator's manual in order to understand the proper use of safety features

! SAFE OPERATION

such as armrest, seat belt, and other equipment. Make sure that you use the safety features properly.

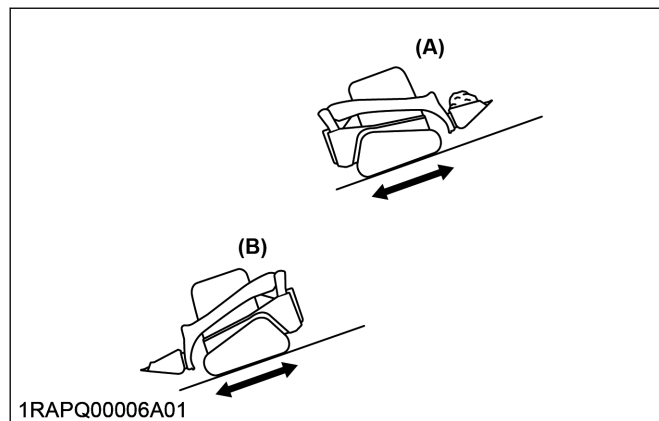
- Make sure that all safety features are in good operating condition and remove only when repair is needed.
- Use appropriate protective doors, windows, and screens such as polycarbonate door, depending upon application. Kubota recommends the use of a polycarbonate door for high impact applications such as a hammer or mulcher.
- To avoid injury, always keep hands and body inside the protective structures such as the ROPS and the FOPS whenever operating the machine. Never operate the machine using control levers from outside the operator's cabin while the machine is running.
- Place the bucket at the following distance from the ground when moving up or down an incline. Prepare to lower the bucket to the ground in case of emergency.

Distance between the bucket and ground	20 cm to 30 cm
--	----------------

- To avoid injury or accidents, always operate the machine or the equipment at slow speed when going up or down an incline by reducing the engine speed (rpm). Place the stroke of the left control (traveling) lever at half speed or less when going down an incline. Traveling too fast down an incline can cause the operator to lose control of the machine. When going up or down an incline, keep the travel speed switch low speed position.
- Avoid stopping the machine suddenly on an incline, which can cause the machine to become unstable and rollover.
- Never cross an incline horizontally or at an angle, which can cause the machine to rollover. Approach inclines vertically to avoid loss of control.
- Use caution when moving the machine in slippery or unstable surfaces such as grass, fallen leaves, metal plates, or ice, as it may skid out of control. Do not allow the machine to be oriented diagonally to slippery or unstable surfaces.
- Avoid any sudden movements while moving and operating the machine such as stopping, starting or turning. Do not raise the armrests while the machine is in motion. Otherwise the parking brake can be engaged, causing an accident or injury.
- Avoid driving the machine over any obstacles, which could cause loss of control. If an obstacle cannot be avoided, always place the bucket close to the ground and move slowly over the obstacle. Do not approach an obstacle at an angle, which could cause the machine to rollover.

- Avoid performing any work with the machine when it is on an incline, which could cause the machine to become unbalanced and rollover.

Use caution when moving the machine on an incline. To prevent the machine from rolling over, ensure that the heavy end of the machine is facing up the incline when moving the machine up or down the incline.



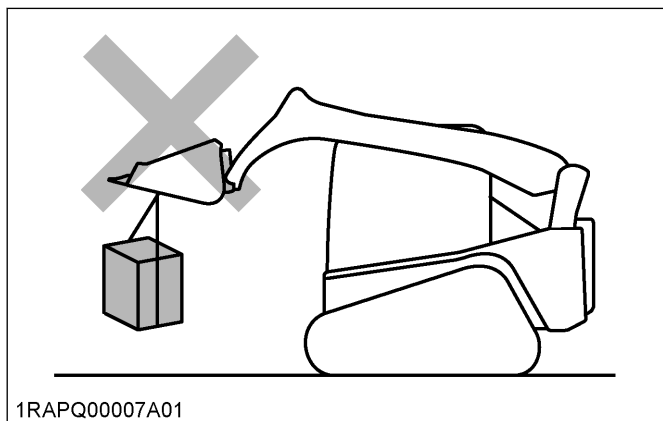
(A) With bucket full (B) With bucket empty

- When operating on public roads, follow all traffic laws and regulations in the country or region of operation.
- Always use caution when floating the lift arms.
 - Always make sure that the bucket/attachment is lowered to the ground before floating the lift arms. Otherwise, the bucket may fall, causing an accident or injury.
- Never dig or shovel at high speed, which could cause the operator to be thrown from the operator's cabin or cause injury from hitting something when the machine stops suddenly. Always operate the machine at low speed, carefully checking the area in front of the load that you will be moving.
- Never operate the machine with the bucket raised over the heads of people. Accident or injury may occur from objects falling from the bucket or the bucket itself falling.
- Be careful of material falling from the bucket. Unstable material in the bucket such as round, cylindrical, or stacked items could fall from the bucket, causing injury. Always move an unstable load with the bucket lowered.
- Never exceed the maximum loading capability of the bucket or put loads off-center of the bucket, which can cause the machine to become unstable and rollover.
- Never undercut a high embankment. Always carefully check the area for conditions that could cause the ground to cave-in.
 - Never operate in areas where there is a possibility of falling objects.
 - Never operate or drive the machine on unstable surfaces such as cliffs, shoulder of roads, and

SAFE OPERATION

deep trenches. The machine could lose stability from unstable ground or vibration underneath, causing the machine to rollover or fall.

- Ground surfaces are especially unstable after heavy rain or explosions.
- Embankments and trenches may cause instability of the ground around the area.
- Pay particular attention when passing through tunnels or moving the machine near high walls to avoid hitting the machine and causing accident or injury. Always check height and width dimensions of the machine against tunnels or any other narrow spaces that the machine is to be moved through in order to avoid accident or injury from hitting an obstruction.
- The machine is not designed for operation with hanging loads and has no safety features for such circumstances. Never operate in conjunction with a crane or other device, which could cause serious injury.



1. Safety for children

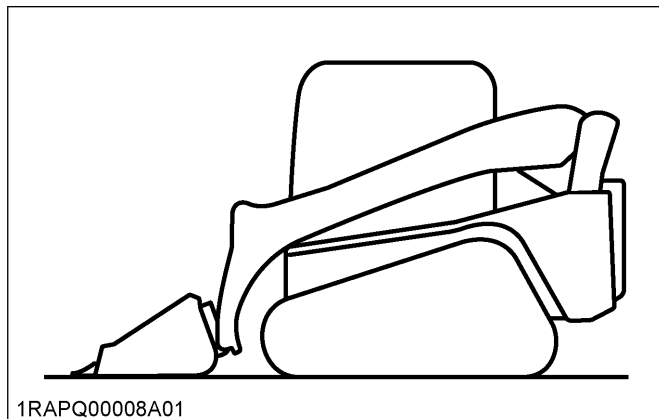
Tragedy can occur if the operator is not alert to the presence of children. Children generally are attracted to machines and their work.

- Never assume that children will remain where you last saw them.
- Keep children out of the work area and under the watchful eye of another responsible adult.
- Be alert and shut your machine down if children enter the work area.
- Never carry children on your machine. There is not a safe place for them to ride. They may fall off and be run over or interfere with your control of the machine.
- Never allow children to operate the machine even under adult supervision.
- Never allow children to play on the machine or on the attachments.
- Use extra caution when backing up. Look behind and down to make sure that the area is clear before moving.

PARKING THE MACHINE

Before leaving the machine, follow the procedure.

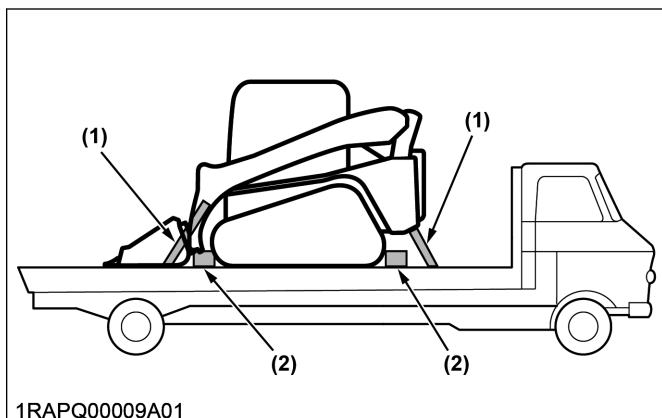
1. Park the machine on a firm, flat and, level surface. If parking the machine on a firm, flat and, level surface is not possible, block the machine securely to prevent movement of the machine.



2. Lower the attachments to the ground.
3. Stop the engine.

PRECAUTIONS FOR SAFELY LOADING AND TRANSPORTING THE MACHINE

- Observe all regulations concerning the transport of the machine on public roads.
- Use adequately long and robust ramps when loading the machine. Secure the ramps, and transport the machine appropriately. If towing is required, use proper tow lines and attachment points. For details, see **LOADING THE MACHINE ON A TRANSPORT VEHICLE** on page 171.
- To avoid tipping over, the heaviest end of the unit should proceed up the ramps first, do not change the running direction, and do not swing the attachment crosswise to the loading ramps.
- Lower the attachment on the loading bed and release the pressure from the hydraulic system. After loading the machine on the truck, secure the tracks with blocks and tie down the machine at the appropriate locations.



(1) Chain

(2) Block

- Avoid abrupt braking of the vehicle with the machine loaded. Sudden braking could cause the machine to move and could cause a serious accident.

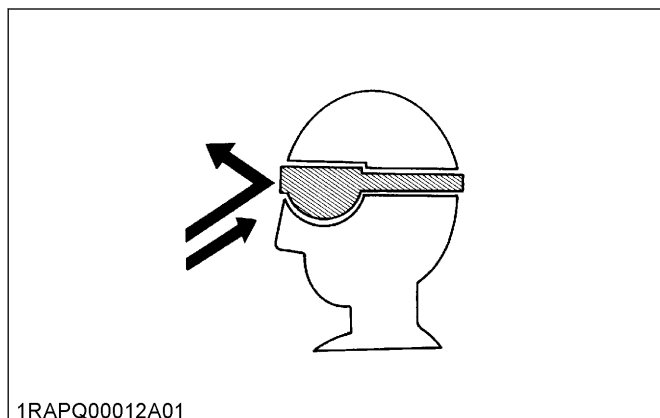
PRECAUTIONS FOR MAINTENANCE

1. Preparing maintenance

- Before performing maintenance on the machine, take the following steps:
 1. Place the machine on a firm, flat and level surface.
 2. Lower the lift arms slowly to the ground.
 3. Turn on the parking brake switch.
 4. Stop the engine.
 5. Release the pressure from the hydraulic system.
 6. Check the machine and the surrounding area for any potential safety issues.

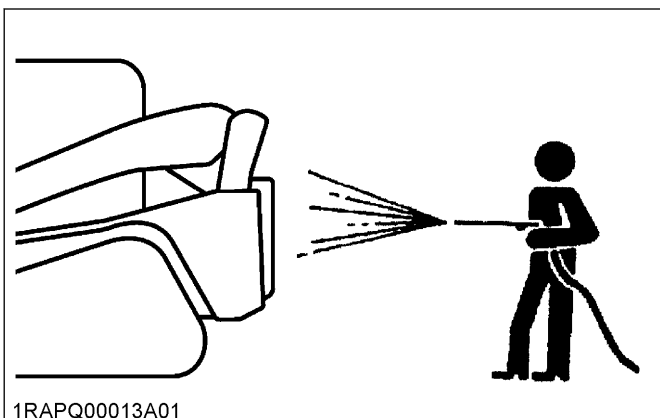
2. Precautions when performing checks or maintenance

- When dismantling hydraulic parts, make sure that the hydraulic oil has cooled down sufficiently to avoid burns.
- Let the machine cool down sufficiently before working on the engine, the exhaust system, the radiator and the hydraulic system.
- Turn off the engine at all times when filling with fuel. Avoid spilling and over-filling of fuel.
- Keep a first-aid box and extinguisher at hand at all times.
- Use a face mask or eye protection to protect the eyes and respiratory system against dust and other foreign particles.

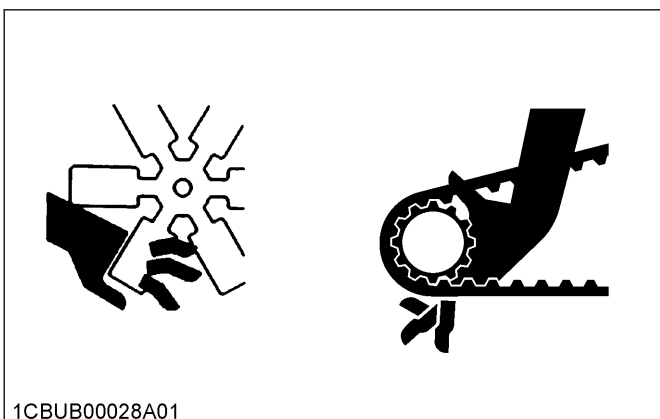


- Kubota does not use components which contain asbestos and recommends against the use of such components.
- Always attach a **[DO NOT OPERATE]** tag whenever performing any kind of maintenance or repair.
- Make sure that you have the proper tools on hand. Do not use flawed or damaged tools, gauges, or other devices. Always use tools that are appropriate for the task to be done.
- To prevent personal injury or death, use explosion-proof lighting when working on, inspecting, or using fuel, oil, coolant, and battery fluid. If you do not use the explosion-proof lighting or if it should break, it can ignite and cause fire, injury, or death.
- Prohibit unauthorized persons from entering the work area to prevent injury caused by debris flying off of machine parts during grinding, welding, using a hammer, or other tasks.
- Make sure that the work area is clear and safe. Work on a firm, level surface with adequate lighting. Work in well-ventilated area if you work indoors. Make sure that the area is free from any potentially dangerous conditions such as obstacles and slippery surfaces.
- Make sure that the machine is clean and free of debris.
 - Always remove debris from the machine and clean it before performing any maintenance or repair work.
 - Before using water to wash or clean the machine, stop engine and make sure that all electrical parts and devices are covered. Any water seepage into electrical wiring on the machine can cause a short circuit or malfunction of controls. Never wash the electrical parts and devices, such as batteries, alternator, starter, sensors, connectors, and audible devices with water or steam.

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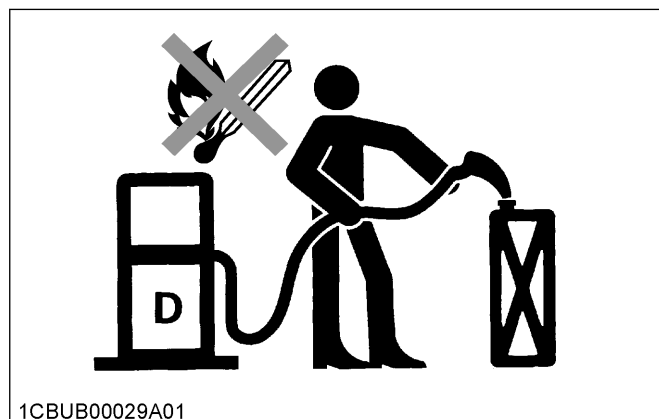
- Always make sure that the engine is stopped before performing any maintenance or repairs.
 - Do not lubricate or mechanically adjust while the machine is in motion or while the engine is running even if stationary.
 - Always stay clear of moving parts. Clothing, hands, or other parts of the body can become caught in moving parts of the machine and cause personal injury or death.
 - Always stay clear of any rotating fans, fan belt, and other moving parts. Never insert tools, fingers, or hands while these parts are running.



- Always secure the rear door after opening it. Avoid opening the rear door when the machine is on an incline or in strong winds.
- Precaution on tilting the cabin:
 - Do not raise or lower the cabin while the engine is running as it may move, cause the machine to become unstable, resulting in personal injury or death. Always lower the working parts of the machine to the ground and stop the engine before attempting to raise the cabin.
 - Make sure that the cabin is properly and securely supported with a stopper when tilted to prevent the cabin from falling and causing personal injury.
- Use care when refueling.
 - Never smoke cigarettes or permit the use of fire while refueling or in the vicinity of refueling.

- Always make sure that the engine is off and cool before removing the fuel cap to refuel the tank. Avoid getting fuel on any hot components.
- Keep control of the fuel-filler-nozzle while refueling.
- Never overfill the tank with fuel. Leave room for thermal expansion.
- Always remove any excess or spilled fuel immediately.
- Always make sure that the fuel-tank-cap is securely reinstalled.

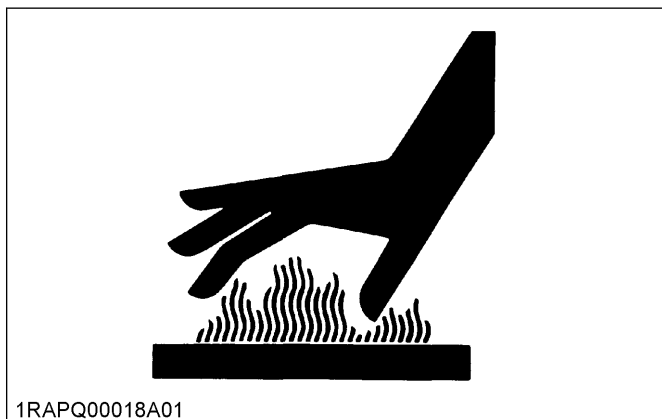
Replace the fuel-tank-cap only with a manufacturer-approved cap whenever it becomes damaged. Use of the wrong type of cap may not allow for proper venting, causing pressure in the tank to build up.
- Never use fuel to clean the machine.
- Always use the correct type of fuel for the machine and the temperature in which it is being operated.
- Always use a properly grounded fueling system.



- Hoses
 - Leakage in any fuel, oil, or hydraulic line can cause fire or explosion.
 - Avoid any twisting, bending, or hitting of hoses that could cause damage to the line.
 - Make sure that any loose connections are secured properly before using the machine.
- Use caution when working around hot and pressurized components.
 - Always allow the engine to cool sufficiently before performing any maintenance, inspection, or repairs.
 - Never touch any parts such as the engine, the muffler, the radiator, the hydraulic lines, and the sliding parts as they may be very hot immediately after the machine has been running and can cause burning. Allow the engine, the muffler, the radiator, the hydraulic lines, and the sliding parts to cool sufficiently before touching them.
 - Always use sufficient care whenever removing the caps and plugs on the coolant, oil, and hydraulic fluid as they are hot and pressurized.

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and can cause burning and injury from spraying of hot fluid.



- Always carefully check the machine after performing any maintenance or repairs. Confirm that no oil or water is leaking from any parts that had been serviced by carefully inspecting the parts. Gradually speed up the engine from a low speed to higher speed to check operation.

3. Handling the engine

- 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 the injectors on the engines with high-pressure-common-rail-fuel-system.
- To avoid hazardous high voltage, press the start switch to stop the engine if it is necessary to check to repair the computer, harness, or connectors.
- When the diesel-particulate-filter (DPF) is in the regenerating cycle, the exhaust gas and the DPF muffler become hot. During regeneration, take into account that the muffler will be very hot and keep the machine away from other people, animals, plants, and flammable material. Also keep the area near the DPF muffler clean and away from flammable material.

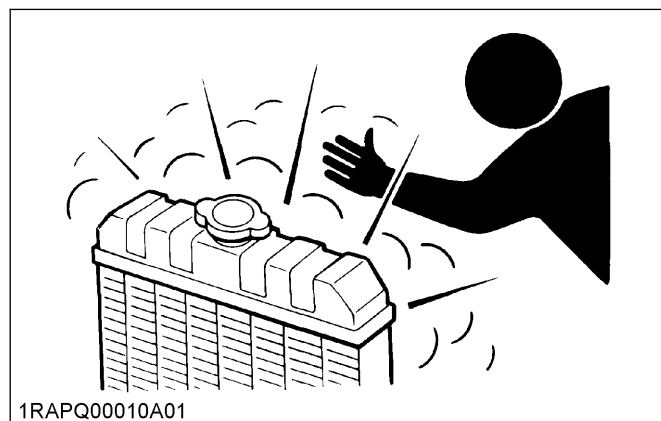
4. Handling the battery

- To avoid the possibility of battery explosion, do not use or charge the refillable type battery if the fluid level is below the lower (lower limit level) mark. Check the fluid level regularly and add distilled water as required so that the fluid level is between the upper and the lower levels.
- To avoid sparks from an accidental short circuit, always disconnect the ground cable (-) of the battery first and reconnect it last.

- Read and follow the directions of **LOADING THE MACHINE ON A TRANSPORT VEHICLE** on page 171 when starting with an auxiliary battery.

5. Handling the radiator

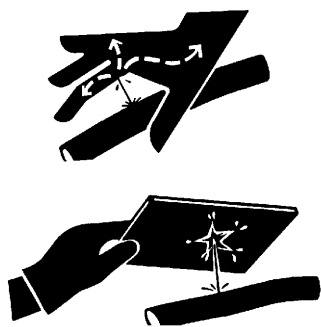
- Do not open the radiator cap before the radiator has cooled down sufficiently.
 1. First loosen the cap to the first stop and allow the system enough time to release the remaining pressure.
 2. Then loosen the cap completely.



6. Handling the hydraulic components

- Make sure that pressure from all of systems is sufficiently released before performing any maintenance or repairs. Oil or other fluids could be released when caps or filters are removed before the pressure has been stabilized in the hydraulic system.
 - Gradually release internal pressure build-up by standing out of the line of any possible spray and slowly removing plugs, screws, or disconnect hoses.
- Oil under high pressure can penetrate the skin and may be harmful to your health if not treated immediately.
- Leaking hydraulic fluid has enough pressure to penetrate the skin and cause serious injuries. Leakages from pinholes can be totally invisible. Do not use hands for checking for leaks of hydraulic fluid. Always use a piece of wood or cardboard. It is strongly recommended to use a face mask or eye protection. If injuries occur with leaking hydraulic fluid, contact a doctor immediately. This fluid can cause gangrene or serious allergic reactions. Never repair the hydraulic and air-conditioner hoses until the pressure has been relieved.

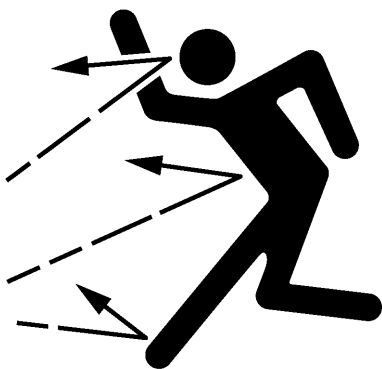
SAFE OPERATION



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7. Precautions when adjusting the tracks

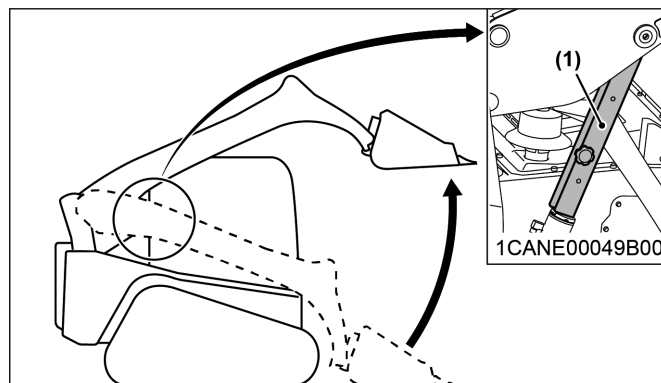
- Do not dismantle the spring of the track tensioner. If dismantling of the spring of the track tensioner is necessary, contact your Kubota dealer.
- Always use care whenever using grease that is pressurized.
 - Always follow the proper procedure to adjust tension.
Grease in the track adjuster is pressurized and improper release can cause the discharge valve to fly off, causing personal injury or death.
 - Always loosen the discharge valve for the grease slowly.
 - Avoid standing in front of, or putting any parts of the body in the line of the grease-discharge-valve.
 - If no grease is released when the discharge valve is loosened, the machine has a malfunction. Do not attempt repair yourself. Contact the nearest dealer for repairs. If no grease is released when the discharge valve is loosened, any operation of the machine can be very dangerous.



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8. Precautions when working under the machine or components

- Securely support the machine with stands or suitable blocking before working underneath. For your safety, do not work under any hydraulically supported devices. Hydraulically supported devices can settle, suddenly leak down, or be accidentally lowered.
- Secure the tracks with blocks, and place a protection where components could fall.
 - Always make sure that the bucket is at the lowest possible position or on the ground before performing any maintenance or repairs under the machine.
 - Make sure that the tracks are securely blocked off.
 - Never work under the machine or on the machine while it is hoisted on jack-stands or other rigid support devices unless they are well secured and stable.
- Whenever performing maintenance or repairs when the lift arms are raised, always use the lift-arm-stopper.
 - Make sure that the lift-arm-stopper is properly engaged and that it is properly and securely fixed before performing any work beneath raised lift arms.
Never work or move under the lift arms when they are not properly supported.
 - Keep in mind that the lift arms may fall whenever hydraulic lines are disconnected, loosened, or removed. Any malfunction or failure in the hydraulics can also cause lift arms to drop.
 - Always perform the necessary repairs or service whenever the lift-arm-stopper becomes damaged or malfunctioned, or part(s) are missing. Damaged or malfunctioning lift-arm-stopper may cause the lift arms to fall causing personal injury or death.



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(1) Lift arm stopper

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9. Fire prevention

- Compact-track-loader and some attachments have 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 the risk of fire to a minimum.

- Do not smoke while refueling or using the battery. Keep sparks and fire away from the fuel tank and the battery. Flammable gases escape from the battery, especially during charging.
- Blow off all accumulated debris near hot engine exhaust components such as the turbocharger and the exhaust manifold as well as the exhaust pipes and the muffler more frequently when working in severe conditions.
- Clean out all accumulated flammable materials and debris from inside the pans of belly of the machine, from inside the lower structures, and from the area in proximity to the engine. Flammable materials include, for example, leaves, straw, pine needles, branches, bark, and small wood chips.
- Inspect all fuel lines and hydraulic hoses for wear or for deterioration. Replace the fuel lines and the hydraulic hoses immediately if they begin to leak.
- Examine 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 for loose or missing bolts, nuts, and clamps.
If you find any exhaust leaks or fractured parts, repair it completely prior to operation.
- Always keep a multipurpose fire extinguisher on or near the machine. Be familiar with the operation of the fire extinguisher.
- Do not weld on pipes or tanks containing flammable liquids. Do not gas-cut pipes or tanks containing flammable liquids. Clean pipes and tanks thoroughly with a non-flammable solvent before welding or cutting.

10. Handling DEF (AdBlue)

- DEF (AdBlue) is a transparent, colorless and non-toxic deionized water solution.

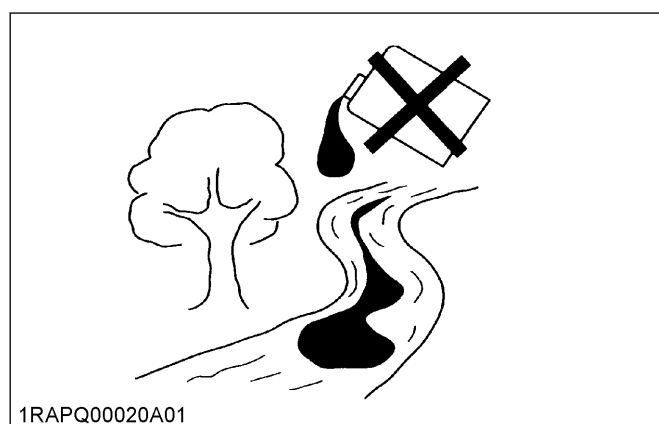
- If DEF (AdBlue) gets into your eyes, immediately rinse your eyes with a large amount of water for at least 15 minutes and consult a doctor.
- Do not swallow DEF (AdBlue). If you have accidentally swallowed DEF (AdBlue), seek medical attention immediately.
- If DEF (AdBlue) gets on your skin, rinse immediately with water. In rare cases, DEF (AdBlue) may irritate the skin.
- If DEF (AdBlue) gets on your clothes or shoes, wash it off immediately. Simply wiping off or leaving DEF (AdBlue) on clothes or shoes will leave a white residue.
- DEF (AdBlue) itself is nonflammable. If it gets heated due to a fire or the like, an irritating odor may be generated. If by any chance a fire breaks out, immediately evacuate yourself to a safe place.

If you spill DEF (AdBlue), immediately rinse with clean water. If left untouched, DEF (AdBlue) may rust metal parts or corrode painted surfaces. Also, resin and rubber parts may be deformed.

For more details, obtain and read the Safety Data Sheet (SDS) from the DEF (AdBlue) supplier.

WASTE MATERIAL

- Always make sure that any material and waste products from the repair and maintenance of the machine are collected into proper containers using a funnel, or other device.
Dispose of waste material properly to avoid pollution and contamination of the environment.
- Consult local regulations and codes when disposing of oil, fuel, engine coolant, refrigerant, solvents, filters, batteries, and any other potentially harmful and hazardous material or substance.



! SAFE OPERATION

SAFETY LABELS

(1) Part No. V0511-5735-2



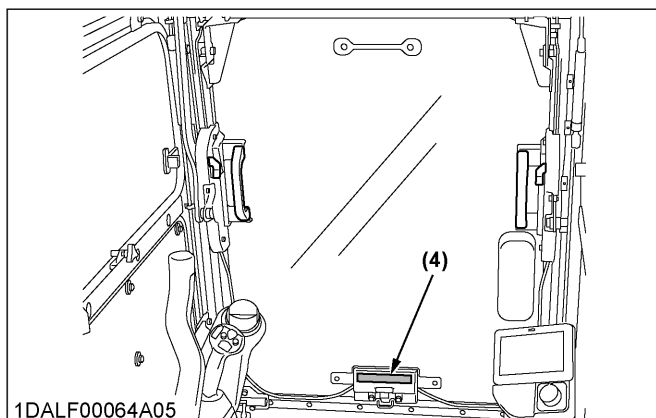
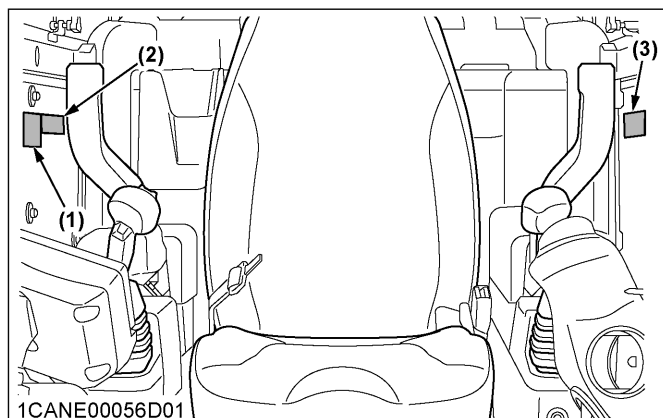
(2) Part No. V1311-5771-3 [High-Flow model only]



(3) Part No. V0511-5740-2



(4) Part No. V1311-5745-2

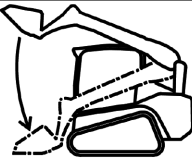


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(1) Part No. V0531-5772-1

 WARNING

TO AVOID SERIOUS INJURY OR DEATH:
Never leave the operator area with the loader arms raised above the rest stops. In the event of power loss or in an emergency to lower loader arms, remain seated and keep the area clear under loader arms. Then remove rubber plug and push button in to lower loader arms.

 WARNING

TO AVOID INJURY:

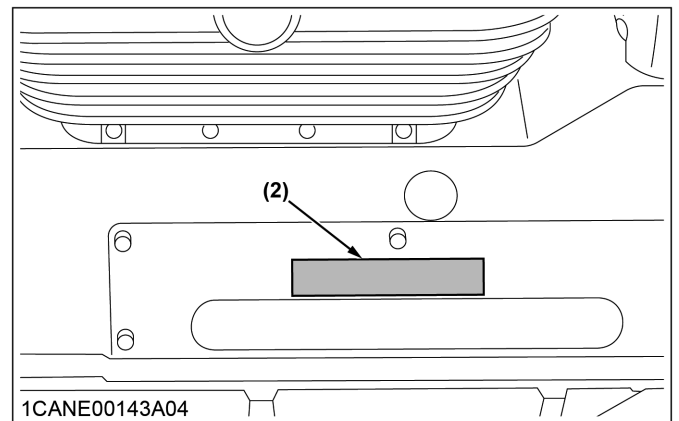
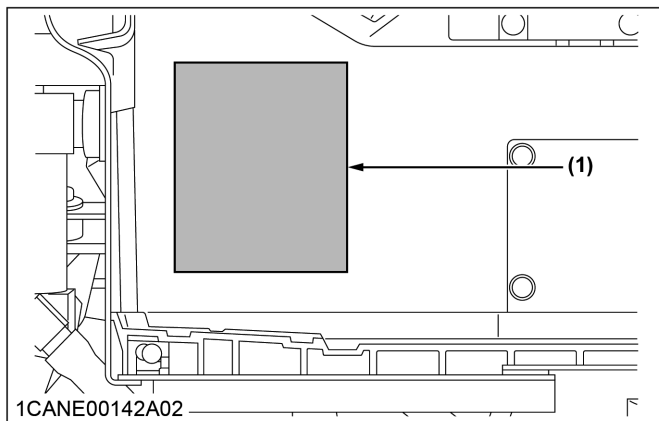
- Read and understand Operator's Manual before operating this machine.
- Know how to operate all controls.
- Keep by-standers away when operating.
- Keep all shields in place.
- Never carry riders.
- Lower all attachments to the ground, stop engine and remove key before leaving.

(2) Part No. V0531-5732-2

Do not operate without seat belt. You could be crash. Use the seat belt.

Read and understand Operator's Manual before operating this machine.

DO NOT REMOVE THIS PLATE
Once this plate is removed, the airtightness of the cab will degrade.



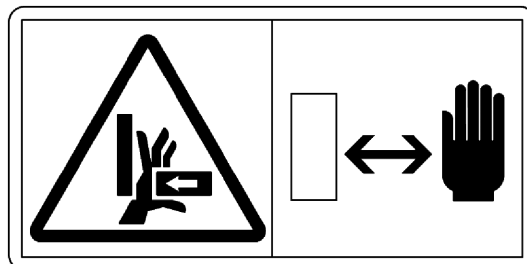
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! SAFE OPERATION

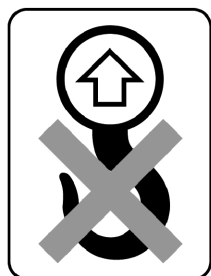
(1) Part No. V0511-5741-2



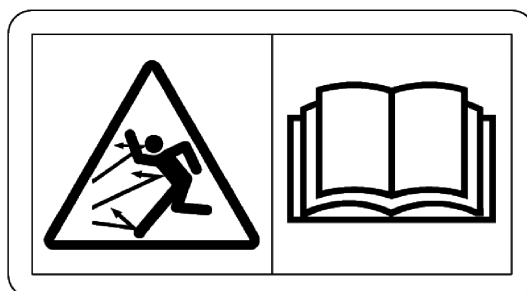
(2) Part No. V1311-5734-1 (Both sides)
Do not allow hands within the working range.



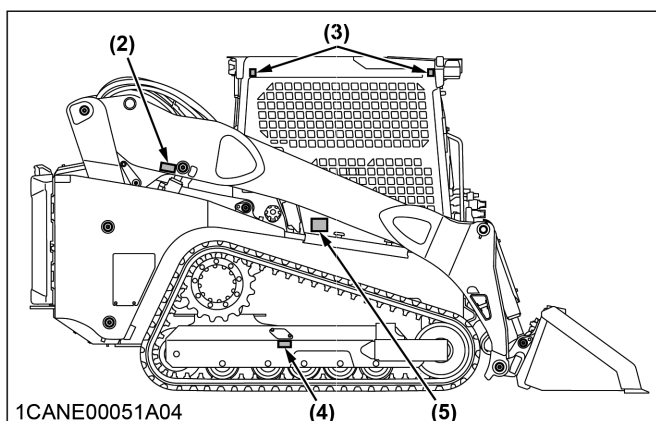
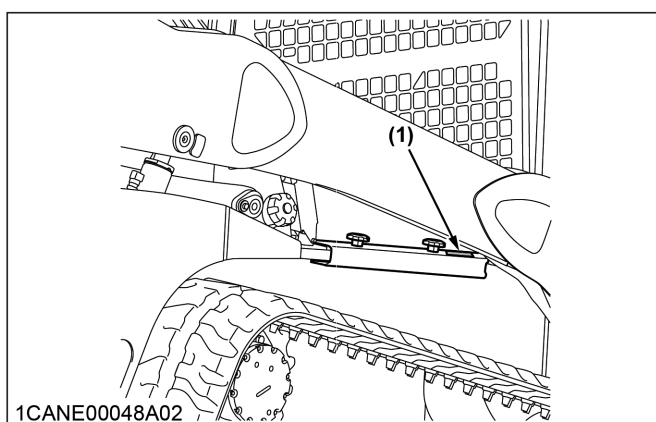
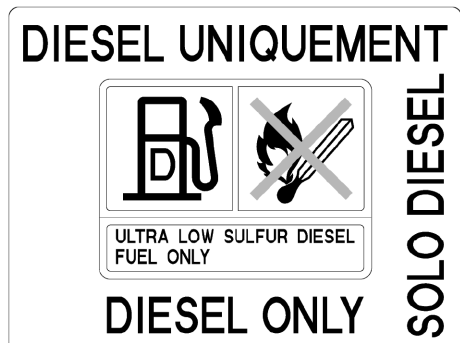
(3) Part No. RB419-5796-2 (Both sides)
Forbidden lift point



(4) Part No. V0511-5764-1 (Both sides)
Do not loosen the grease fitting completely or too quickly.



(5) Part No. V0651-5745-1

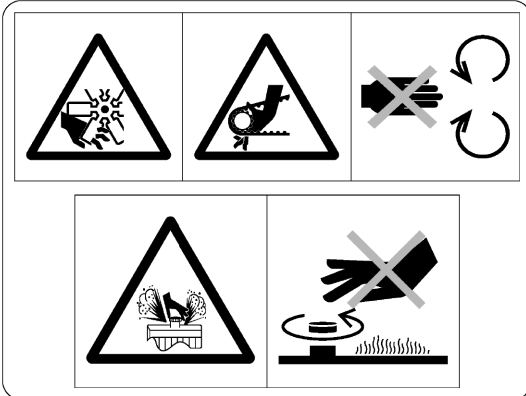


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! SAFE OPERATION

(1) Part No. V0651-5750-2

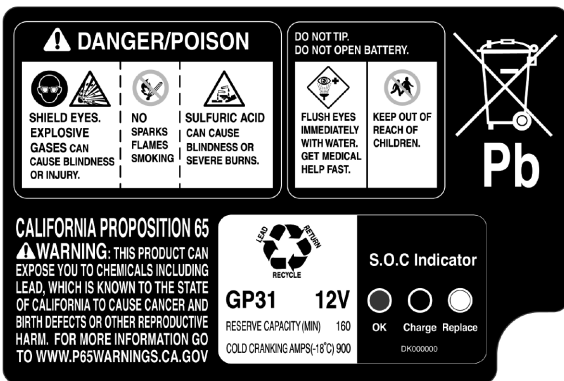
Keep away from fan and fan belt.
Do not open the caps when the radiator is hot.



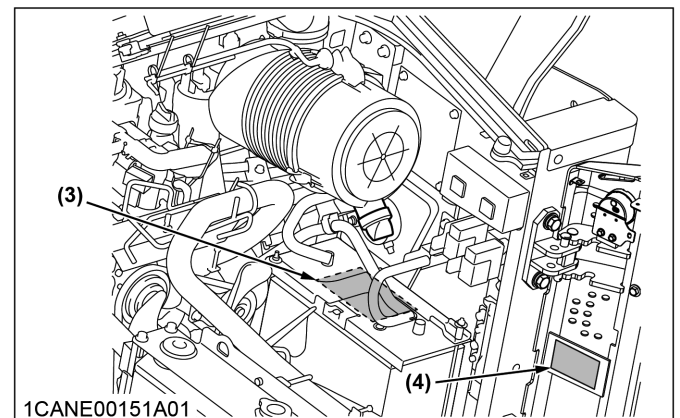
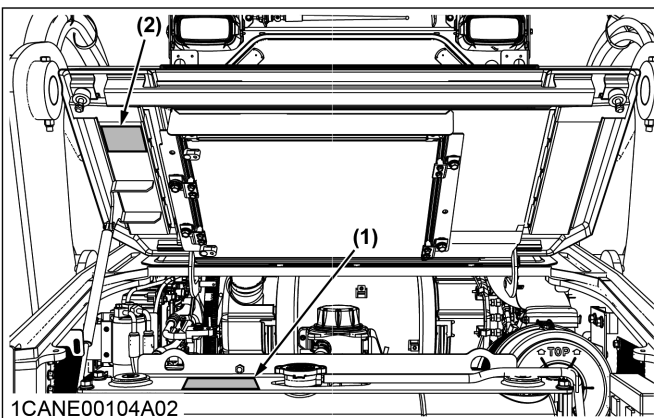
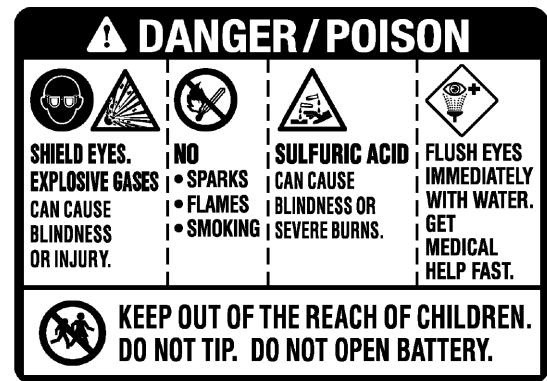
(2) Part No. V0651-5744-2



(3) Part No. V1311-5323-2



(4) Part No. V0521-5776-1



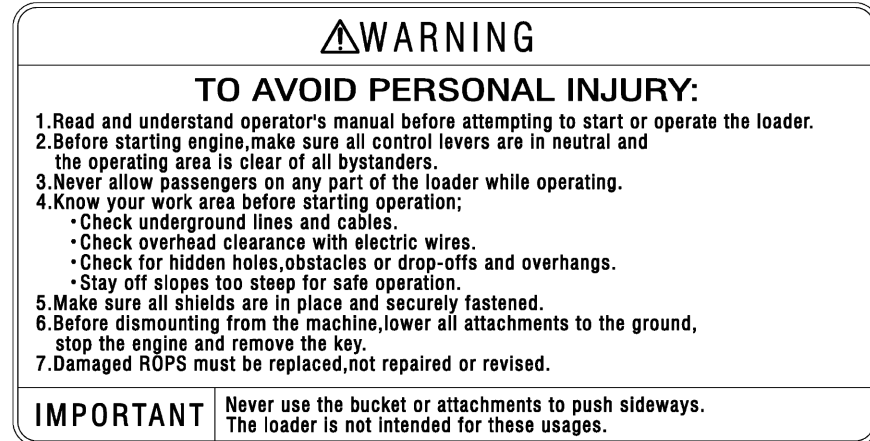
1CANE00147A01enUS

! SAFE OPERATION

(1) Part No. V0532-5714-1



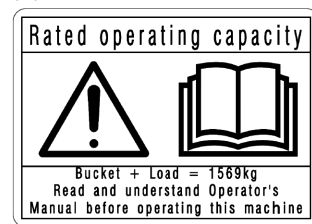
(2) Part No. V0532-5731-1



(3) Part No. V0532-5723-1

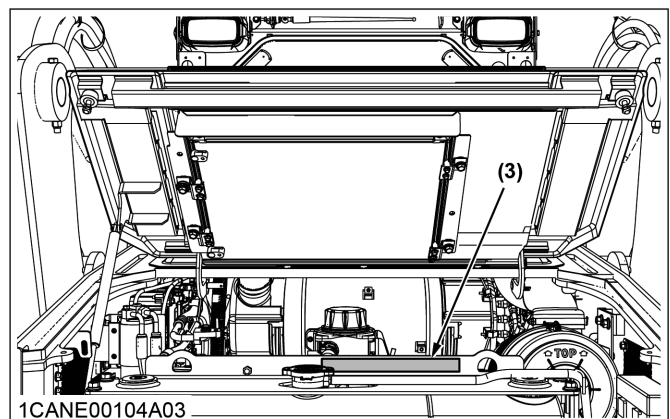
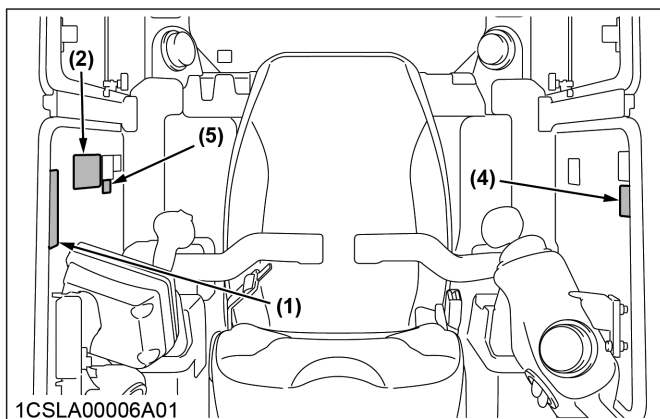
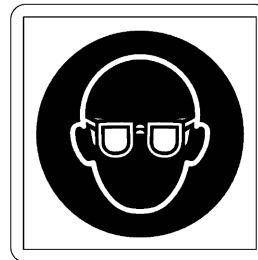


(4) Part No. V0652-5712-2



(5) Part No. V0532-5713-1

Wear eye protection or a face mask.

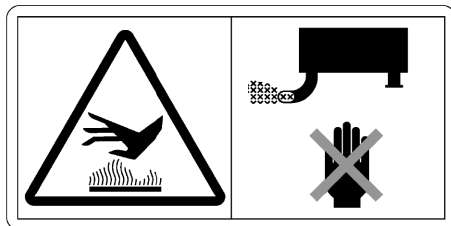


1CSLA00007A01enUS

SAFE OPERATION

(1) Part No. V0511-5738-2

Do not touch hot parts such as exhaust, etc.



(2) Part No. V1311-5763-2

WARNING

TO AVOID PERSONAL INJURY:
When opening and closing the engine hood, be careful not to get your hands pinched or other parts of your body caught.

(3) Part No. V0521-5775-1

WARNING

TO AVOID PERSONAL INJURY OR DEATH:

When the Diesel Particulate Filter(DPF) is in the regenerating mode, the exhaust gas, the DPF muffler and the SCR(Selective Catalytic Reduction) muffler *1 become hot.

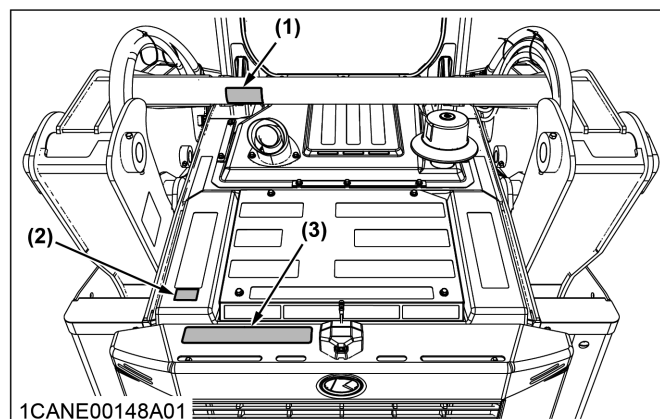
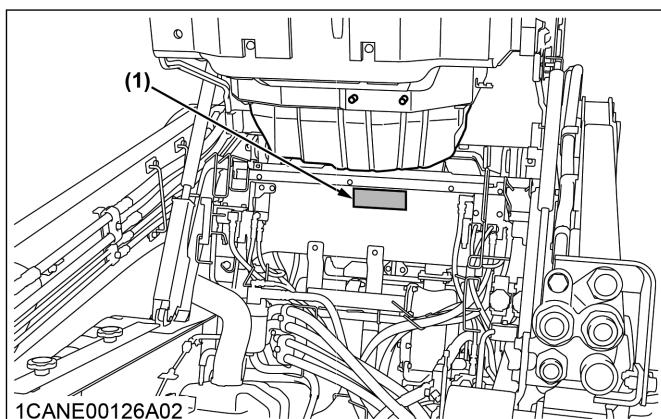
During regeneration, take into account that the mufflers will be very hot and keep the machine away from other people, animals, plants, and flammable material. Also keep the area near the DPF muffler and the SCR muffler *1 clean and away from flammable material.

*1: if equipped with SCR muffler

WARNING

TO AVOID PERSONAL INJURY OR DEATH:

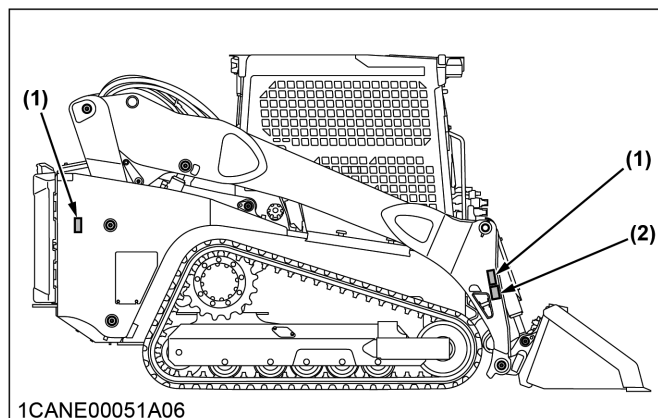
Never open before stopping engine



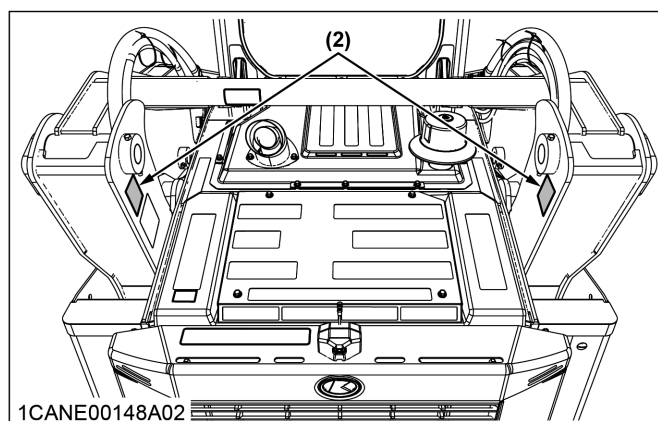
1CANE00149A01enUS

SAFE OPERATION

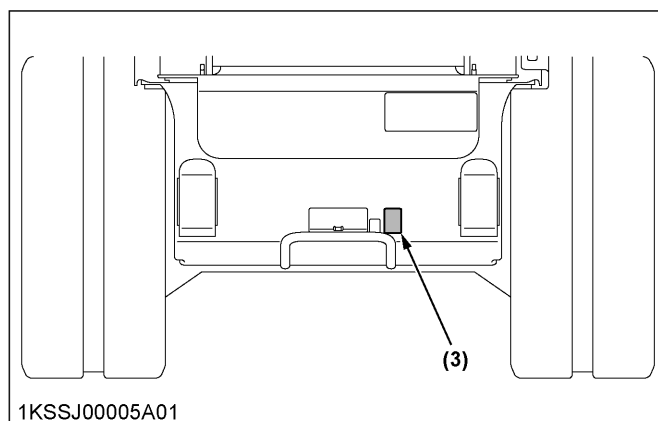
(1) Part No. V0532-5701-2 [Both sides]



(2) Part No. V0532-5722-3 [Both sides]



(3) Part No. V0532-5704-1



1CSLA00008A01enUS

! SAFE OPERATION

(1) Part No. V0531-5773-2

! WARNING TO AVOID PERSONAL INJURY OR DEATH: Do not go under the raised CAB unless the stopper is locked. Read Operator's Manual for Complete Instructions. See Operator's Manual.	

! DANGER TO AVOID PERSONAL INJURY OR DEATH:	
1. Make sure both levers (LH,RH) (A) contact the ear plates (B) at the ※ points and ear all the way down.	2. Make sure both lock pins (LH,RH) (C) protrude through the pin slots (D).
(A) : LEVER (B) : EAR PLATE (C) : LOCK PIN (D) : PIN SLOT	
• Attachments must comply with ISO 24410. • Use of attachments that do not comply with ISO 24410 or the improper positioning of lever(s) or non-protrusion of pin(s) may result in detachment of the attachment or deformation, causing loss of performance, personal injury or death. • For information, contact your Kubota Dealer.	

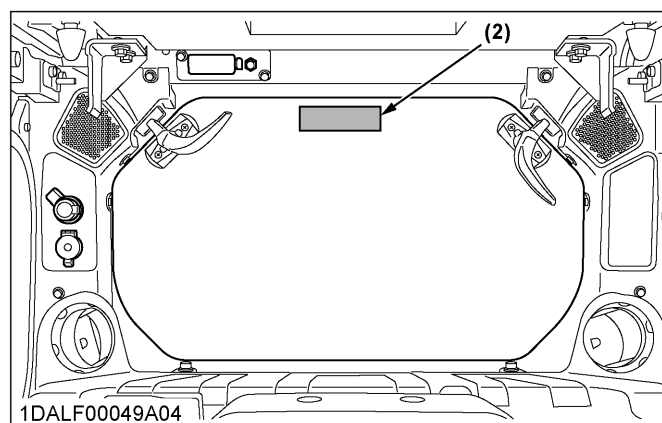
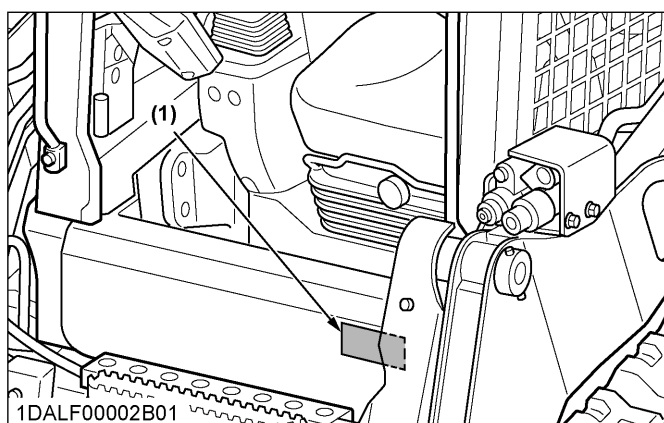
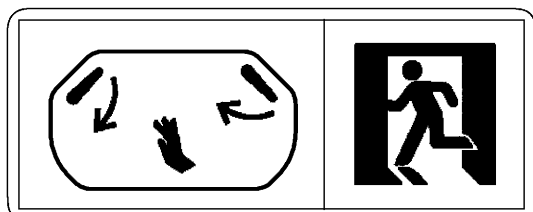
Do not allow any persons on the bucket.

(2) Part No. V1311-5754-1

EMERGENCY EXIT

This window is equipped with latches. If you should become trapped in the cab, you can open the rear window to get out.

1. Turn both latches clockwise until they disengage from the window frame.
2. Push the rear window out of the rear of the operator cab.
3. Exit through the rear of the operator cab.



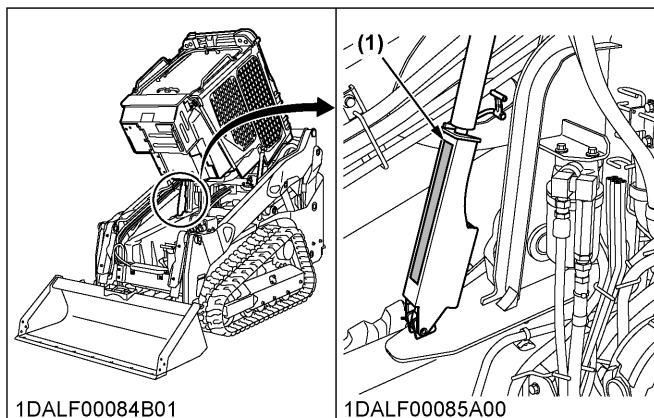
1CANE00150A01enUS

SAFE OPERATION

(1) Part No. V1311-5743-2

WARNING

TO AVOID PERSONAL INJURY OR DEATH: To make sure the damper stopper at the lock position to fix the cab. See Operator's Manual



1CANE00256A01enUS

1. Care for safety labels

- Keep safety labels clean and free from obstructing material.
- Clean safety labels with soap and water, dry with a soft cloth.
- Replace damaged or missing safety labels with new safety labels from your 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.

SERVICE OF THE MACHINE

DEALER SERVICE

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

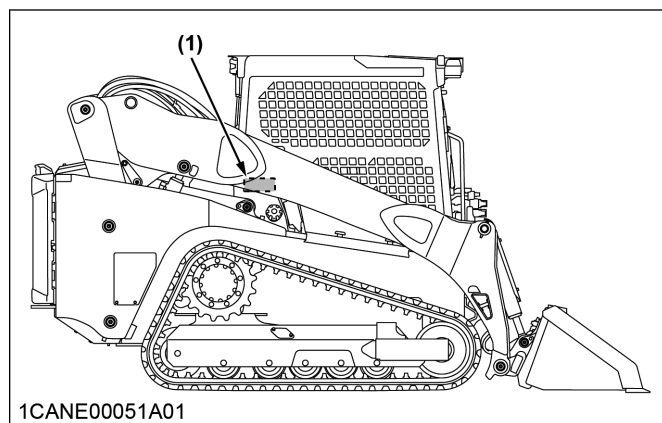
After having carefully read these instructions, you will realize that you can perform much of the routine maintenance by yourself. For service, contact your local Kubota dealer.

When ordering spare parts from your Kubota dealer, always mention the product identification number of the machine and the serial number of the engine.

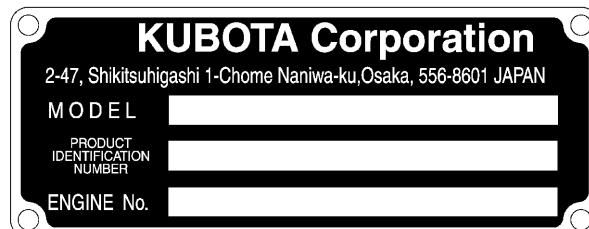
Note the product identification number of the machine and the serial number of the engine in the supplied lines.

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

	Model	Serial No.
Engine		

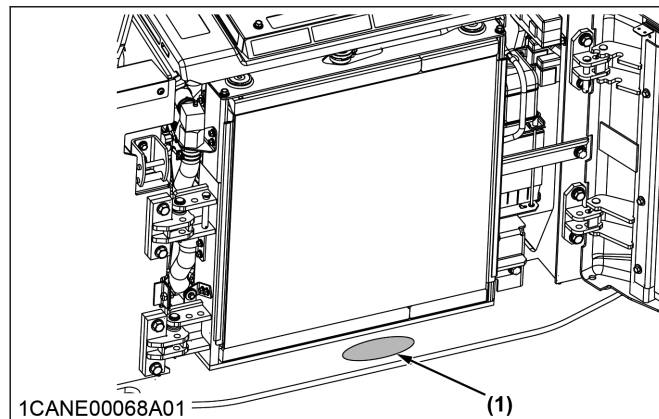


(1)

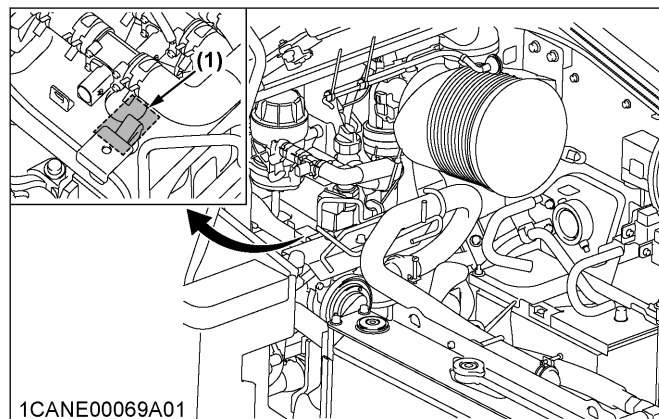


1EWEL00203A01

(1) Product identification number and engine number label



(1) Product identification number



(1) Engine serial no.

1. Warranty policy

This machine 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 operated and

maintained 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 machine

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

If you ask questions, contact your local Kubota Dealer.

TECHNICAL DATA

SPECIFICATION TABLE

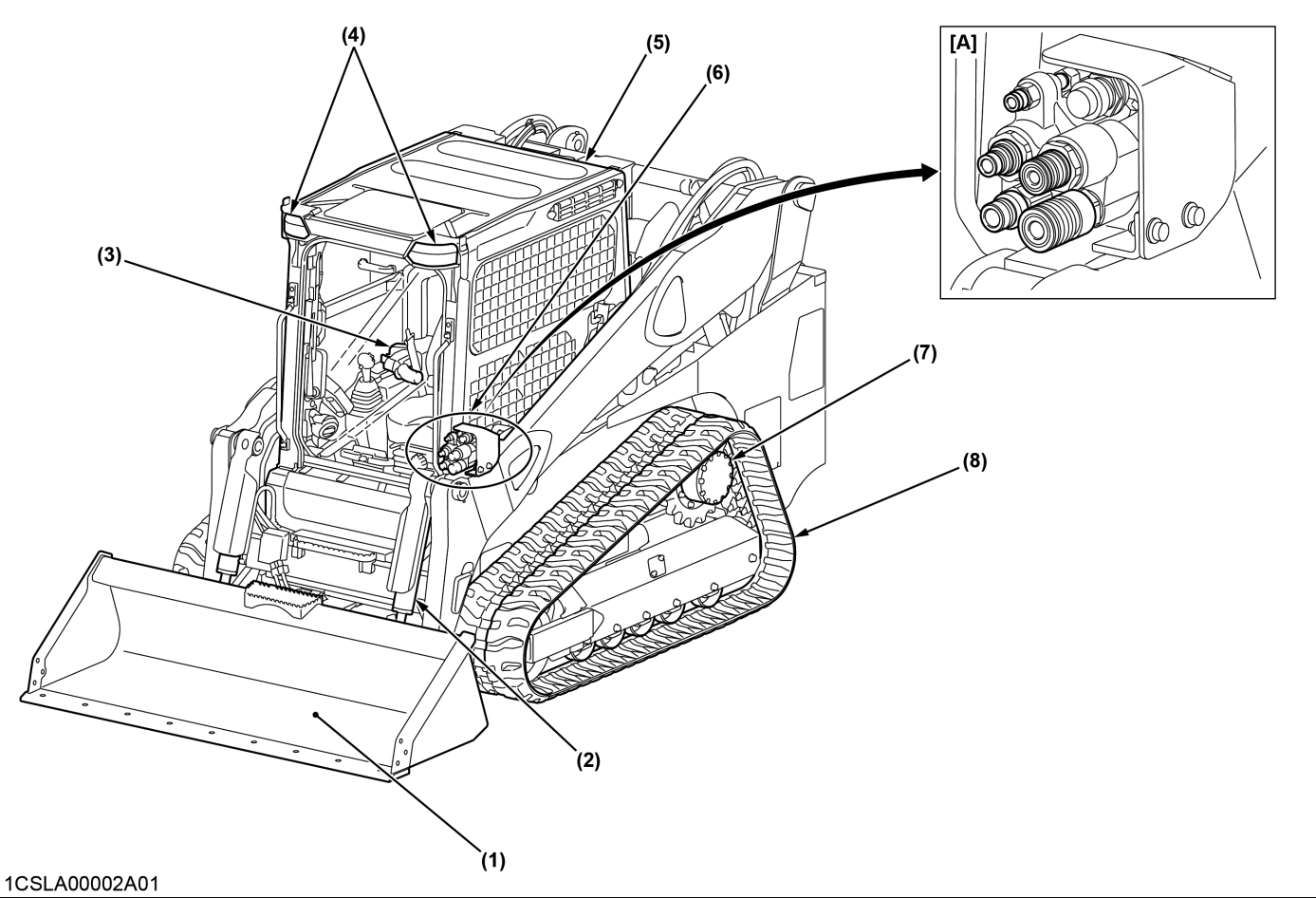
			KUBOTA CTL (Compact Track Loader)	
Model name			SVL97-3	
Type			Closed Cab	
Operating weight including operator's weight			5411 kg	
Engine	Type		Water cooled 4 cycle diesel engine with 4 cylinder	
	Model name		KUBOTA V3800-TIE5	
	Total displacement		3769 cc	
	Engine power	SAE J1995 gross		71.9 kW
		SAE J1349 net		63.5 kW
	Rated speed		2500 rpm	
	Low idling speed		1150 rpm	
Performance	Rated operating capacity (ISO14397-1)	Bucket	1569 kg	
		Pallet fork	1123 kg	
	Tipping load (ISO14397-1)	Bucket	4483 kg	
		Pallet fork	3210 kg	
	Breakout force	Bucket (ISO14397-2)	3468 kg	
		Lift arm (ISO14397-2)	2394 kg	
	Travel speed	Fast	13.5 km/h	
		Slow	8.9 km/h	
	Ground pressure (With operator)		32.8 kPa (0.33 kgf/cm ²)	
Battery capacity			12 V, RC: 160 min, CCA: 900 A	
Pressure connection for attachments	Max. displacement (Theoretical)	Standard-Flow	High-Flow	
		90 L/min	156 L/min	
	Max. pressure		24.5 MPa (250 kgf/cm ²)	
Fuel tank capacity			115.7 L	
DEF (AdBlue) tank capacity			12.7 L	

NOTE :

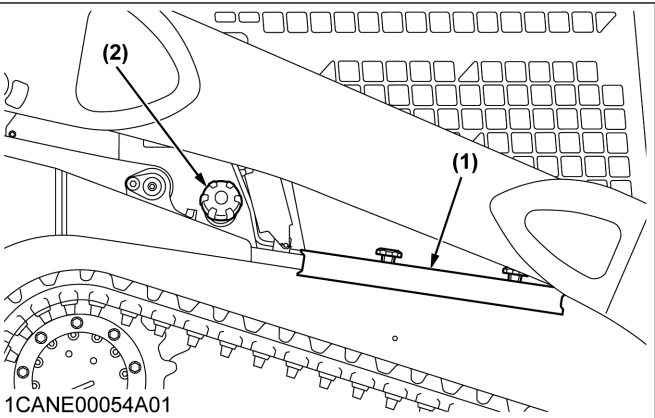
- The rated operating capacity and tipping load in the table are based on the machine with quick coupler, standard Kubota bucket or Kubota pallet fork model PFL5648, and closed cabin model. Rated operating capacity is based on normal operating conditions with a maximum travel speed of 6 km/h. Specifications subject to change without notice.
- Operating weight is with 75 kg operator, 268 kg standard general purpose bucket, and fully served.

MACHINE PARTS

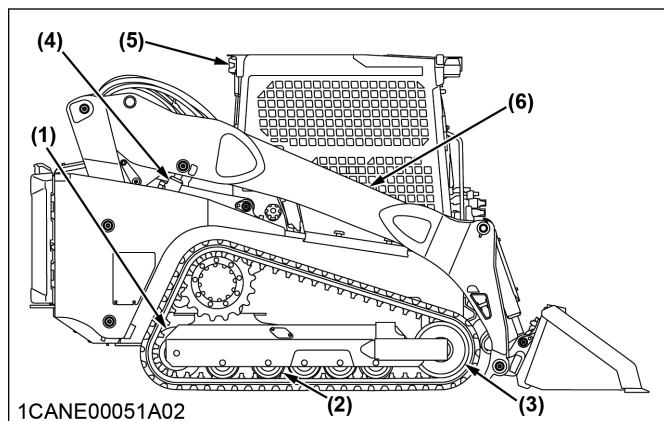
DESCRIPTION OF MACHINE PARTS



- | | | |
|-------------------|-------------------------|---------------------|
| (1) Bucket | (4) Front working light | (7) Drive motor |
| (2) Tilt cylinder | (5) Cab | (8) Rubber track |
| (3) Armrest | (6) AUX supply port | [A] High-Flow model |



- | | |
|----------------------|-------------------|
| (1) Lift arm stopper | (2) Fuel tank cap |
|----------------------|-------------------|



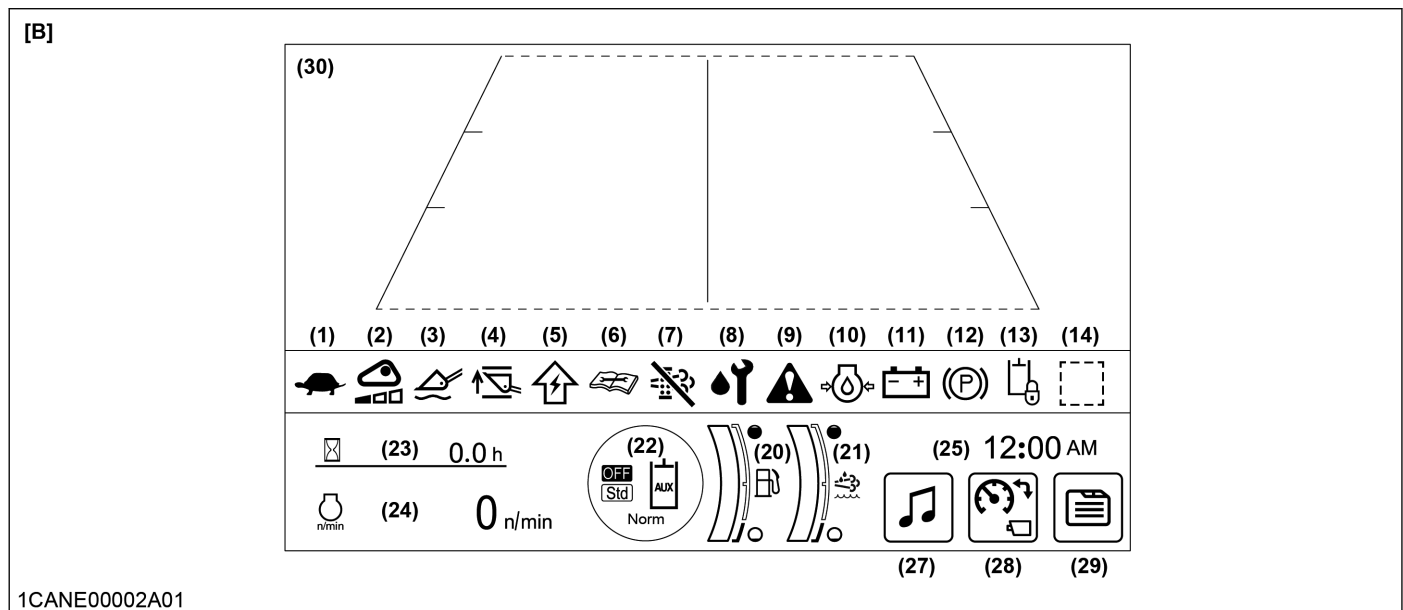
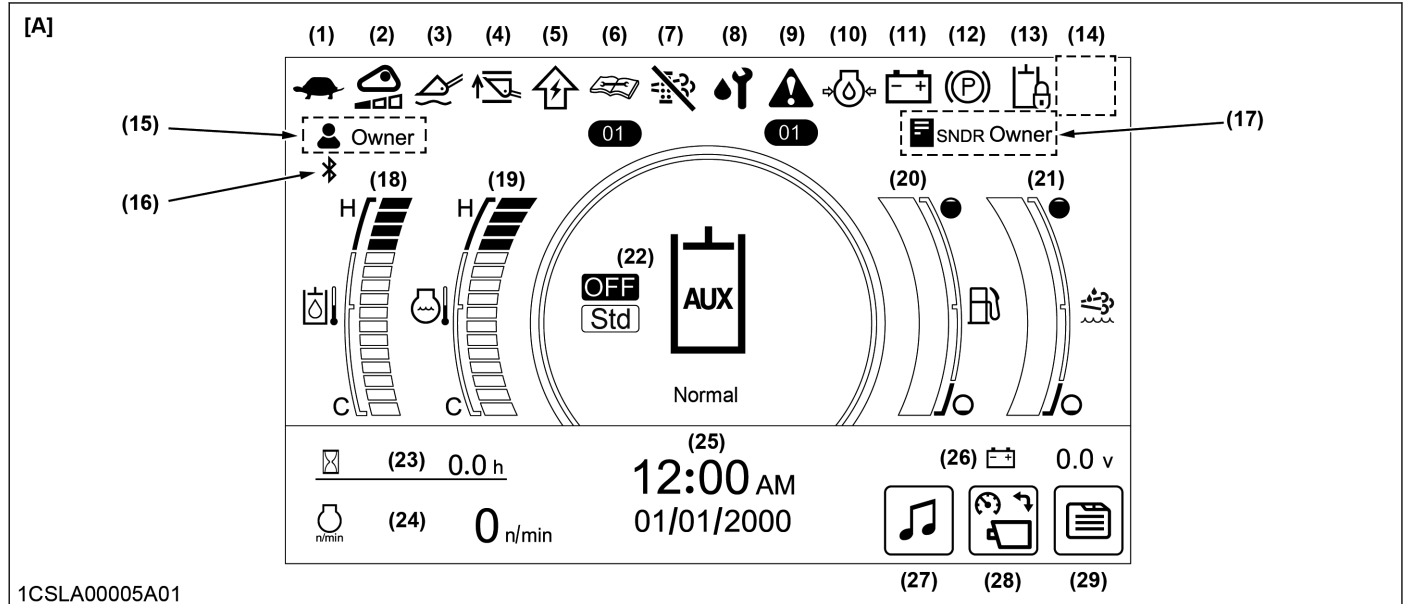
(1) Rear idler
(2) Track roller

(3) Front idler
(4) Lift arm cylinder

(5) Rear working light
(6) Lift arm

INSTRUMENT PANEL AND SWITCH

INSTRUMENT PANEL



- | | | | |
|--|---|--|-------------------------------|
| (1) Speed indicator | (9) Master warning indicator | (17) Memo (handover) | (22) AUX operation indicator |
| (2) Track response indicator | (10) Engine oil pressure indicator | (18) Hydraulic oil temperature gauge and hydraulic oil temperature warning indicator | (23) Hour meter |
| (3) Bucket-floating indicator | (11) Battery charge warning indicator | (19) Coolant temperature gauge and coolant temperature warning indicator | (24) Engine tachometer |
| (4) Self leveling indicator | (12) Parking brake indicator | (20) Fuel gauge and low fuel warning indicator | (25) Date and time |
| (5) AUX electrical mode change indicator | (13) Hydraulic lock indicator / touch operation restriction indicator | (21) DEF (AdBlue) level gauge and remaining DEF warning lamp | (26) Battery voltage |
| (6) Periodic check indicator | (14) Blank | | (27) Audio icon |
| (7) DPF inhibit indicator / DPF regeneration indicator / engine rev up indicator | (15) User name | | (28) Display mode change icon |
| (8) DEF (AdBlue) indicator | (16) Condition of Bluetooth connection | | (29) Menu icon |
- [A] Home screen
[B] Rearview camera screen

1. Handling the touch panel

CAUTION

To avoid personal injury:

- If the screen is damaged, replace it as soon as possible. If the damaged screen is used, the fragments may cause injury.

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.
- Do not press hard with your fingers or touch the screen with pointed objects. Not following this instruction may cause scratches or damage to the screen.

NOTE :

- The touch panel is designed to be operated with gloves, but operations may not be possible with some types of gloves.
- Adherence of water droplets or sand to the touch panel may cause malfunction or operations may not be possible.

1.1 Basic procedure of the touch panel

Touch or tap

Touch or lightly tap an item on the screen. An operation is performed or the following items are displayed.

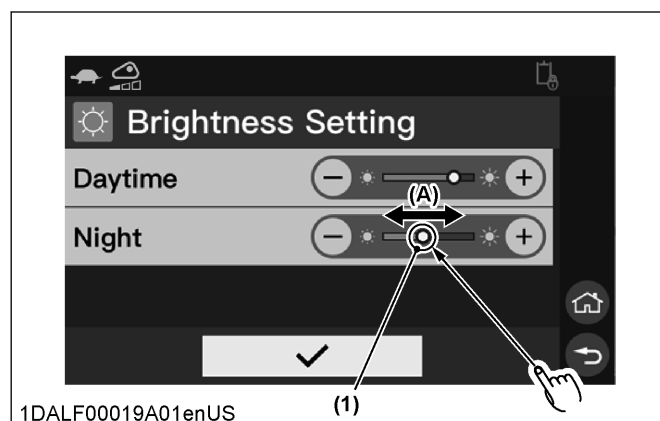


(1) Item

(A) Touch or tap

Slide

1. Touch the slider bar on the touch panel.
2. While holding down your finger on the slider, move to the required setting value.



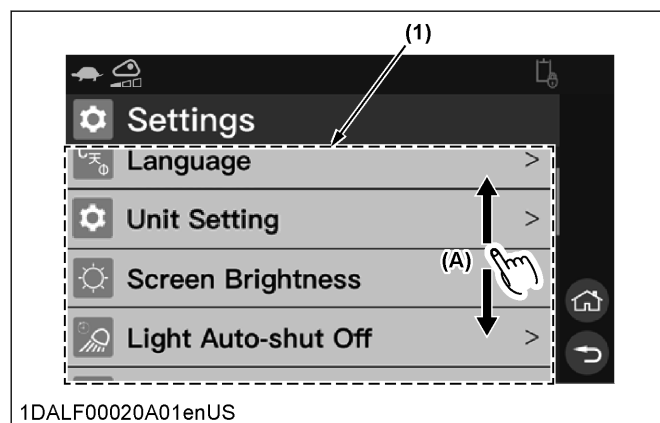
(1) Slider bar

(A) Slide

Scroll

While holding down your finger on the touch panel, move up and down.

Items that are not displayed will be displayed.



(1) Screen

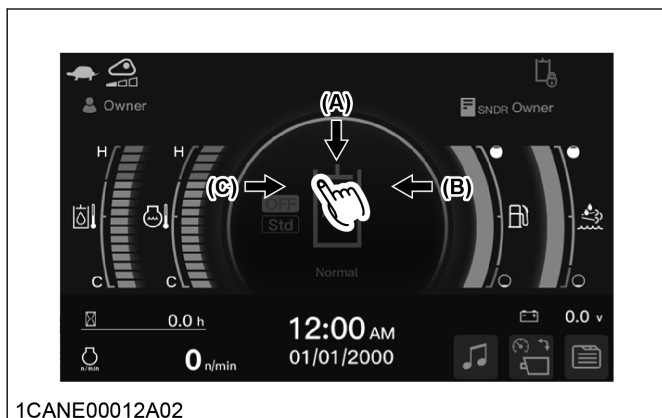
(A) Scroll

Swipe

While holding down your finger on the touch panel, move up and down, left and right.

The home, rearview camera, audio and memo screens can be swiped to switch screens.

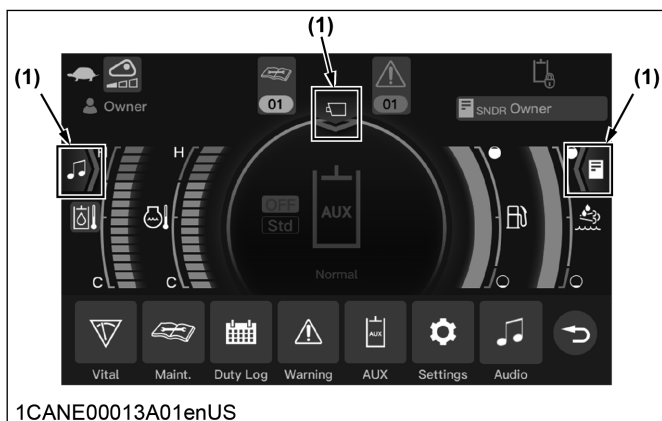
(For more information, see REARVIEW CAMERA MODE on page 101, Change to the audio screen on page 103, and Switching to the memo screen on page 114.)



(A) To rearview camera screen (C) To audio screen
(B) To memo screen

Swipe icon

The swipe icon is displayed when you touch anywhere on the home screen or rearview camera screen beside the icon.



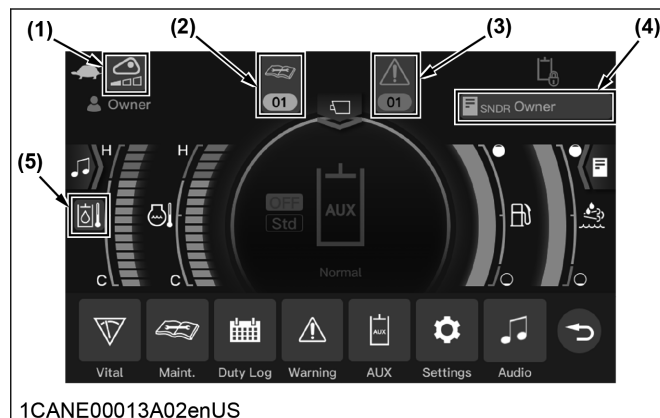
(1) Swipe icon

Swipe in the direction of the icon or touch the icon to switch screens as following.

- Home screen icon The home screen appears.
- Rearview camera screen icon The rearview camera screen appears.
- Audio screen icon The audio screen appears.
- Memo screen icon The memo screen appears.

Indicator and memo (handover) are highlighted

When the swipe icon is displayed, the indicator and memo notification are highlighted.



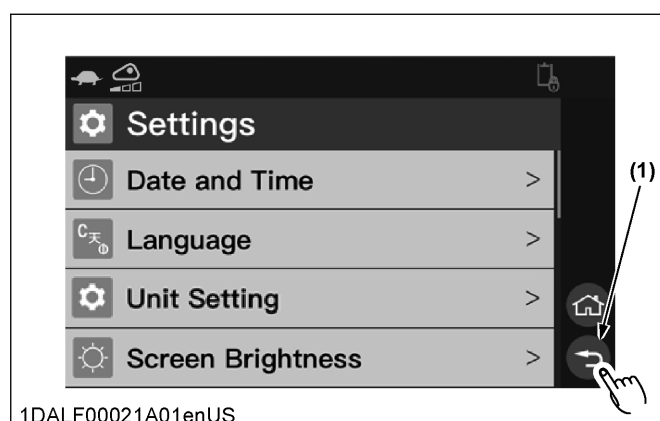
(1) Track response indicator (4) Memo (handover)
(2) Periodic check indicator (5) Hydraulic oil temperature indicator
(3) Master warning indicator

Touching the highlighted area switches the screen as follows.

- Track response indicator
The track response screen appears.
(See Setting the track response on page 78)
- Periodic check indicator
The list of the periodic check items appears.
(See Periodic check on page 48)
- Master warning indicator
The message appears.
(See LIST OF SCREEN on page 225)
- Memo (handover)
The memo screen appears.
(See Switching to the memo screen on page 114)
- Hydraulic oil temperature indicator
The hydraulic oil gauge screen appears.
(See Hydraulic oil temperature gauge on page 38)

Back to previous screen

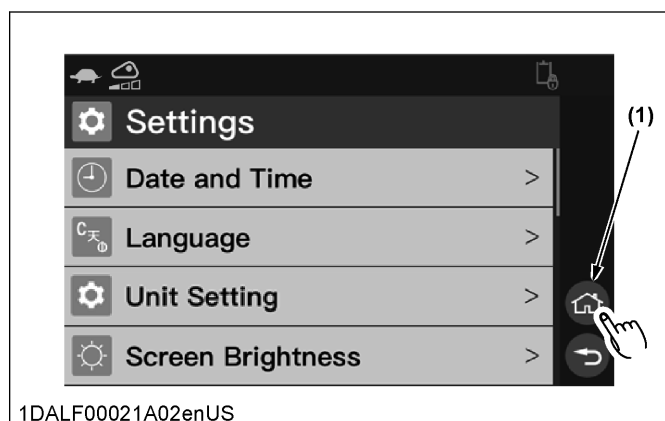
Touch the return button to return to the previous screen.



(1) Return button

Back to home screen

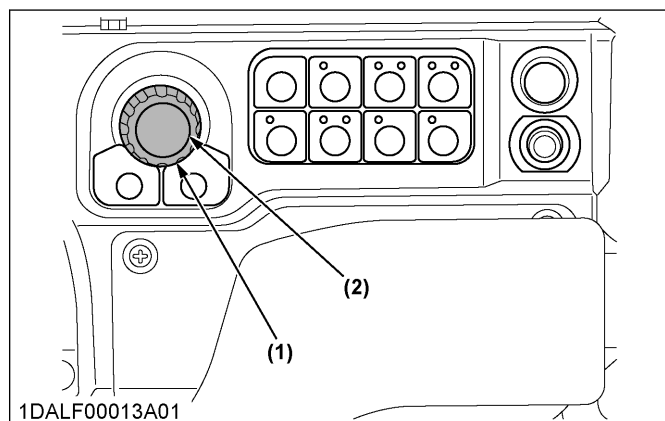
Touch the home button to return to the home screen or the rearview camera screen.



(1) Home button

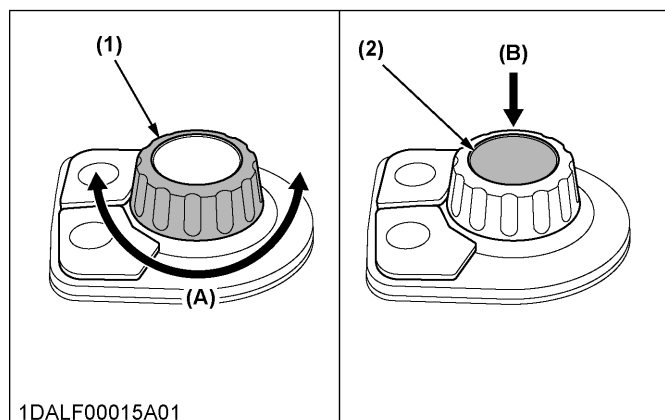
2. Handling the jog dial

1. Rotate the jog dial to move the cursor on the display to the icon or item you want to select.
2. Press the jog dial switch to select an icon or item.



(1) Jog dial

(2) Jog dial switch



(1) Jog dial

(2) Jog dial switch

(A) Rotate

(B) Press

NOTE :

- Pressing the jog dial when the starter switch is in the "OFF" mode will launch the touch panel in the fuel notification mode.
(See Fill level monitor when refuelling on page 36)

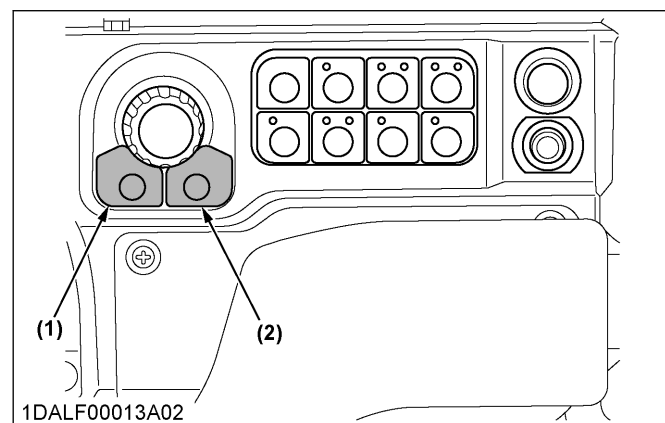
2.1 Function of the home switch and the return switch

Home switch

When pressing the home switch, the screen back to the home screen.

Return switch

When pressing the return switch, the screen back to the previous screen.



(1) Home switch

(2) Return switch

3. Fuel gauge indicator

Press the start switch when the machine is off, then the fuel-gauge-indicator indicates that the fuel remains in the fuel tank.



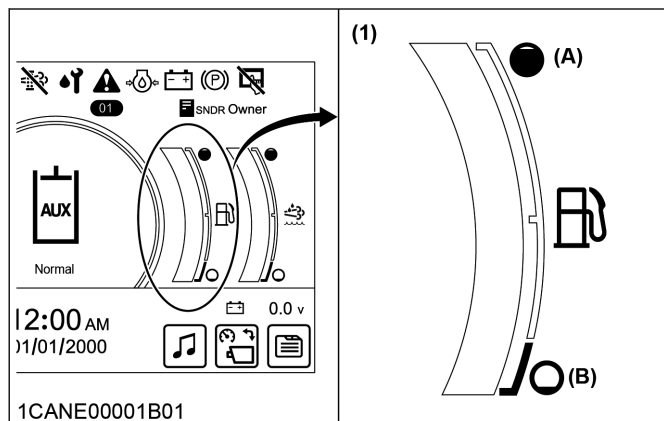
WARNING

To avoid personal injury or death:

- Before adding fuel, stop the engine.
- Keep open flame away from the machine. Otherwise a fire may result.
- Make sure that fuel delivery system is grounded.

IMPORTANT :

- If the fuel gauge indicator is near the , or if the message "Low Fuel Level" appears, add fuel as soon as possible. If the indicator is near  and the machine runs on a slope, the engine may run out of the fuel and get interrupted.
- Be very attentive to the remaining fuel for the engine not to stall. If the engine stalls, it may fail to get restarted for a while to protect the emission-purifying-device.



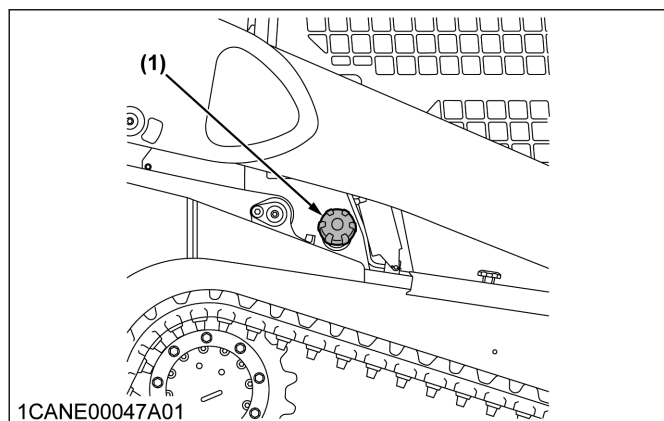
(1) Fuel gauge indicator

(A) Full
(B) Empty

If the fuel runs short, open the cap and refuel the tank.

NOTE :

- To open the fuel tank cap, keep the key inserted.

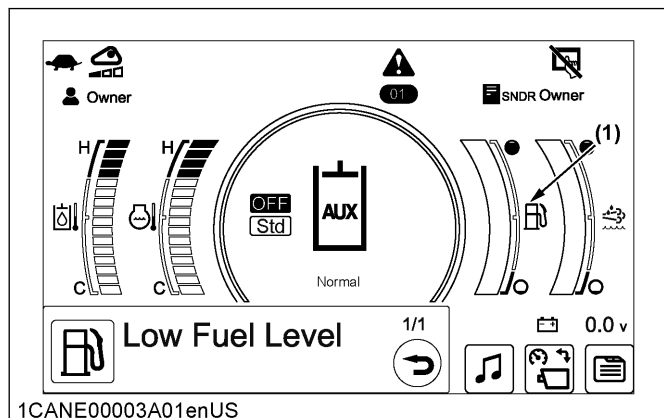


(1) Cap

4. Low fuel warning indicator

If the fuel in the tank goes below the prescribed level, the low-fuel-warning-indicator will blink.

If the low-fuel-warning-indicator blinks during operation of the machine, refuel as soon as possible.

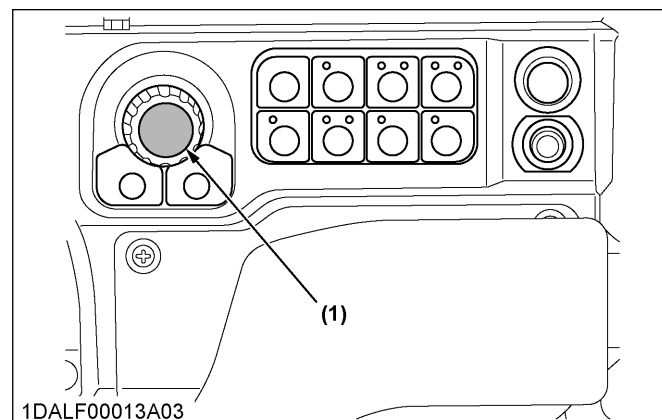


(1) Low fuel warning indicator

4.1 Fill level monitor when refuelling

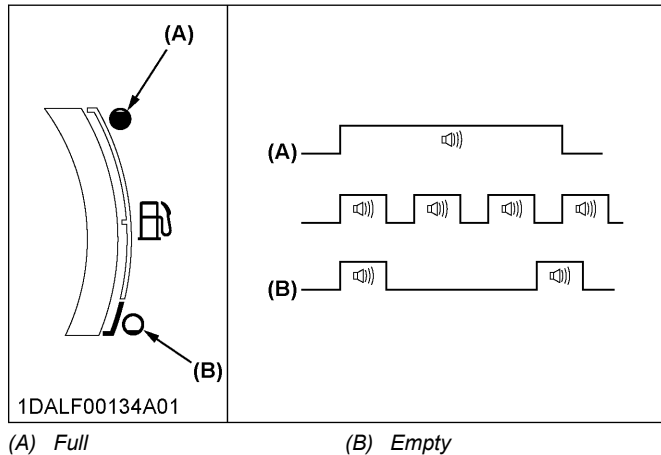
The fueling progress can be monitored by a buzzer sound.

- Press the jog dial switch when the machine is off. The instrument panel turns on, and the fill level monitor function becomes active.

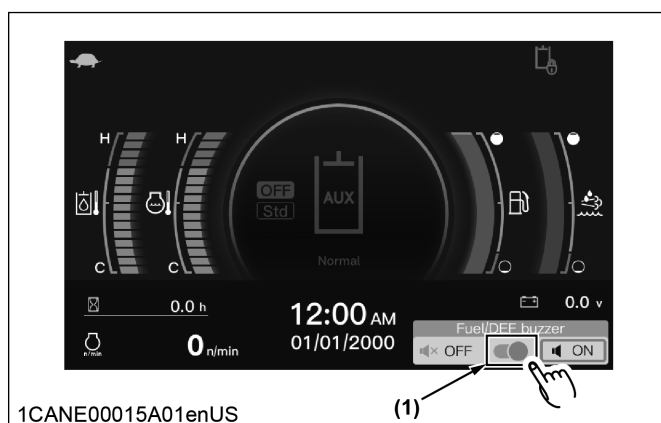


(1) Jog dial switch

- Start refueling the machine. The buzzer beeping intervals change according to how much fuel is poured into the tank.
As the fuel tank is filled up, the buzzer sound becomes almost continuous. The buzzer will stop sounding.

**NOTE :**

- If the start switch is pressed while the fill level monitor function is active, the fill level monitor function is deactivated, and the start switch changes to the "ACCESSORY" mode.
(See Start switch on page 118)
- To turn off the buzzer, touch the Fuel buzzer mute button to the [OFF] position. Touch the Fuel buzzer mute button to the [ON] position to turn on the buzzer again.
- If filling the fuel is stopped for a certain period, the fill level monitor function is deactivated. The function can be restarted by pressing the jog dial switch again.



(1) Fuel / DEF buzzer mute button

- To stop refueling halfway (before filling up), press the jog dial switch.

5. Coolant temperature gauge

! 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 cap.

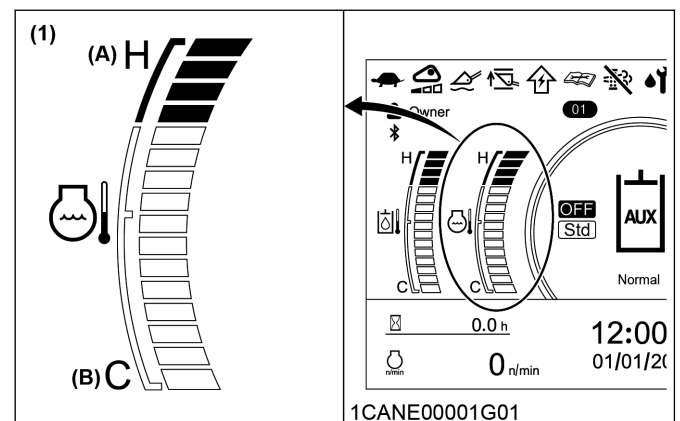
When the engine is running or the start switch mode is "ACCESSORY," the coolant-temperature-gauge indicates the coolant temperature.

If engine coolant rises above a specified temperature level, the buzzer starts beeping every 3 minutes for advance warning. If the coolant temperature further rises to the critical level, the coolant temperature indicator starts blinking and the buzzer keeps on beeping.

When the coolant temperature has dropped below specified temperature level or the engine stops, the warning will cease.

If the coolant-temperature-gauge is near [H], check the machine.

(See Checking the coolant temperature gauge on page 37)



(1) Coolant temperature gauge

(A) Hot
(B) Cool

IMPORTANT :

- If the message "Coolant temp high" is displayed, the EGR valve will begin to close and EGR system will not function. Stop work and lower the engine rpm, which will reduce the coolant temperature.

5.1 Checking the coolant temperature gauge

If the coolant-temperature-gauge is near [H], take the following steps.

- Discontinue the job.
- Reduce the engine rpm to idle and keep it at idle for 5 minutes.

3. Stop the engine and check the following points.
 - Low coolant level or leak
 - Tension of the fan belt
 - Deposits of mud, dust, or chaff blocking the radiator or screen
 - Leak of the hydraulic oil

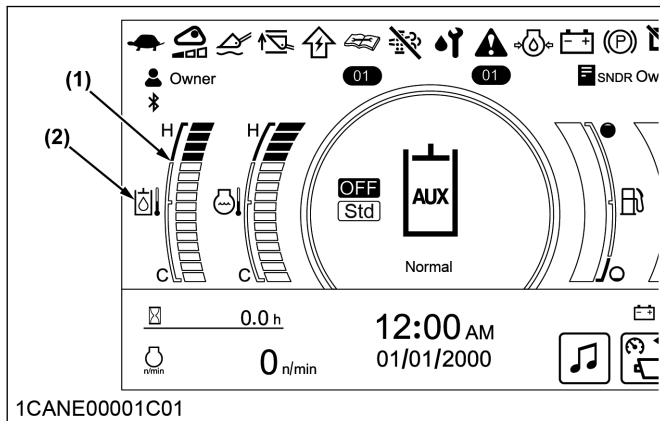
6. Hydraulic oil temperature gauge

When the engine is running or the start switch mode is "ACCESSORY," the hydraulic-oil-temperature-gauge indicates the hydraulic-oil-temperature.

The hydraulic oil temperature indicator starts blinking and the buzzer starts beeping if the hydraulic-oil-temperature has reached a specified level.

When the hydraulic-oil-temperature has dropped below the specified level or the engine stops, the warning will cease.

Stop the engine and check for an unspecified level in the hydraulic tank and for leak of the hydraulic oil.

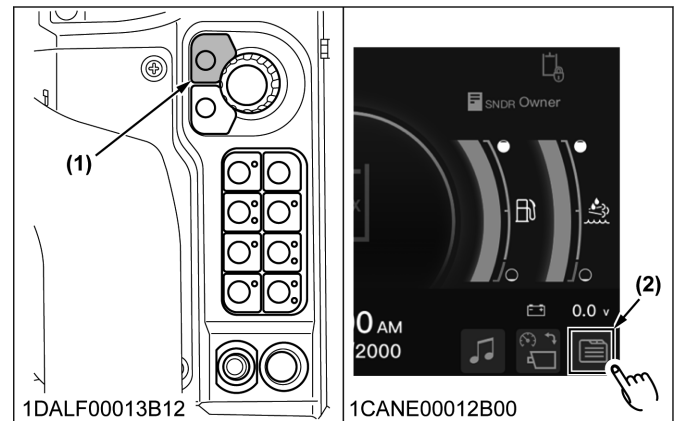


(1) Hydraulic oil temperature gauge (2) Hydraulic oil temperature indicator

7. Hydraulic oil gauge

This function enables the confirmation of the remaining amount of hydraulic oil with the monitor display and buzzer.

1. Press the home switch or touch the menu icon to make the menu bar appear on-screen.

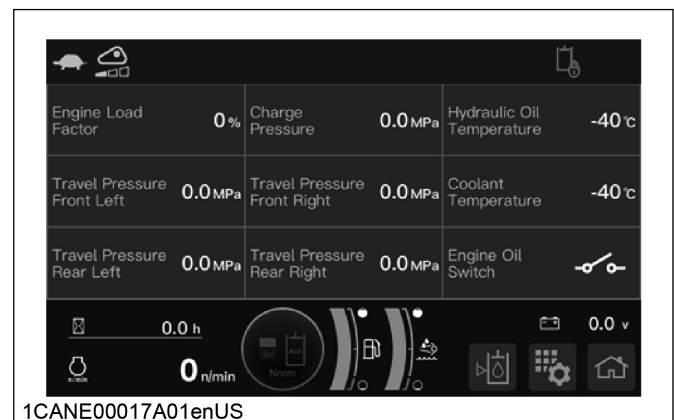


(1) Home switch (2) Menu icon

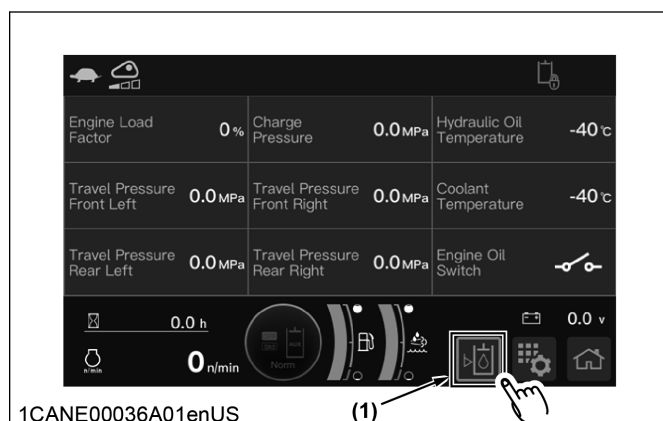
2. Rotate the jog dial to select the icon [Vital] and press the jog dial switch. For touch operation, touch the icon [Vital]. The vital screen appears.



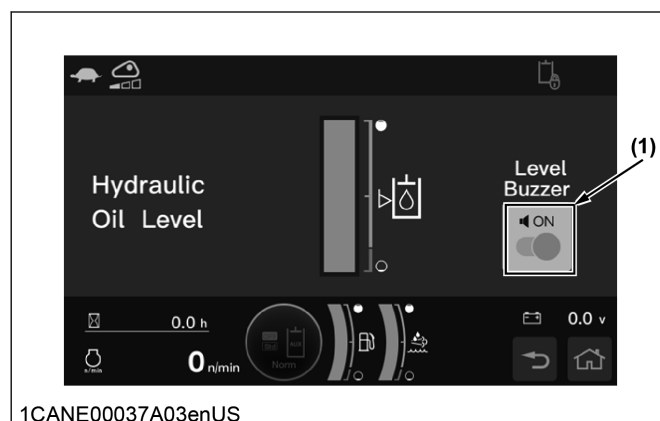
Figure of the vital screen



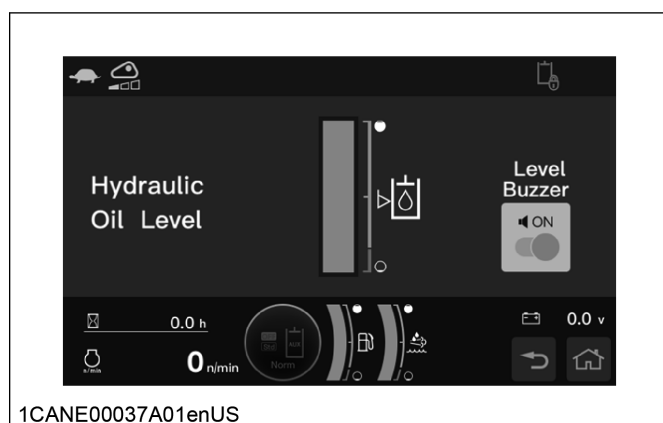
3. Rotate the jog dial to select the hydraulic oil gauge button, and then press the jog dial. For touch operation, touch the hydraulic oil gauge button. The hydraulic oil gauge screen appears.



(1) Hydraulic oil gauge button



(1) Level Buzzer button

**NOTE :**

- Touch the hydraulic oil temperature indicator on the home screen to open the hydraulic oil gauge screen on the display.

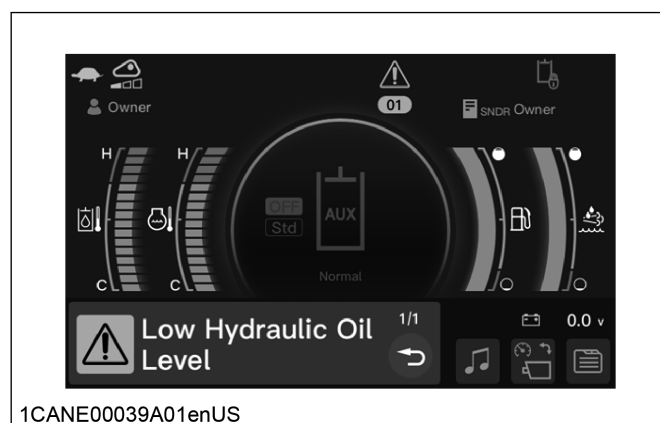


(1) Hydraulic oil temperature indicator

- Select the Level Buzzer button by rotating the jog dial, and then press the jog dial or perform the touch operation to mute the buzzer.
Note that the Level Buzzer button is inoperable while the engine is starting up.

8. Low hydraulic oil warning indicator

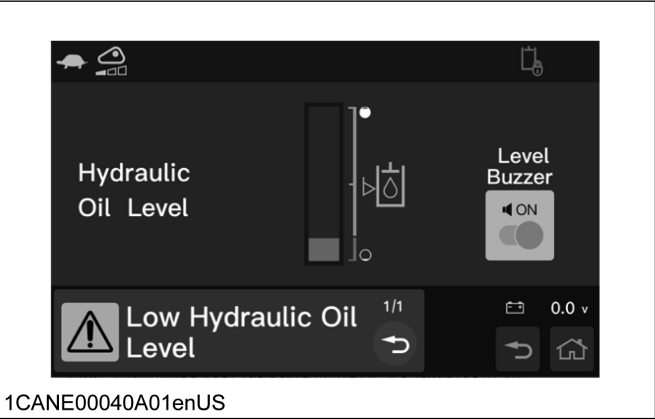
The amount of hydraulic oil in the tank decreases below the specified level, the warning indicator flashes. If the low hydraulic oil warning appears while the equipment is operated, add hydraulic oil immediately.



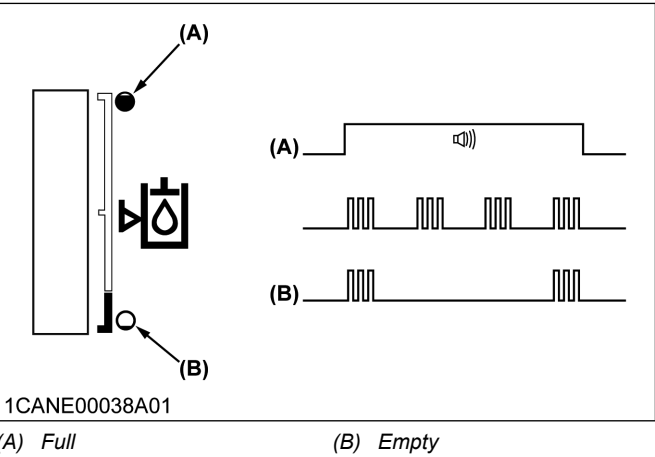
8.1 Fill level monitor when refilling hydraulic oil

The refilling progress can be monitored by a buzzer sound.

1. Display the hydraulic oil gauge screen.
(See Hydraulic oil gauge on page 38)



2. Start supplying hydraulic oil to the machine.
The buzzer beeping interval changes according to the amount of oil supplied to the hydraulic oil tank. As the oil level approaches the full level, the buzzer produces continuous sound for a short while and then stops when the tank becomes full.

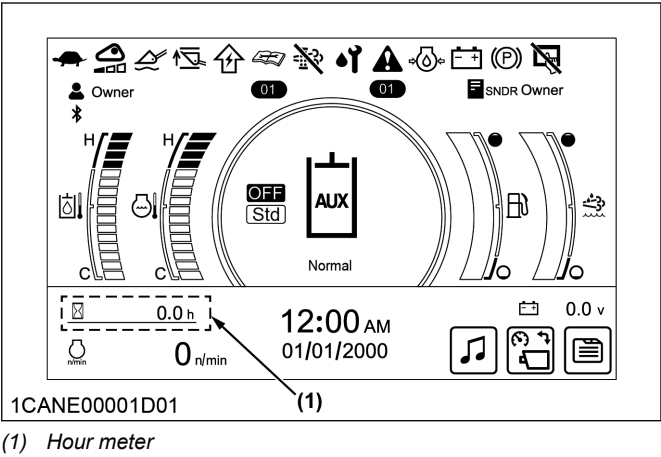


9. Hour meter

The hour meter indicates the total operating hours of the machine.

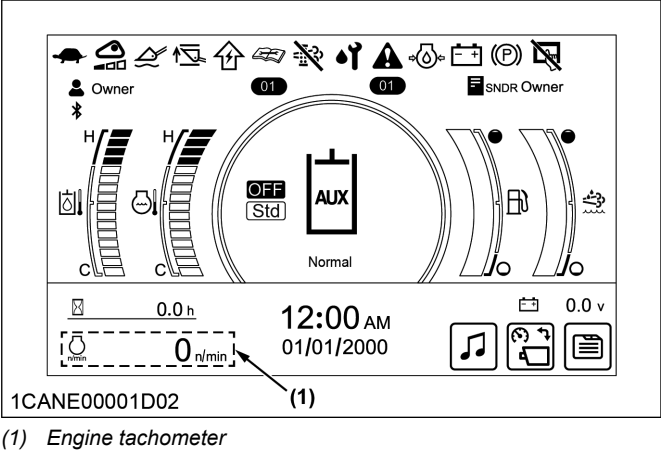
How the hour meter works

- The hour meter advances 1 hour after an hour of operation of the machine regardless of the engine rpm.



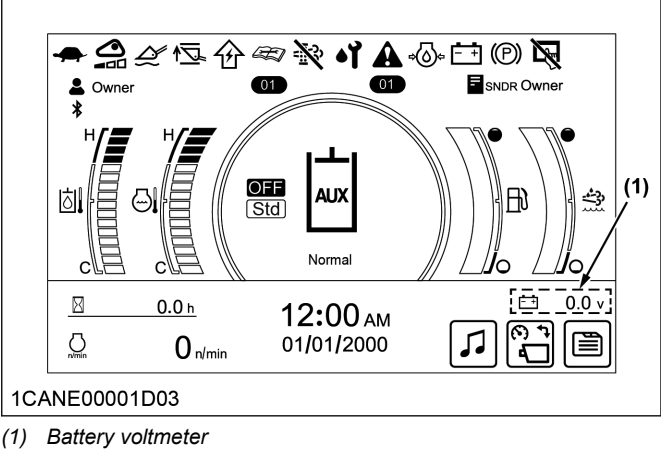
10. Engine tachometer

The engine tachometer indicates the current rpm of the engine.



11. Battery voltmeter

The battery voltmeter indicates the current voltage of the battery.



12. Glow plug indicator

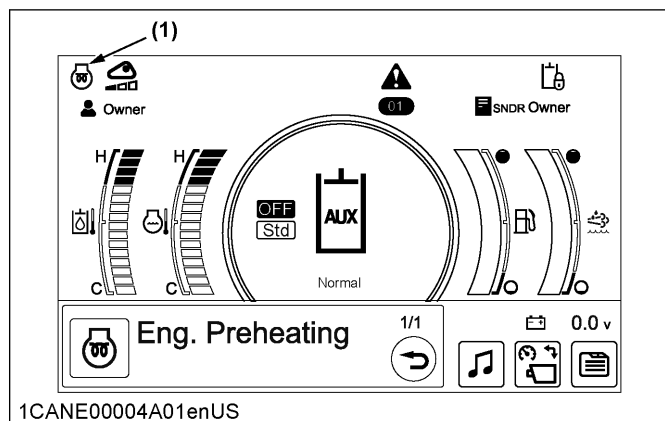
The glow-plug-indicator is displayed when the engine requires preheating.

Press the start switch when the machine is off, and then the glow plug indicator lights up.

Wait until the glow plug indicator goes out, and then start the engine.

NOTE :

- If the machine lockout function is enabled, the glow plug indicator lights up after password authentication is completed.
- When the machine lock out function is not enabled, the glow plugs may operate prior to the meter panel fully starting up. So glow plug operation may not be displayed if glow plug cycle time is shorter than the meter panel start up time.
- When the engine is preheating, the message “Eng. Preheating” is displayed.

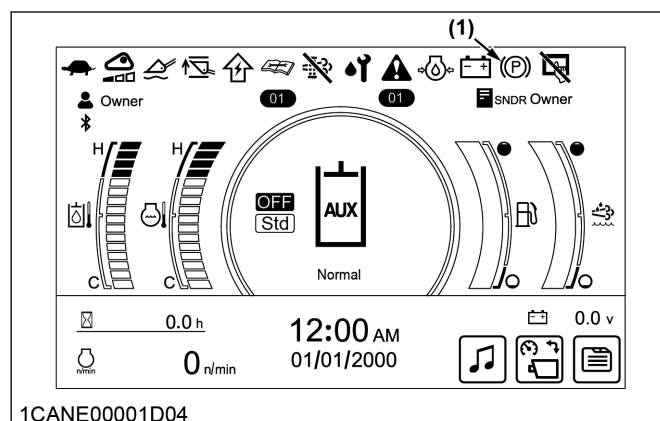


(1) Glow plug indicator

13. Parking brake warning indicator

When the parking brake switch is turned on, the parking brake warning indicator on the instrument panel turns on.

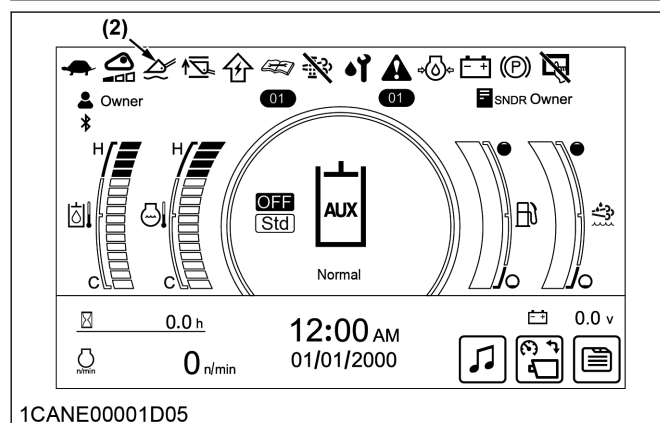
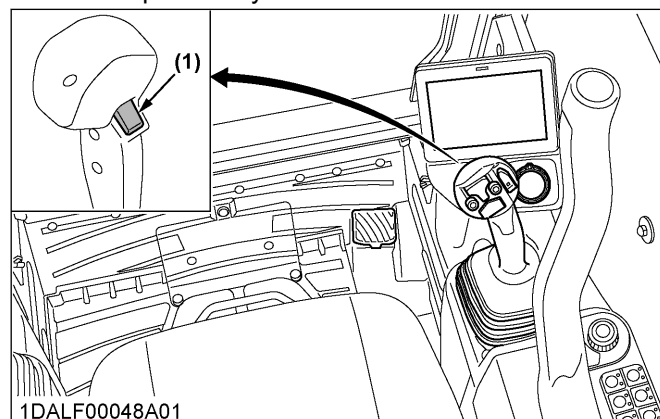
(See Parking brake switch on page 118)



(1) Parking brake warning indicator

14. Bucket-floating indicator

While in the bucket-float mode, the  mark on the instrument panel stays on.

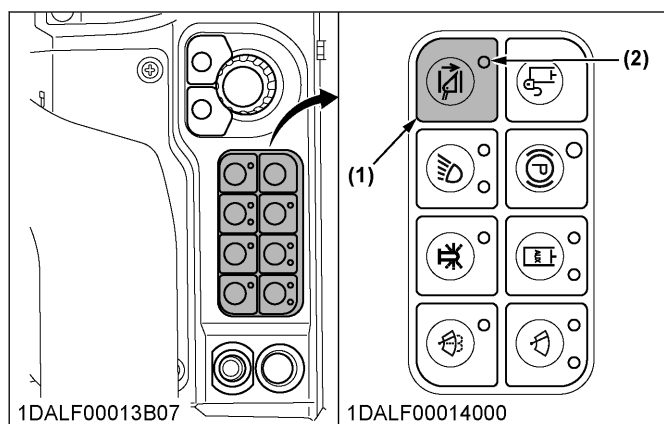


(1) Bucket-float switch

(2) Bucket-floating indicator

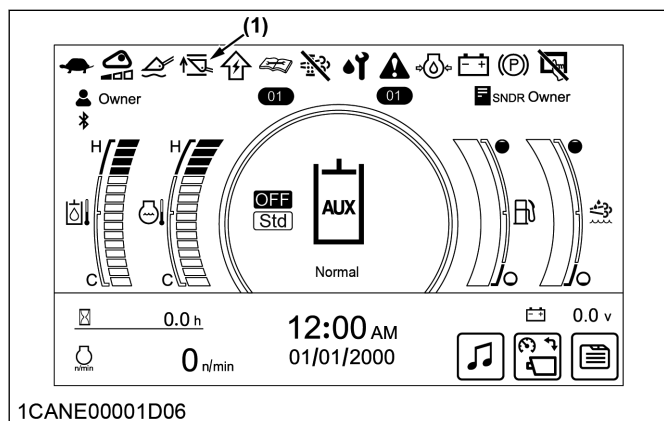
15. Self leveling indicator

While in the self leveling mode, the  mark on the instrument panel stays on.



(1) Self leveling switch

(2) Indicator



1CANE00001D06

(1) Self leveling indicator

16. Master warning indicator

The master warning indicator is used to indicate broken wire, short-circuit, and other problems.

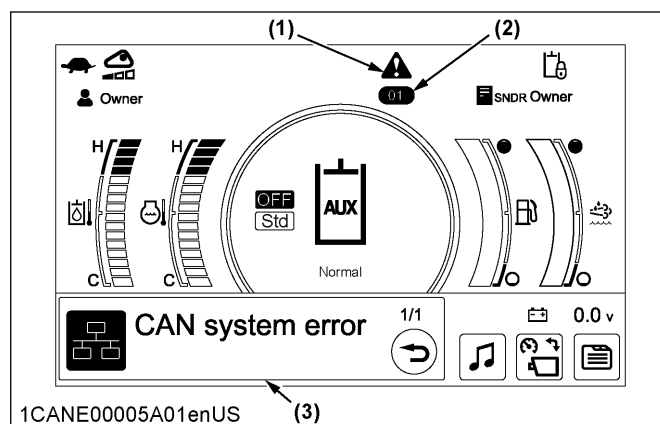
The master warning indicator starts blinking red if any problem occurs. If the system senses a warning signal, the master warning indicator starts blinking yellow.

IMPORTANT :

- If the master warning indicator lights up, perform the appropriate inspection and correction accordingly.
(See MAINTENANCE on page 174)
- If the master warning indicator lights up continuously after performing, contact your local Kubota dealer immediately.

NOTE :

- If any warnings and problems are displayed, an alarm buzzer will beep.
(See LIST OF SCREEN on page 225)

(1) Master warning indicator
(red, yellow)(2) Number of warnings
(3) Error message

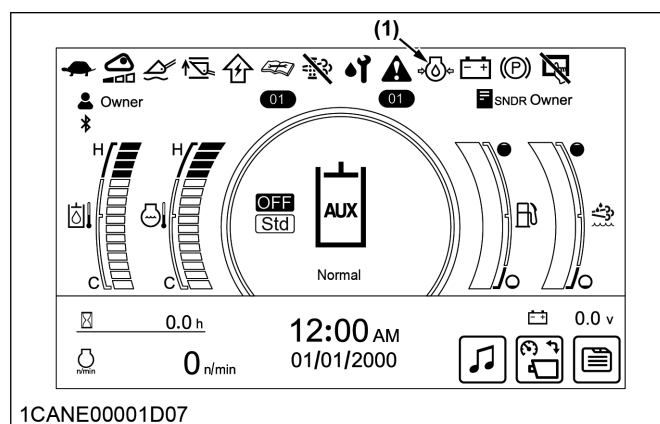
17. Engine oil pressure indicator

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

When start switch mode is "ACCESSORY," the engine-oil-pressure-indicator lights up.

When the engine starts, the engine-oil-pressure-indicator goes out.

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



1CANE00001D07

(1) Engine oil pressure indicator

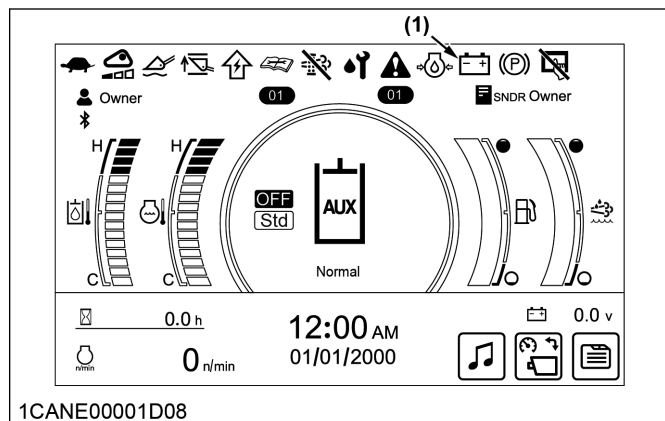
18. Battery charge warning indicator

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

When start switch mode is "ACCESSORY," the battery-charge-warning-indicator lights up.

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

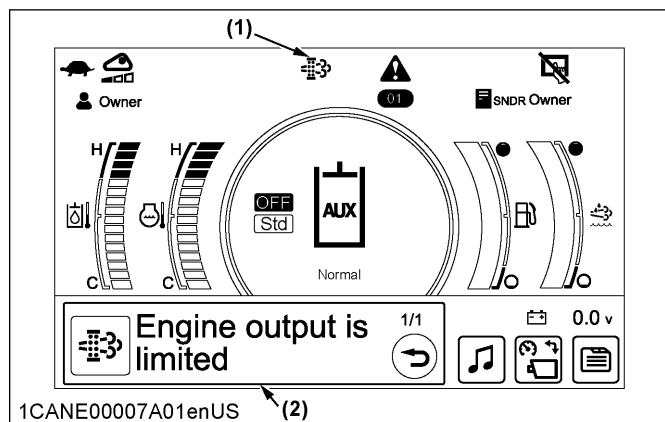
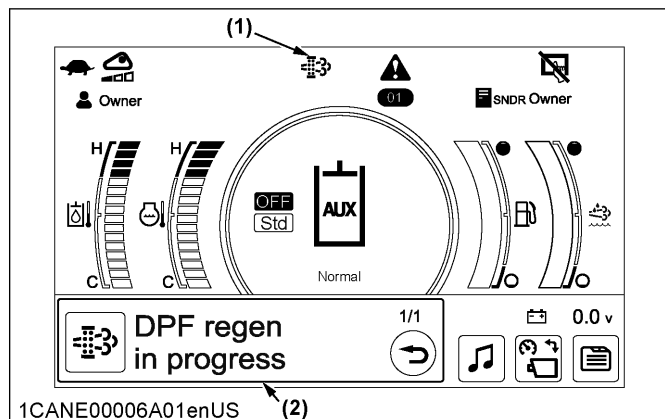
If the battery-charge-warning-indicator stays on with the engine running, stop the engine and check the fan belt.



(1) Battery charge warning indicator

19. Diesel-particulate-filter (DPF) regeneration indicator

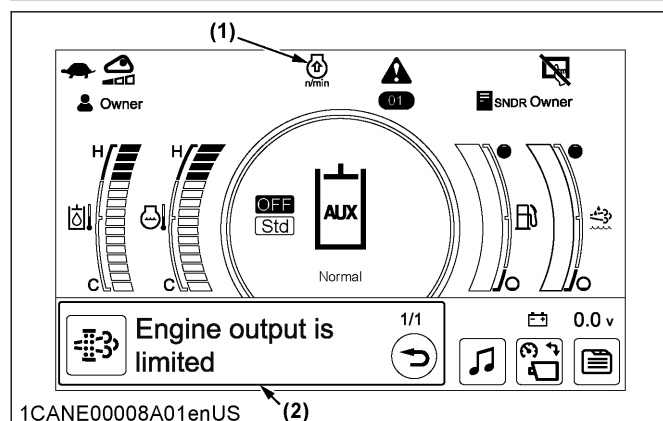
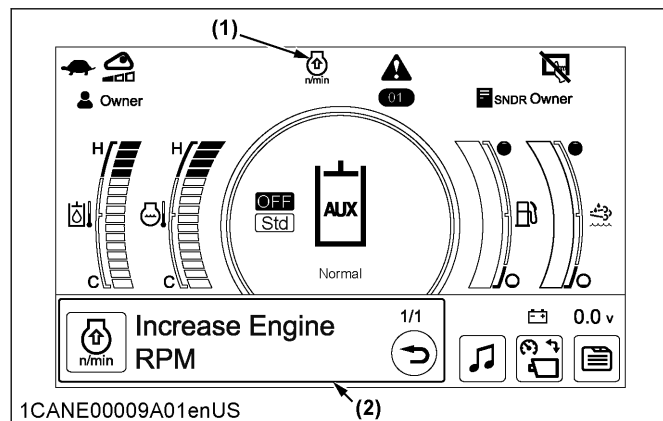
As PM (particulate-matter) build up inside the DPF, the DPF regeneration cycle starts automatically to burn away PM. During DPF regeneration, the DPF-regeneration-indicator lights up and stays on, the message “DPF regen in progress” or “Engine output is limited” appears, and the beep tone keeps sounding to warn the operator.



(1) DPF regeneration indicator (2) Message

20. Engine rev up indicator

If the engine rpm is too low to start the DPF regeneration, the engine-rev-up-indicator lights up, and the message “Increase Engine RPM” or “Engine output is limited” appears. In case that the engine-rev-up-indicator lights up, and the message “Increase Engine RPM” or “Engine output is limited” appears, rev up the engine until the engine-rev-up-indicator and the message go out, the DPF regeneration will automatically start.



(1) Engine rev up indicator (2) Message

21. CCV system freezing warning indicator

! WARNING

To avoid personal injury:

- Do not remove the engine oil dipstick immediately after the warning lamp has come on. Allow engine to cool sufficiently before removing the engine oil dipstick. Otherwise the hot engine oil may spout and make burn.

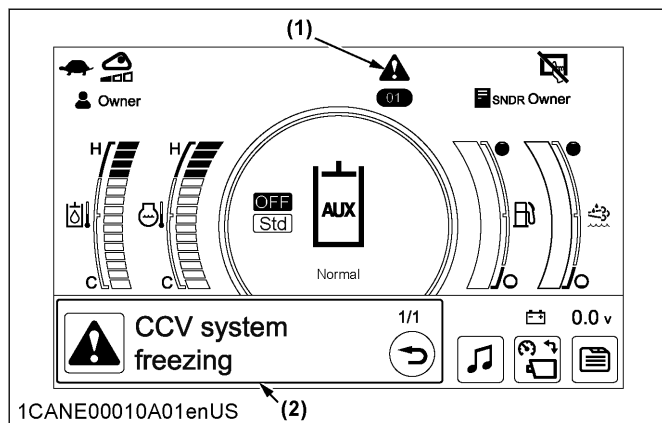
If the CCV pipe freezes, the master warning indicator starts blinking, the message “Engine system error” appears on the instrument panel, and the buzzer starts sounding continuously. If you continue running the engine, the message “CCV system freezing” appears and the engine performance is limited. In such case,

stop the engine and contact your local Kubota dealer immediately.

(See LIST OF SCREEN on page 225)

IMPORTANT :

- Before and after the cold season, remove the CCV internal pressure switch cover and check the terminals, CCV internal pressure switch and others. If any of them is found corroded, do not use the machine and contact your local Kubota dealer for repair request.
- The operator shall stop the engine immediately. Otherwise the engine oil may spout and in the worst case the engine is damaged then needs to be replaced.

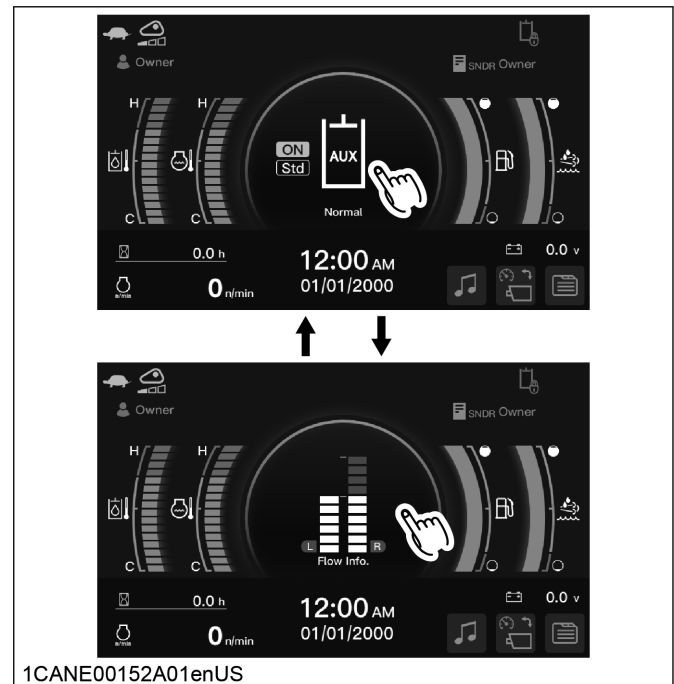


(1) Master warning indicator (2) Error message

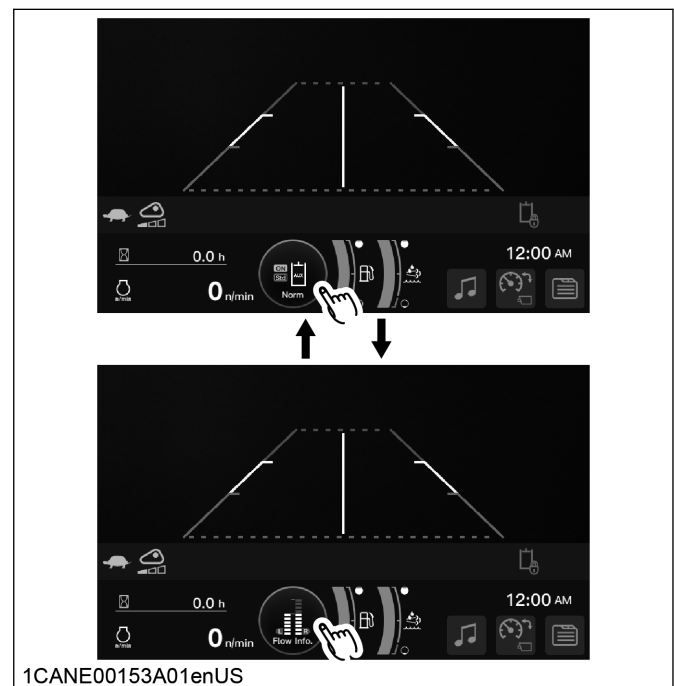
22. AUX volume

Touch the AUX icon in the center of the screen to check the currently selected AUX volume.

Home screen



Rearview camera screen



NOTE :

- Checking the volume is possible, regardless of whether the AUX is ON or OFF.
- See Setting the AUX on page 54 for the AUX settings.

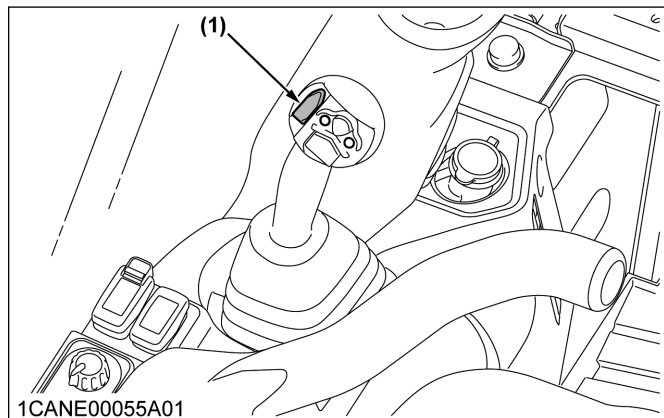
23. Ride control indicator (option)

WARNING

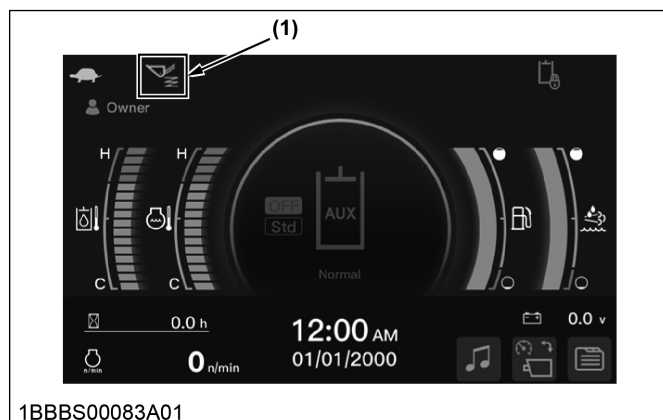
To avoid personal injury or death:

- Do not jack up the machine with the ride control function ON, as this will cause the lift arm cylinders to extend and the machine to gradually lower.

While the ride control mode is turned on, the "" mark on the instrument panel stays on.



(1) Ride control switch



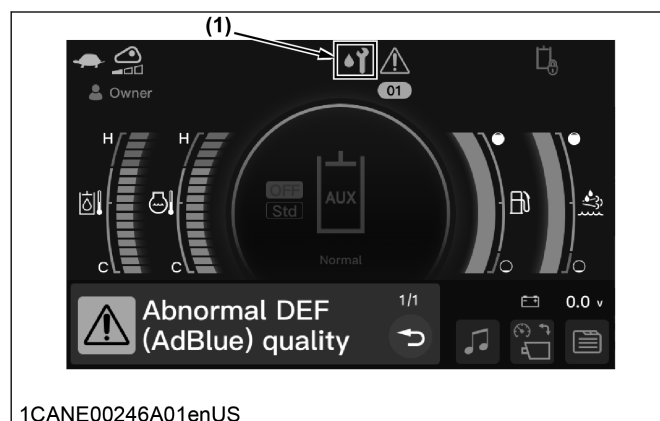
(1) Ride control indicator

NOTE :

- This function is OFF immediately after the engine starts.
- When the ride control function is turned on, the lift arm lowers slightly depending on the bucket load.

24. DEF (AdBlue) quality warning indicator

This indicator serves to indicate that the quality of DEF (AdBlue) is not as specified. If this indicator lights up, check the error code onscreen and follow the instructions given in NAVIGATION SCREENS on page 225.



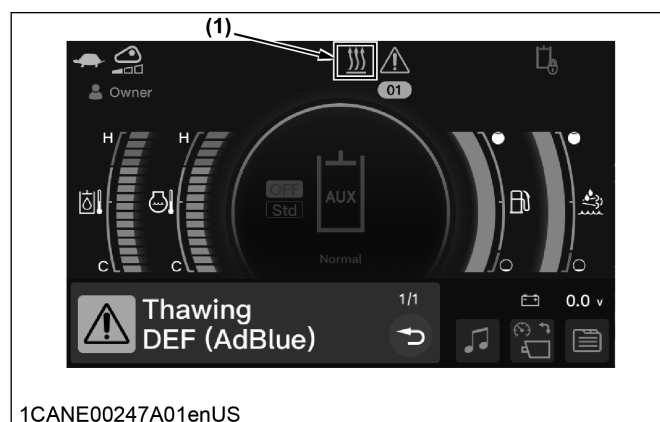
(1) DEF (AdBlue) quality warning indicator

25. Thawing DEF (AdBlue) indicator

This indicator serves to indicate that frozen DEF (AdBlue) is being thawed. DEF (AdBlue) freezes below -11 °C, but this does not affect the start-up of the engine. The DEF (AdBlue) is automatically thawed while the engine is running.

While thawing, output may be limited to protect the SCR system.

(See Precautions when using in cold regions on page 138)

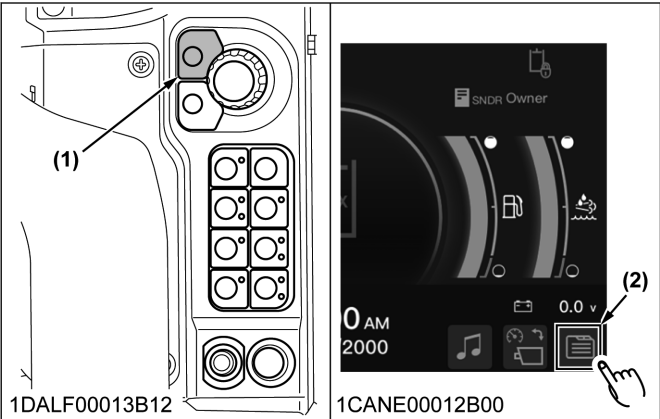


(1) Thawing DEF (AdBlue) indicator

MACHINE SETTING

1. Vital display function

- Press the home switch or touch the menu icon to make the menu bar appear on-screen.



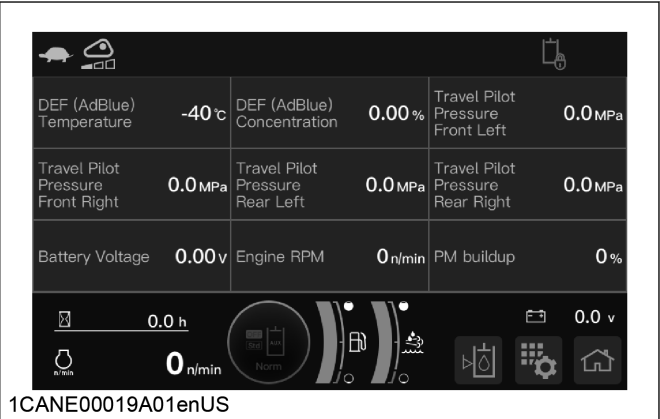
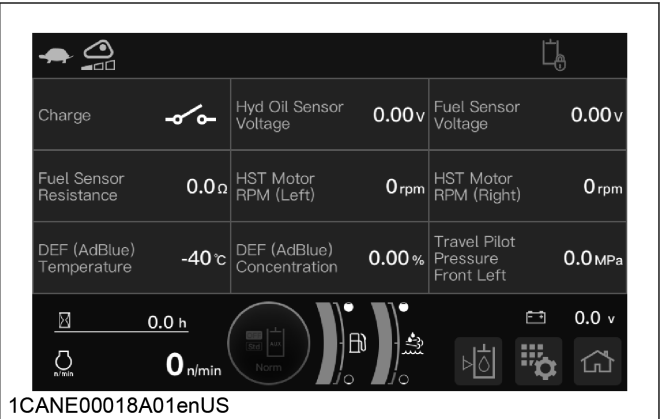
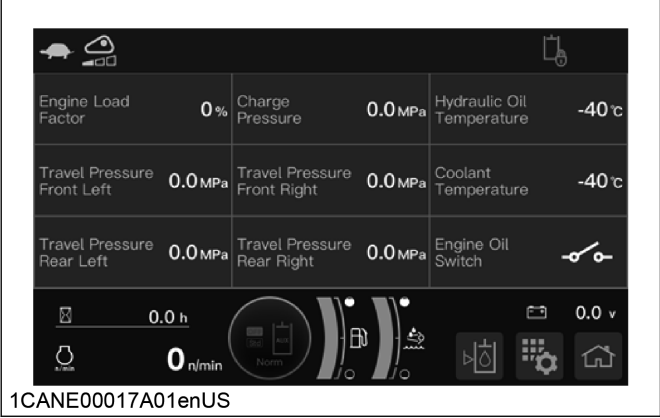
(1) Home switch

(2) Menu icon

2. Rotate the jog dial to select the icon **[Vital]** and press the jog dial switch.
For touch operation, touch the icon **[Vital]**.
The vital screen appears.



Figure of the vital screen

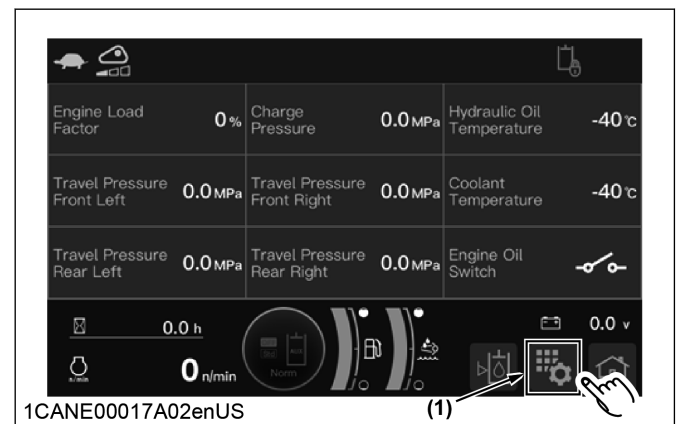


Vital screen shows the following items.

Item	Unit	Unit conversion	Remarks
Engine Load Factor	%	-	When the engine is stopped, "0 %" is displayed.
Charge Pressure	psi	psi ↔ MPa	-
Hydraulic Oil Temperature	°F	°F ↔ °C	-
Travel Pressure Front Left	psi	psi ↔ MPa	-
Travel Pressure Front Right	psi	psi ↔ MPa	-
Travel Pressure Rear Left	psi	psi ↔ MPa	-
Travel Pressure Rear Right	psi	psi ↔ MPa	-
Coolant Temperature	°F	°F ↔ °C	-
Engine Oil Switch	-	-	When the engine is running, the icon  is displayed. When the engine is stopped, the icon  is displayed.
Charge	-	-	When the engine is running, the icon  is displayed. When the engine is stopped, the icon  is displayed.
Hyd Oil Sensor Voltage	V	-	-
Fuel Sensor Voltage	V	-	-
Fuel Sensor Resistance	Ω	-	-
HST Motor RPM (Left)	rpm	-	-
HST Motor RPM (Right)	rpm	-	-
DEF (AdBlue) Temperature	°F	°F ↔ °C	-
DEF (AdBlue) Concentration	%	-	-
Travel Pilot Pressure Front Left	psi	psi ↔ MPa	-
Travel Pilot Pressure Front Right	psi	psi ↔ MPa	-
Travel Pilot Pressure Rear Left	psi	psi ↔ MPa	-
Travel Pilot Pressure Rear Right	psi	psi ↔ MPa	-
Battery Voltage	V	-	Battery voltage ±0.5 V
Engine RPM	n/min	-	When the engine is stopped, "0 n/min" is displayed.
PM buildup	%	-	PM buildup displays the amount of the PM accumulated in the DPF muffler.

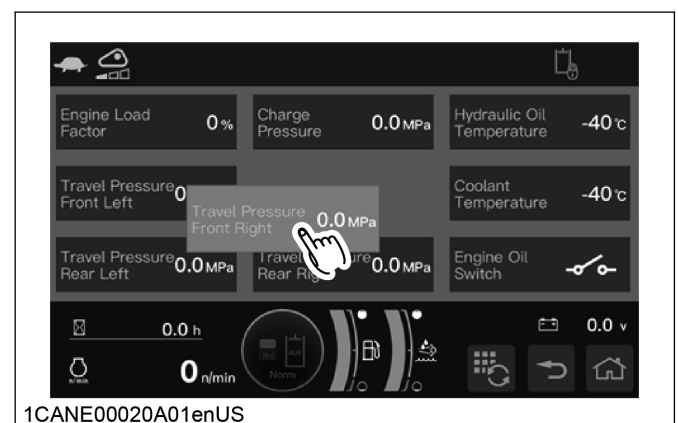
Sorting the items of the vital screen

- Rotate the jog dial to select the item sort button and press the jog dial switch.
For touch operation, touch the item sort button.



- (1) Item sort button

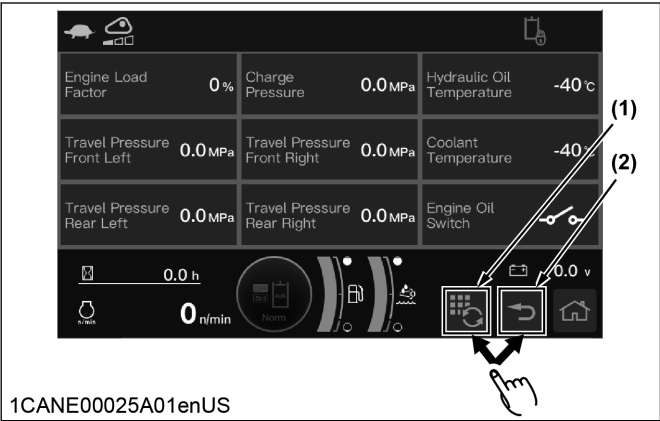
- Rotate the jog dial to select the item you wish to sort, and press the jog dial switch.
For touch operation, hold down the item you wish to sort.



- Rotate the jog dial to move the item to the required position.
For touch operation, touch the point where you want to move the item.

NOTE :

- Rotate the jog dial to the default sort button and press the jog dial switch to reset the order of displayed items to factory default.
For touch operation, touch the default sort button.
- Rotate the jog dial to the return button and press the jog dial switch to finish sorting the displayed items.
For touch operation, touch the return button.



(1) Default sort button (2) Return button

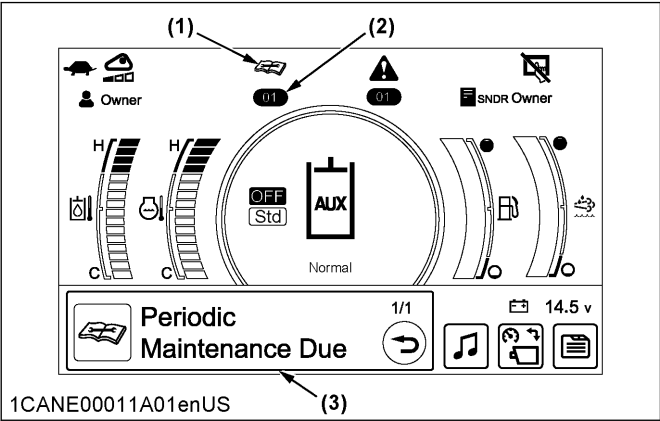
For touch operation, touch the icon **[Maint.]**.
The list of the periodic check items appears.



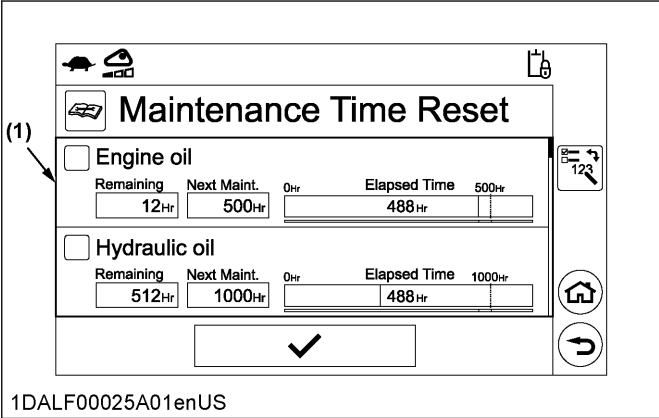
(1) Icon

2. Periodic check

The periodic check indicator lights up and the following message appears on the display 10 hours before a periodic check.
Below the indicator shows the number of items required for maintenance.

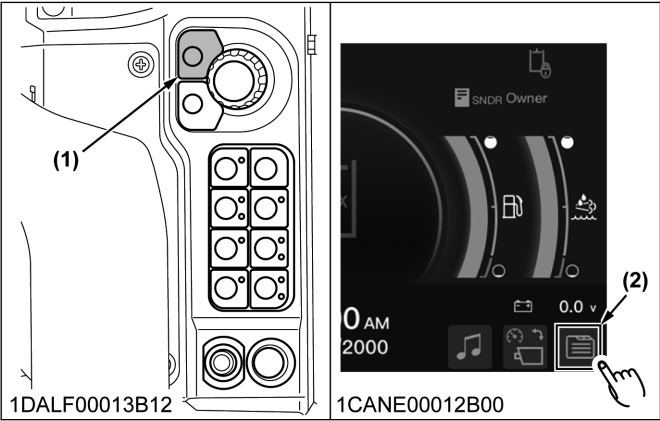


(1) Periodic check indicator (2) Number of items (3) Message



(1) List of periodic check items

1. Press the home switch or touch the menu icon to make the menu bar appear on-screen.



(1) Home switch (2) Menu icon

2. Rotate the jog dial to select the icon **[Maint.]** and press the jog dial switch.

3. Perform the servicing as listed.
4. After servicing, rotate the jog dial to the right or to the left to select the item you performed and press the jog dial switch.
For touch operation, touch the item you performed.
5. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch. For touch operation, touch the icon **[✓]**.
The time associated with inspection such as **[Next Maint.]** in the list of periodic check items is reset.

IMPORTANT :

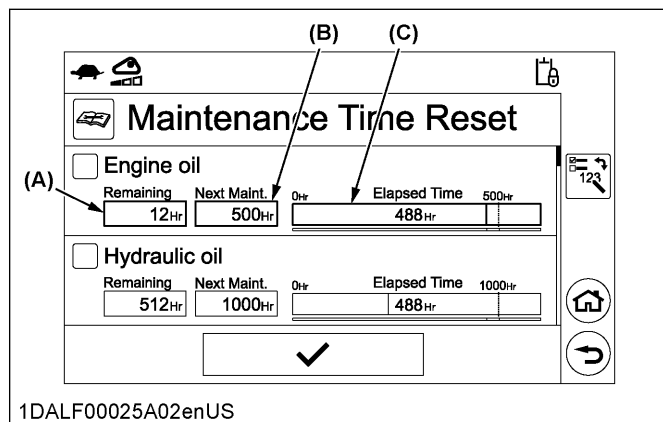
- Press the start switch to switch the mode between “OFF” and “ACCESSORY” 10 times or more, and then the list of periodic check items disappears.
- When the periodic check interval has passed, the message “Periodic check notification” shows up. Immediately perform the specified servicing.

NOTE :

- If you touch the periodic check indicator on the home screen, the list of periodic check items appears.

2.1 How to read the list of the periodic check items

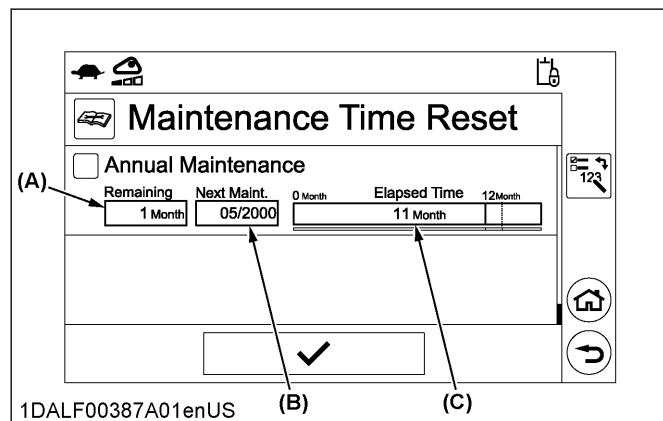
Periodic check items other than annual maintenance



No.	Item	Description
(A)	[Remaining]	[Remaining] displays the remaining hour meter time until the next maintenance.
(B)	[Next Maint.]	[Next Maint.] displays the hour meter time for the next maintenance.
(C)	[Elapsed Time]	[Elapsed Time] displays the elapsed hour meter time since the last maintenance.

- If there are 10 or more hours until the next maintenance, a blue bar is indicated in the elapsed time displayed area.
- If there are less than 10 hours until the next maintenance, a yellow bar is indicated in the elapsed time displayed area. Because the maintenance time is approaching, perform servicing as listed.
- When the maintenance time has passed, a red bar is indicated in the elapsed time displayed area. If 20 or more hours have passed since the maintenance time, the length of the red bar will not change. Because the maintenance time has passed, perform servicing as listed immediately.

Periodic check items for annual maintenance



No.	Item	Description
(A)	[Remaining]	[Remaining] displays the remaining months until the next maintenance.
(B)	[Next Maint.]	[Next Maint.] displays the year and month for the next maintenance.
(C)	[Elapsed Time]	[Elapsed Time] displays the elapsed months since the last maintenance.

- If there is 1 or more month until the next maintenance, a blue bar is indicated in the elapsed time displayed area.
- If there is less than 1 month until the next maintenance, a yellow bar is indicated in the elapsed time displayed area. Because the maintenance time is approaching, perform servicing as listed.
- When the maintenance time has passed, a red bar is indicated in the elapsed time displayed area. If 2 or more months have passed since the maintenance time, the length of the bar will not change. Because the maintenance time has passed, perform servicing as listed immediately.

2.2 Service hour meter

When the hour meter reaches the hours circled in the following maintenance table, a message appears.

No.	Check points		Measures	Hour meter indicator						Intervals	
				50	250	500	1000	1500	2000		3000
1	Engine oil		change		○	○	○	○	○	○	every 250 hrs
2	Hydraulic oil		change				○		○	○	every 1000 hrs
3	Air cleaner element	Outer element	replace		○	○	○	○	○	○	every 250 hrs
		Inner element	replace		○	○	○	○	○	○	every 250 hrs
4	Engine oil filter cartridge		replace		○	○	○	○	○	○	every 250 hrs
5	Water separator filter element		replace			○	○	○	○	○	every 500 hrs
6	Fuel filter cartridge		replace			○	○	○	○	○	every 500 hrs
7	Travel motor gear oil		change		⊙	○	○	○	○	○	every 500 hrs
8	Hydraulic return filter		replace		⊙	○	○	○	○	○	every 500 hrs
9	Hydraulic breather filter		replace			○	○	○	○	○	every 500 hrs
10	Hydraulic oil filter		replace	⊙		○	○	○	○	○	every 500 hrs
11	Hydraulic suction filter		replace				○		○	○	every 1000 hrs
12	CCV filter		replace					○		○	every 1500 hrs
13	Air filter for AC		replace			○	○	○	○	○	every 500 hrs
14	DEF (AdBlue) pump filter		replace							○	every 3000 hrs
15	Front window roller		replace				○		○	○	every 1000 hrs

IMPORTANT :

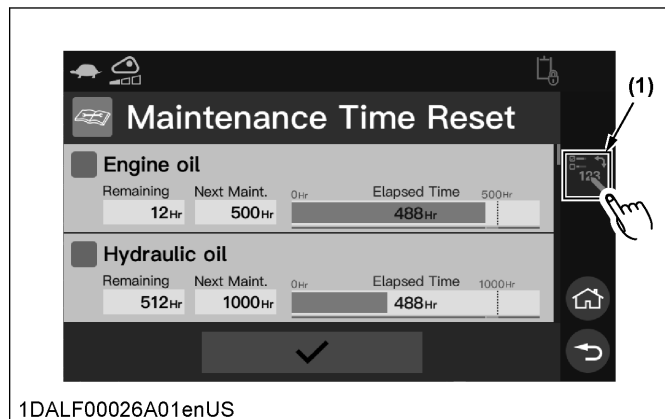
- Perform the job indicated by ◎ at the first operation.
- The factory default setting is shown in the maintenance table.
- The message is displayed in hours of the hour meter by adding the intervals after resetting the inspection time in the list of periodic check items.

2.3 Changing the maintenance interval

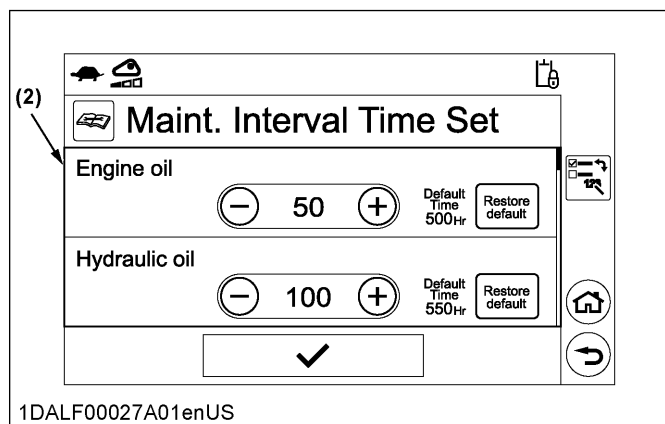
IMPORTANT :

- The maintenance interval for each item cannot be set to intervals longer than the factory default settings.

- Open the list of the periodic check items.
- Rotate the jog dial to select the display selector icon and press the jog dial switch. For touch operation, touch the display selector icon.
The maintenance interval setting screen appears.



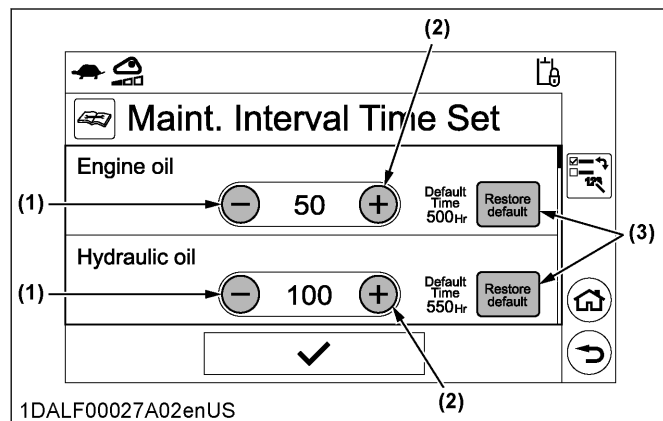
(1) Display selector icon



(2) Maintenance interval setting screen

- Select the button with jog dial and press the jog dial switch, or touch the button to change the maintenance interval.

Button	Function
[-]	Decrease the maintenance interval.
[+]	Increase the maintenance interval.
[Restore Default]	Return the maintenance interval to the factory default settings.



(1) Decrease button

(3) Restore button

(2) Increase button

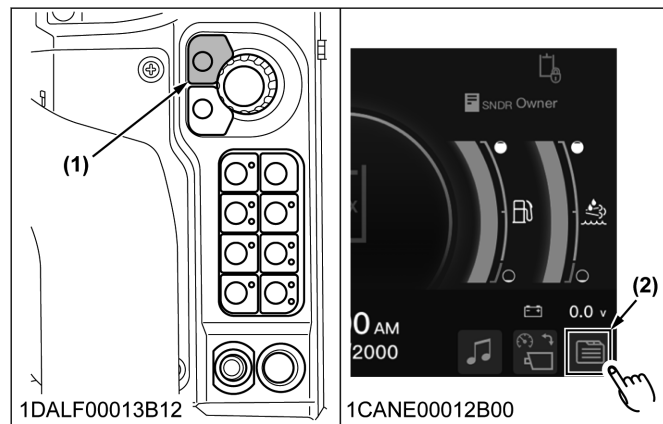
- Rotate the jog dial to select the icon [✓], and press the jog dial switch. For touch operation, touch the icon [✓].

The maintenance interval setting is activated.

3. Log record

The log record helps you check the last 3 months operating record of the machine. Take the following steps:

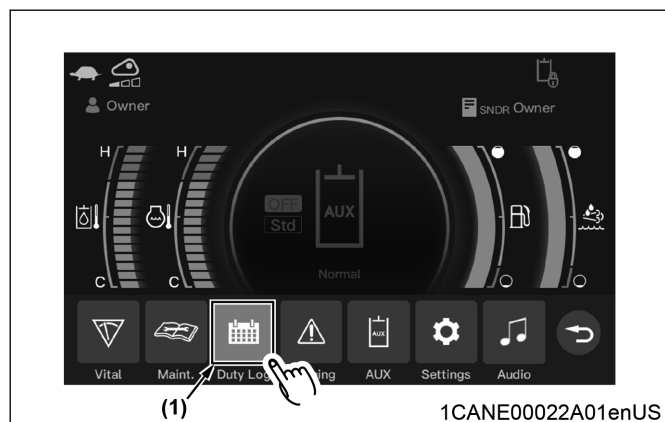
- Press the home switch or touch the menu icon to make the menu bar appear on-screen.



(1) Home switch

(2) Menu icon

- Rotate the jog dial to select the icon **[Duty Log]**, and press the jog dial switch.
For touch operation, touch the icon **[Duty Log]**.
The log record (the machine's operating day and operating hours) for the current month appears.



(1) Icon

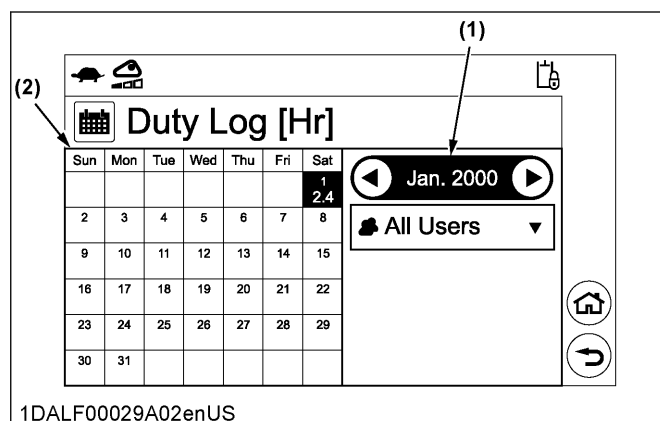


(1) Log record

- To view records from previous months, rotate the jog dial to select the year and month display area, press the jog dial switch, rotate the jog dial to select the desired month, and press the jog dial switch to confirm the selection.
For touch operation, touch **[◀]** or **[▶]** of the year and month display area, or swipe the calendar display area to left or right.

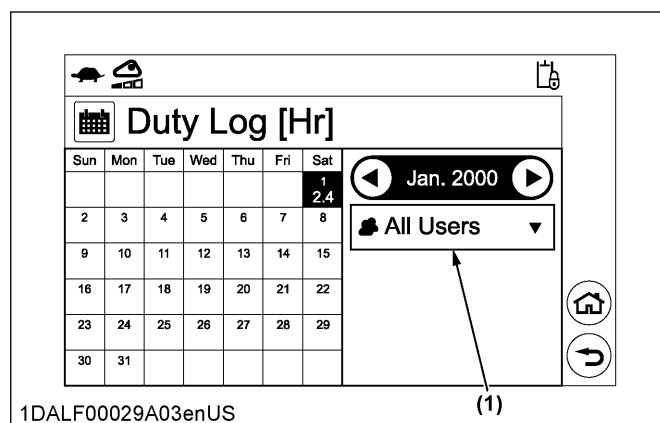
NOTE :

- It is possible to view records from the last 3 months (up to 90 days ago).



(1) Year and month display area (2) Calendar display area

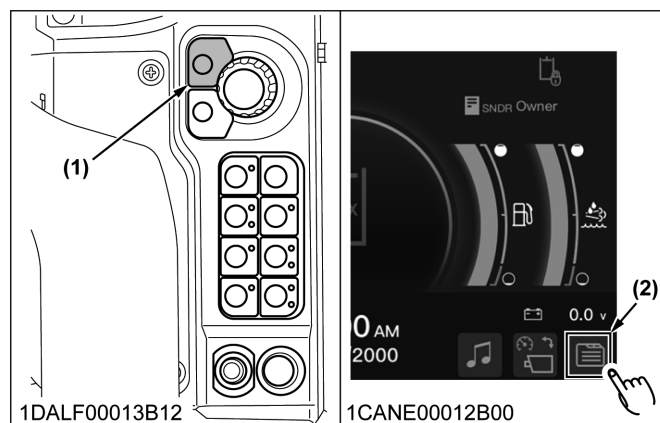
- To view records from other users, rotate the jog dial to select the user display area, press the jog dial switch, rotate the jog dial to select the desired user, and press the jog dial switch to confirm the selection.
For touch operation, touch **[▼]** of the user display area, and touch the desired user.



(1) User display area

4. Checking error messages

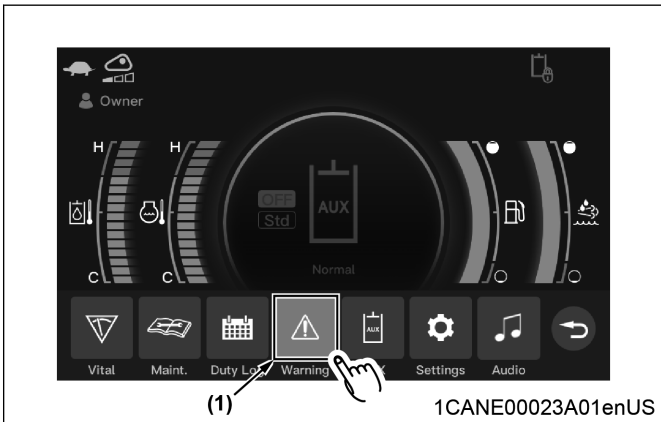
- Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

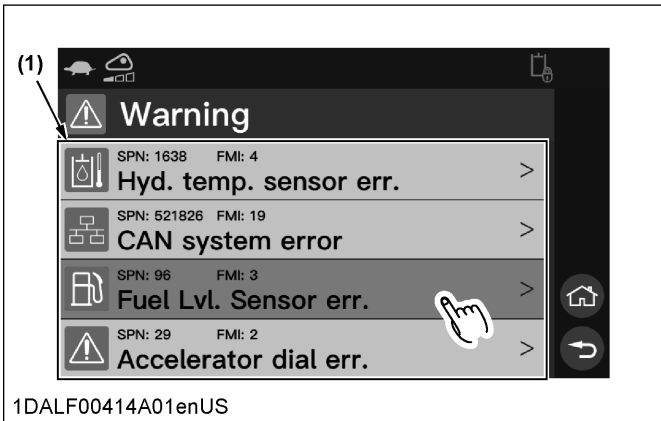
(2) Menu icon

2. Rotate the jog dial to select the icon **[Warning]**, and press the jog dial switch.
For touch operation, touch the icon **[Warning]**.
The list of error messages appears on the display.



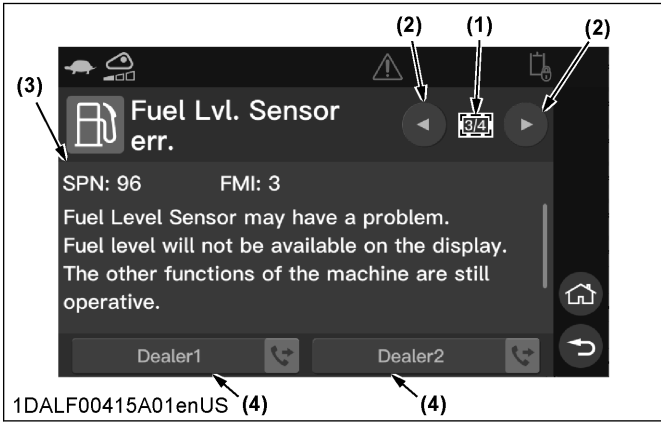
(1) Icon

3. Rotate the jog dial to select the desired item, and press the jog dial switch.
For touch operation, touch the error message.
A detailed message appears on the display.



(1) List of error messages

Example of detailed message



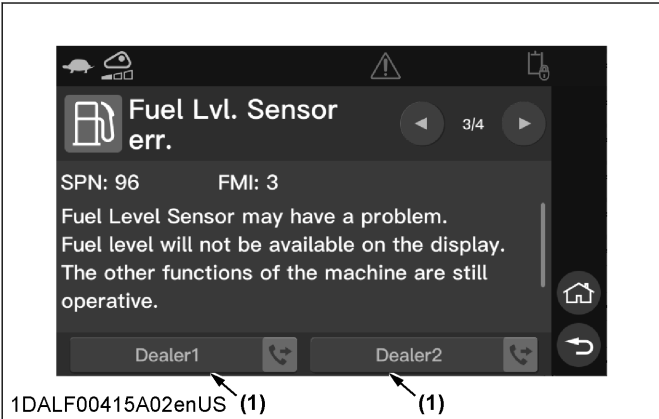
(1)	Error index/total number of errors	Displays the current index number of the error being displayed and the total number of errors that have occurred.
(2)	Change Display Error button	[◀] displays one previous error. [▶] displays the next error.
(3)	Error detail display	Displays the detail information of the current error. Swipe up or down to advance or return the display.
(4)	Phone call button	Makes a call to the registered phone number.

The phone call button is displayed when there is an error that has to be notified to the dealer. If the phone call button is selected, the “Calling” pop-up is displayed, and selecting **[Call]** dials the displayed phone number.

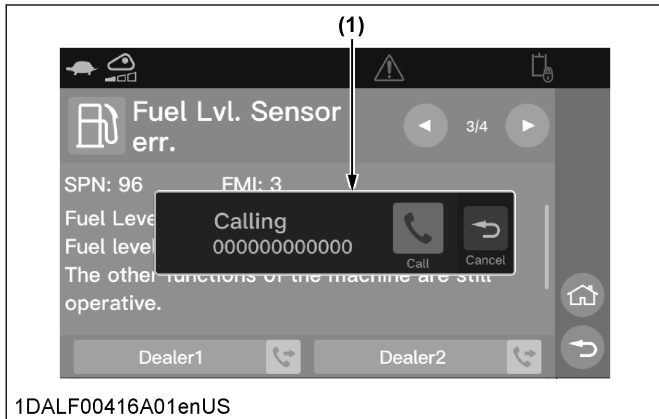
IMPORTANT :

- The phone call button may not be displayed depending on the error message.
- If both the dealer name and phone number are not registered, the phone call button will not be displayed.
- The phone call button is grayed out and unavailable in the following cases.
 - When the phone number is not registered.
 - When the machine and the user's mobile phone are not connected via Bluetooth.

(See Setting the dealer phone number on page 98)



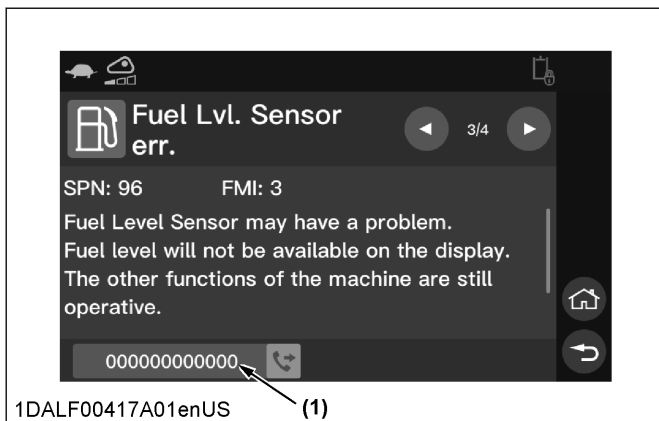
(1) Phone call button



(1) Pop-up

NOTE :

- If the phone number is registered and dealer name is not registered, the phone number is displayed in the phone call button.



(1) Phone number

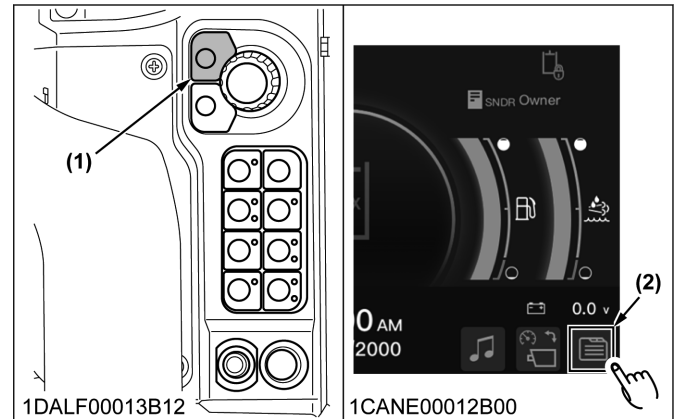
5. Setting the AUX

The following options are available in the AUX settings.

- Selecting the AUX mode
- Setting the AUX icon
- Setting the AUX name
- Setting the AUX flow rate [High-Flow model only]
- Adding the AUX mode
- Deleting the AUX mode
- Deleting all AUX modes

5.1 Selecting the AUX mode

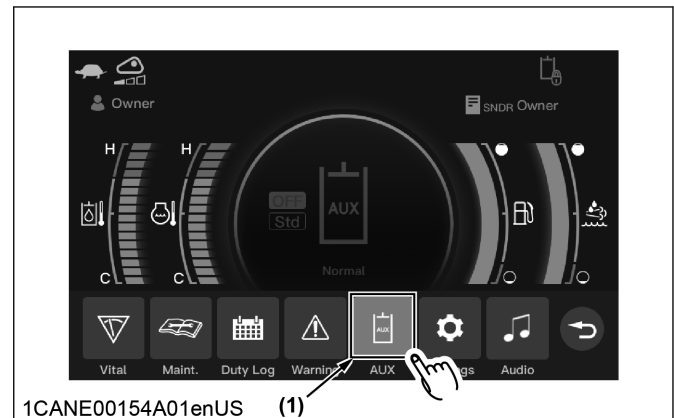
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

(2) Menu icon

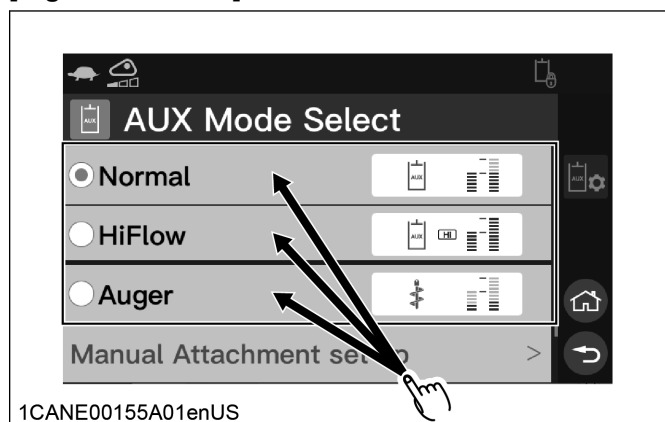
2. Rotate the jog dial to select the icon **[AUX]**, and press the jog dial switch.
For touch operation, touch the icon **[AUX]**.



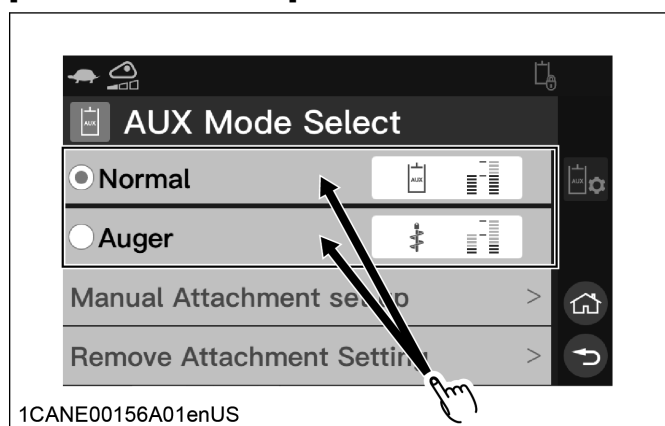
(1) Icon

3. Rotate the jog dial to select the desired AUX mode, and press the jog dial switch.
For touch operation, touch the desired AUX mode.

[High-Flow model]

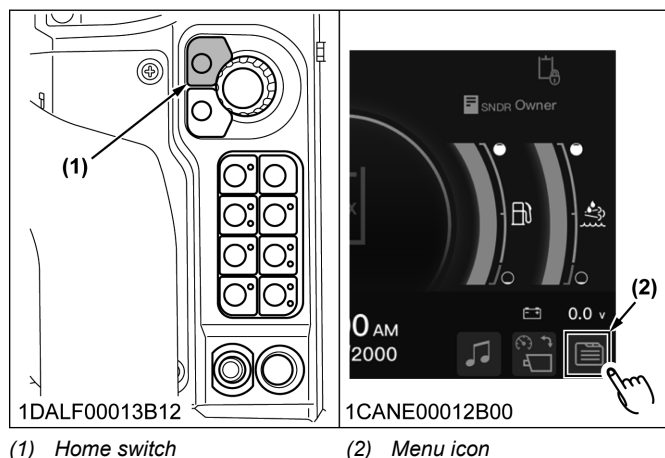


[Standard-Flow model]

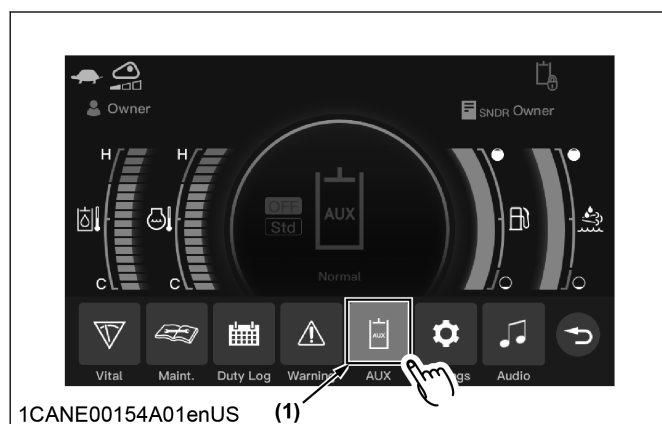


5.2 Setting the AUX icon

1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



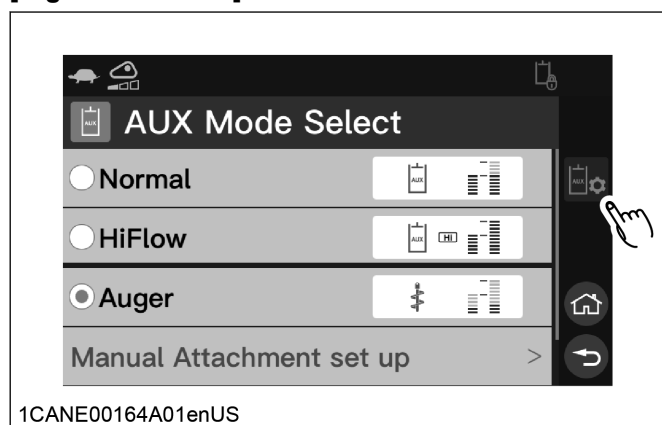
2. Rotate the jog dial to select the icon **[AUX]**, and press the jog dial switch.
For touch operation, touch the icon **[AUX]**.



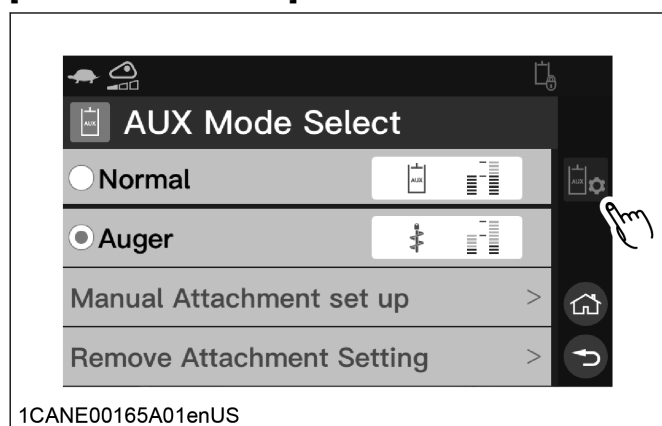
(1) Icon

3. Rotate the jog dial to select the AUX Edit icon, and press the jog dial switch.
For touch operation, touch the AUX Edit icon.

[High-Flow model]

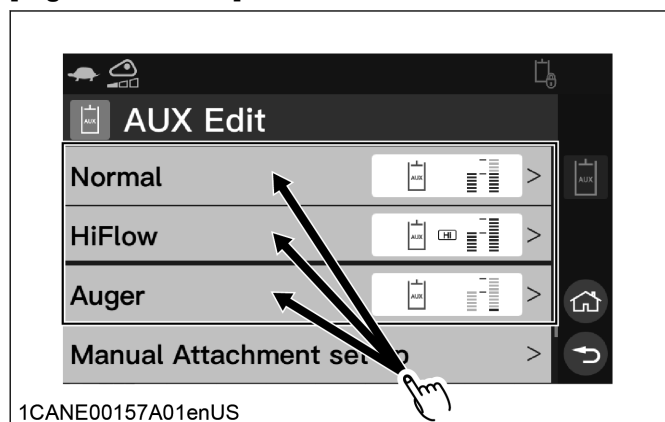


[Standard-Flow model]

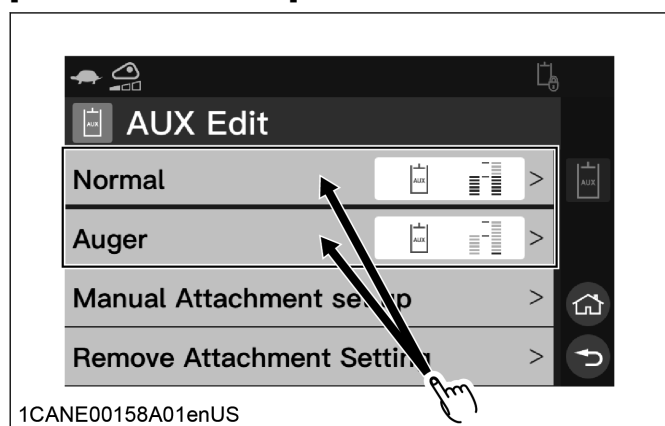


4. Rotate the jog dial to select the desired AUX mode, and press the jog dial switch.
For touch operation, touch the desired AUX mode.

[High-Flow model]

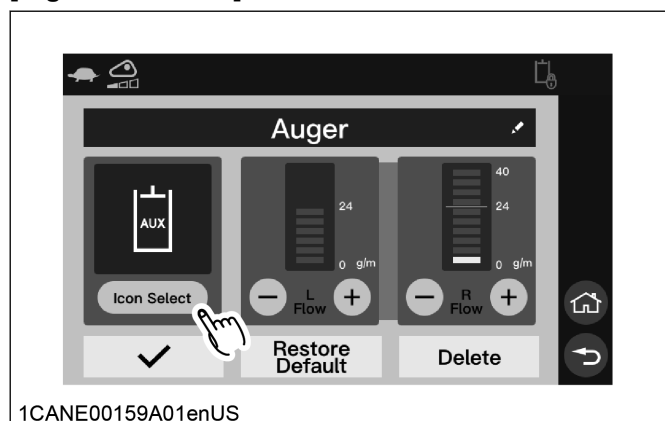


[Standard-Flow model]

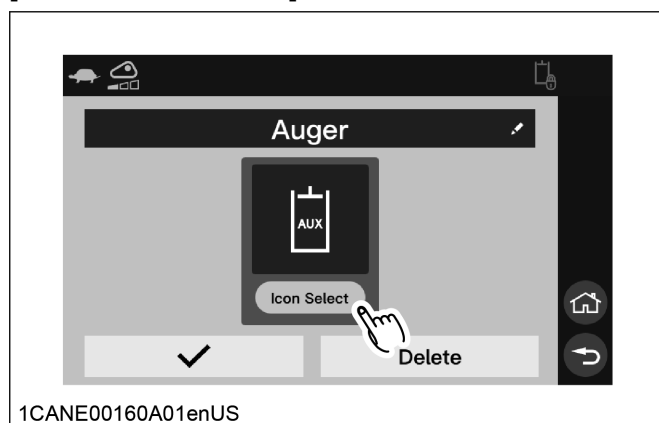


5. Rotate the jog dial to select **[Icon Select]**, and press the jog dial switch.
For touch operation, touch **[Icon Select]**.

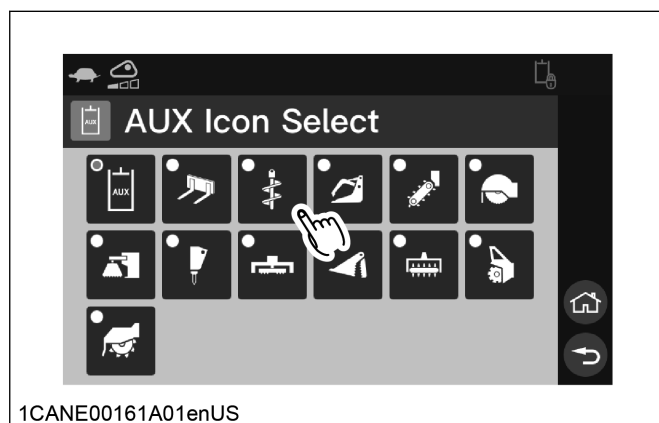
[High-Flow model]



[Standard-Flow model]



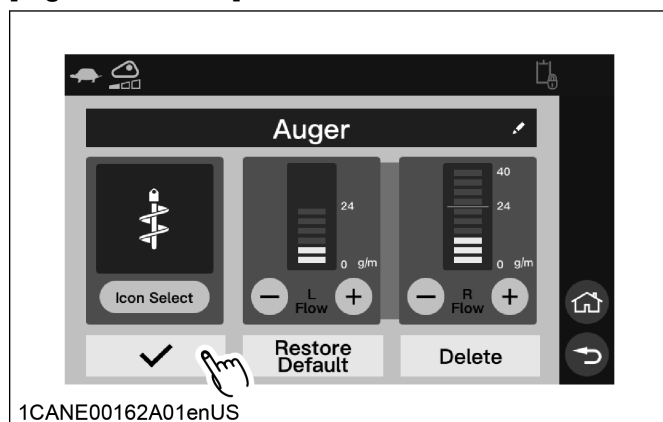
6. Rotate the jog dial to select the desired AUX icon, and press the jog dial switch.
For touch operation, touch the desired AUX icon.



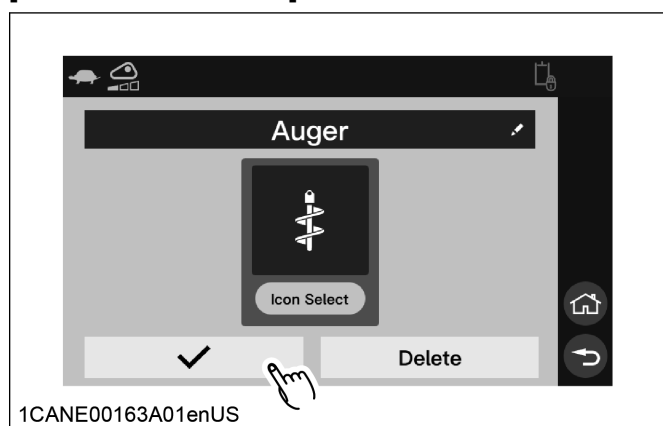
7. Rotate the jog dial to select the icon [✓], and press the jog dial switch.

For touch operation, touch the icon [✓].

[High-Flow model]

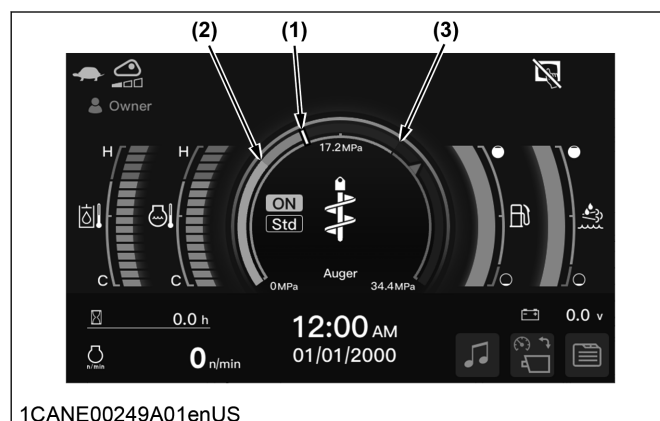


[Standard-Flow model]



NOTE :

- To retain the previous setting, press the return switch.
For touch operation, touch the return button.
- When the icon is selected, the hydraulic oil output is controlled to reduce vibrations during the start and stop of the attachment operation.
- [High-Flow model only]
 - Selecting an icon will show the flow rate associated with the icon.
- [Male port only]
 - When the icon is selected and the AUX flow rate is adjusted, the standard pressure range for the corresponding attachment is displayed on the meter screen. Additionally, the pressure being applied to the attachment can be checked simultaneously. The relationship between each icon and its standard pressure range is as follows.



- (1) Attachment pressure
(2) Low pressure boundary
(3) High pressure boundary

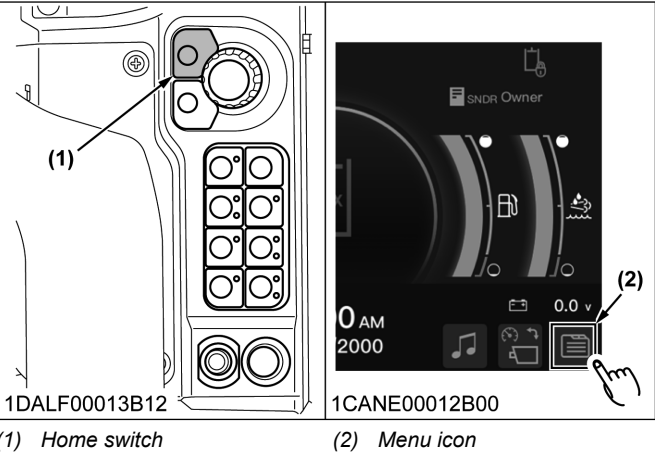
Icon		Low pressure	High pressure
AUX default		0.0 MPa	34.5 MPa
Pallet Forks		0.0 MPa	34.5 MPa
Auger		10.3 MPa	22.1 MPa
Grapple Bucket		0.0 MPa	34.5 MPa
Trencher		9.0 MPa	19.3 MPa
Angle Broom		10.3 MPa	20.7 MPa
Hopper Broom		10.3 MPa	20.7 MPa
Breaker		0.0 MPa	34.5 MPa
Skid Cutter		10.3 MPa	22.1 MPa
Combina- tion Bucket		0.0 MPa	34.5 MPa
Powered Rake		7.6 MPa	19.3 MPa
Mulcher		12.4 MPa	22.1 MPa

(Continued)

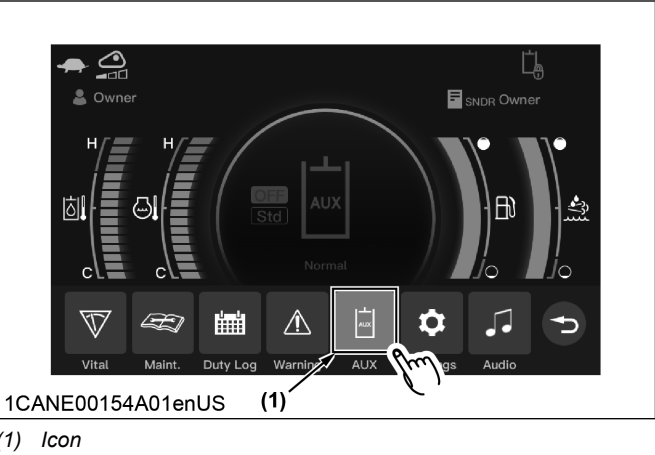
Icon		Low pressure	High pressure
Cold Planer		10.3 MPa	20.7 MPa

5.3 Setting the AUX name

- 1. Press the home switch or touch the menu icon to make the menu bar appear on the display.

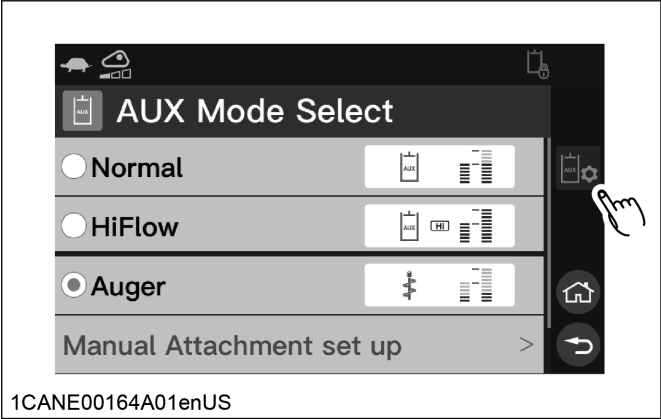


- 2. Rotate the jog dial to select the icon **[AUX]**, and press the jog dial switch.
For touch operation, touch the icon **[AUX]**.

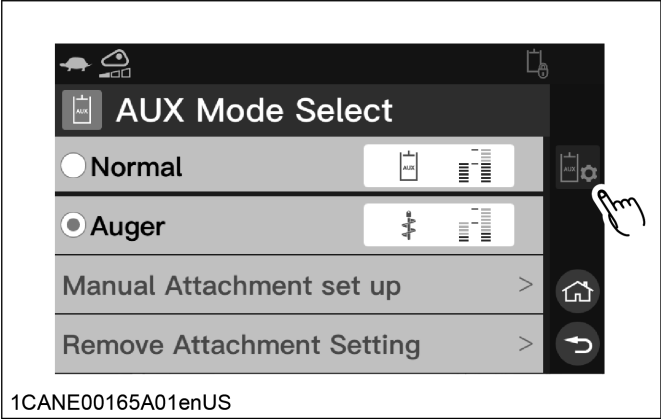


- 3. Rotate the jog dial to select the AUX Edit icon, and press the jog dial switch.
For touch operation, touch the AUX Edit icon.

[High-Flow model]

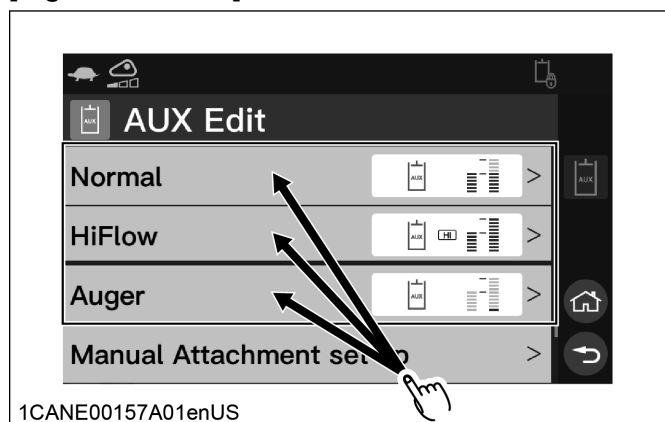


[Standard-Flow model]

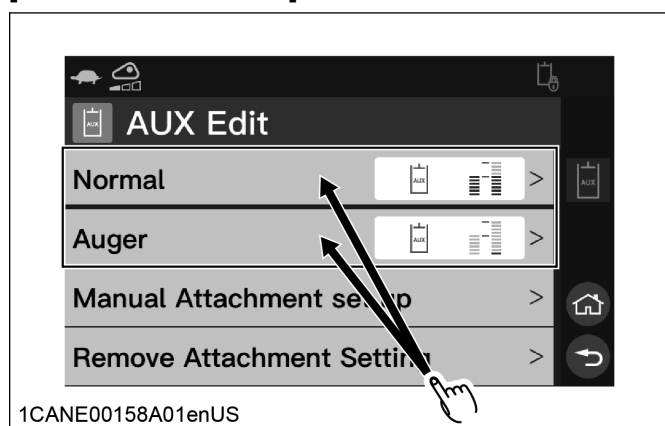


4. Rotate the jog dial to select the desired AUX mode, and press the jog dial switch.
For touch operation, touch the desired AUX mode.

[High-Flow model]

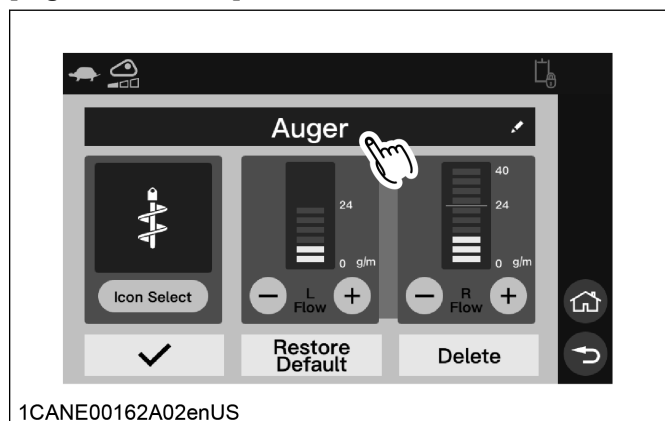


[Standard-Flow model]

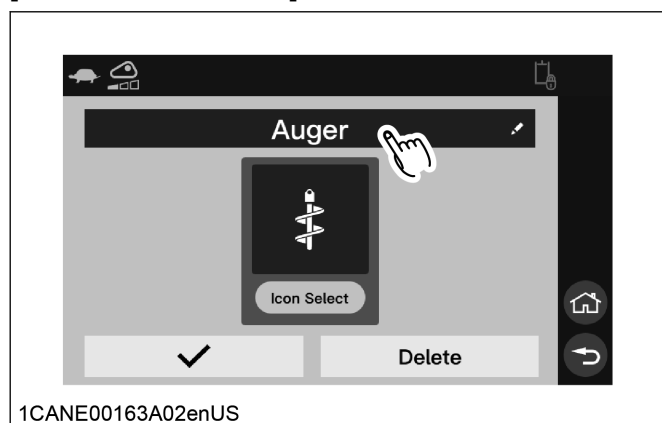


5. Rotate the jog dial to select the AUX name entry field, and press the jog dial switch.
For touch operation, touch the AUX name entry field.

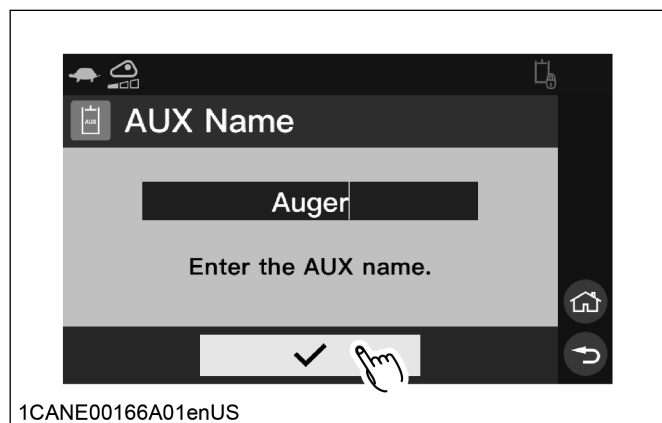
[High-Flow model]



[Standard-Flow model]



6. Rotate the jog dial to select the AUX name entry field, and press the jog dial switch. The keyboard appears on the screen.
For touch operation, touch the AUX name entry field.

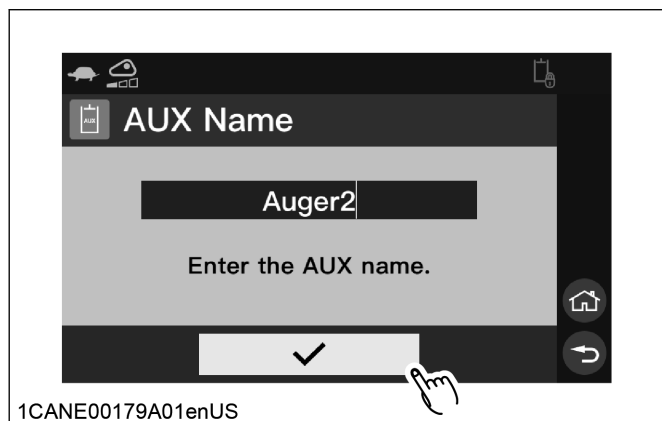


7. Rotate the jog dial left or right to select the characters you want to enter, and press the jog dial switch to enter the AUX name.
For touch operation, touch the characters you want to enter.

8. Rotate the jog dial to select the icon [↔], and press the jog dial switch.
For touch operation, touch the icon [↔].

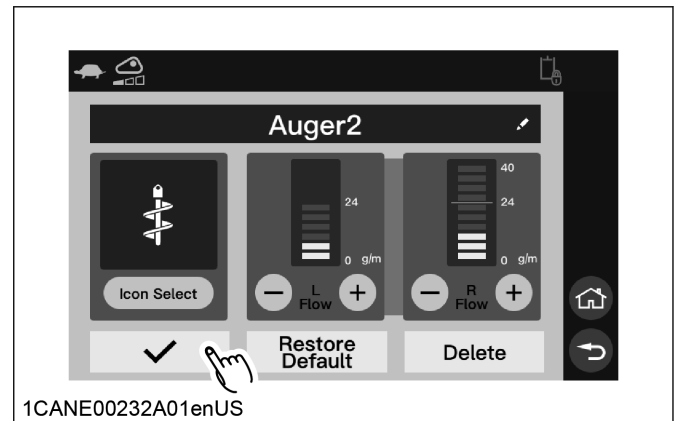


9. Rotate the jog dial to select the icon [✓], and press the jog dial switch to save the new settings.
For touch operation, touch the icon [✓].

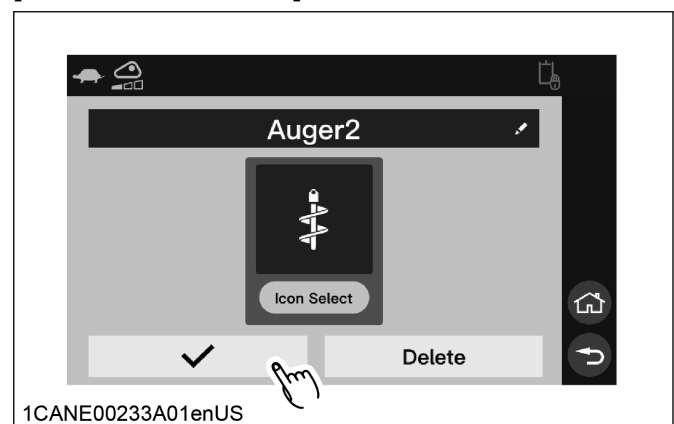


10. Rotate the jog dial to select the icon [✓], and press the jog dial switch to save the new settings.
For touch operation, touch the icon [✓].

[High-Flow model]

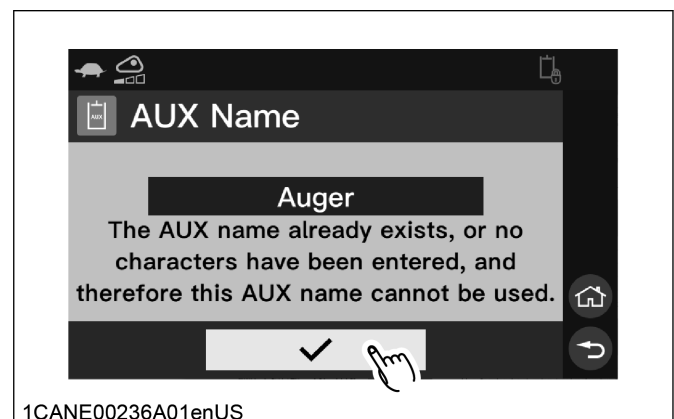


[Standard-Flow model]



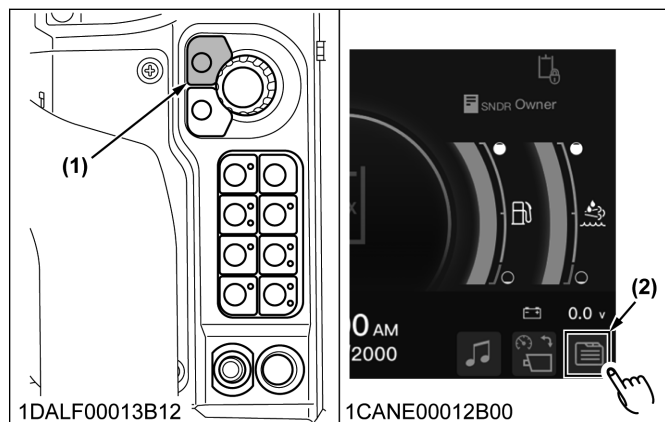
NOTE :

- To retain the previous setting, press the return switch.
For touch operation, touch the return button.
- You cannot set an AUX name that has already been registered. The following screen is displayed if you enter an already registered AUX name.



5.4 Setting the AUX flow rate [High-Flow model only]

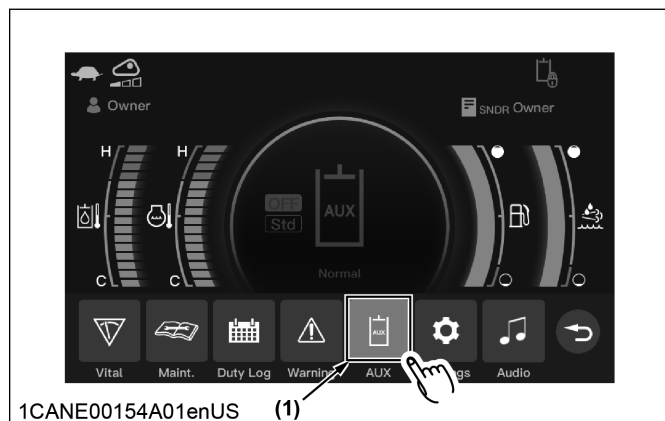
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

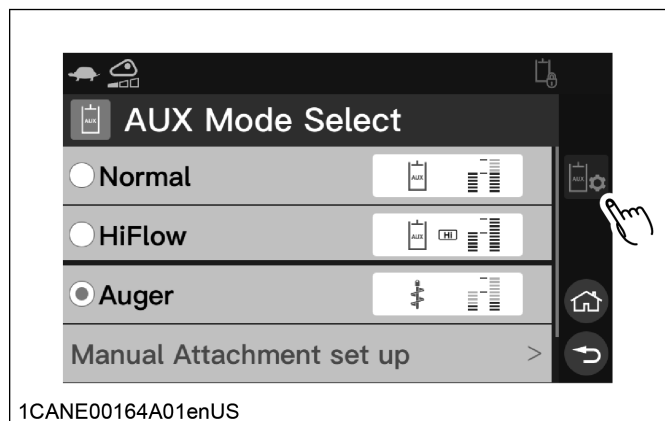
(2) Menu icon

2. Rotate the jog dial to select the icon **[AUX]**, and press the jog dial switch.
For touch operation, touch the icon **[AUX]**.



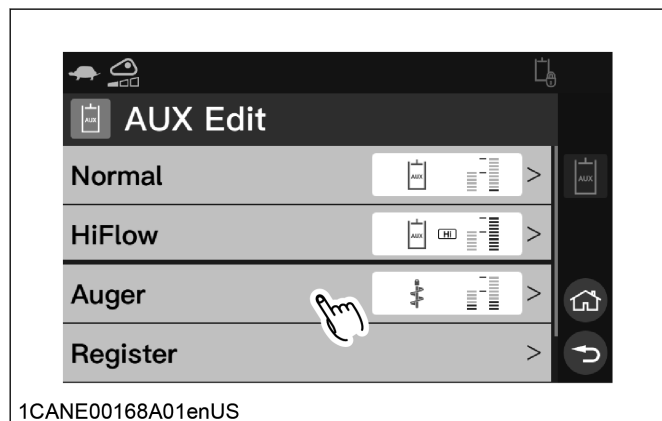
(1) Icon

3. Rotate the jog dial to select the AUX Edit icon, and press the jog dial switch.
For touch operation, touch the AUX Edit icon.

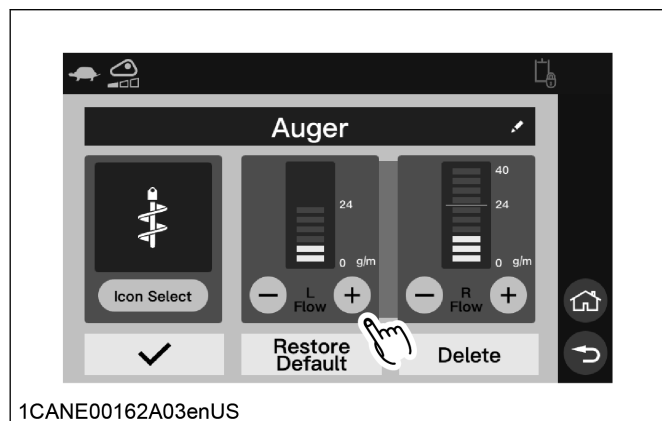


4. Rotate the jog dial to select the desired AUX mode, and press the jog dial switch.

For touch operation, touch the desired AUX mode.

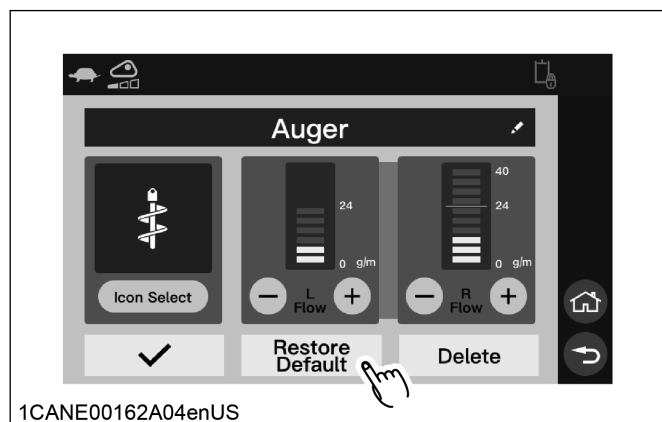


5. Rotate the jog dial to select the desired AUX flow rate (L or R), and press the jog dial switch.
Rotate the jog dial to change the flow rate setting, and press the jog dial switch.
For touch operation, touch the **[+]** or **[-]** icon of desired AUX flow rate (L or R).

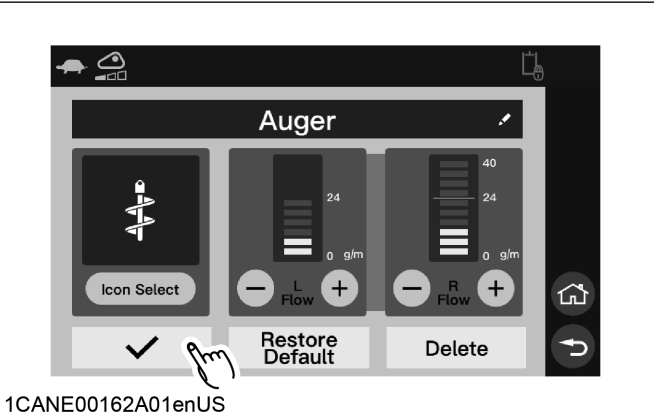


NOTE :

- Press the **[Restore Default]** button to restore to the default flow rate associated with the icon.



6. Rotate the jog dial to select the icon [✓], and press the jog dial switch to save the new settings.
For touch operation, touch the icon [✓].

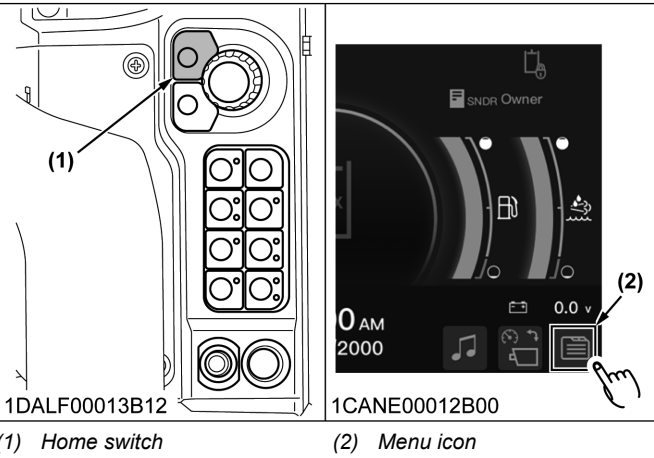


NOTE :

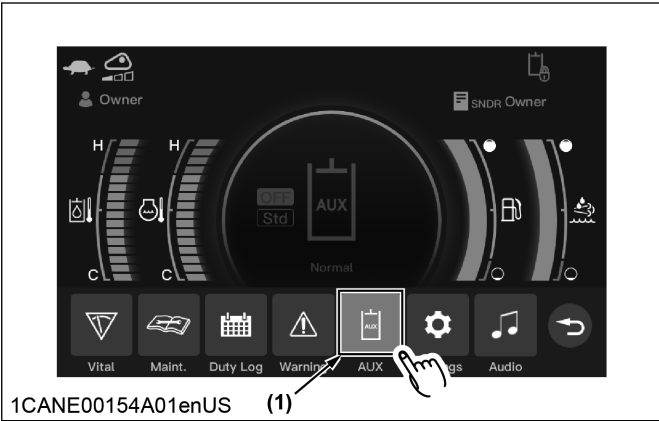
- To retain the previous setting, press the return switch.
For touch operation, touch the return button.

5.5 Adding the AUX mode

1. Press the home switch or touch the menu icon to make the menu bar appear on the display.

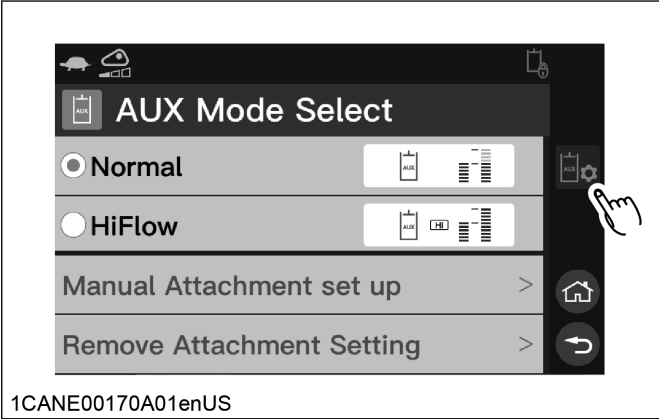


2. Rotate the jog dial to select the icon [AUX], and press the jog dial switch.
For touch operation, touch the icon [AUX].

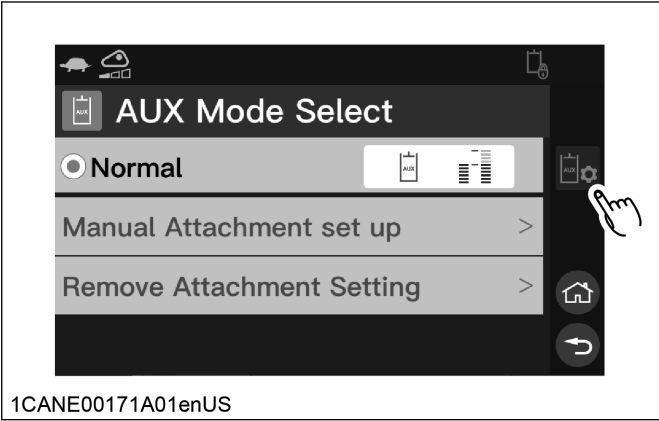


- (1) Icon
3. Rotate the jog dial to select the AUX Edit icon, and press the jog dial switch.
For touch operation, touch the AUX Edit icon.

[High-Flow model]

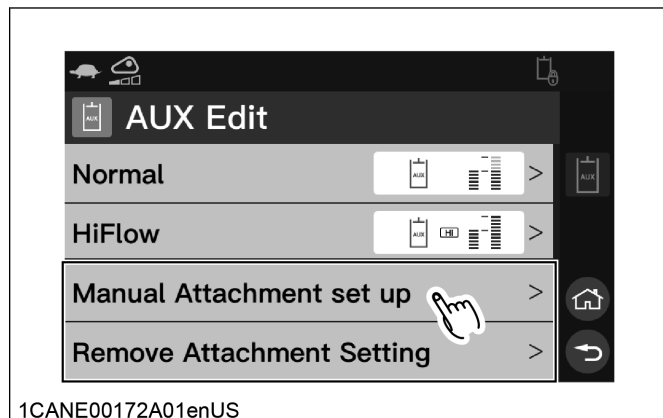


[Standard-Flow model]

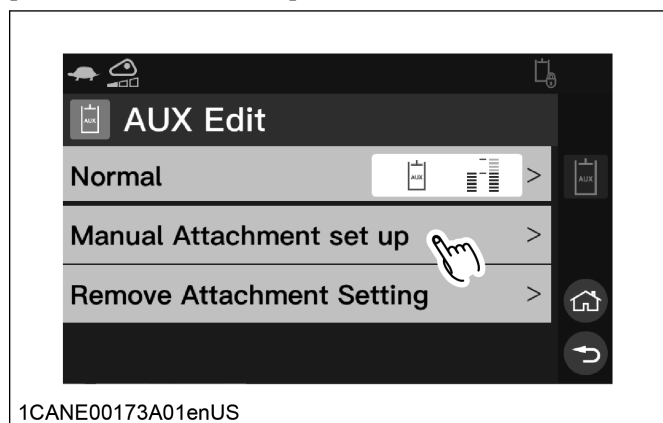


4. Rotate the jog dial to select **[Manual Attachment set up]**, and press the jog dial switch.
For touch operation, touch **[Manual Attachment set up]**.

[High-Flow model]

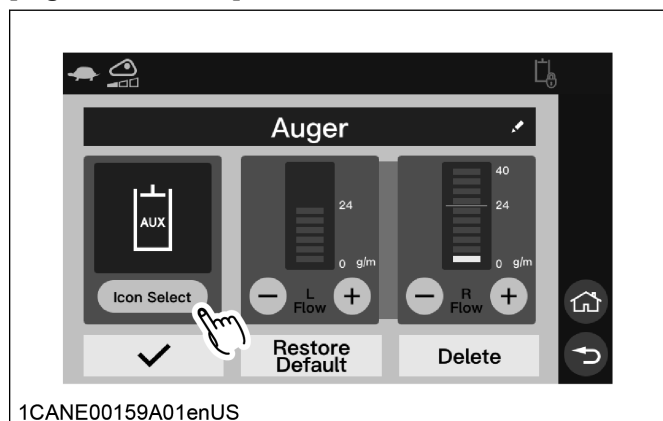


[Standard-Flow model]

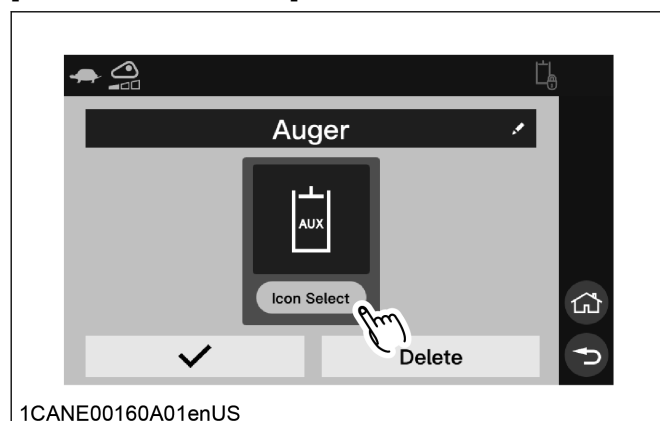


5. Rotate the jog dial to select **[Icon Select]**, and press the jog dial switch.
For touch operation, touch **[Icon Select]**.

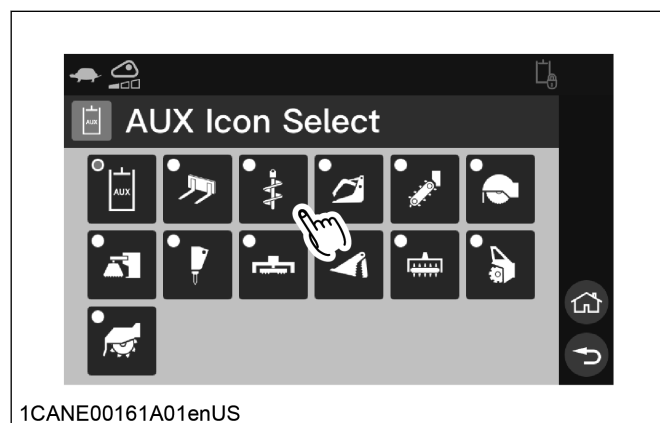
[High-Flow model]



[Standard-Flow model]

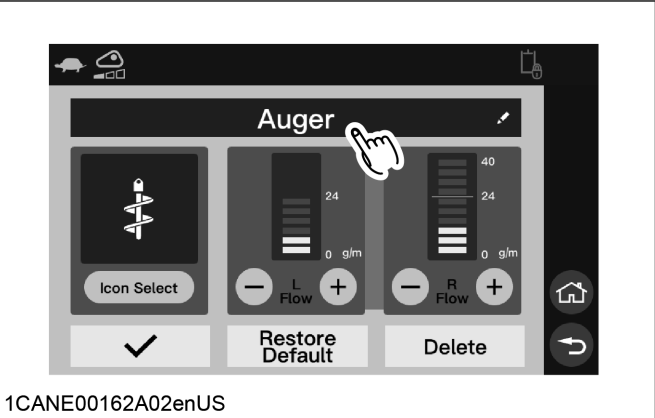


6. Rotate the jog dial to select the desired AUX icon, and press the jog dial switch.
For touch operation, touch the desired AUX icon.

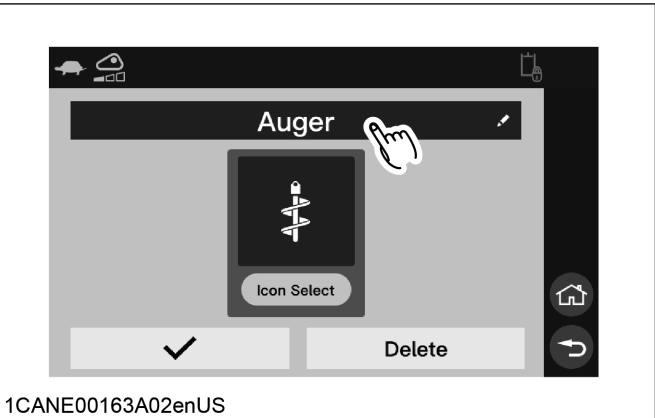


7. Rotate the jog dial to select the AUX name entry field, and press the jog dial switch.
For touch operation, touch the AUX name entry field.

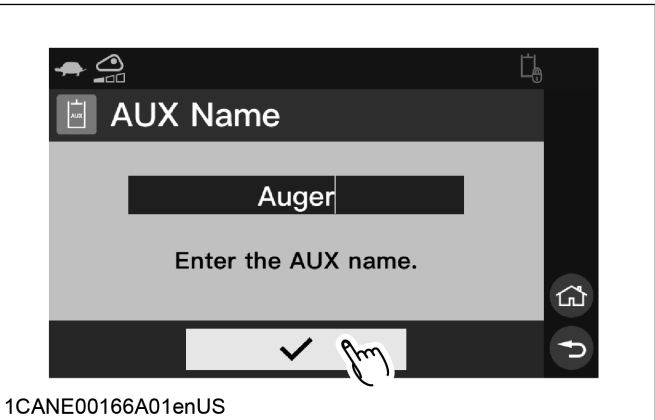
[High-Flow model]



[Standard-Flow model]



8. Rotate the jog dial to select the AUX name entry field, and press the jog dial switch. The keyboard appears on the screen.
For touch operation, touch the AUX name entry field.

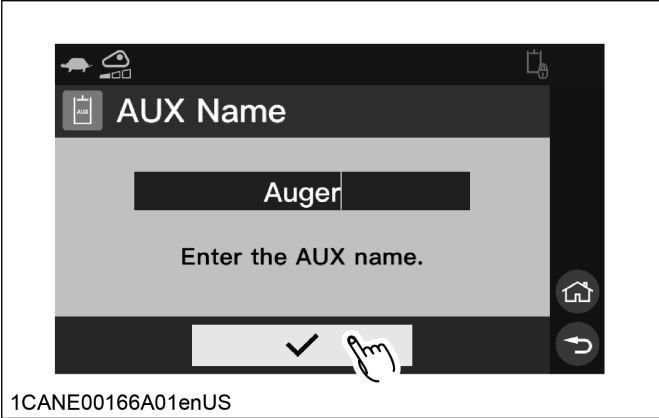


9. Rotate the jog dial left or right to select the characters you want to enter, and press the jog dial switch.
For touch operation, touch the characters you want to enter.

10. Rotate the jog dial to select the icon , and press the jog dial switch.
For touch operation, touch the icon .



11. Rotate the jog dial to select the icon , and press the jog dial switch to save the new settings.
For touch operation, touch the icon .

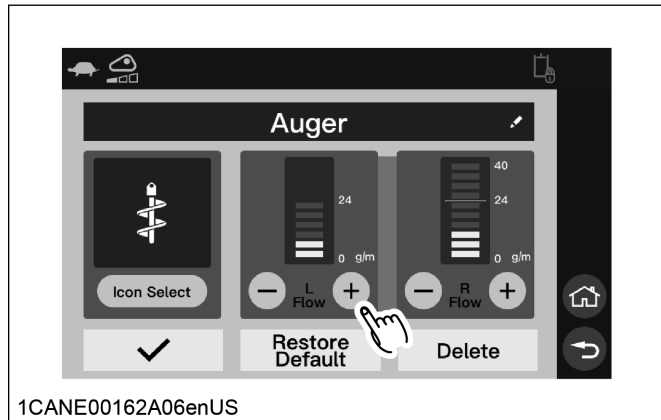


12. [High-Flow model only]

Rotate the jog dial to select the desired AUX flow rate (L or R), and press the jog dial switch.

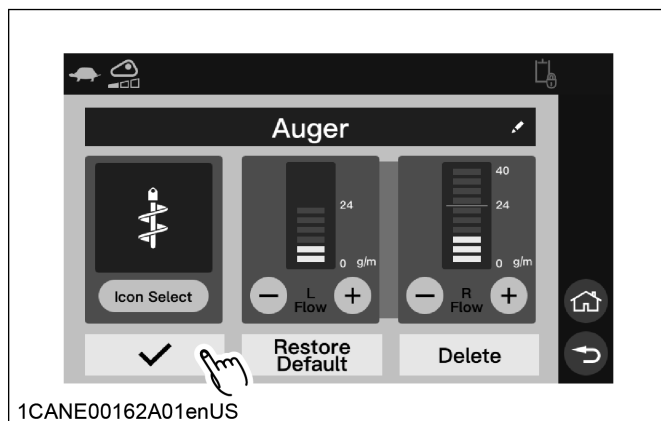
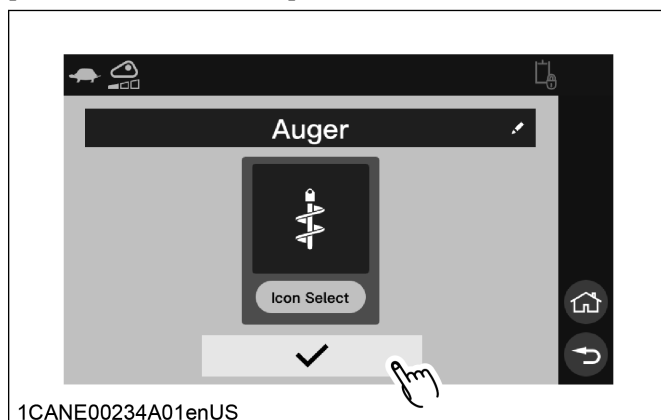
Rotate the jog dial to change the flow rate setting, and press the jog dial switch.

For touch operation, touch the **[+]** or **[-]** icon of the desired AUX flow rate (L or R).



13. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to save the new settings.

For touch operation, touch the icon **[✓]**.

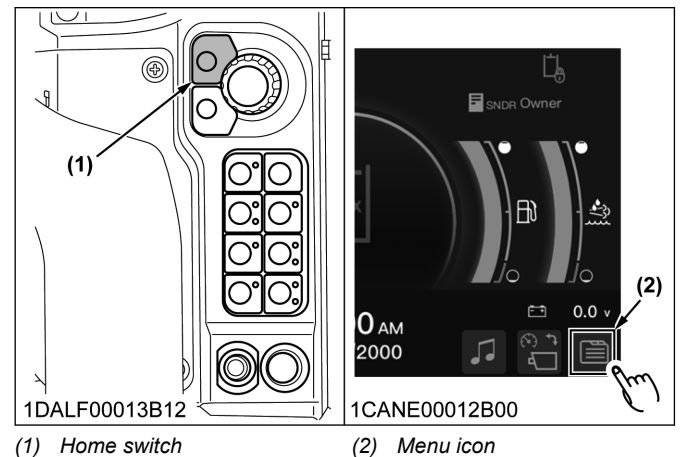
[High-Flow model]**[Standard-Flow model]****NOTE :**

- To retain the previous setting, press the return switch.

For touch operation, touch the return button.

5.6 Deleting the AUX mode

1. Press the home switch or touch the menu icon to make the menu bar appear on the display.

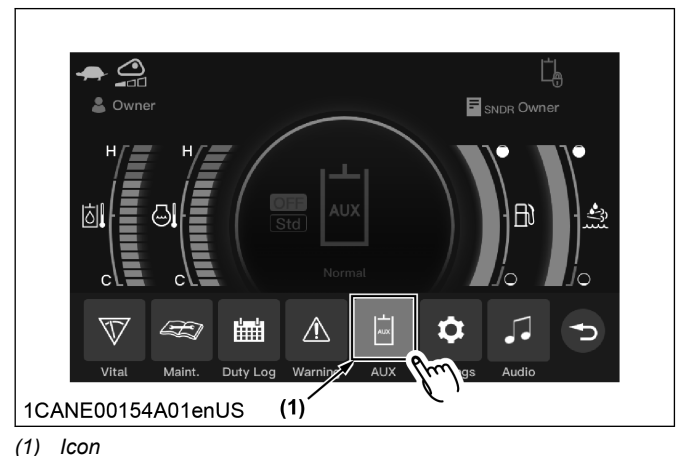


(1) Home switch

(2) Menu icon

2. Rotate the jog dial to select the icon **[AUX]**, and press the jog dial switch.

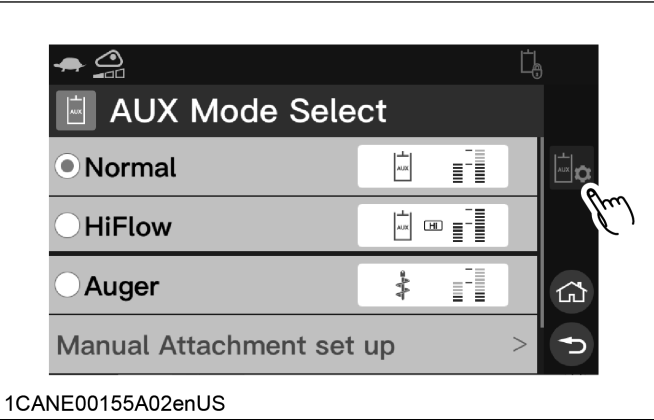
For touch operation, touch the icon **[AUX]**.



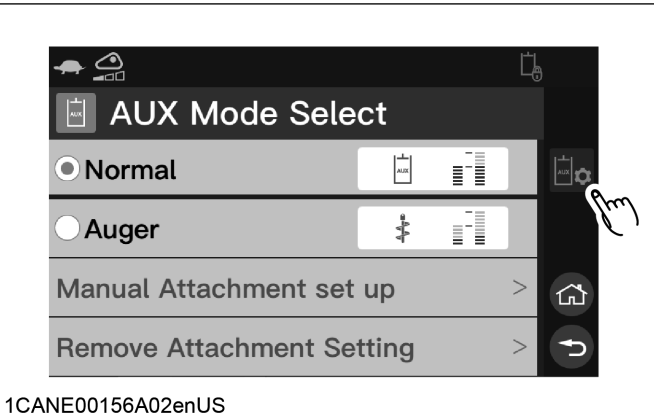
(1) Icon

3. Rotate the jog dial to select the AUX Edit icon, and press the jog dial switch.
For touch operation, touch the AUX Edit icon.

[High-Flow model]

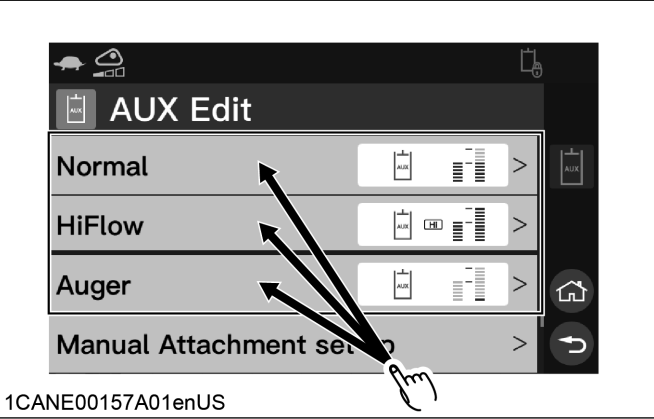


[Standard-Flow model]

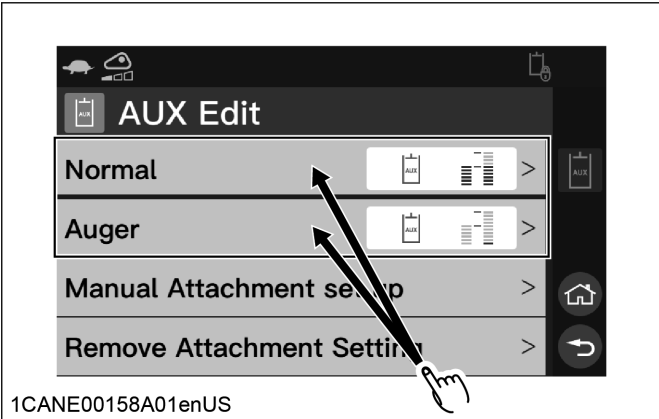


4. Rotate the jog dial to select the desired AUX mode, and press the jog dial switch.
For touch operation, touch the desired AUX mode.

[High-Flow model]

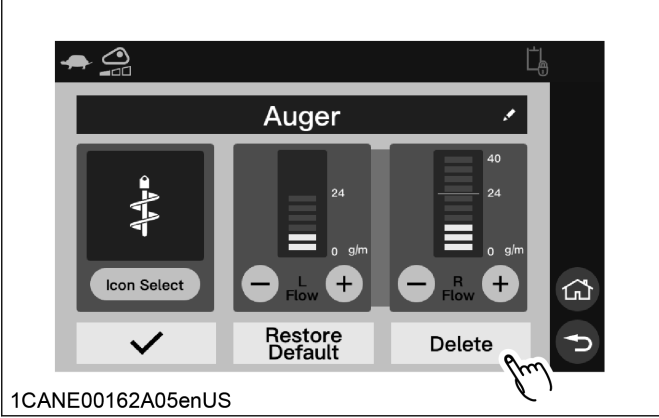


[Standard-Flow model]

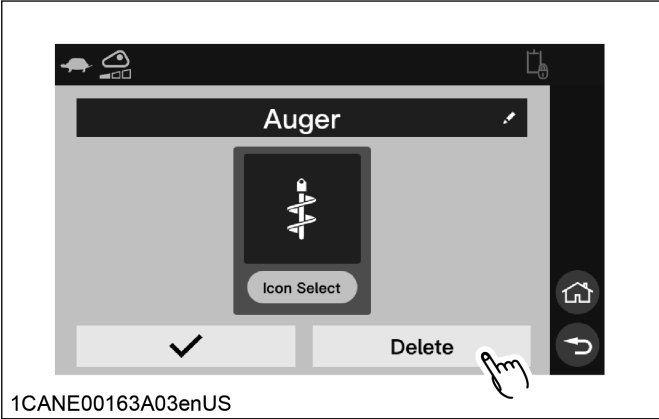


5. Rotate the jog dial to select the icon [Delete], and press the jog dial switch.
For touch operation, touch the icon [Delete].

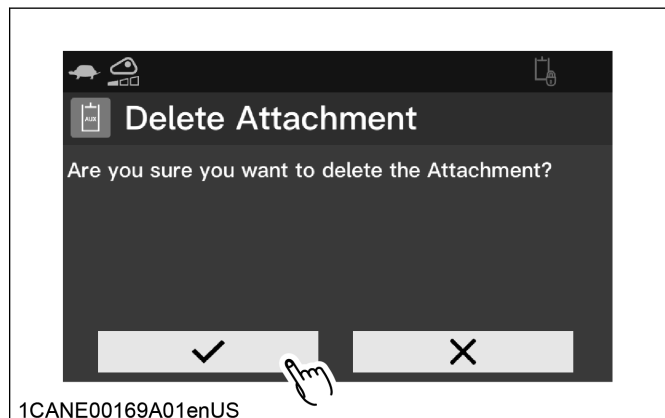
[High-Flow model]



[Standard-Flow model]



6. Rotate the jog dial to select the icon [✓], and press the jog dial switch to delete the AUX.
For touch operation, touch the icon [✓].

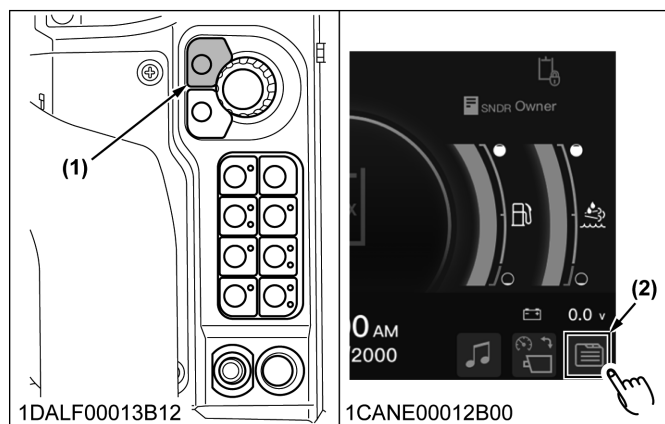


NOTE :

- The default AUX registered cannot be deleted.
(2 items for the High-Flow model, and 1 item for the Standard-Flow model)

5.7 Deleting all AUX modes

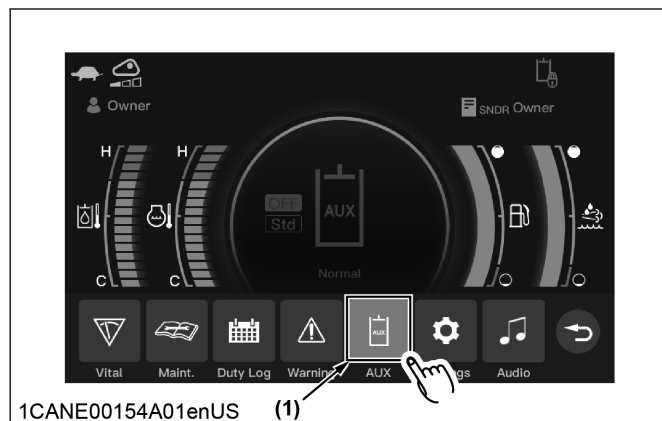
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

(2) Menu icon

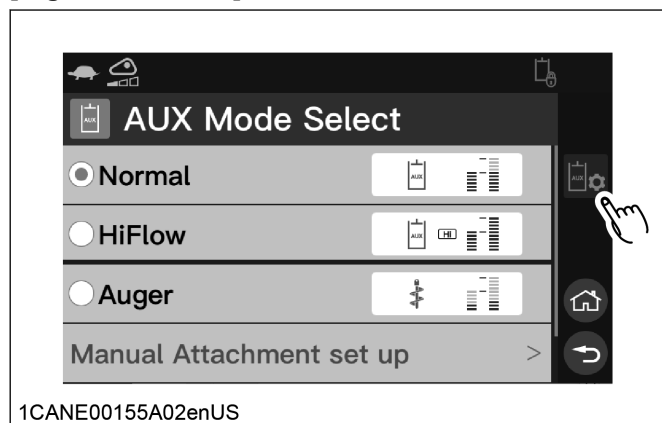
2. Rotate the jog dial to select the icon [AUX], and press the jog dial switch.
For touch operation, touch the icon [AUX].



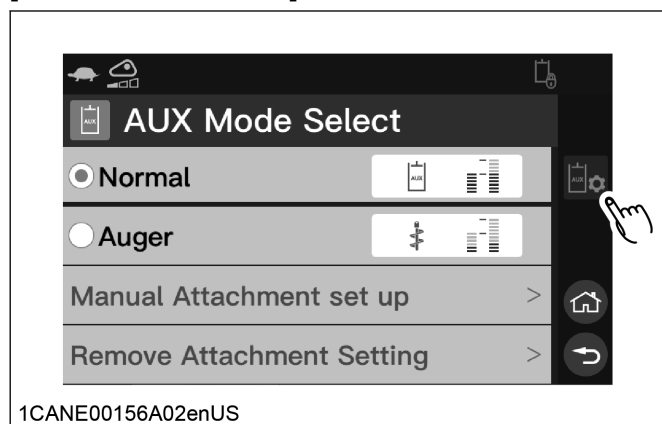
(1) Icon

3. Rotate the jog dial to select the AUX Edit icon, and press the jog dial switch.
For touch operation, touch the AUX Edit icon.

[High-Flow model]

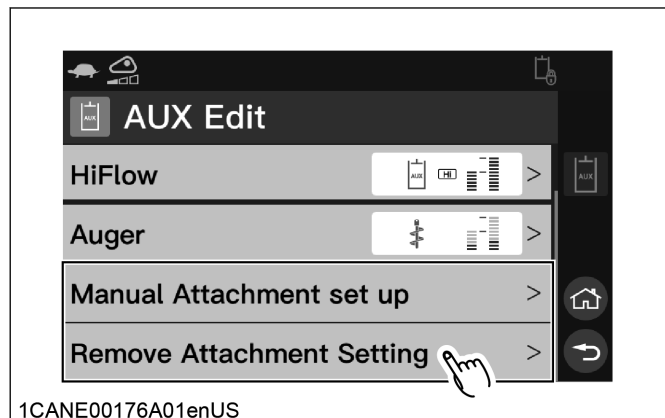


[Standard-Flow model]

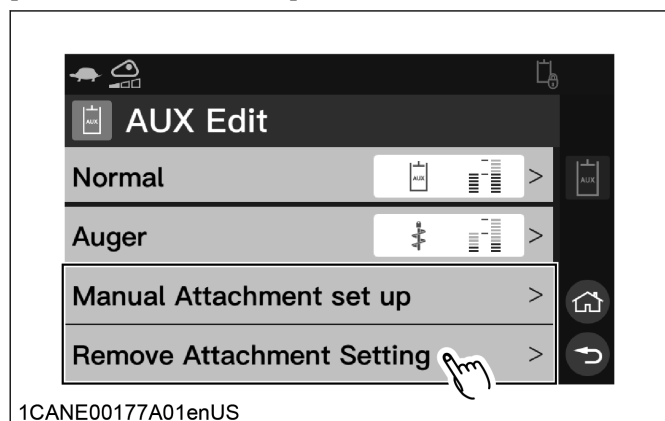


- Rotate the jog dial to select **[Remove Attachment Setting]**, and press the jog dial switch.
For touch operation, touch **[Remove Attachment Setting]**.

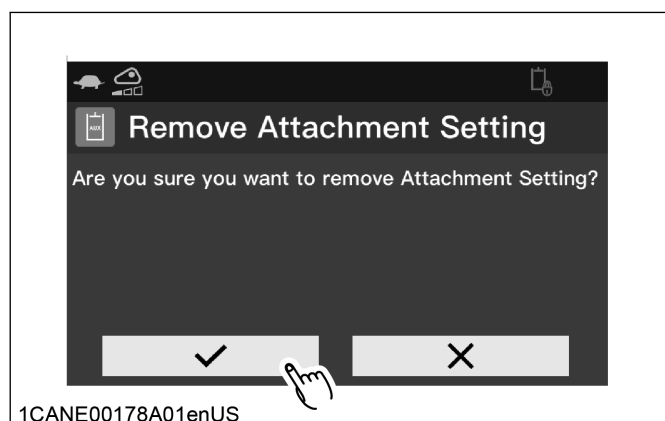
[High-Flow model]



[Standard-Flow model]



- Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to delete the AUX.
For touch operation, touch the icon **[✓]**.



NOTE :

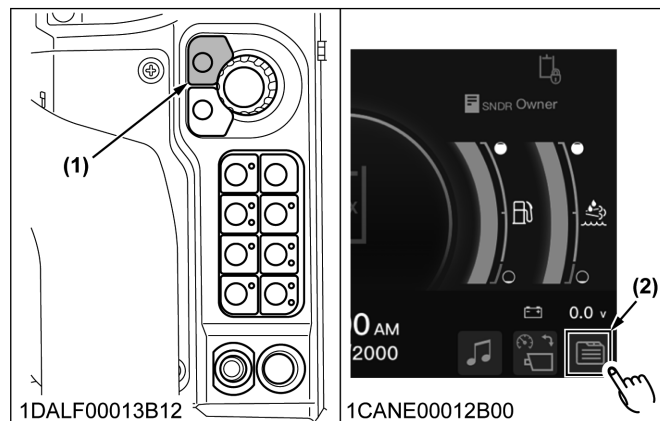
- The default AUX registered cannot be deleted.
(2 items for the High-Flow model, and 1 item for the Standard-Flow model)

6. Setting the clock

NOTE :

- This setting is available only when logged in with the owner account.

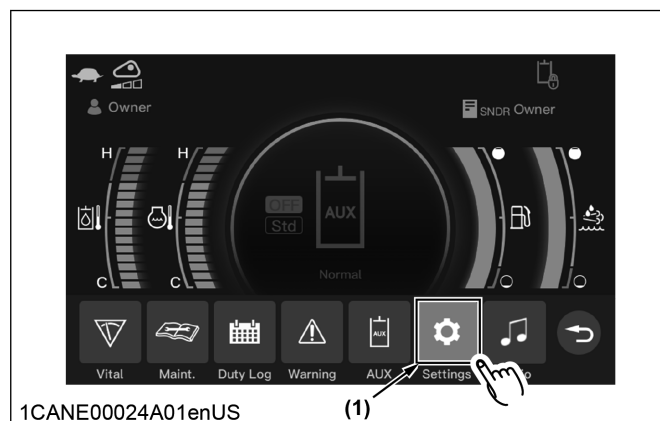
- Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

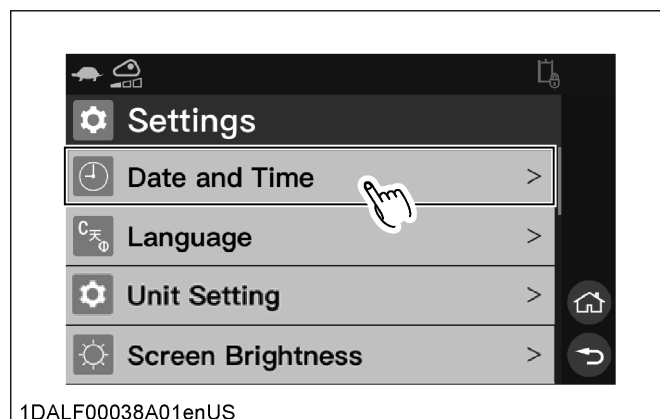
(2) Menu icon

- Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.

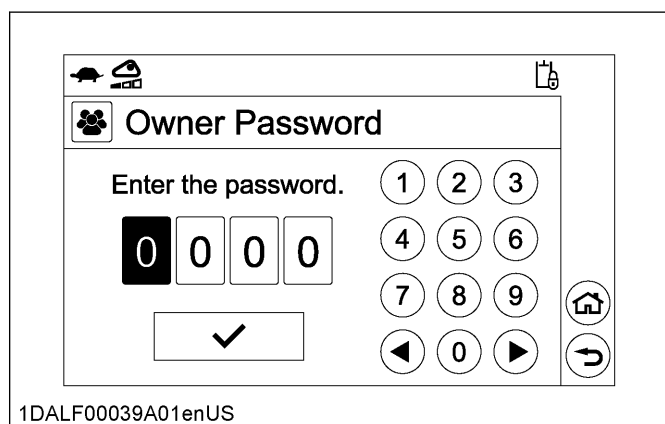


(1) Icon

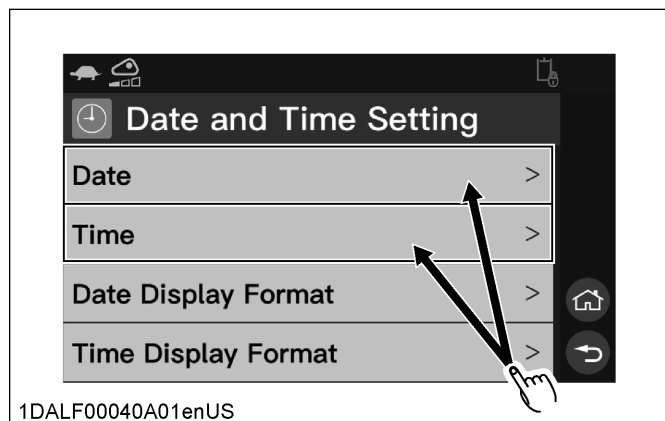
- Rotate the jog dial to select **[Date and Time]**, and press the jog dial switch.
For touch operation, touch **[Date and Time]**.



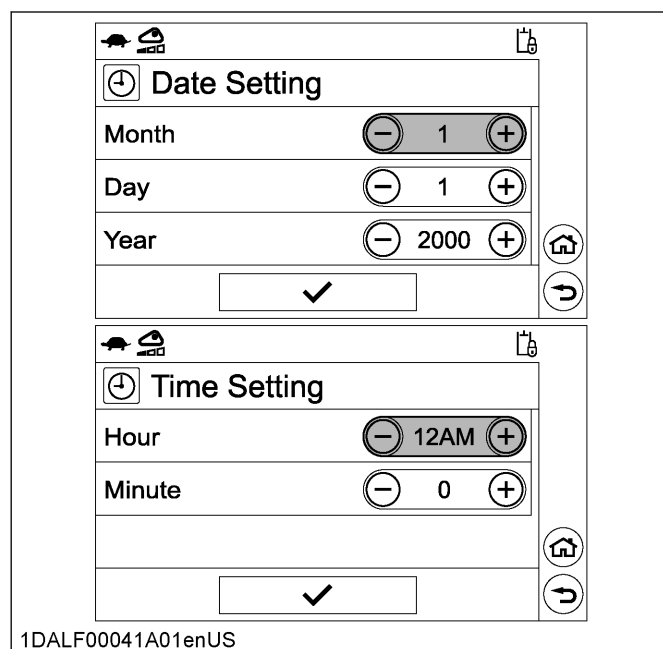
4. Enter the owner password.



5. Rotate the jog dial to select **[Date]** or **[Time]**, and press the jog dial switch.
For touch operation, touch **[Date]** or **[Time]**.



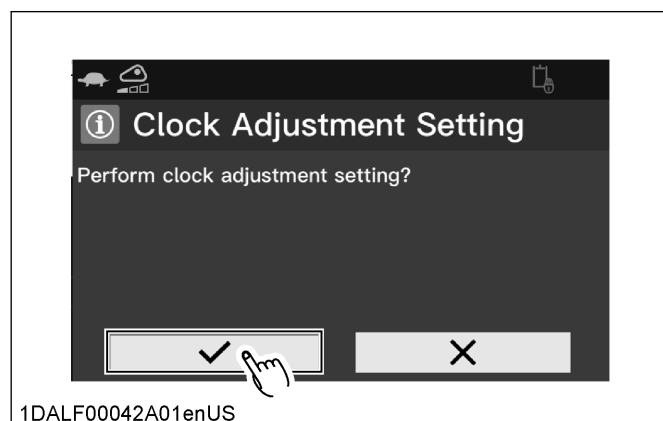
6. Adjust the numerical values as follows:
- Rotate the jog dial to the right or to the left to select the item you wish to change and press the jog dial switch.
 - Rotate the jog dial to the right or to the left to increase or decrease the numerical value.
 - Press the jog dial to confirm the value.
- For touch operation, touch **[+]** or **[-]** to increase or decrease the numerical value.



7. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch.
For touch operation, touch the icon **[✓]**.
New clock settings are saved.

NOTE :

- Be careful not to confirm the time at an unintended timing on the clock setting screen. Otherwise, the seconds will be set to [00] and the clock will show the wrong time.
- If the clock is interrupted, for example when the battery is disconnected, the following message appears on-screen. Select **[✓]** to set the clock again.



NOTE :

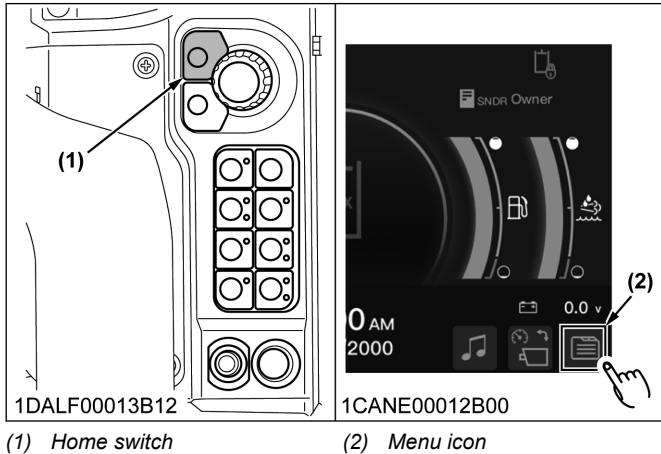
- When the return switch is pressed on the clock setting screen, the clock is not readjusted and returns to the previous menu screen.

7. Reordering year/month/day and selecting AM/PM or 24-hour

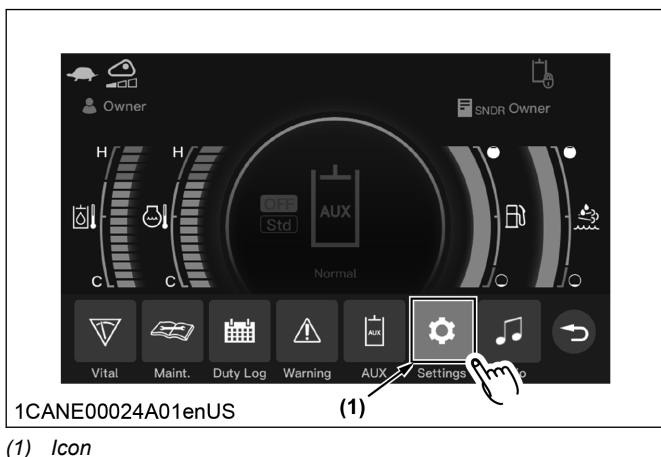
NOTE :

- This setting is available only when logged in with the owner account.

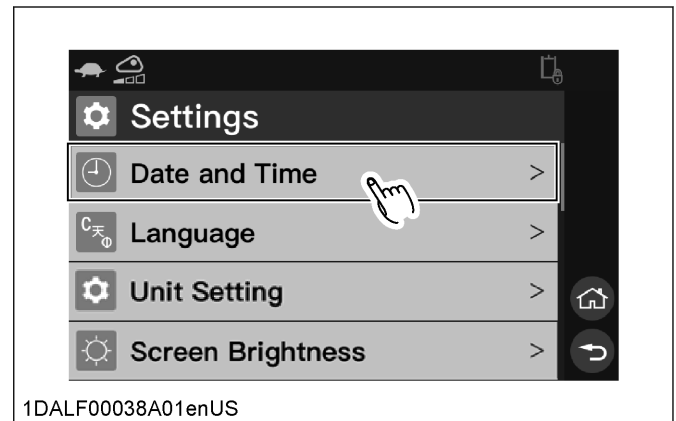
- Press the home switch or touch the menu icon to make the menu bar appear on the display.



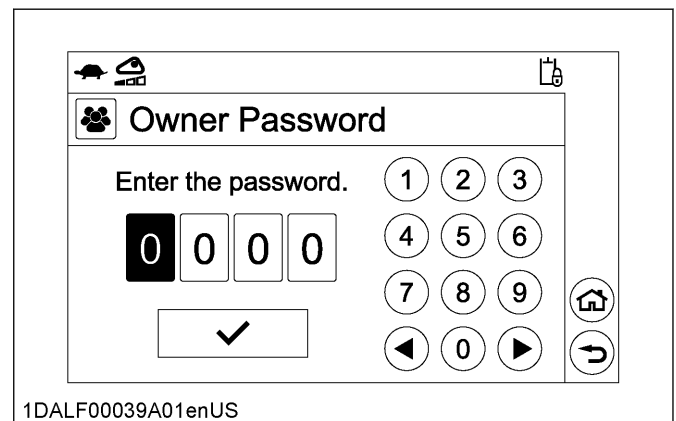
- Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.



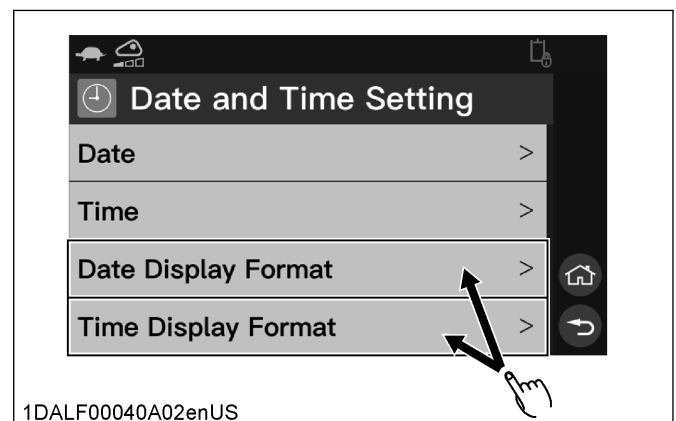
- Rotate the jog dial to select **[Date and Time]**, and press the jog dial switch.
For touch operation, touch **[Date and Time]**.



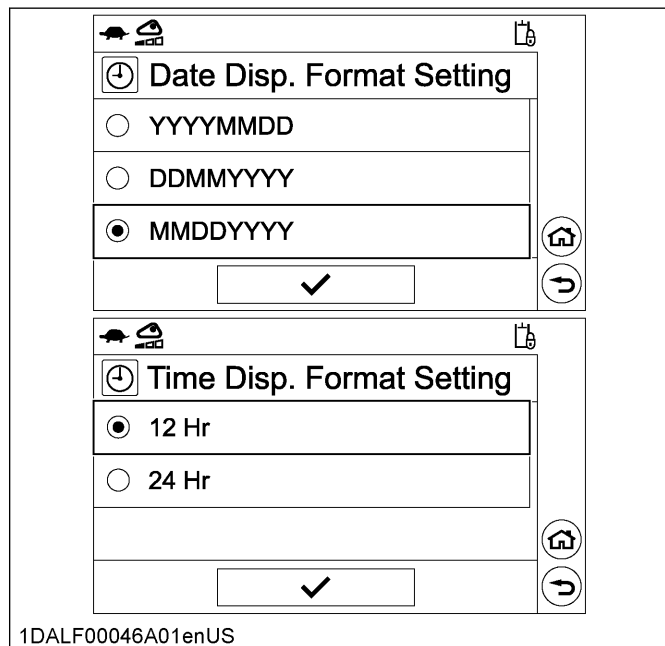
- Enter the owner password.



- Rotate the jog dial to select **[Time Display Format]** or **[Date Display Format]**, and press the jog dial switch.
For touch operation, touch **[Date Display Format]** or **[Time Display Format]**.



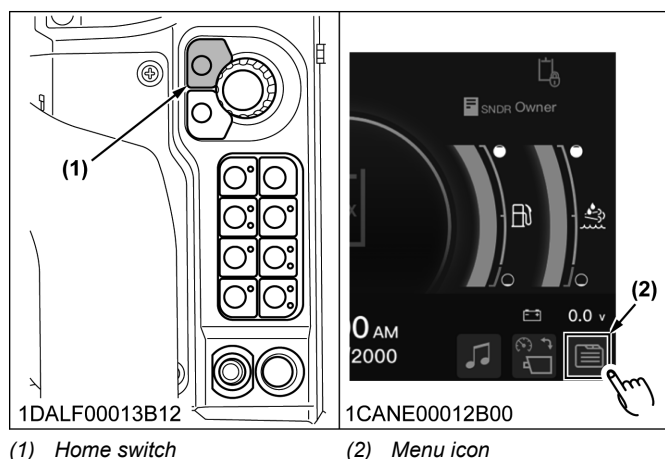
6. Rotate the jog dial to select the desired format, and press the jog dial switch.
For touch operation, touch the desired format.



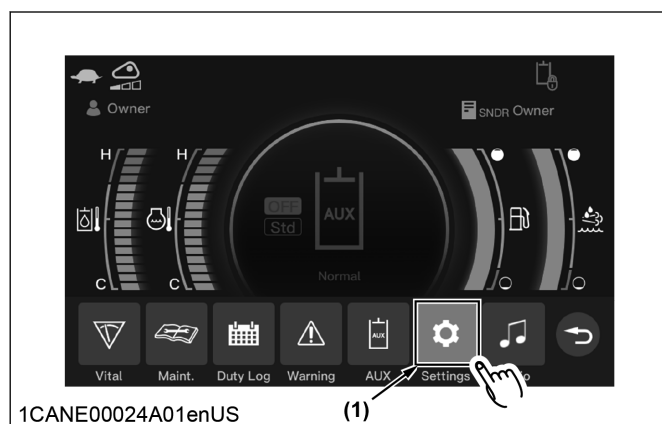
7. Rotate the jog dial to select the icon [✓], and press the jog dial switch.
For touch operation, touch the icon [✓].
New settings are saved.

8. Setting the display language

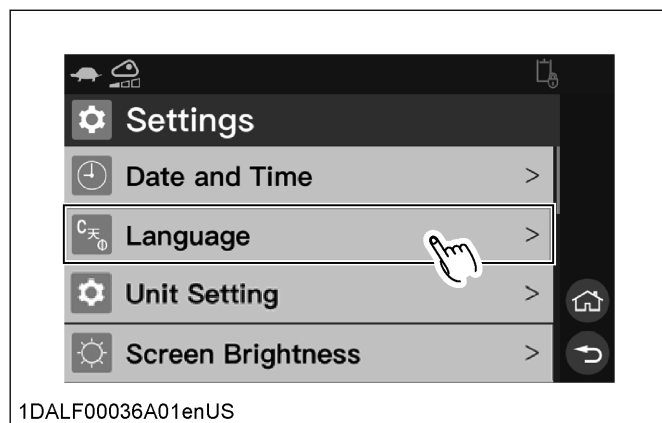
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



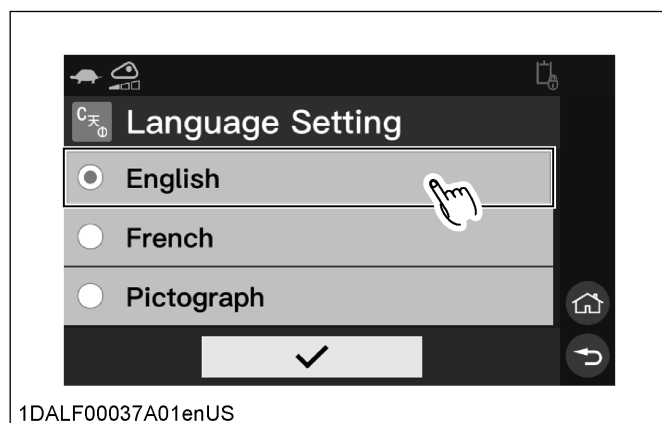
2. Rotate the jog dial to select the icon [Settings], and press the jog dial switch.
For touch operation, touch the icon [Settings].
The list of settings appears on the display.



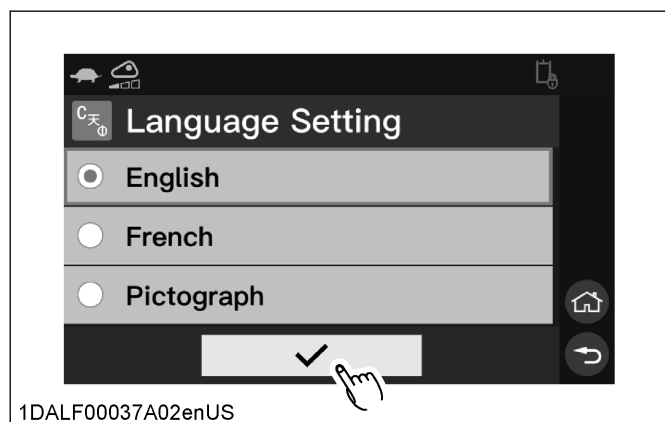
3. Rotate the jog dial to select [Language], and press the jog dial switch.
For touch operation, touch [Language].
The list of languages appears on the display.



4. Rotate the jog dial to select the desired language, and press the jog dial switch.
For touch operation, touch the desired language.

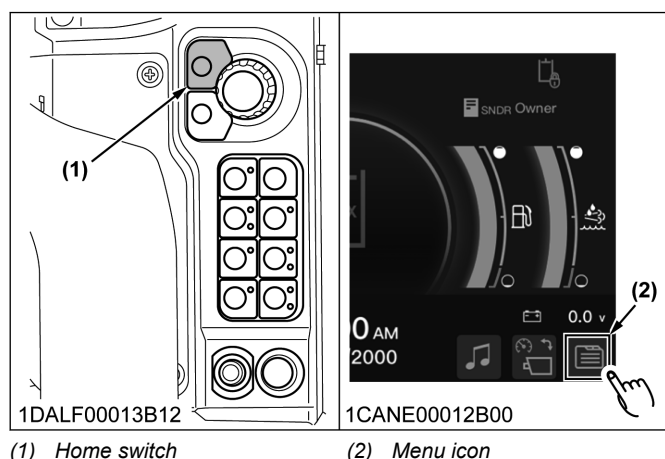


- Rotate the jog dial to select the icon [✓], and press the jog dial switch.
For touch operation, touch the icon [✓].
The language setting is activated.

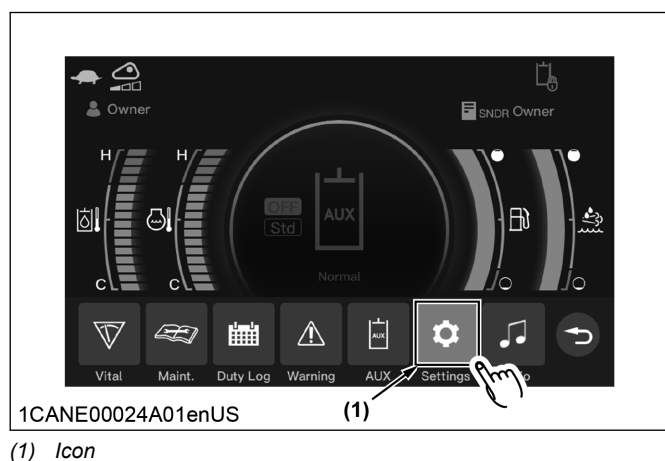


9. Unit setting

- Press the home switch or touch the menu icon to make the menu bar appear on the display.

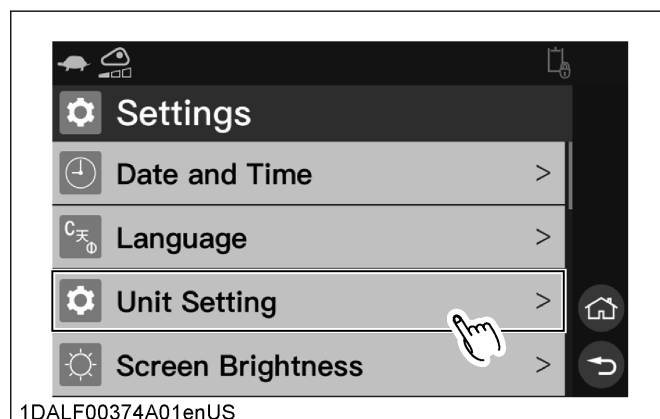


- Rotate the jog dial to select the icon [Settings], and press the jog dial switch.
For touch operation, touch the icon [Settings].

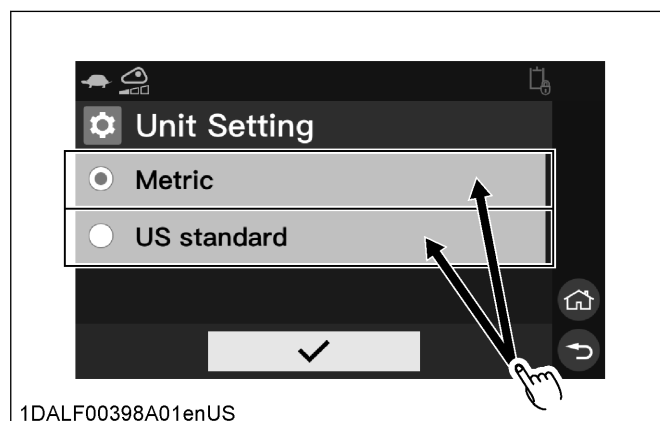


(1) Icon

- Rotate the jog dial to select [Unit Setting], and press the jog dial switch.
For touch operation, touch [Unit Setting].



- Rotate the jog dial to select [Metric] or [US standard], and press the jog dial switch.
For touch operation, touch [Metric] or [US standard].



- Rotate the jog dial to select the icon [✓], and press the jog dial switch.
For touch operation, touch the icon [✓].

NOTE :

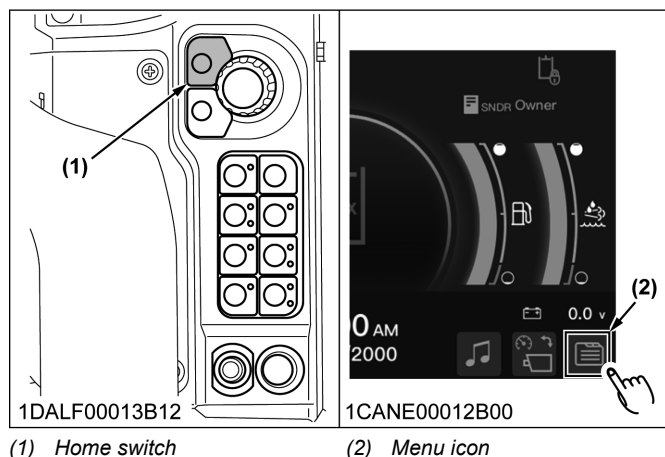
- To retain the previous setting, press the return switch.
For touch operation, touch the return button.

10. Setting the display brightness

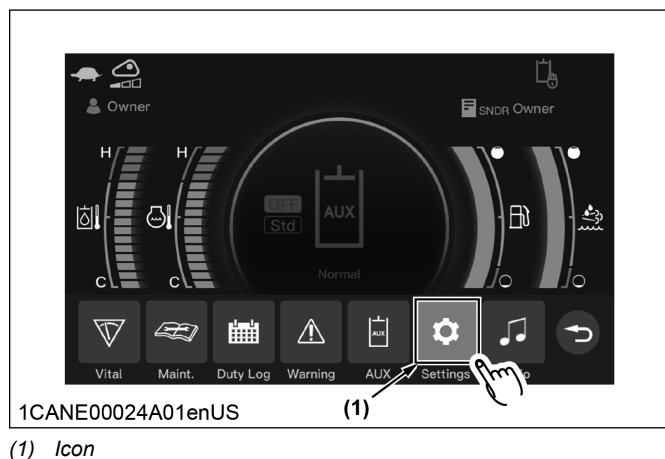
The display brightness can be set to one of 100 levels.

It is possible to register separate brightness settings for when the working light is on and when the working light is off.

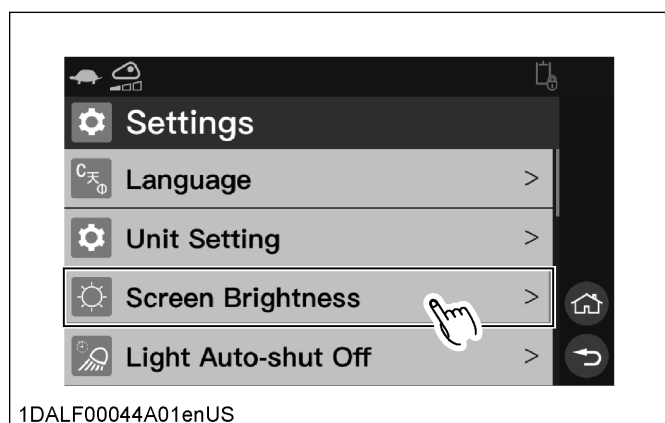
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.

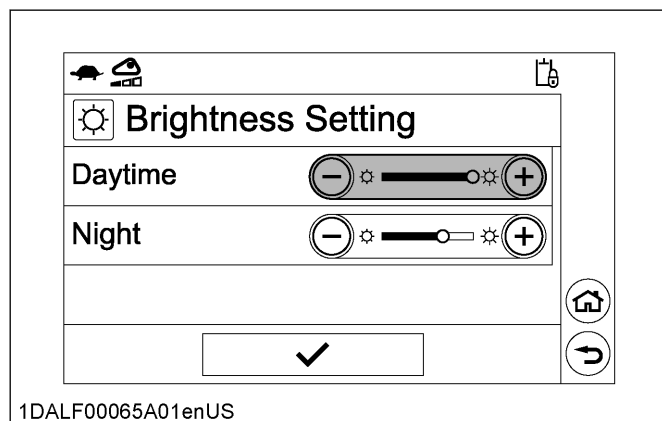


3. Rotate the jog dial to select **[Screen Brightness]**, and press the jog dial switch.
For touch operation, touch **[Screen Brightness]**.



4. Rotate the jog dial to select **[Daytime]** or **[Night]**, and press the jog dial switch.
5. Rotate the jog dial to the right or left to increase or decrease the display brightness, and press the jog dial switch to confirm the adjustment.

For touch operation, touch **[+]** or **[-]** to increase or decrease the display brightness.



6. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to save the new settings.
For touch operation, touch the icon **[✓]**.

NOTE :

- To retain the previous settings, press the return switch.
For touch operation, touch the return button.

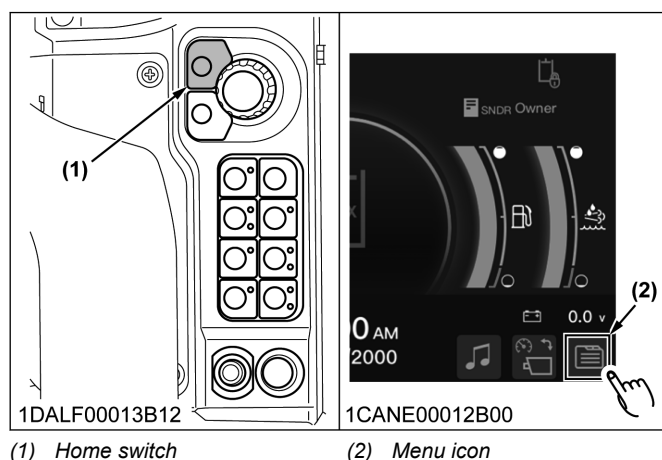
11. Setting the work light turn-off delay function

NOTE :

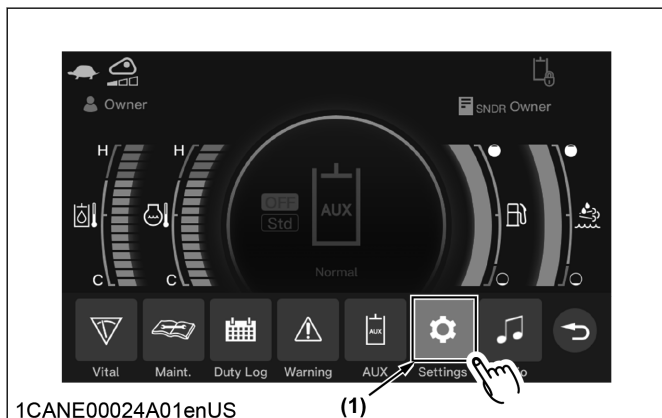
- This setting is available only when logged in with the owner account.

The working light turn-off can be delayed for a given time after turning off the machine. The working light switch can be used to manually turn off the working light when the turn-off delay function is activated.

1. Press the home switch or touch the menu icon to make the menu bar appear on the display.

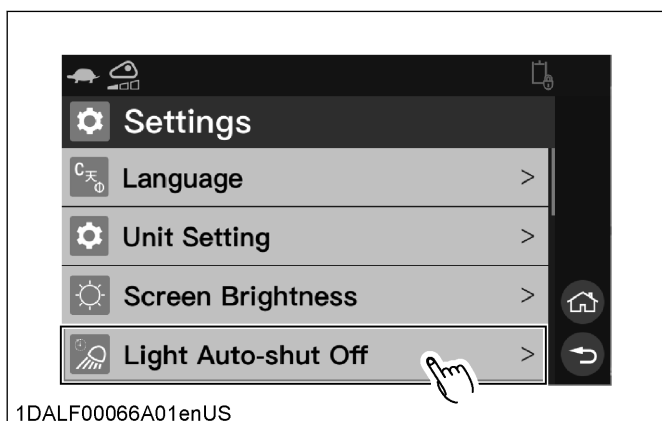


2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.



(1) Icon

3. Rotate the jog dial to select **[Light Auto-shut Off]**, and press the jog dial switch.
For touch operation, touch **[Light Auto-shut Off]**.



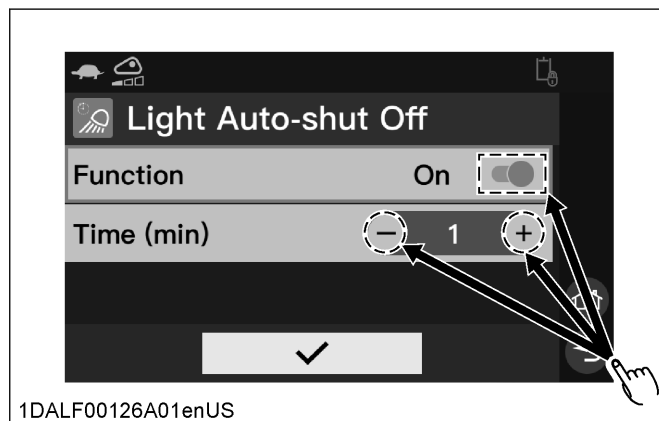
4. Enter the owner password.



5. Rotate the jog dial to select **[Function]** or **[Time (min)]**, and press the jog dial switch.
6. Rotate the jog dial to the right or left to select the desired setting, and press the jog dial switch to confirm the selection.
For touch operation, touch the button, **[-]**, or **[+]** to select the desired setting.

NOTE :

- **[Function]** must be set to **[On]** before the delay time can be set.
- If **[Function]** is set to **[Off]**, you can not select **[Time (min)]**.
- The delay time can be set in 1 minute increments from 1 to 20 minutes.



7. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to save the new settings.
For touch operation, touch the icon **[✓]**.

NOTE :

- To retain the previous settings, press the return switch.
For touch operation, touch the return button.

12. Auto-idle function

The auto idle function automatically reduces the engine RPM to the low idle speed when the following conditions are satisfied (conditions differ depending on whether in hydraulic lock or unlock state).

The auto idle function ON/OFF and the auto idle state transition time can be changed by means of the meter.

Auto idle transition conditions (hydraulic lock engaged)

- Auto idle setting is ON (ON/OFF status can be changed by means of the meter).
- Engine speed control dial is not operated.
- Accelerator pedal is not operated.
- DPF is not being regenerated.
- Water temperature and hydraulic oil temperature are not too low.
- These conditions remain for a certain period of time (Time setting can be changed by means of the meter).

Auto idle transition conditions (hydraulic lock disengaged)

- Auto idle transition conditions (hydraulic lock engaged) are satisfied.
- Left control (traveling) lever is not operated.
- Right control (front operating) lever is not operated.
- AUX is not operated.
- **[Hydraulic quick-hitch model only]**

Hydraulic quick-hitch switch is not operated.

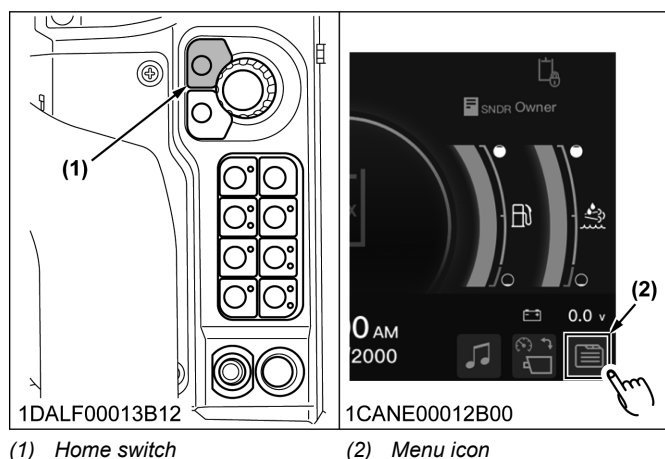
- These conditions remain for a certain period of time (Time setting can be changed by means of the meter).

NOTE :

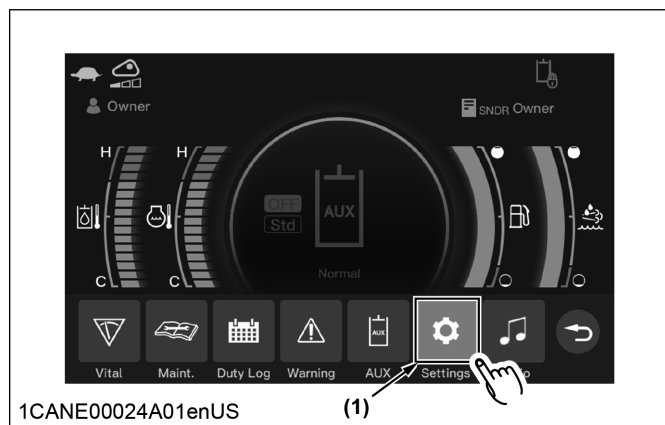
- If any one of the auto idle transition conditions is not met during the transition to auto idle state, the auto idle status is canceled immediately and the engine RPM returns to the speed before the transition to the auto idle state.
- An auto hydraulic lock function is also provided. This function achieves automatic transition to hydraulic lock state when the auto idle state continues for a certain period of time.
- The ON/OFF of the auto hydraulic lock function and the auto hydraulic lock activation time can be changed by means of the meter.

12.1 Setting the auto-idle

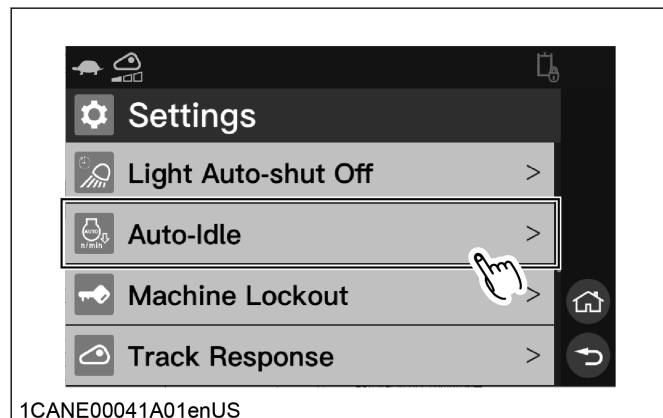
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.



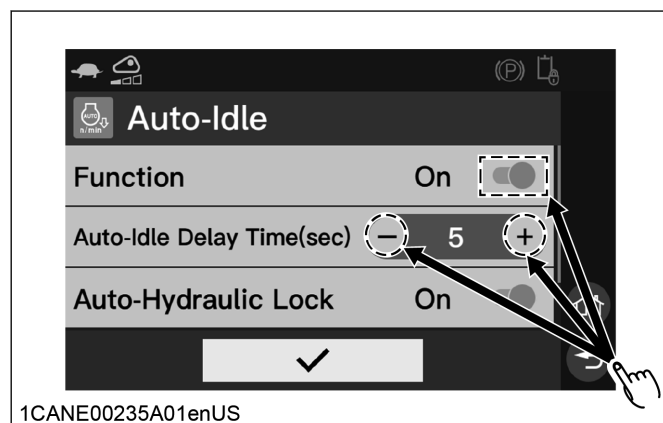
3. Rotate the jog dial to select **[Auto-idle]**, and press the jog dial switch.
For touch operation, touch **[Auto-idle]**.



4. Rotate the jog dial to the right or left to select the desired setting, and press the jog dial switch to confirm the selection.
For touch operation, touch the button, **[-]**, or **[+]** to select the desired setting.

NOTE :

- **[Function]** must be set to **[On]** before the delay time can be set.
- If **[Function]** is set to **[Off]**, you can not select **[Auto-idle Delay Time(sec)]**.
- The delay time can be selected from **[5]**, **[10]**, **[30]**, **[60]**, **[120]**, **[180]**, **[300]**, and **[600]**.
The unit is seconds.



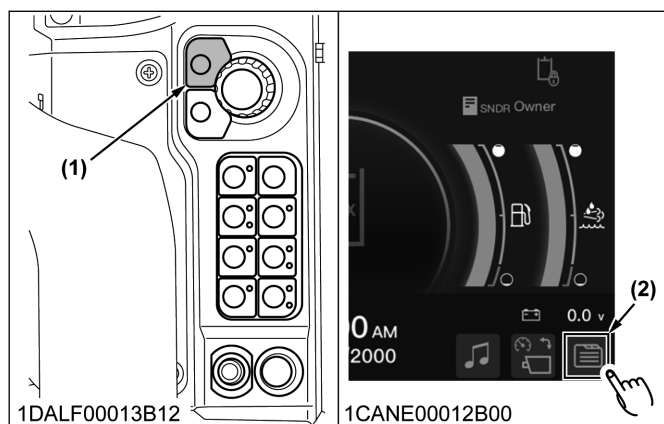
5. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to save the new settings.
For touch operation, touch the icon **[✓]**.

NOTE :

- To retain the previous settings, press the return switch.
For touch operation, touch the return button.

12.2 Setting the auto-hydraulic lock

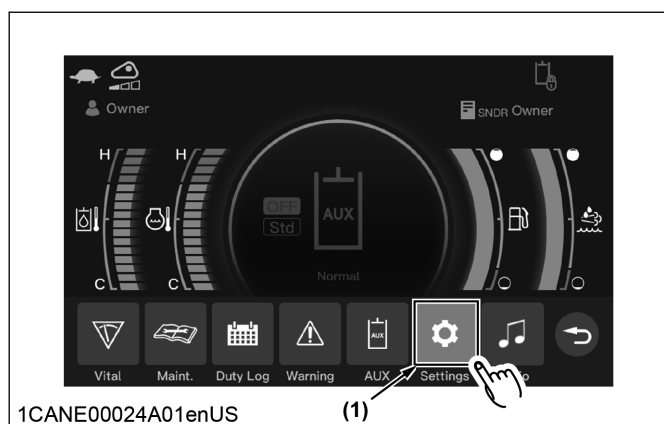
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

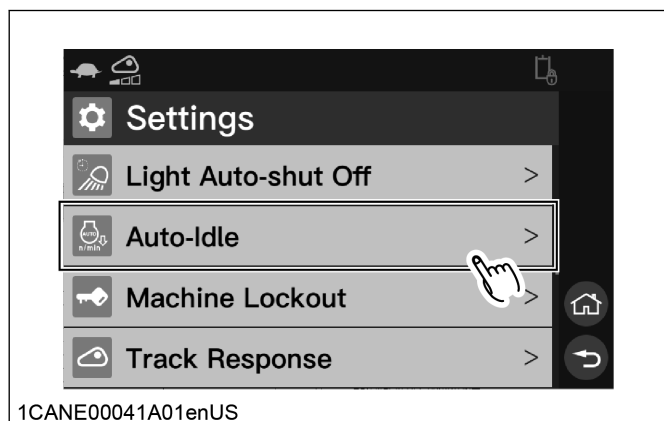
(2) Menu icon

2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.



(1) Icon

3. Rotate the jog dial to select **[Auto-idle]**, and press the jog dial switch.
For touch operation, touch **[Auto-idle]**.



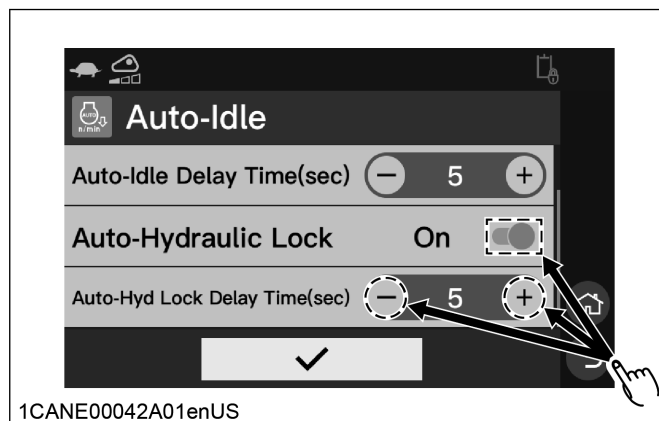
1CANE00041A01enUS

4. Rotate the jog dial to the right or left to select the desired setting, and press the jog dial switch to confirm the selection.

For touch operation, touch the button, **[-]**, or **[+]** to select the desired setting.

NOTE :

- **[Auto-Hydraulic Lock]** must be set to **[On]** before the delay time can be set.
- If **[Auto-Hydraulic Lock]** is set to **[Off]**, you can not select **[Auto-Hyd Lock Delay Time(sec)]**.
- The delay time can be selected from **[5]**, **[10]**, **[30]**, **[60]**, **[120]**, **[180]**, **[300]**, and **[600]**. The unit is seconds.



1CANE00042A01enUS

5. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to save the new settings.
For touch operation, touch the icon **[✓]**.

NOTE :

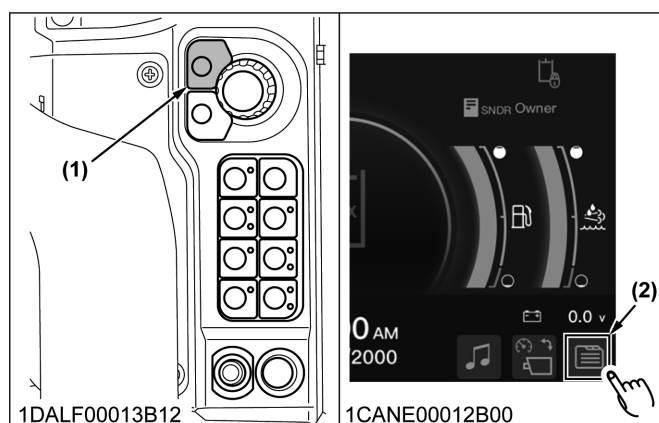
- To retain the previous settings, press the return switch.
For touch operation, touch the return button.

13. Setting the machine lockout

NOTE :

- This setting is available only when logged in with the owner account.

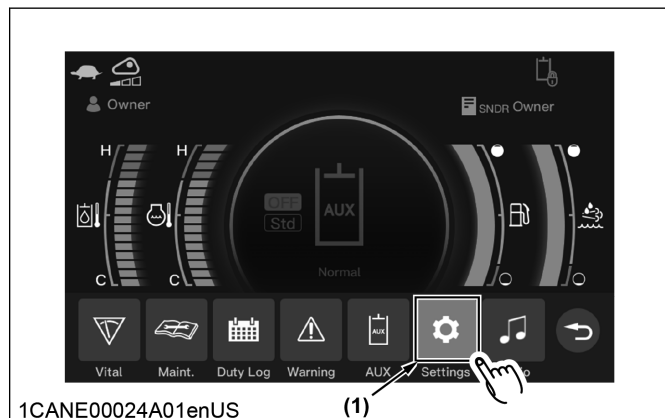
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

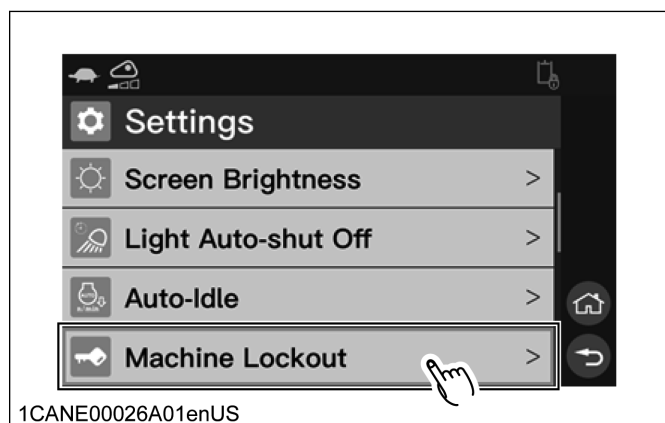
(2) Menu icon

2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.

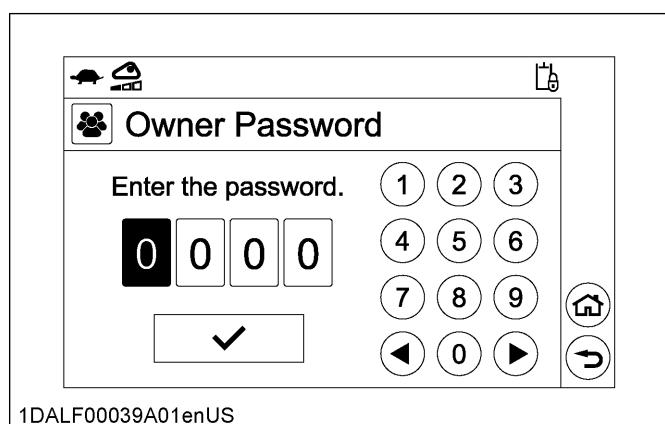


(1) Icon

3. Rotate the jog dial to select **[Machine Lockout]**, and press the jog dial switch.
For touch operation, touch **[Machine Lockout]**.



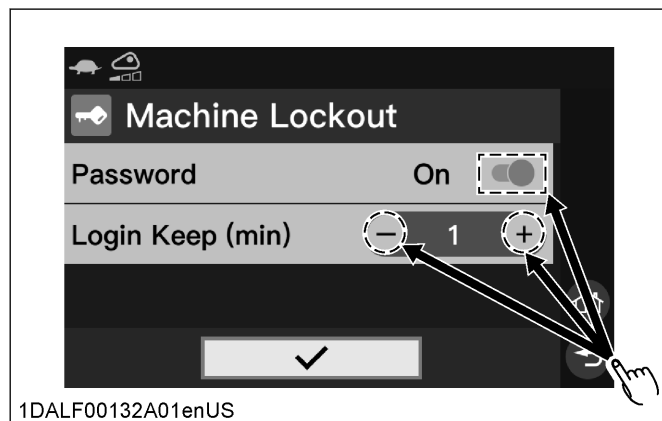
4. Enter the owner password.



5. Rotate the jog dial to select **[Password]** or **[Login Keep (min)]**, and press the jog dial switch.
6. Rotate the jog dial to the right or left to select the desired setting, and press the jog dial switch to confirm the selection.
For touch operation, touch the button, **[-]**, or **[+]** to select the desired setting.

NOTE :

- **[Password]** must be set to **[On]** before the login keep time can be set.
- If **[Password]** is set to **[Off]**, you can not select **[Login Keep (min)]**.
- The login keep time can be set in 1 minute increments from 0 to 20 minutes.



7. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to save the new settings.
For touch operation, touch the icon **[✓]**.

NOTE :

- To retain the previous settings, press the return switch.
- For touch operation, touch the return button.

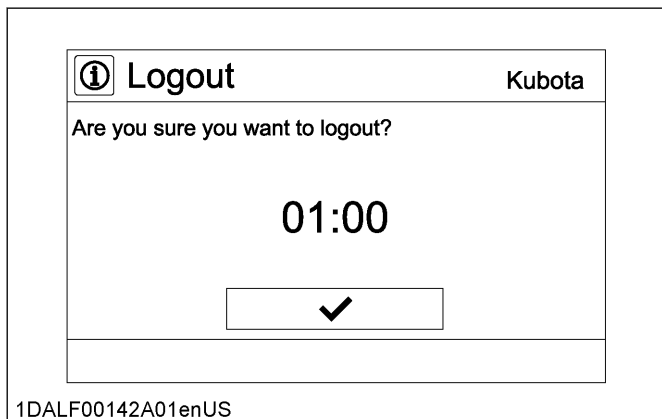
If **[Password]** is set to **[On]**, the password entry screen is displayed when the start switch is pushed after logging out of the machine. The machine cannot be operated without entering the configured password.

(See Setting the user password on page 88)

13.1 How to use the machine lockout function

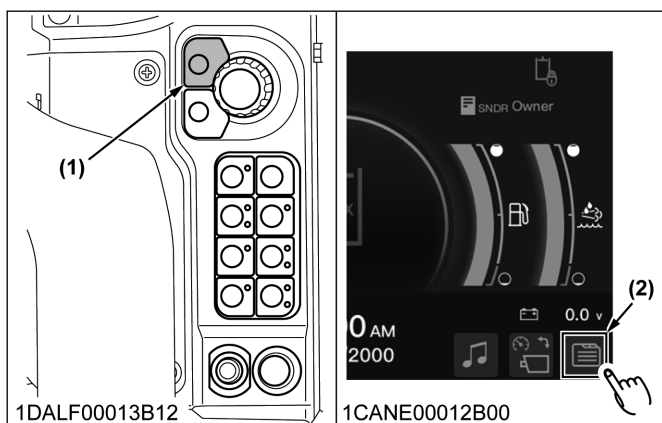
1. Press the start switch to change the start switch mode to "OFF."
The login keep screen appears on the display.
2. The following operations are possible when the login keep screen is displayed.
 - When the start switch is pushed, the login status is retained and the machine can be operated again.
 - If you rotate the jog dial to select the icon **[✓]** and press the jog dial switch, you can log out of the machine immediately.
For touch operation, touch the icon **[✓]**.

- Log out of the machine after the set time has elapsed.



14. Setting the track response

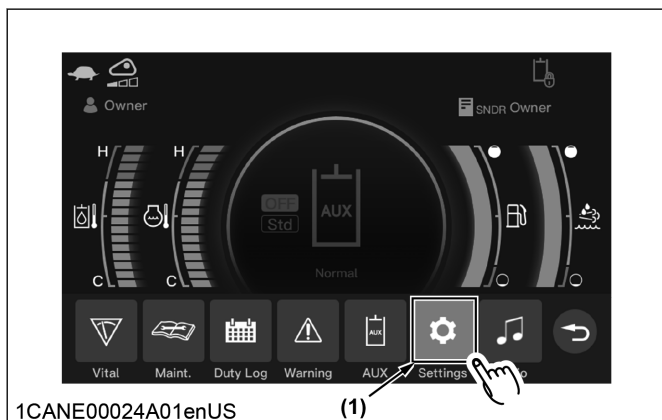
- Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

(2) Menu icon

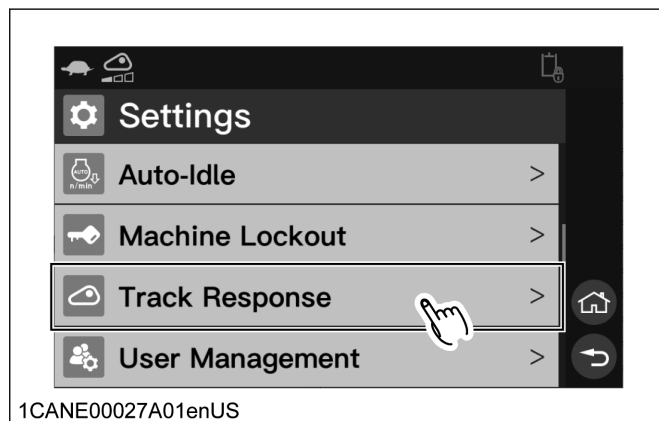
- Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.
The list of settings appears on the display.



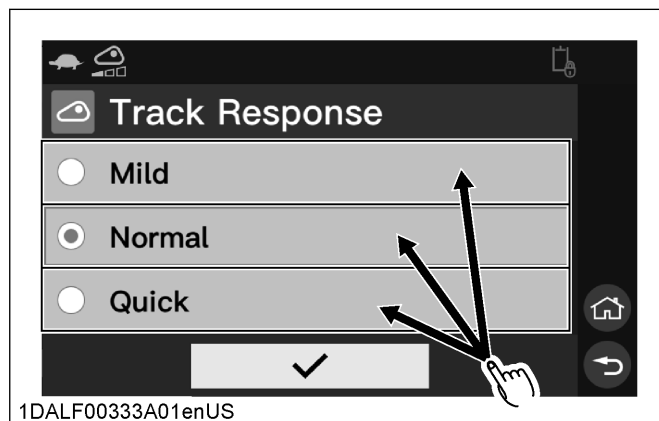
(1) Icon

- Rotate the jog dial to select **[Track Response]**, and press the jog dial switch.

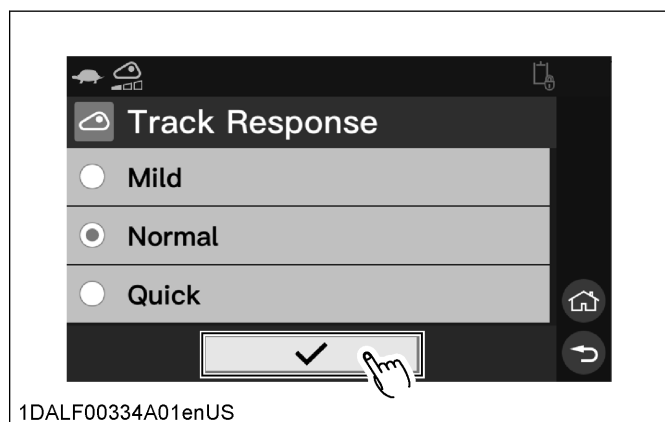
For touch operation, touch **[Track Response]**.



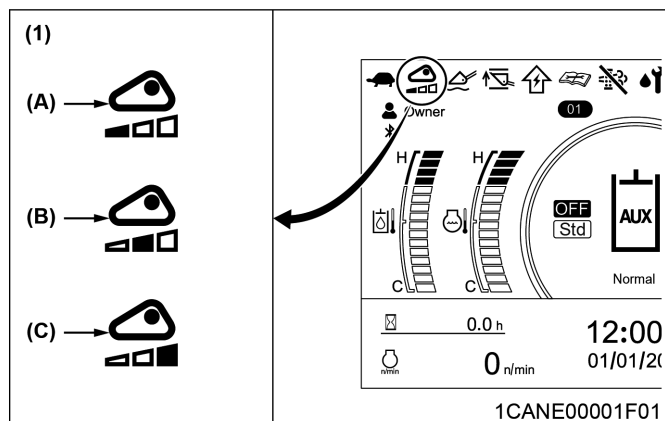
- Rotate the jog dial to select the desired response, and press the jog dial switch.
For touch operation, touch the desired response.



5. Rotate the jog dial to select the icon [✓], and press the jog dial switch.
For touch operation, touch the icon [✓].
The track response setting is activated.

**NOTE :**

- To retain the previous setting, press the return switch.
For touch operation, touch the return button.
- If you touch the track response indicator on the home screen, the track response setting screen appears on the display.
- The track response indicator will change according to the track response setting as shown in the following figure.

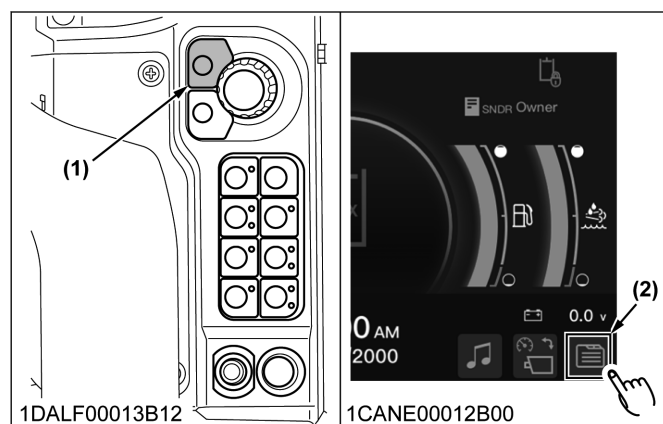


(1) Track response indicator

- (A) Mild
(B) Normal
(C) Quick

15. Setting the rearview camera

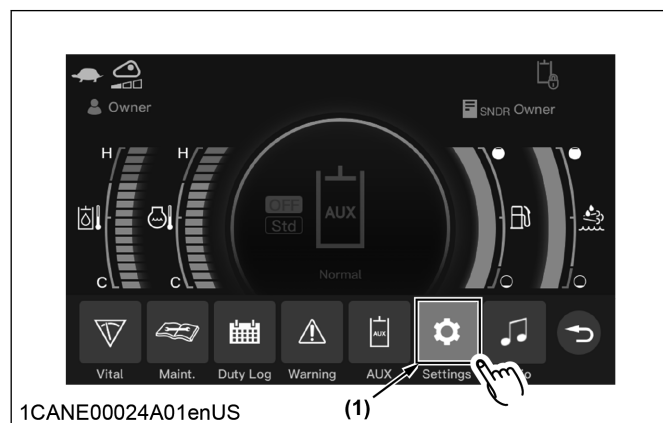
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

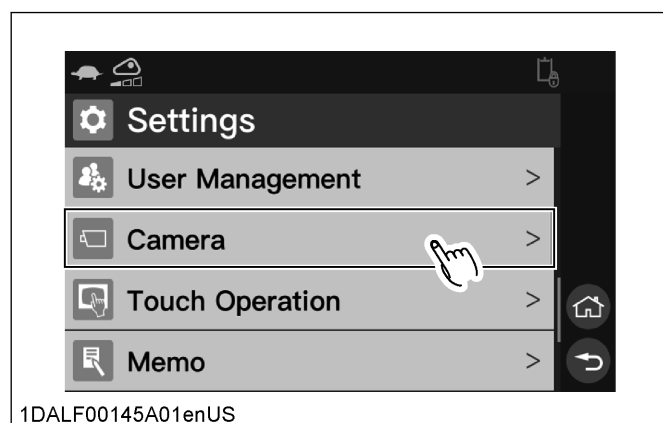
(2) Menu icon

2. Rotate the jog dial to select the icon [Settings], and press the jog dial switch.
For touch operation, touch the icon [Settings].



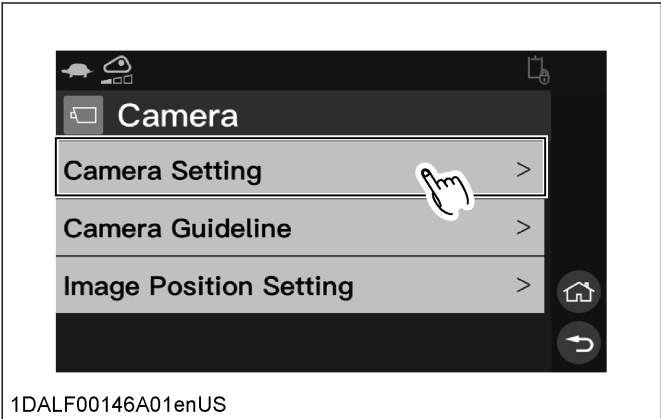
(1) Icon

3. Rotate the jog dial to select [Camera], and press the jog dial switch.
For touch operation, scroll the display, and touch [Camera].

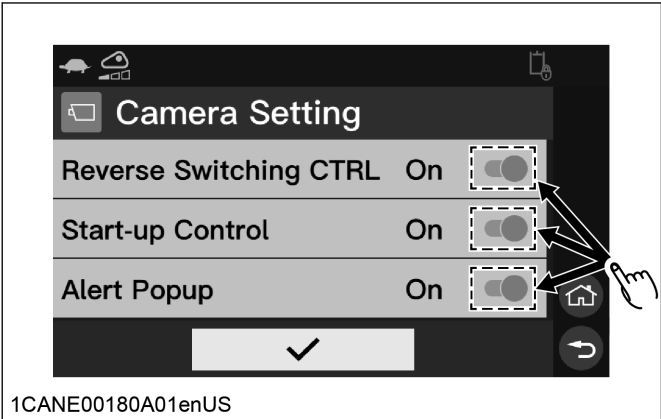


Setting for switching to the rearview camera screen

1. Rotate the jog dial to [Camera Setting], and press the jog dial switch.
For touch operation, touch [Camera Setting].



- 2. Rotate the jog dial to select **[Reverse Switching CTRL]**, **[Start-up Control]**, or **[Alert Popup]**, and press the jog dial switch.
- 3. Rotate the jog dial to the right or left to select the desired setting, and press the jog dial switch to confirm the selection.
For touch operation, touch the buttons to select the desired setting.



Function of **[Reverse Switching CTRL]**

[On]	The display automatically switches to the rearview camera screen when the machine moves backward.
[Off]	The display does not switch to the rearview camera screen when the machine moves backward.

Function of **[Start-up Control]**

[On]	If the rearview camera screen was displayed when the start switch was set to the "OFF" mode during the previous time, the rearview camera screen is displayed the next time when the start switch is set to the "ACCESSORY" mode.
[Off]	The home screen is always displayed when the start switch is set to the "ACCESSORY" mode.

Function of **[Alert Popup]**

[On]	The message "Always visually check surroundings for safety." appears when switching to the rearview camera screen.
[Off]	The message does not appear when switching to the rearview camera screen. When [Image Position Setting] is set to [Lower] , the message appears even if [Alert Popup] is set to [Off] .

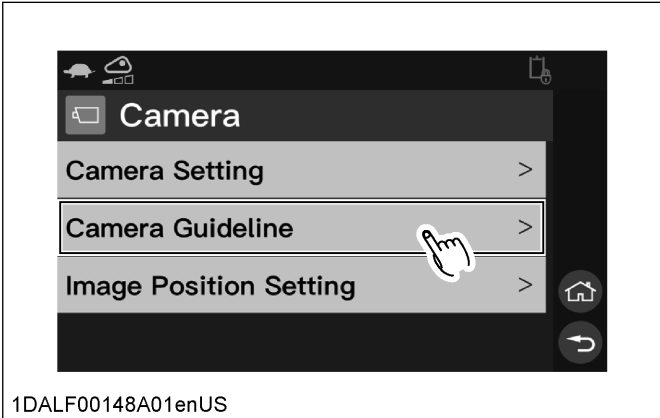
- 4. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to save the new setting.
For touch operation, touch the icon **[✓]**.

NOTE :

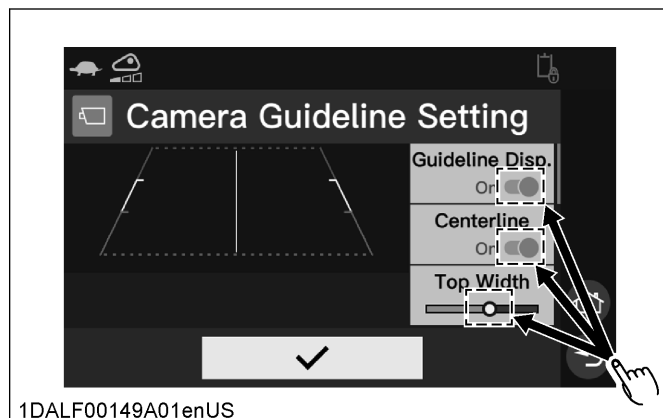
- To retain the previous setting, press the return switch.
For touch operation, touch the return button.

Setting of rearview camera screen

- 1. Rotate the jog dial to **[Camera Guideline]**, and press the jog dial switch.
For touch operation, touch **[Camera Guideline]**.



- 2. Rotate the jog dial to select the item you wish to change or adjust, and press the jog dial switch.
- 3. Rotate the jog dial to the right or left to select the desired setting, and press the jog dial switch to confirm the selection.
For touch operation, touch the buttons to select the desired setting, or slide the sliders to adjust the desired setting.



Item	Function
[Guideline Disp.]	Sets the display of guidelines to ON/OFF.
[Centerline]	Sets the display of center line of guidelines to ON/OFF.
[Top Width]	Sets the length of the top line (green dashed line) within the guidelines.
[Bottom Width]	Sets the length of the bottom line (red dashed line) within the guidelines.
[Top Hgt.]	Sets the vertical position of the top line (green dashed line) within the guidelines.
[Bottom Hgt.]	Sets the vertical position of the bottom line (red dashed line) within the guidelines.
[Yellow Hgt.]	Sets the length of the left and right lines (yellow line) within the guidelines.
[Red Hgt.]	Sets the length of the left and right lines (red line) within the guidelines.
[Restore Default]	Return the camera guideline to the factory default settings.

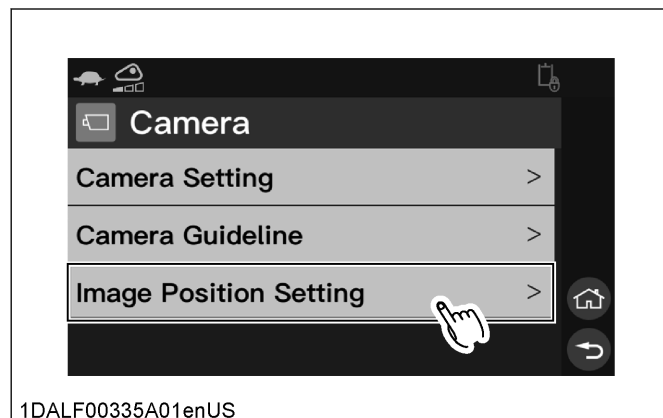
4. Rotate the jog dial to select the icon [✓], and press the jog dial switch to save the new setting.
For touch operation, touch the icon [✓].

NOTE :

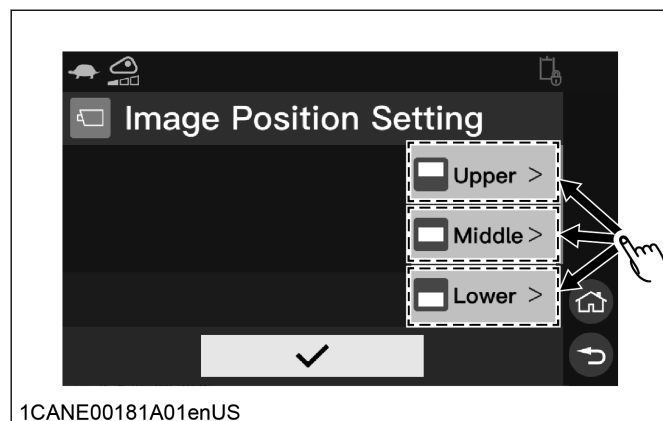
- To retain the previous setting, press the return switch.
For touch operation, touch the return button.

16. Setting the rearview camera image position

1. Rotate the jog dial to [Image Position Setting], and press the jog dial switch.
For touch operation, touch [Image Position Setting].



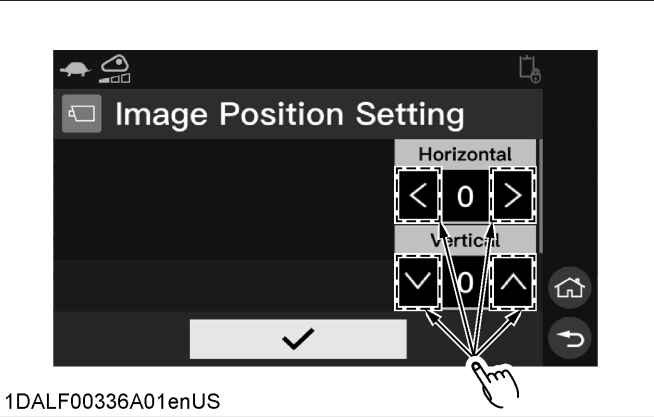
2. Rotate the jog dial to select the desired rearview camera angle, and press the jog dial switch.
For touch operation, touch the desired rearview camera angle.



Item	Function
[Upper]	Sets the rearview camera image position when the upper angle selected in the rearview camera screen.
[Middle]	Sets the rearview camera image position when the middle angle selected in the rearview camera screen.
[Lower]	Sets the rearview camera image position when the lower angle selected in the rearview camera screen.
[Restore Default]	Return all rearview camera image positions to the factory default settings.

3. Rotate the jog dial to select the item you wish to adjust, and press the jog dial switch.

4. Rotate the jog dial to the right or left to select the desired setting, and press the jog dial switch to confirm the selection.
For touch operation, touch the buttons [>] / [<], [^] / [v], or [+] / [-].



Item	Function
[Horizontal]	Sets the horizontal position of the currently selected rearview camera image.
[Vertical]	Sets the vertical position of the currently selected rearview camera image.
[Zoom]	Sets the magnification of the currently selected rearview camera image.
[Restore Default]	Return the currently selected rearview camera image position to the factory default settings.

NOTE :

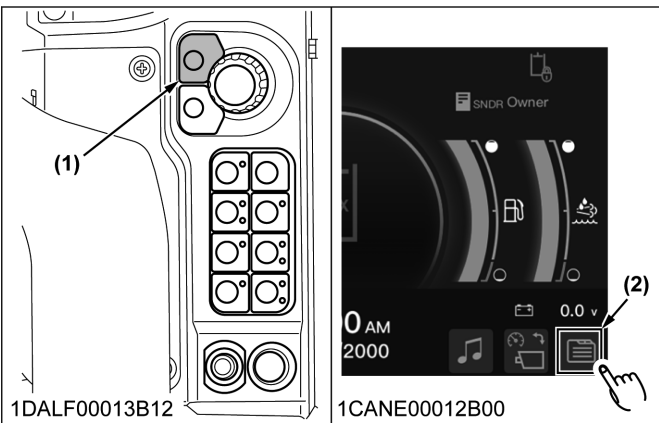
- The image position can be set for [Upper], [Middle], or [Lower]. Default settings can also be set individually.
5. Rotate the jog dial to select the icon [✓], and press the jog dial switch to save the new setting.
For touch operation, touch the icon [✓].

NOTE :

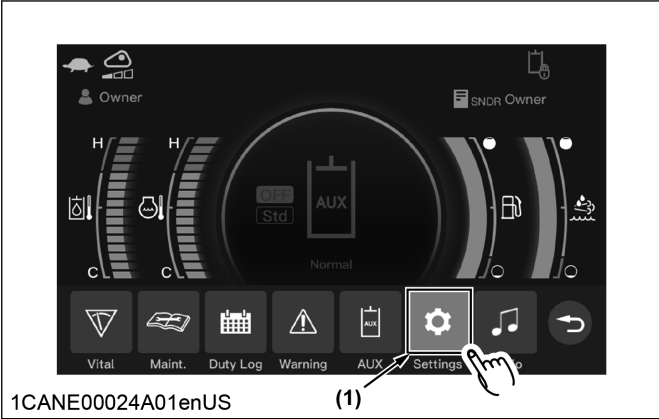
- To retain the previous setting, press the return switch.
For touch operation, touch the return button.

17. Setting the restriction of the touch operation

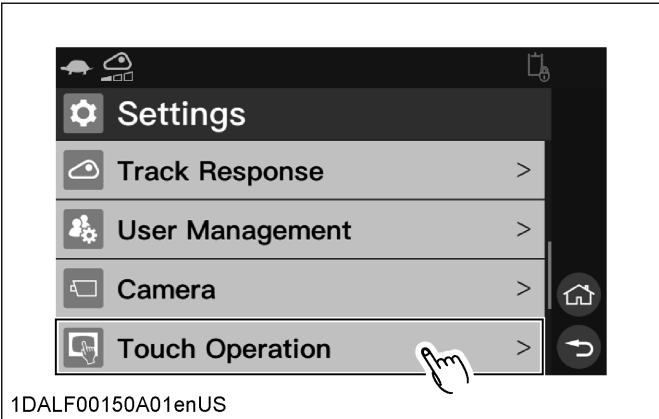
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



- (1) Home switch (2) Menu icon
2. Rotate the jog dial to select the icon [Settings], and press the jog dial switch.
For touch operation, touch the icon [Settings].

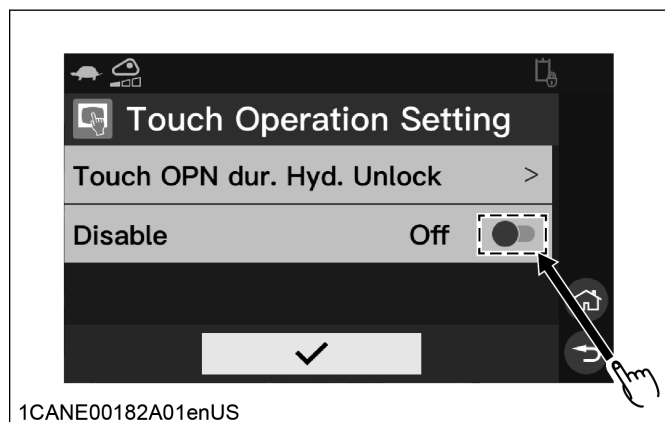


- (1) Icon
3. Rotate the jog dial to select [Touch Operation], and press the jog dial switch.
For touch operation, scroll the display, and touch [Touch Operation].



4. Rotate the jog dial to select [Disable], and press the jog dial switch.

5. Rotate the jog dial to the right or left to select the desired setting, and press the jog dial switch to confirm the selection.
For touch operation, touch the button to select the desired setting.



Function of [Disable]

[On]	Touch operation is restricted at all times.
[Off]	Touch operation is available when the hydraulic system is locked.

6. Rotate the jog dial to select the icon [✓], and press the jog dial switch to save the new setting.
For touch operation, touch the icon [✓].

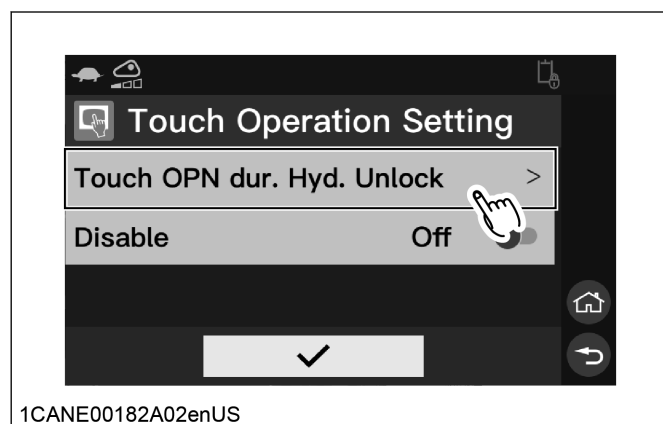
NOTE :

- To retain the previous setting, press the return switch.
For touch operation, touch the return button.
- Factory default setting of [Disable] is [Off].

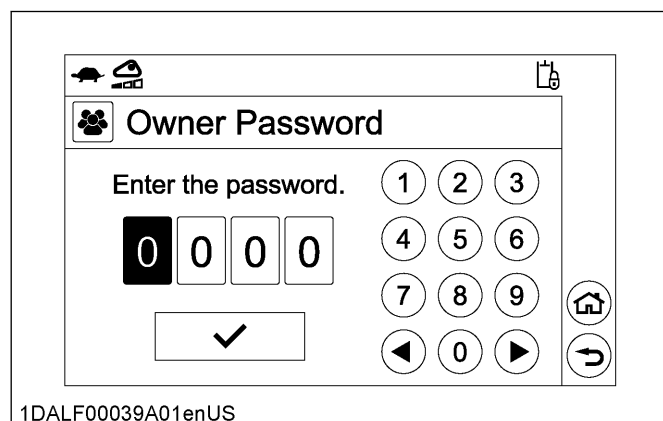
17.1 Setting the restriction of the touch operation during the hydraulic system unlocked

NOTE :

- This setting is available only when logged in with the owner account.
- Make the touch operation setting screen appear on the display.
(See Setting the restriction of the touch operation on page 82)
 - Rotate the jog dial to select [Touch OPN dur. Hyd. Unlock], and press the jog dial switch.
For touch operation, touch [Touch OPN dur. Hyd. Unlock].



3. Enter the owner password.



- Rotate the jog dial to select [Touch OPN dur. Hyd. Unlock], and press the jog dial switch.
- Rotate the jog dial to the right or left to select the desired setting, and press the jog dial switch to confirm the selection.
For touch operation, touch the button to select the desired setting.



Function of [Touch OPN dur. Hyd. Unlock]

[On]	Touch operation is available when the hydraulic system is unlocked.
[Off]	Touch operation is restricted when the hydraulic system is unlocked.

- Rotate the jog dial to select the icon [✓], and press the jog dial switch to save the new setting. For touch operation, touch the icon [✓].

NOTE :

- To retain the previous setting, press the return switch.
For touch operation, touch the return button.

18. Auto shift adjustment

WARNING

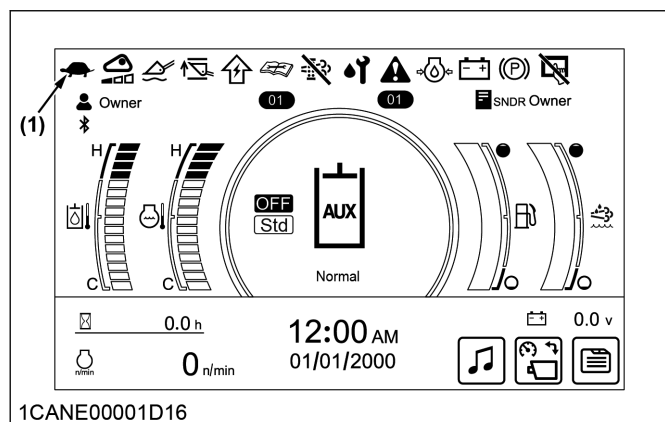
To avoid personal injury or death:

- If the machine moves forward or backward while setting, return the left control (traveling) lever to the neutral position and stop the engine immediately.

NOTE :

- This setting is available only when logged in with the owner account.

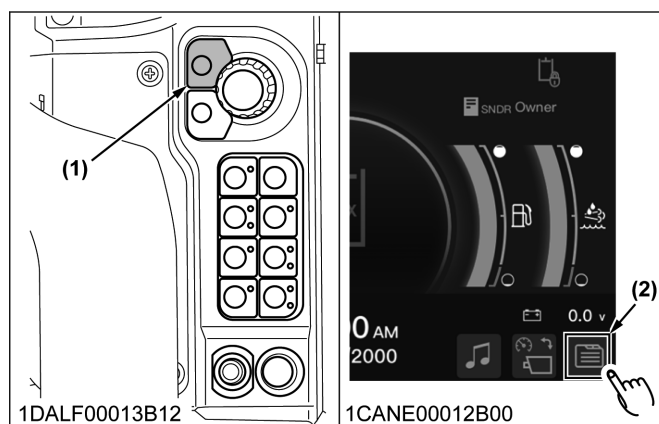
The travel speed automatically shifts into low speed when the drive resistance increases while traveling in high speed. Thereafter, when the resistance decreases, it returns to high speed. While the travel speed shifts into low speed automatically, the speed indicator blinks.



(1) Speed indicator

If you feel that the effect of auto shift has become poor when the machine is in use, performing the following readjustments will restore the effect of the auto shift to its equivalent at the time of purchase.

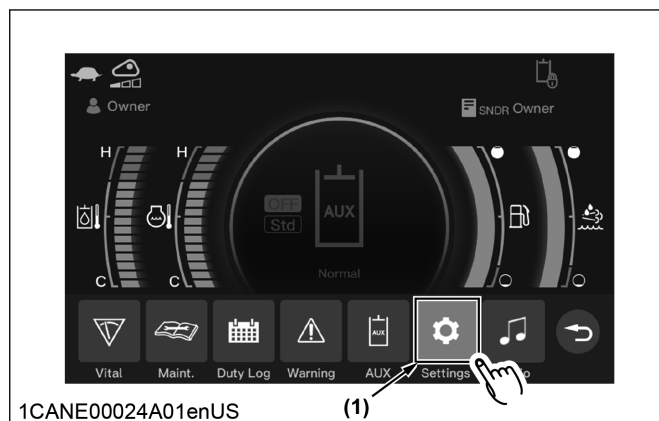
- Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

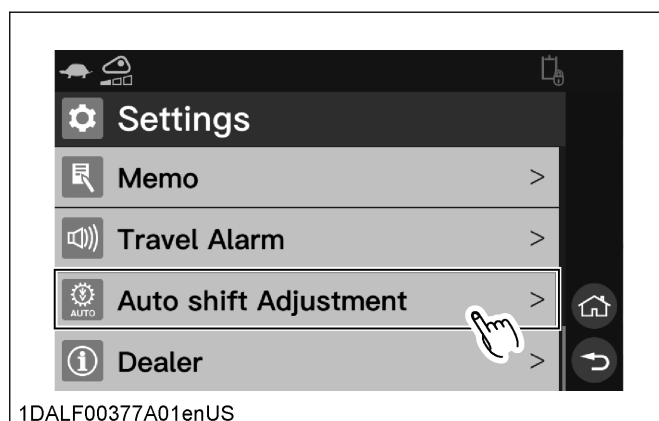
(2) Menu icon

- Rotate the jog dial to select the icon [Settings], and press the jog dial switch. For touch operation, touch the icon [Settings].

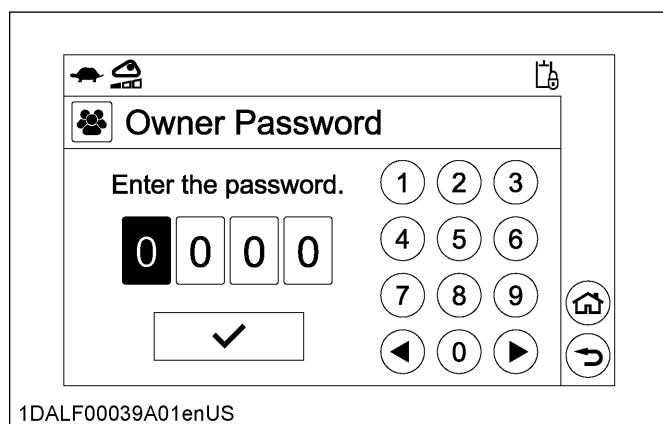


(1) Icon

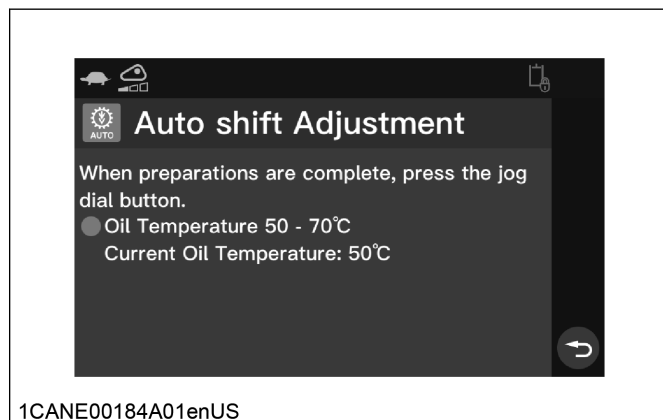
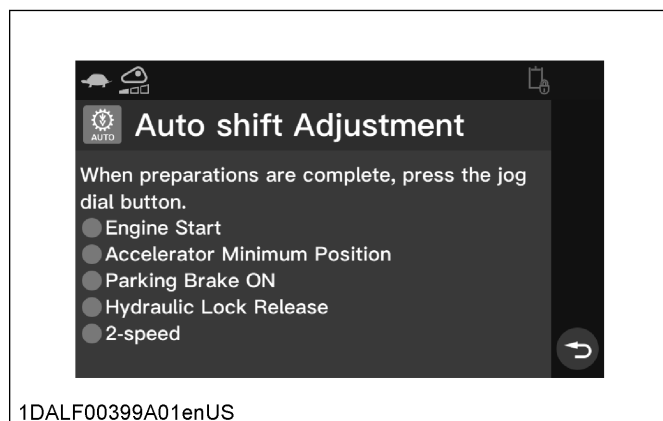
- Rotate the jog dial to select [Auto shift Adjustment], and press the jog dial switch. For touch operation, touch [Auto shift Adjustment].



4. Enter the owner password.



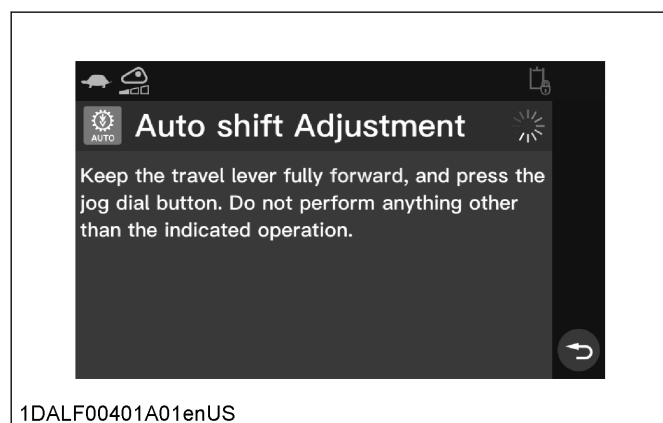
5. Perform the following operations following the instructions on the screen.
- Start the engine.
 - Rotate the engine speed control dial to the leftmost (minimum) position, and release the accelerator pedal.
 - Turn on the parking brake switch.
 - Enable the hydraulic system.
 - Let the engine warm up after start-up to raise the hydraulic oil temperature to 50 °C or higher. After operation, press the jog dial switch.



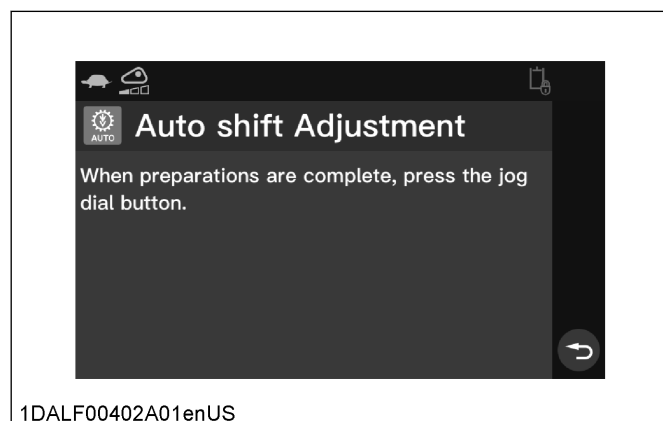
6. When the following screen is displayed, press the jog dial switch again while pushing the left control (traveling) lever to the fully forward position. The machine starts the adjustment.

NOTE :

- The icon on the screen rotates while the machine is being adjusted. At this time, the engine speed increases and enters high idle state in approximately 20 seconds.
- Operate the left control (traveling) lever straight forward. If the left control (traveling) lever is tilted to the left or right, it cannot be set correctly.



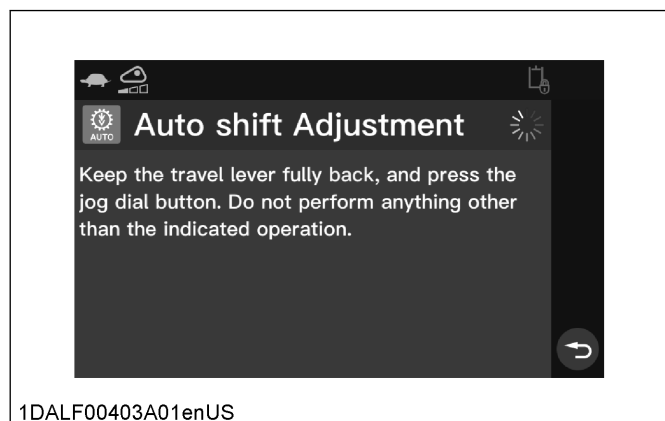
7. When the following screen is displayed, return the left control (traveling) lever to the neutral position and press the jog dial switch again.



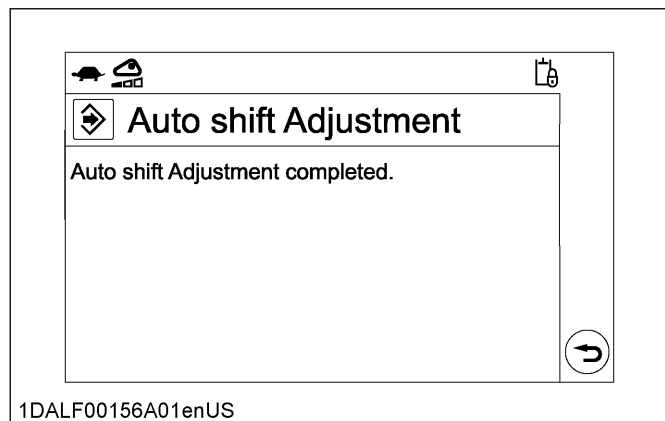
8. When the following screen is displayed, press the jog dial switch again while pulling the left control (traveling) lever to the fully backward position. The machine starts the adjustment.

NOTE :

- The icon on the screen rotates while the machine is being adjusted. At this time, the engine speed increases and enters high idle state in approximately 20 seconds.
- Operate the left control (traveling) lever straight backward. If the left control (traveling) lever is tilted to the left or right, it cannot be set correctly.

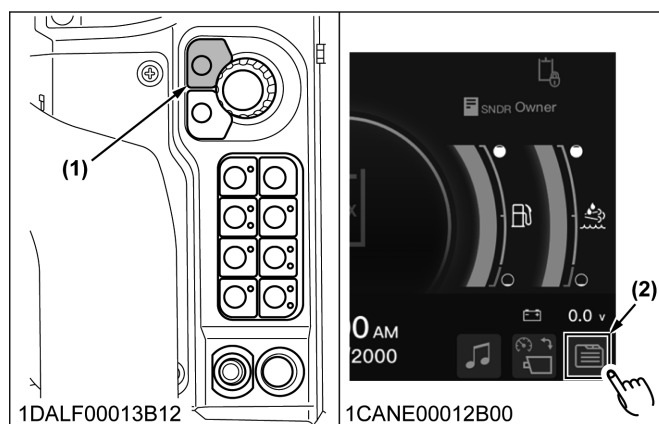


9. The adjustment is complete when the following screen is displayed. After setting, return left control (traveling) lever to the neutral position.



19. Setting the user name

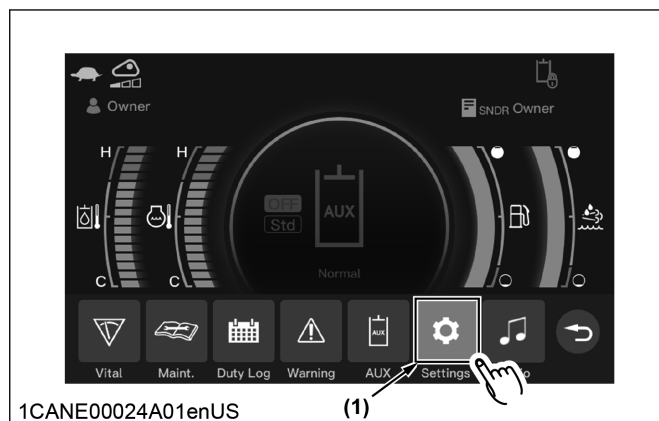
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

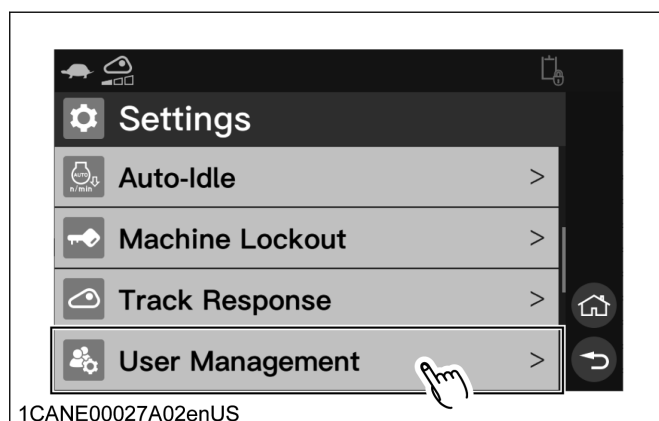
(2) Menu icon

2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch. For touch operation, touch the icon **[Settings]**.



(1) Icon

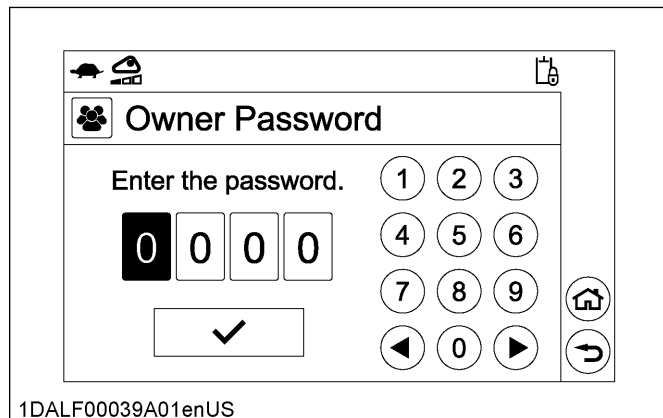
3. Rotate the jog dial to select **[User Management]**, and press the jog dial switch. For touch operation, scroll the display, and touch **[User Management]**.



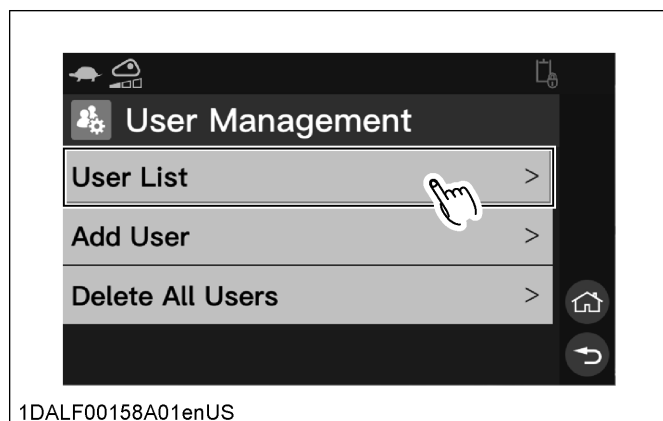
4. Enter the owner password.

NOTE :

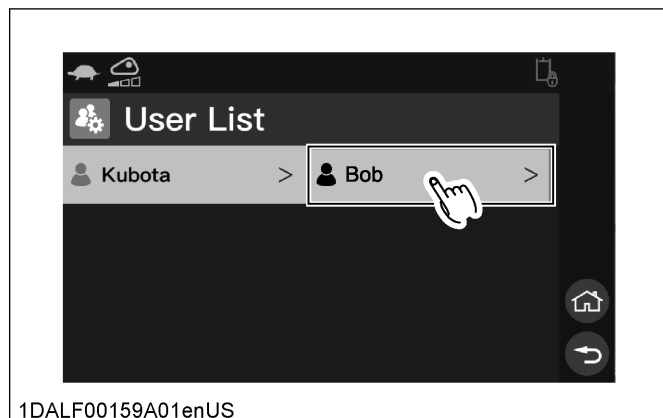
- If you log in with an account other than the owner account, the [User Settings] screen will be displayed. See step 7 onwards.



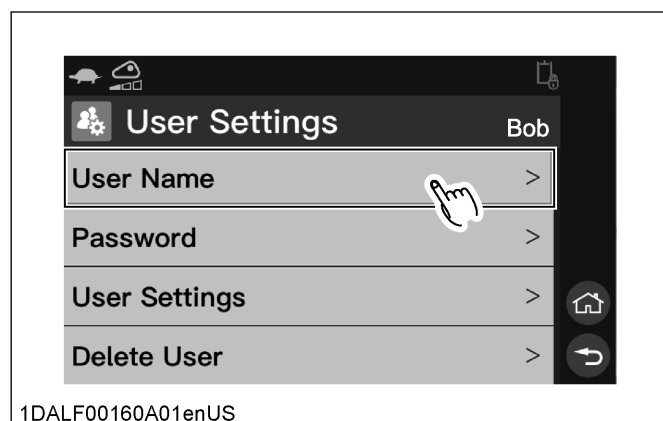
5. Rotate the jog dial to select **[User List]**, and press the jog dial switch.
For touch operation, touch **[User List]**.



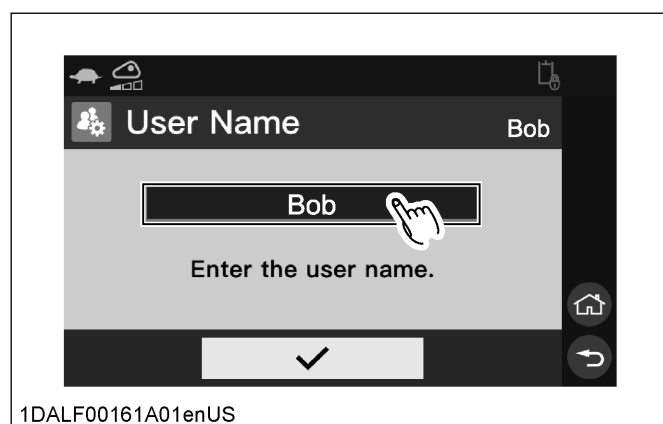
6. Rotate the jog dial to select the user you wish to change the name, and press the jog dial switch.
For touch operation, touch the user you wish to change the name.



7. Rotate the jog dial to select **[User Name]**, and press the jog dial switch.
For touch operation, touch **[User Name]**.



8. Rotate the jog dial to select the user name entry field, and press the jog dial switch. The keyboard appears on the screen.
For touch operation, touch the user name entry field.

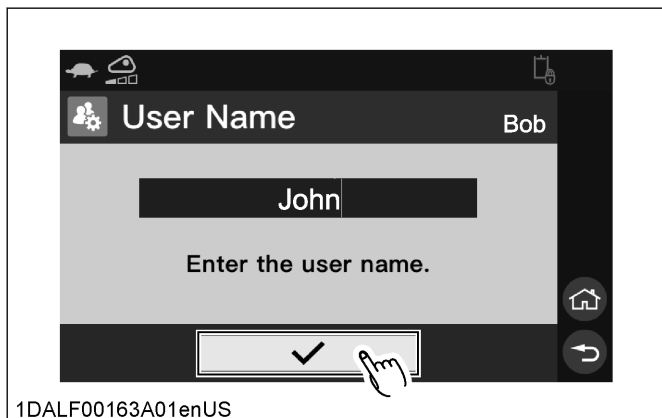


9. Rotate the jog dial left or right to select the characters you want to enter, and press the jog dial switch to enter the user name.
For touch operation, touch the characters you want to enter.

10. Rotate the jog dial to select the icon [←], and press the jog dial switch to save the new settings.
For touch operation, touch the icon [←].

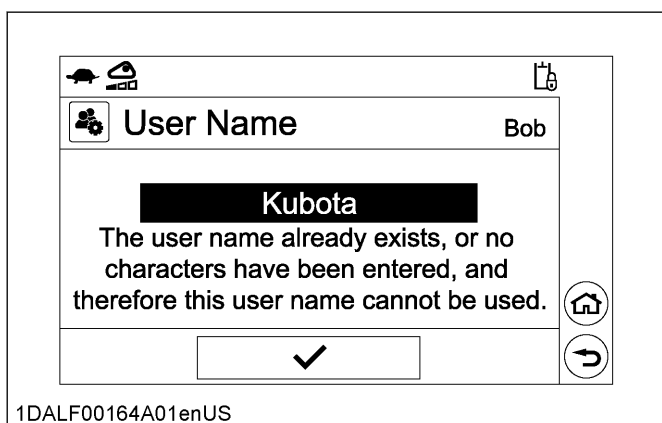


11. Rotate the jog dial to select the icon [✓], and press the jog dial switch. For touch operation, touch the icon [✓].



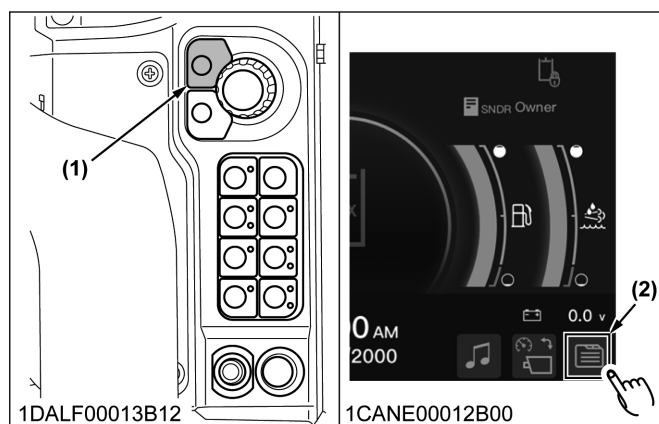
NOTE :

- To retain the previous settings, rotate the jog dial to the return button, and press the jog dial switch. For touch operation, touch the return button
- You cannot set a user name that has already been registered. The following screen is displayed if you enter an already registered user name.



20. Setting the user password

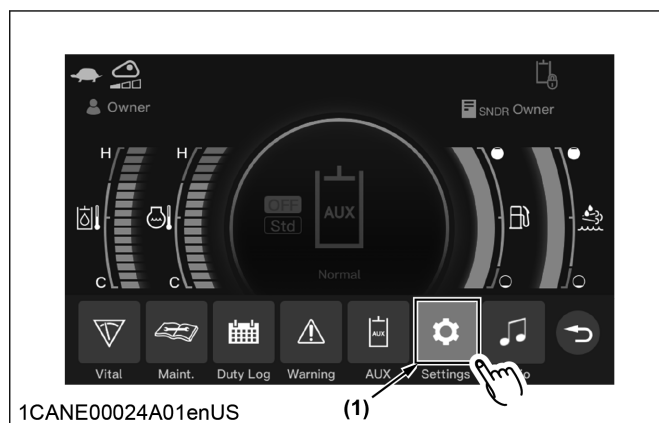
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

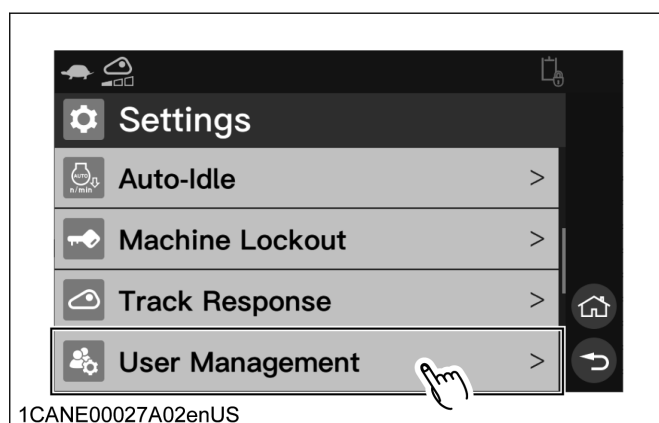
(2) Menu icon

2. Rotate the jog dial to select the icon [Settings], and press the jog dial switch.



(1) Icon

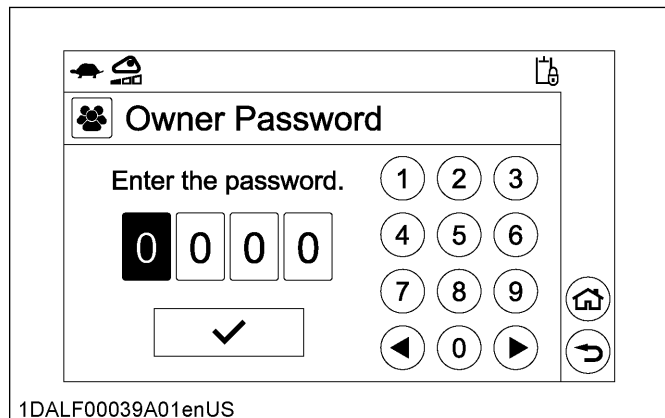
3. Rotate the jog dial to select [User Management], and press the jog dial switch. For touch operation, scroll the display, and touch [User Management].



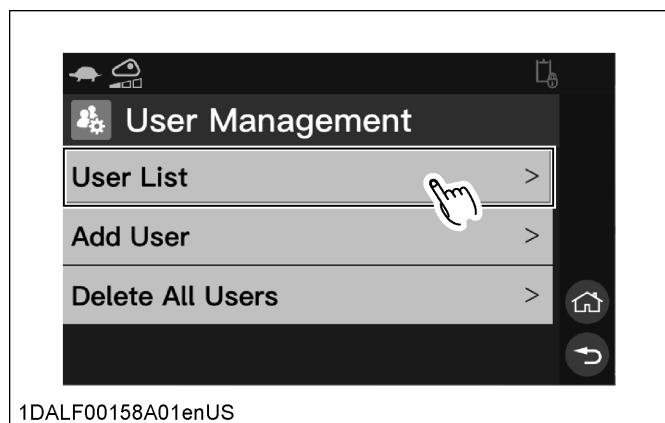
4. Enter the owner password.

NOTE :

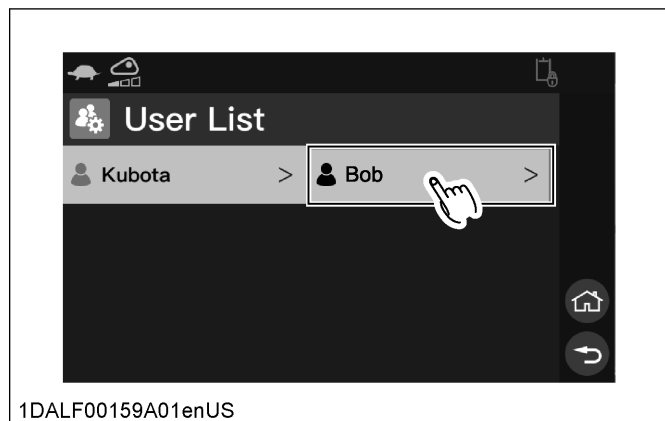
- If you log in with an account other than the owner account, the [User Settings] screen will be displayed. See step 7 onwards.



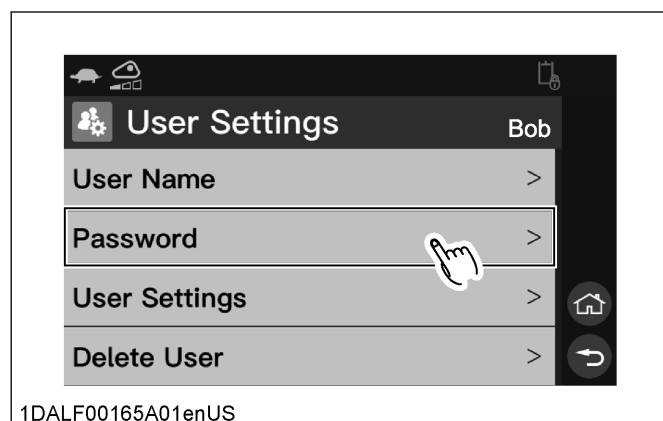
5. Rotate the jog dial to select **[User List]**, and press the jog dial switch.
For touch operation, touch **[User List]**.



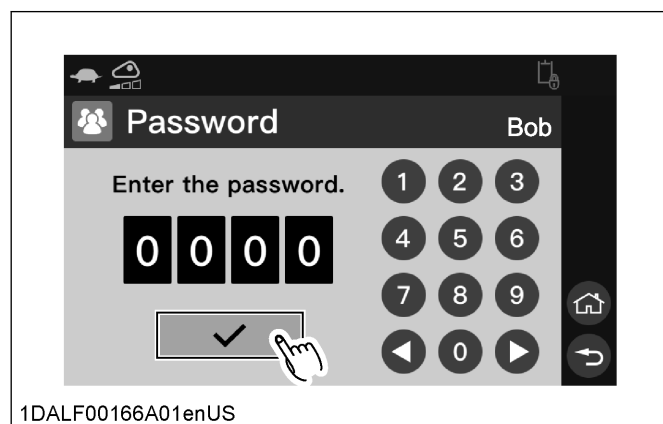
6. Rotate the jog dial to select the user you wish to change the password, and press the jog dial switch.
For touch operation, touch the user you wish to change the password.



7. Rotate the jog dial to select **[Password]**, and press the jog dial switch.
For touch operation, touch **[Password]**.

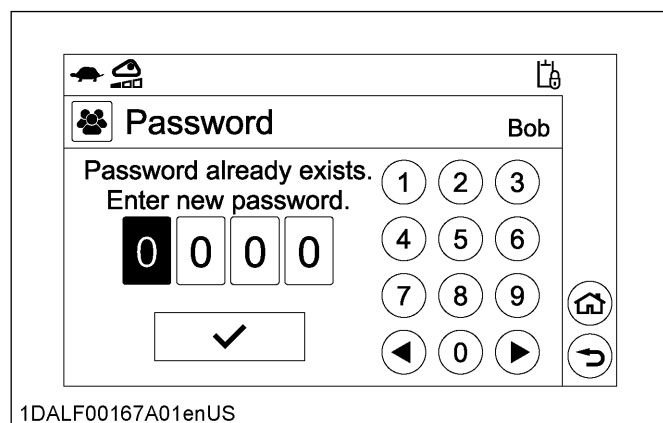


8. Rotate the jog dial left or right to select the number you want to enter, and press the jog dial switch to enter the password.
For touch operation, touch the numbers you want to enter.
9. Rotate the jog dial to select the icon [✓], and press the jog dial switch to save the new settings.
For touch operation, touch the icon [✓].



NOTE :

- You cannot set a password that has already been registered. The following screen is displayed if you enter an already registered password.

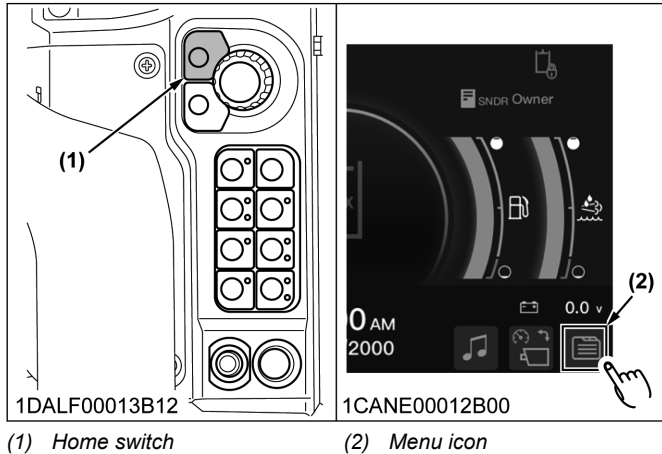


21. Setting function restrictions for each user

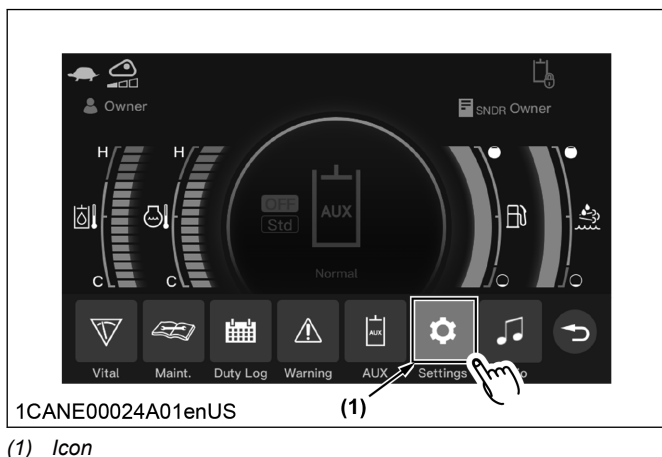
NOTE :

- This setting is available only when logged in with the owner account.

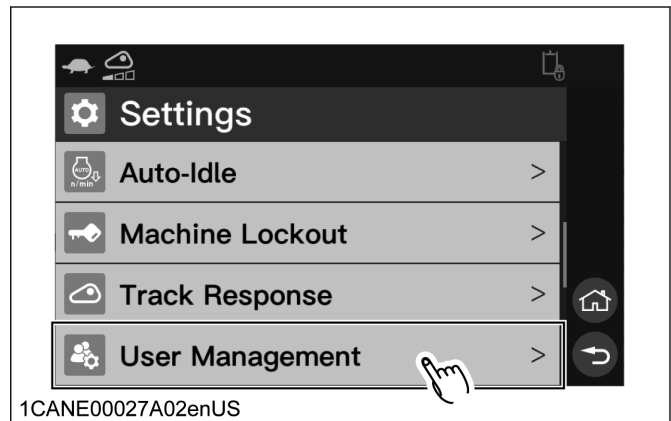
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



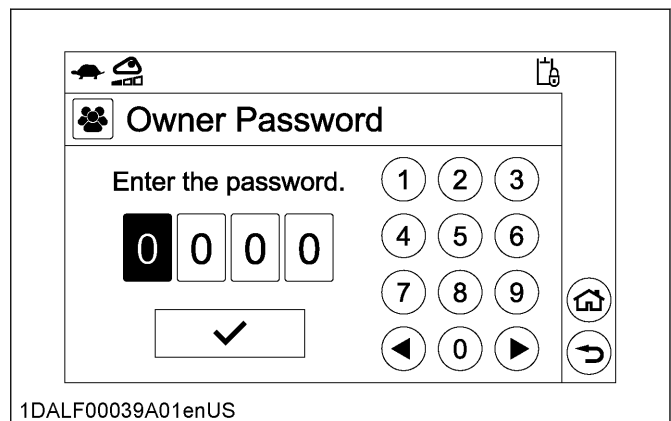
2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.



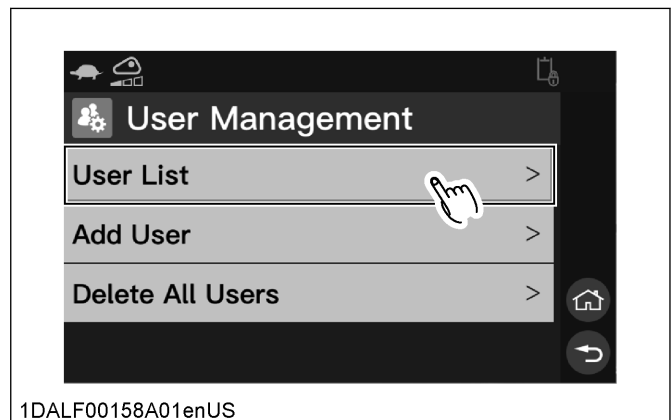
3. Rotate the jog dial to select **[User Management]**, and press the jog dial switch.
For touch operation, scroll the display, and touch **[User Management]**.



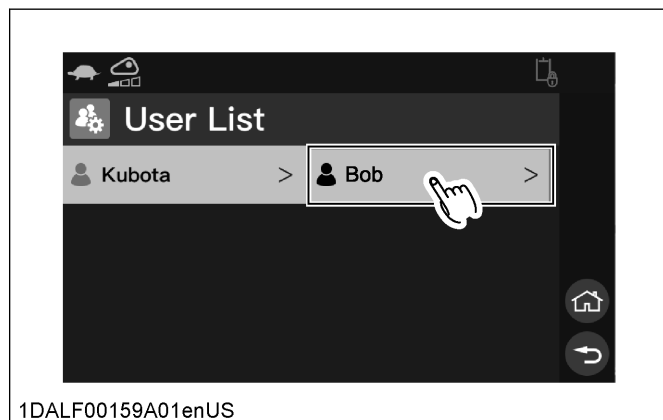
4. Enter the owner password.



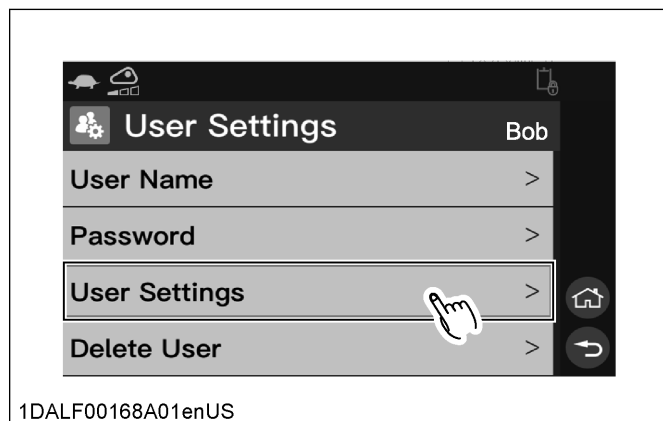
5. Rotate the jog dial to select **[User List]**, and press the jog dial switch.
For touch operation, touch **[User List]**.



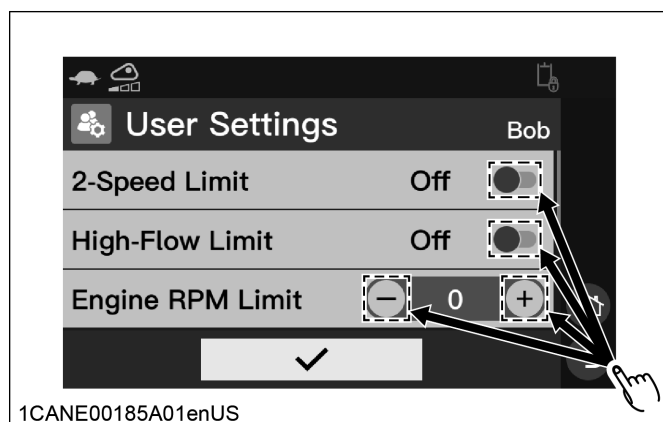
6. Rotate the jog dial to select the user you wish to set the restriction, and press the jog dial switch.
For touch operation, touch the user you wish to set the restriction.



7. Rotate the jog dial to select **[User Settings]**, and press the jog dial switch.
For touch operation, touch **[User Settings]**.



8. Rotate the jog dial to the right or left to select the desired setting, and press the jog dial switch to confirm the selection.
For touch operation, touch the buttons, **[-]**, or **[+]** to select the desired setting.



Item	Function
[2-Speed Limit]	When set to [On] , shifting to 2-speed is not possible.
[High-Flow Limit]	When set to [On] , shifting to High Flow mode is not possible.
[Engine RPM Limit]	Subtracts 0 rpm to 400 rpm from the maximum engine speed limit.
[Touch OPN dur. Hyd. Unlock]	When set to [On] , touch operation is possible even when the hydraulic lock is released.
[AUX Setting Limit]	When set to [On] , AUX settings are restricted.
[Maint. Intvl. Reset Limit]	When set to [On] , the periodic check can be reset.

9. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to save the new settings.
For touch operation, touch the icon **[✓]**.

NOTE :

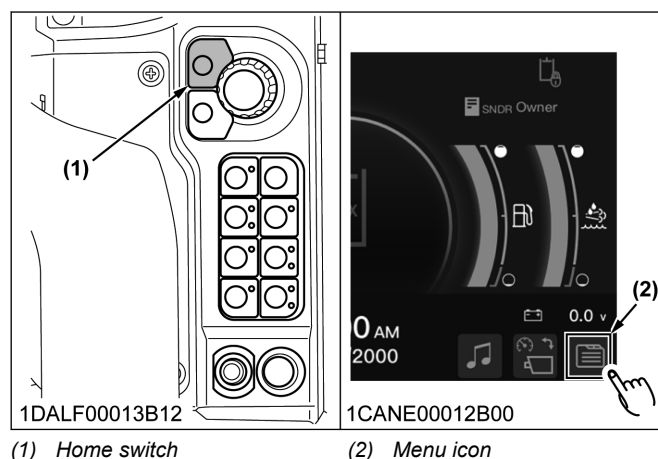
- To retain the previous setting, press the return switch.
For touch operation, touch the return button.

22. Adding the user account

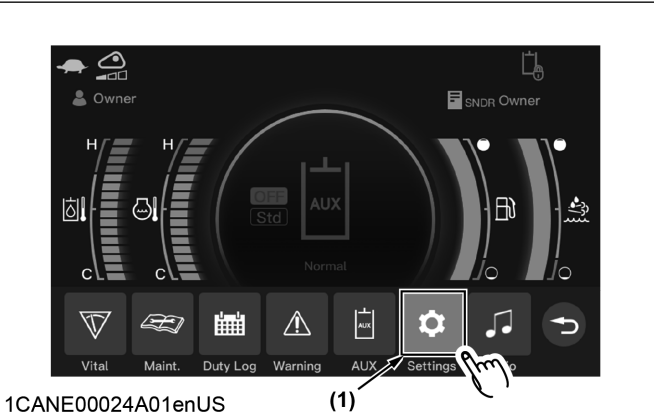
NOTE :

- This setting is available only when logged in with the owner account.

1. Press the home switch or touch the menu icon to make the menu bar appear on the display.

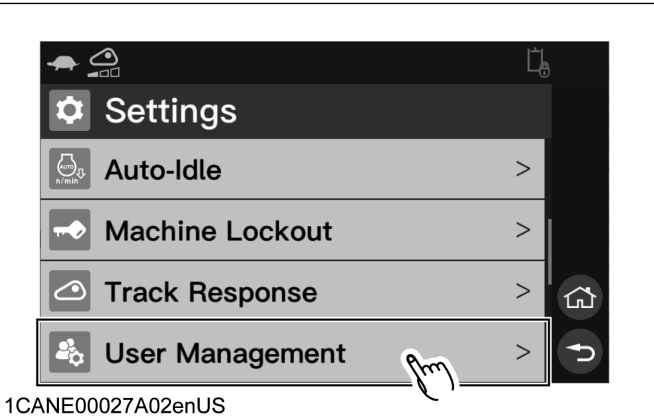


2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.

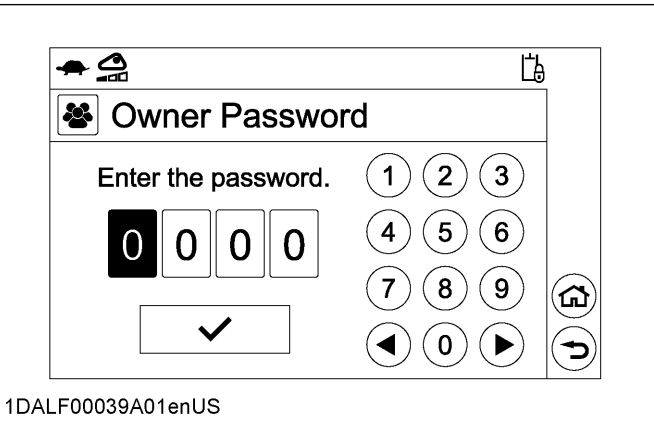


(1) Icon

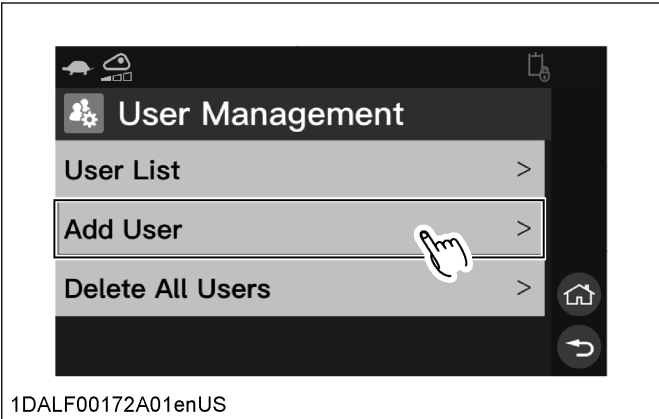
3. Rotate the jog dial to select **[User Management]**, and press the jog dial switch.
For touch operation, scroll the display, and touch **[User Management]**.



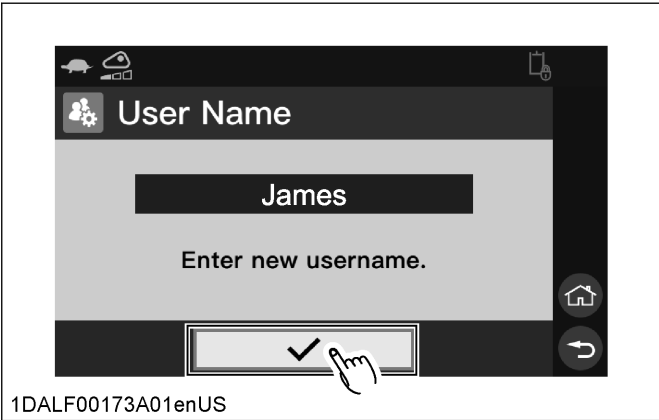
4. Enter the owner password.



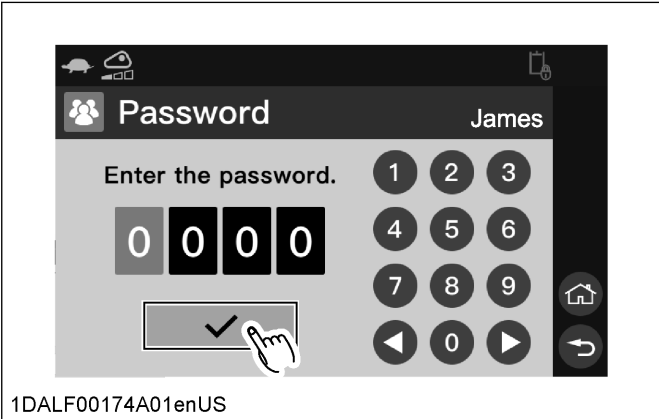
5. Rotate the jog dial to select **[Add User]**, and press the jog dial switch.
For touch operation, touch **[Add User]**.



6. Enter the user name.
(See Setting the user name on page 86)

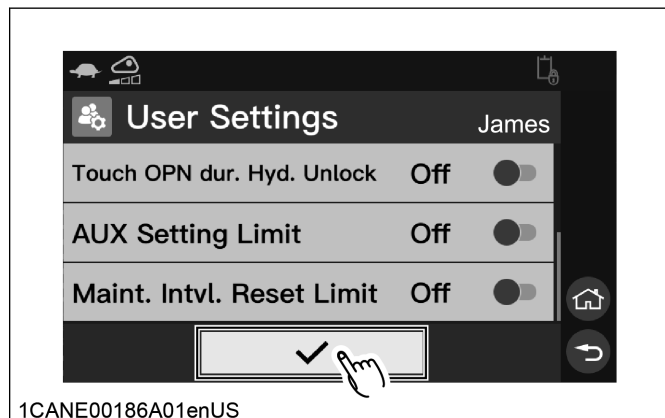


7. Set the password.
(See Setting the user password on page 88)



8. Set the user function restrictions.
(See Setting function restrictions for each user on page 90)

9. Rotate the jog dial to select the icon [✓], and press the jog dial switch to save the new settings.
For touch operation, touch the icon [✓].

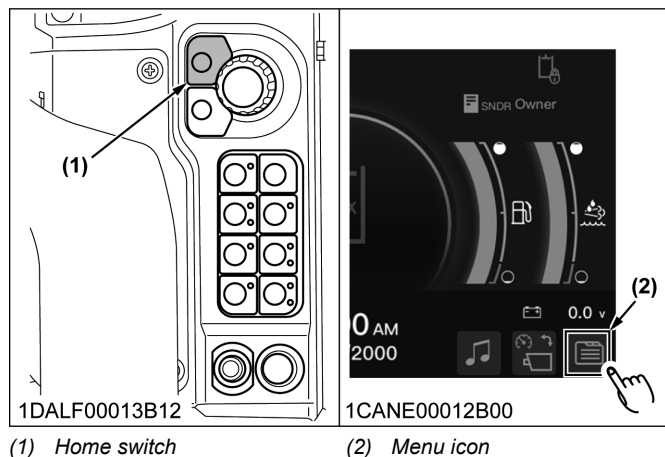


23. Deleting the user account

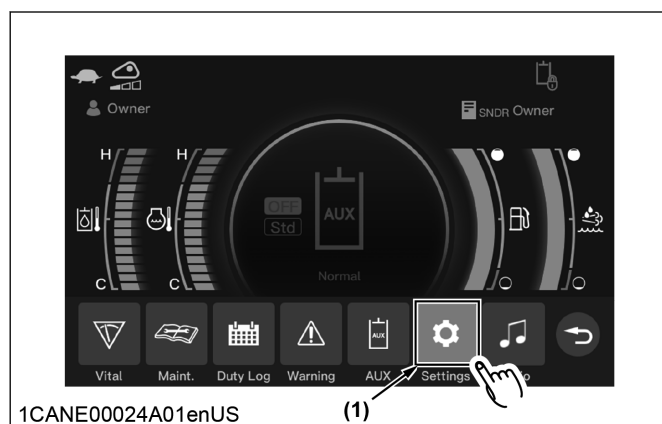
NOTE :

- This setting is available only when logged in with the owner account.
- Deleting a user account also deletes the user's log record.
(See Log record on page 51)

1. Press the home switch or touch the menu icon to make the menu bar appear on the display.

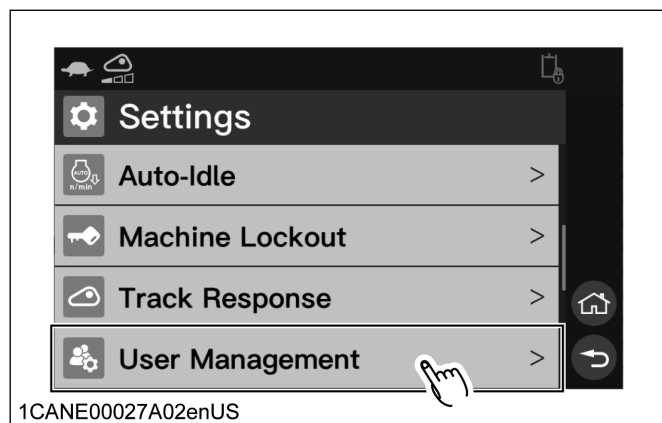


2. Rotate the jog dial to select the icon [Settings], and press the jog dial switch.
For touch operation, touch the icon [Settings].

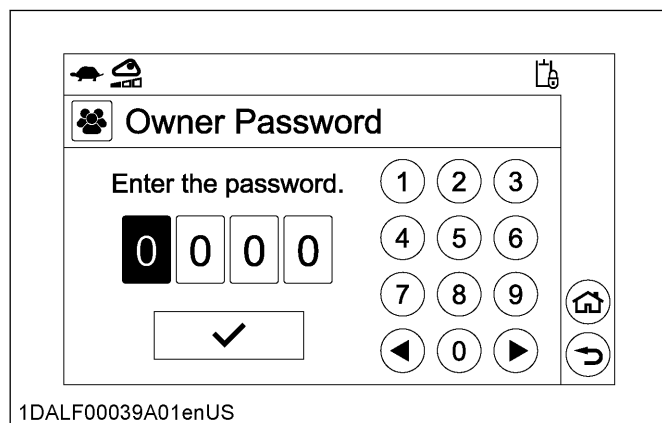


(1) Icon

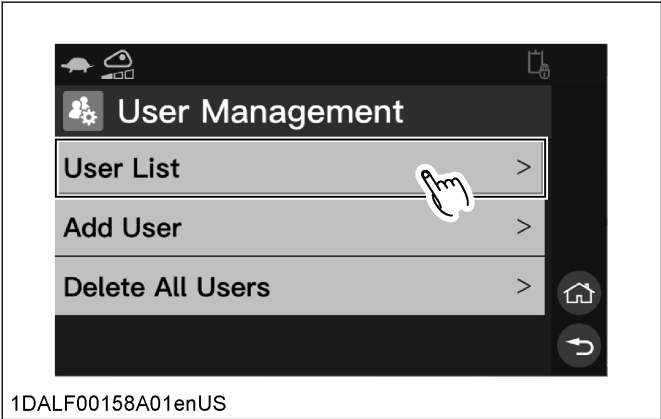
3. Rotate the jog dial to select [User Management], and press the jog dial switch.
For touch operation, scroll the display, and touch [User Management].



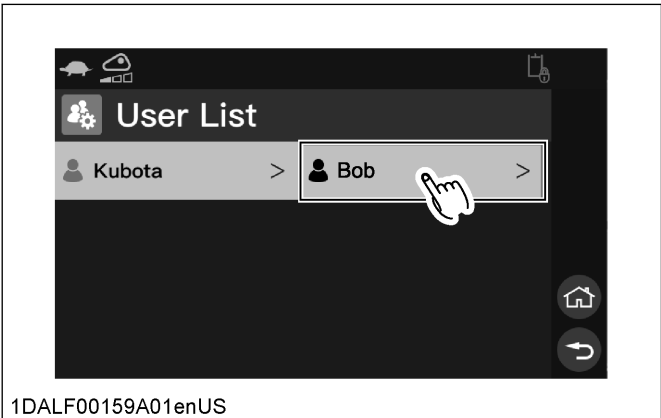
4. Enter the owner password.



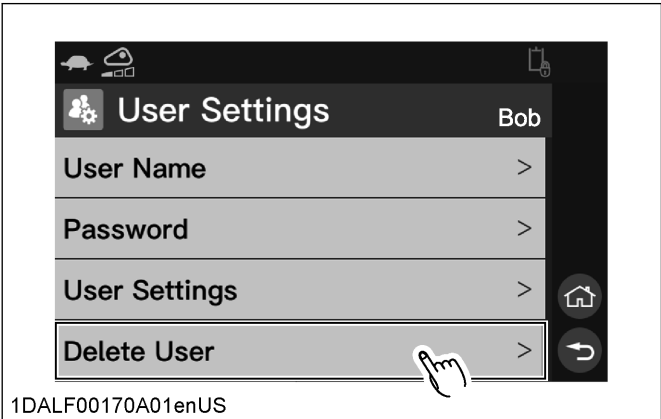
5. Rotate the jog dial to select **[User List]**, and press the jog dial switch.
For touch operation, touch **[User List]**.



6. Rotate the jog dial to select the user account you wish to delete, and press the jog dial switch.
For touch operation, touch the user account you wish to delete.



7. Rotate the jog dial to select **[Delete User]**, and press the jog dial switch.
For touch operation, touch **[Delete User]**.



8. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to delete the user account.
For touch operation, touch the icon **[✓]**.

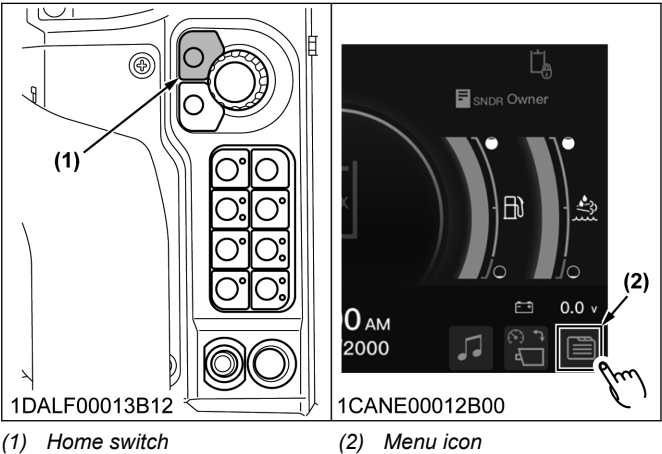


24. Deleting all user account

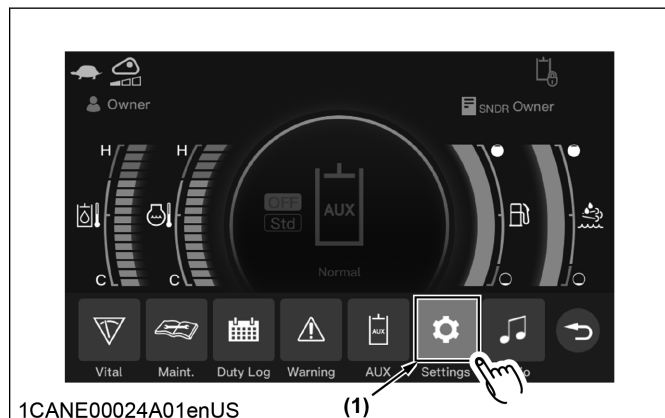
NOTE :

- This setting is available only when logged in with the owner account.
- Deleting a user account also deletes the user's log record.
(See Log record on page 51)

1. Press the home switch or touch the menu icon to make the menu bar appear on the display.

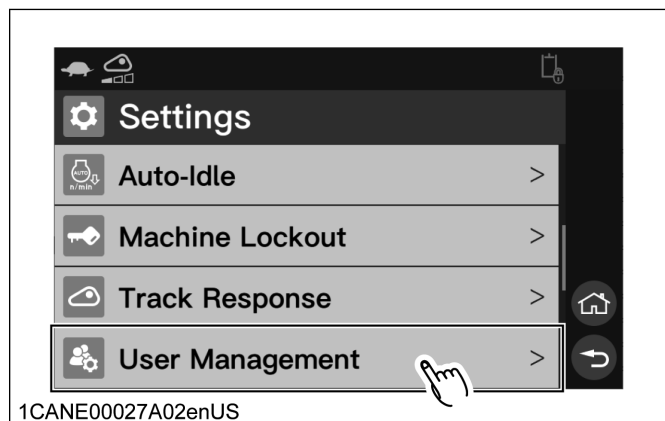


2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.



(1) Icon

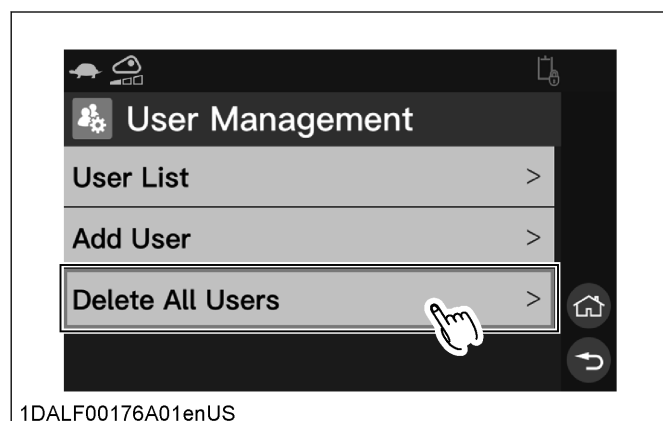
3. Rotate the jog dial to select **[User Management]**, and press the jog dial switch.
For touch operation, scroll the display, and touch **[User Management]**.



4. Enter the owner password.



5. Rotate the jog dial to select **[Delete All Users]**, and press the jog dial switch.
For touch operation, touch **[Delete All Users]**.



6. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to delete all user account.
For touch operation, touch the icon **[✓]**.

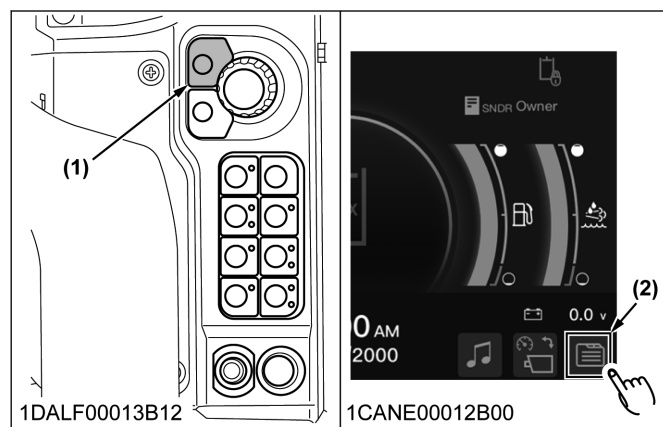


25. Setting the travel alarm

Travel alarm is a sounding function that expands the back-up alarm, which normally sounds only when backing up, to sound for traveling operation in all directions.

To switch the travel alarm to on and off, take the following steps.

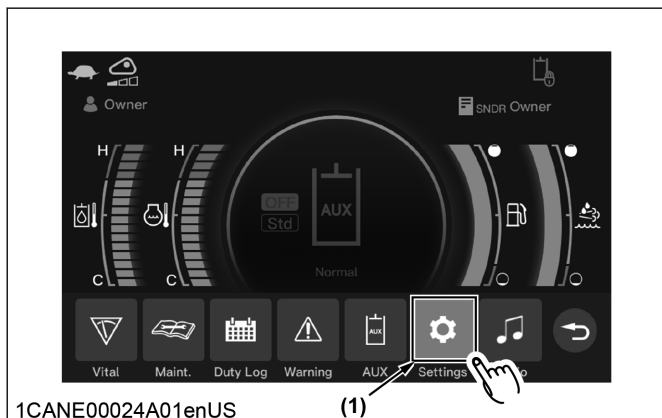
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

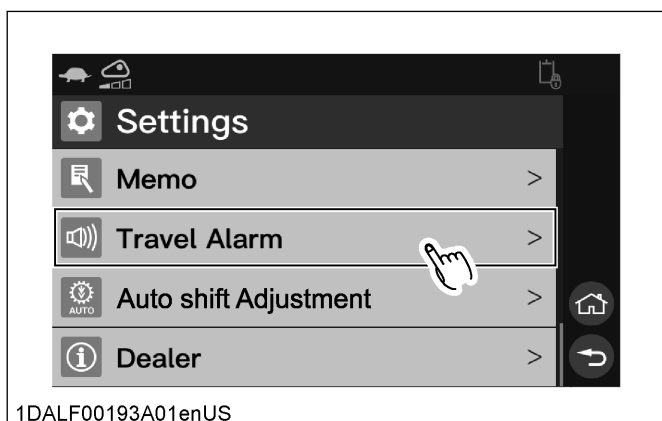
(2) Menu icon

2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.

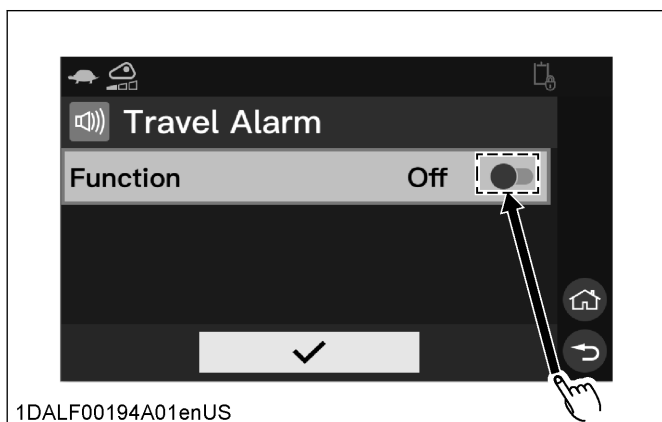


(1) Icon

3. Rotate the jog dial to select **[Travel Alarm]**, and press the jog dial switch.
For touch operation, touch **[Travel Alarm]**.



4. Rotate the jog dial to select **[Function]**, and press the jog dial switch to select the desired setting.
For touch operation, touch the button to select the desired setting.



5. Rotate the jog dial to select the icon **[✓]**, and press the jog dial switch to save the new settings.
For touch operation, touch the icon **[✓]**.

NOTE :

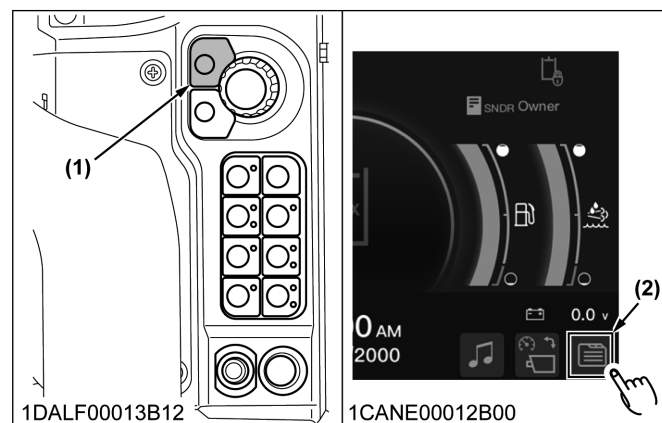
- Even if the travel alarm is set to **[Off]**, the back-up alarm will sound when the machine starts to reverse.
- To retain the previous settings, rotate the jog dial to the return button, and press the jog dial switch.
For touch operation, touch the return button.

26. Setting the dealer name

NOTE :

- This setting is available only when logged in with the owner account.

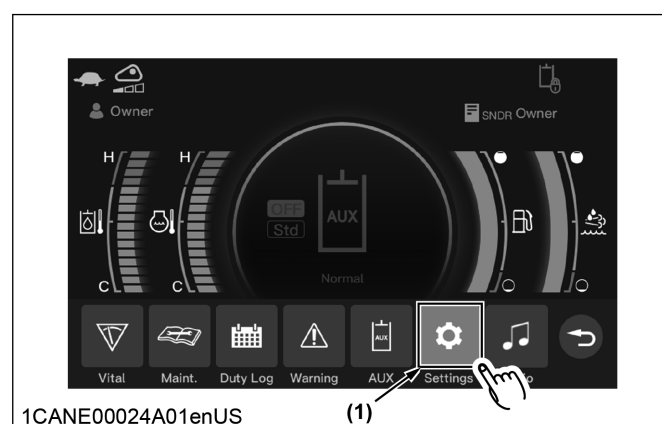
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



(1) Home switch

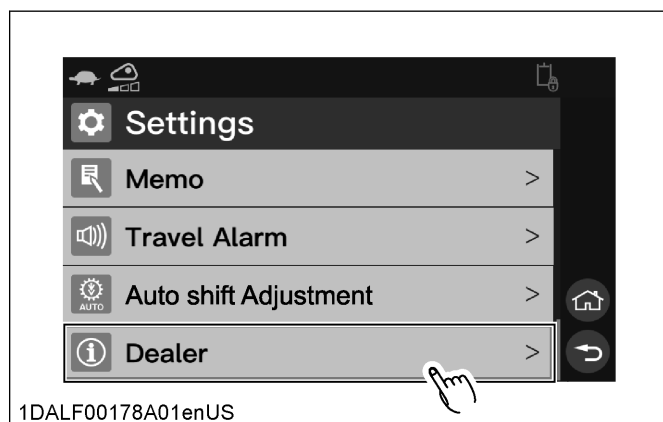
(2) Menu icon

2. Rotate the jog dial to select the icon **[Settings]**, and press the jog dial switch.
For touch operation, touch the icon **[Settings]**.



(1) Icon

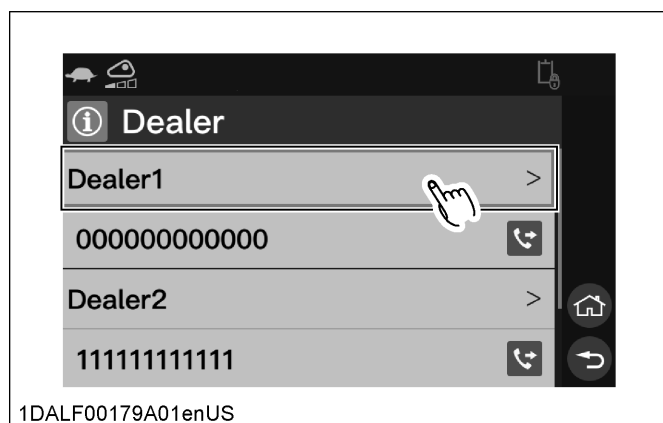
3. Rotate the jog dial to select **[Dealer]**, and press the jog dial switch.
For touch operation, scroll the display, and touch **[Dealer]**.



4. Rotate the jog dial to select the dealer you wish to change the name, and press the jog dial switch.
For touch operation, touch the dealer you wish to change the name.

NOTE :

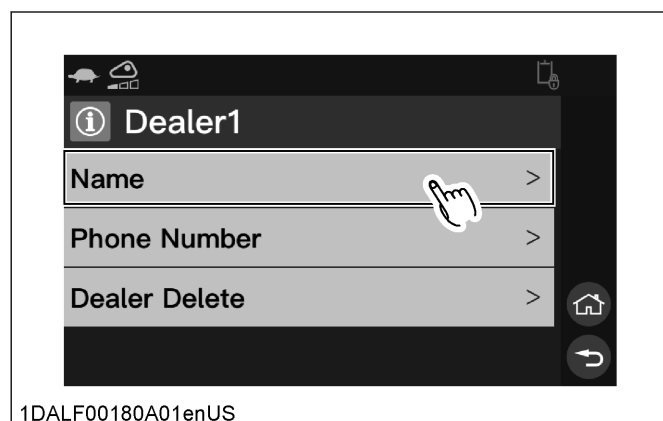
- The dealer name before registration is blank.



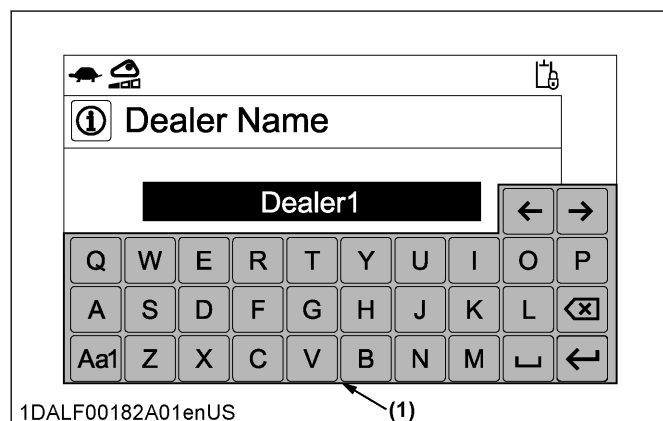
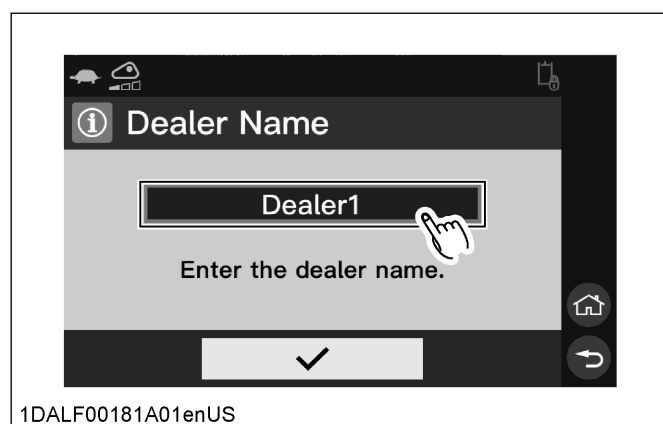
5. Enter the owner password.



6. Rotate the jog dial to select **[Name]**, and press the jog dial switch.
For touch operation, touch **[Name]**.



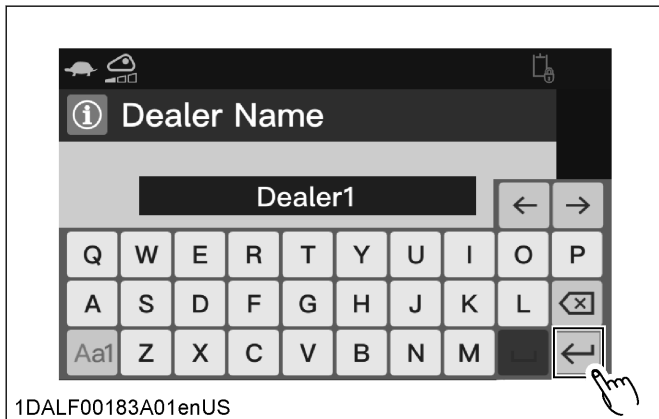
7. Rotate the jog dial to select the dealer name entry field, and press the jog dial switch. The keyboard appears on the screen.
For touch operation, touch the dealer name entry field.



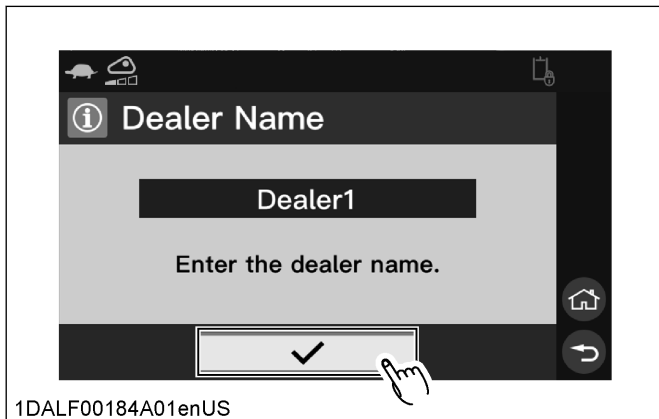
(1) Keyboard

8. Rotate the jog dial left or right to select the characters you want to enter, and press the jog dial switch to enter the dealer name.
For touch operation, touch the characters you want to enter.

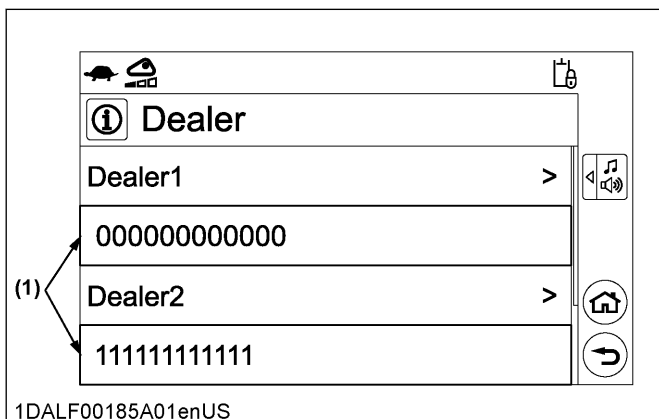
9. Rotate the jog dial to select the icon [←], and press the jog dial switch.
For touch operation, touch the icon [←].



10. Rotate the jog dial to select the icon [✓], and press the jog dial switch.
For touch operation, touch the icon [✓].

**NOTE :**

- The phone number will be grayed out in the following cases.
 - When the phone number is not registered.
 - When the machine and the operator's mobile phone are not connected via Bluetooth.

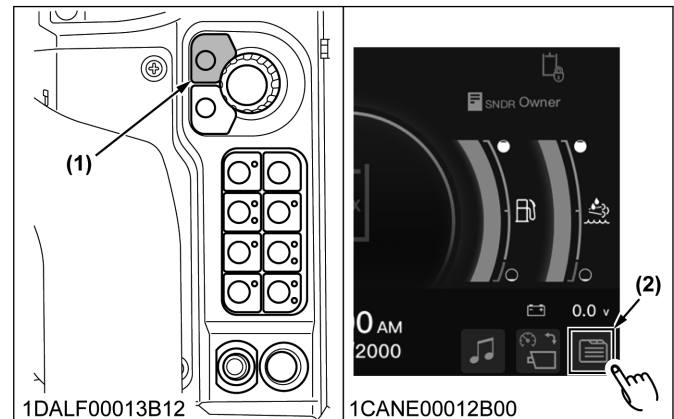


- (1) Phone number

27. Setting the dealer phone number**NOTE :**

- This setting is available only when logged in with the owner account.

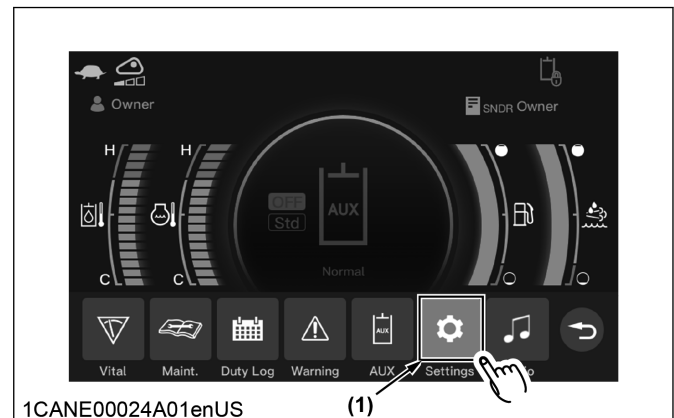
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



- (1) Home switch

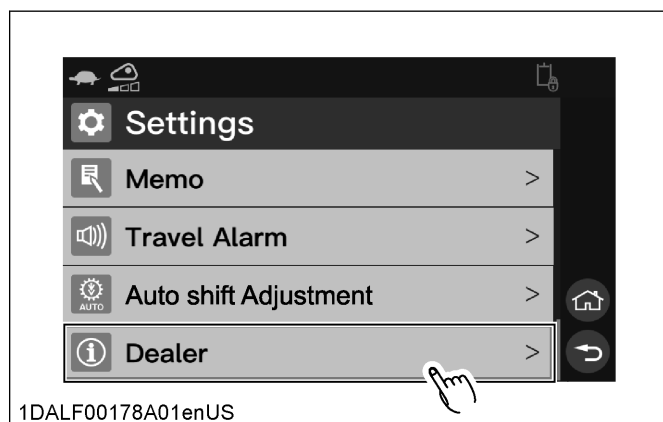
- (2) Menu icon

2. Rotate the jog dial to select the icon [Settings], and press the jog dial switch.
For touch operation, touch the icon [Settings].



- (1) Icon

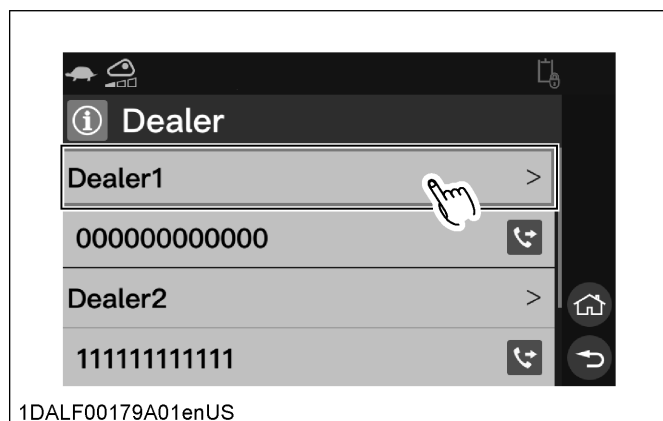
3. Rotate the jog dial to select **[Dealer]**, and press the jog dial switch.
For touch operation, scroll the display, and touch **[Dealer]**.



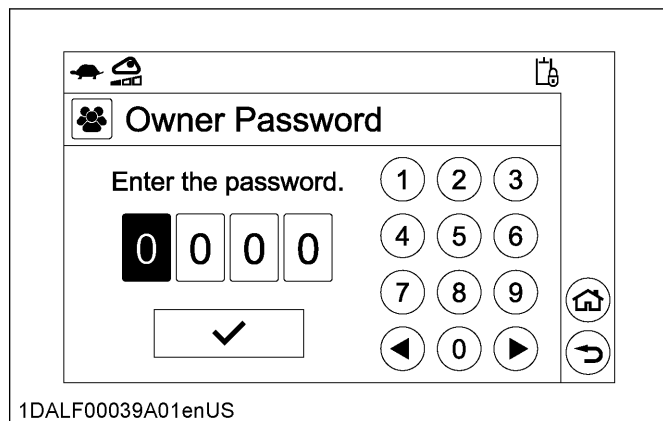
4. Rotate the jog dial to select the dealer you wish to change the phone number, and press the jog dial switch.
For touch operation, touch the dealer you wish to change the phone number.

NOTE :

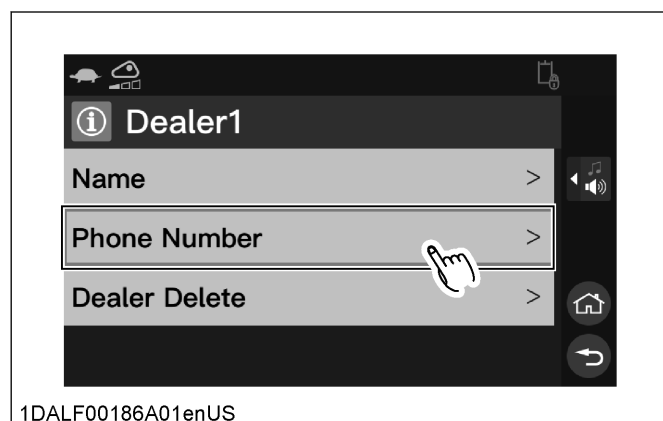
- The dealer name before registration is blank.



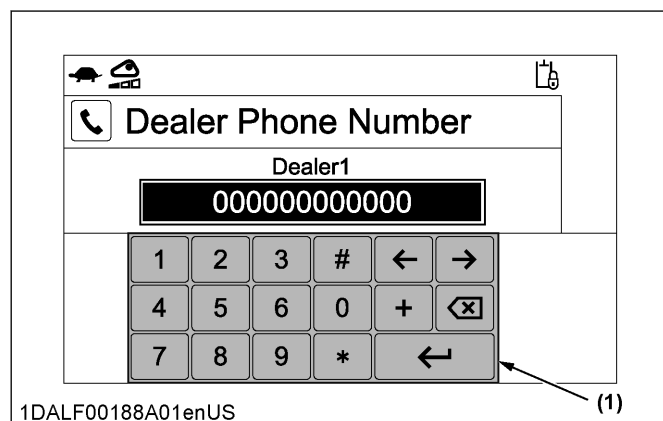
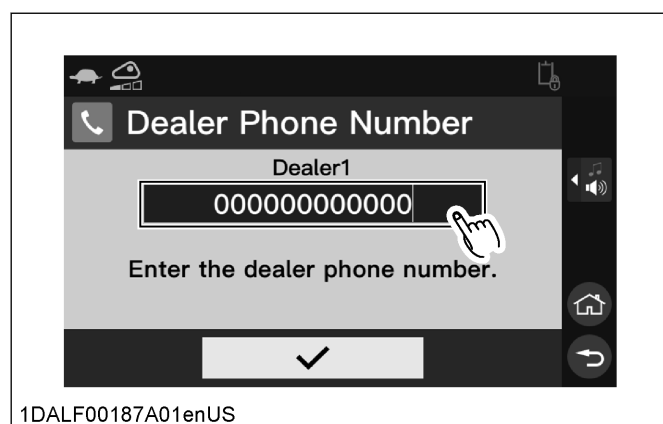
5. Enter the owner password.



6. Rotate the jog dial to select **[Phone Number]**, and press the jog dial switch.
For touch operation, touch **[Phone Number]**.

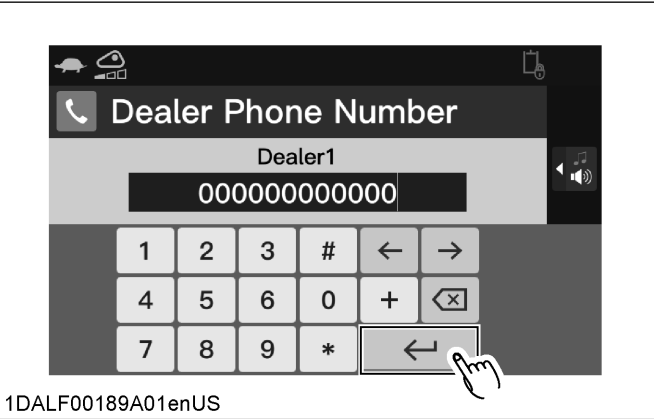


7. Rotate the jog dial to select the dealer phone number entry field, and press the jog dial switch.
The keyboard appears on the screen.
For touch operation, touch the dealer phone number entry field.

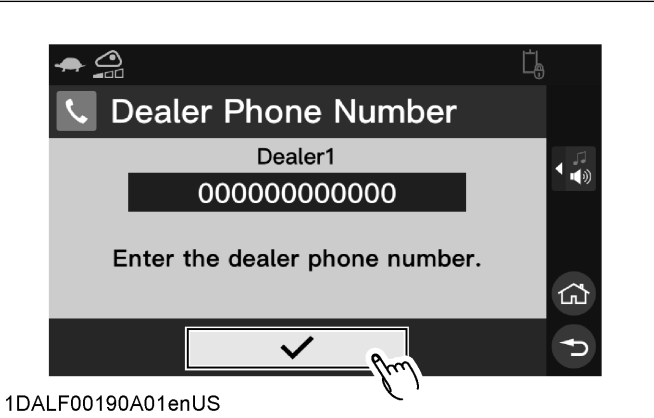


8. Rotate the jog dial left or right to select the number you want to enter, and press the jog dial switch to enter the telephone number.
For touch operation, touch the numbers you want to enter.

9. Rotate the jog dial to select the icon [←], and press the jog dial switch.
For touch operation, touch the icon [←].

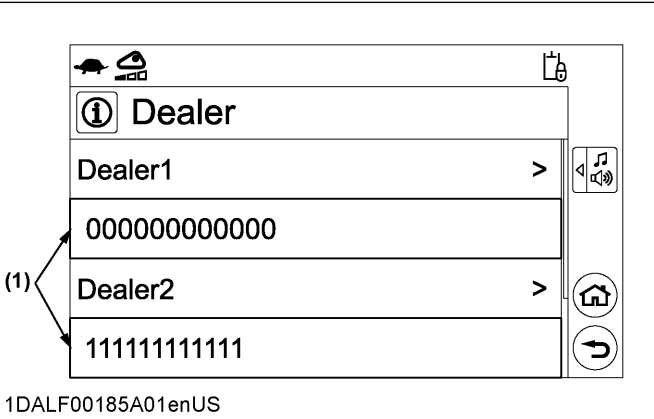


10. Rotate the jog dial to select the icon [✓], and press the jog dial switch.
For touch operation, touch the icon [✓].



NOTE :

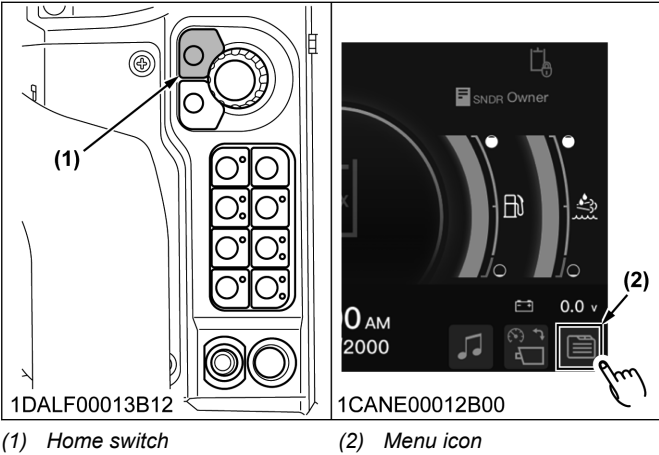
- The phone number will be grayed out in the following cases.
 - When the phone number is not registered.
 - When the machine and the operator's mobile phone are not connected via Bluetooth.



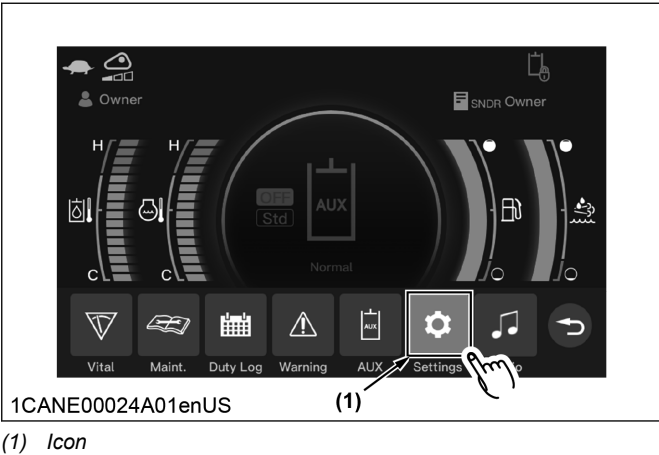
(1) Phone number

28. Calling the dealer

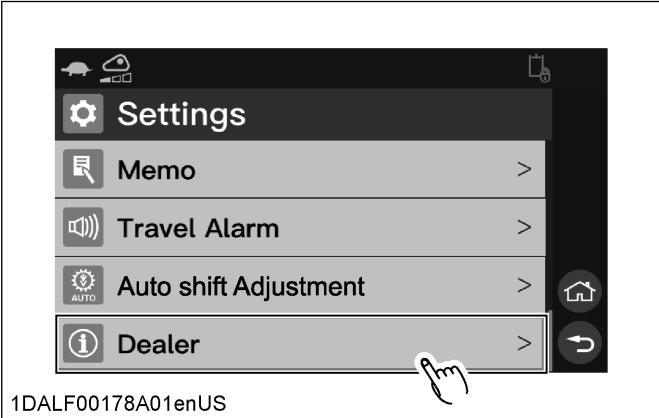
1. Press the home switch or touch the menu icon to make the menu bar appear on the display.



2. Rotate the jog dial to select the icon [Settings], and press the jog dial switch.
For touch operation, touch the icon [Settings].



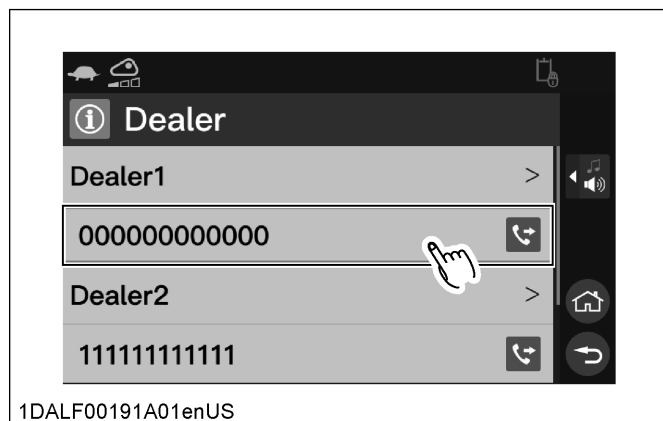
3. Rotate the jog dial to select [Dealer], and press the jog dial switch.
For touch operation, scroll the display, and touch [Dealer].



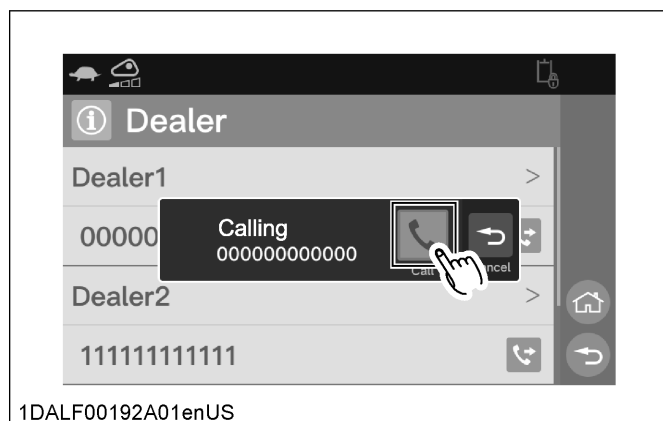
4. Rotate the jog dial to select the phone number you want to call, and press the jog dial switch.
A pop-up "Calling" will appear.
For touch operation, touch the phone number you want to call.

NOTE :

- The dealer name before registration is blank.

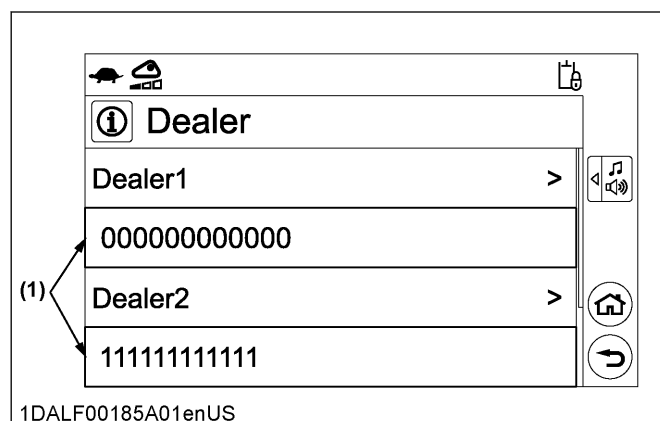


5. Rotate the jog dial to select [Call], and press the jog dial switch.
Calls the displayed phone number.
For touch operation, touch [Call].



NOTE :

- The phone number will be grayed out in the following cases.
 - When the phone number is not registered.
 - When the machine and the user's mobile phone are not connected via Bluetooth.



(1) Phone number

REARVIEW CAMERA MODE

! WARNING

To avoid personal injury or death:

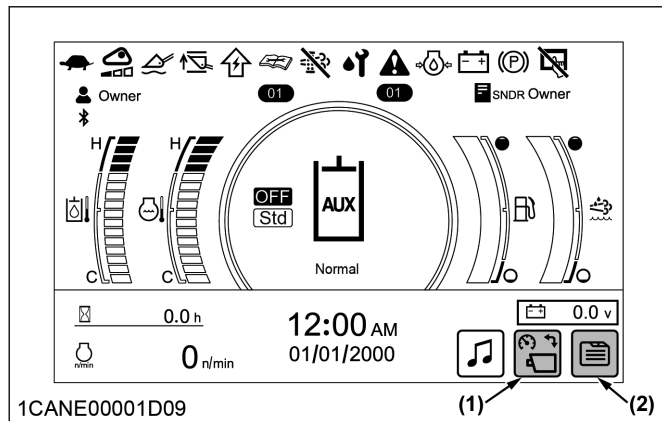
- Before reversing, check the rearview camera and visually check the rear of the machine by looking in the intended direction of travel to ensure the area is clear of people and obstacles.
- Drive slowly and carefully until you become familiar with the wide-angle image from the CMOS camera displayed on the LCD panel. Reversing at a fast speed can result in contact with a person or obstacle, which may cause a serious accident.
- If there are people around, use the machine in the "Upper" or "Middle" mode.
- If the rearview camera malfunctions, stop driving and contact your local Kubota dealer for repair request.

1. Switching to the rearview camera screen

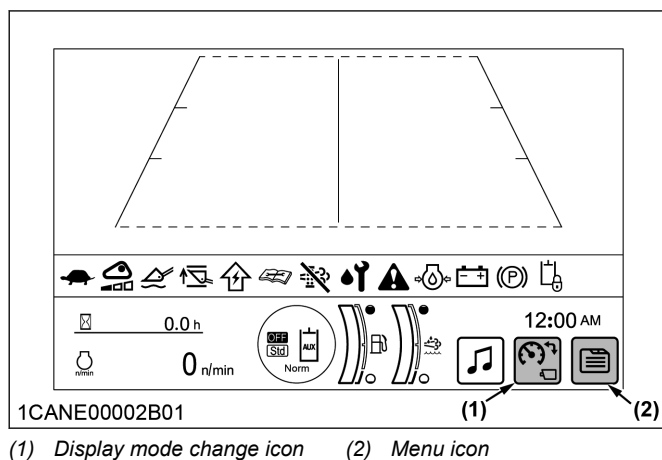
The rearview camera screen is shown on the display by selecting display mode change icon.
By default, the display will change to rearview camera screen automatically when the operator pulls the left control (traveling) lever backward. Once the backward travel command is no longer applied, the screen will automatically revert to the previous screen.
Selecting display mode change icon again will return the display to the home screen.

1. Rotate the jog dial to select the display mode change icon, and press the jog dial switch.
For touch operation, touch the display mode change icon.

Home screen



Rearview camera screen



IMPORTANT :

- The operator must service and maintain the camera system to ensure proper function. If the camera is dirty or steamed up, wash and wipe it dry. Replace damaged or missing camera immediately with new one.

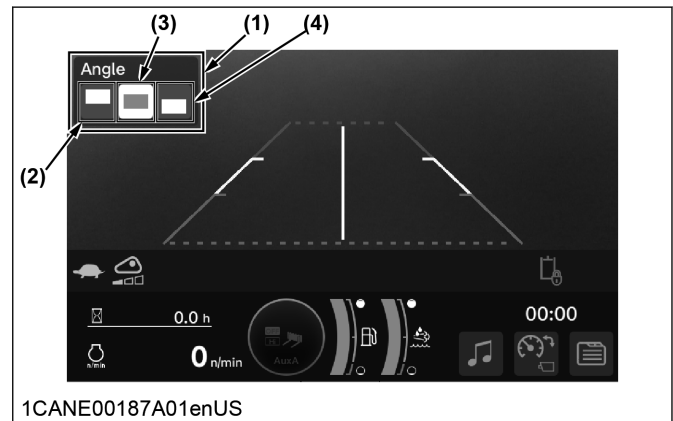
NOTE :

- The image may be out of sync due to camera voltage fluctuations, etc., causing the screen to scroll. Out of sync errors are corrected automatically. (If the problem persists, repeat switching between "OFF" mode and "ACCESSORY" mode on the start switch.)

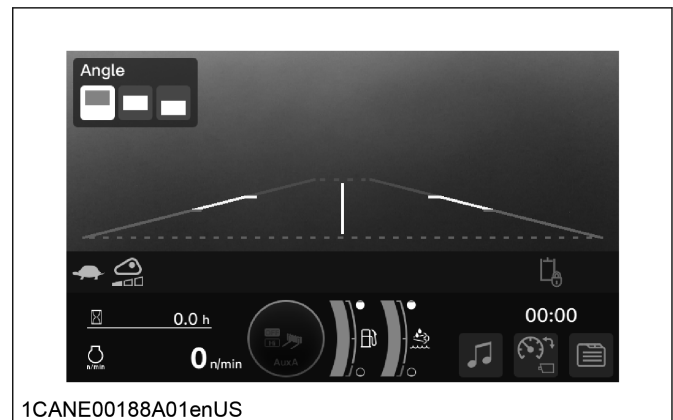
2. Switching the rearview camera angle

- On the rearview camera screen, rotate the jog dial or touch the display to make the angle window appear on-screen.
- Rotate the jog dial to select the desired angle, and press the jog dial switch.

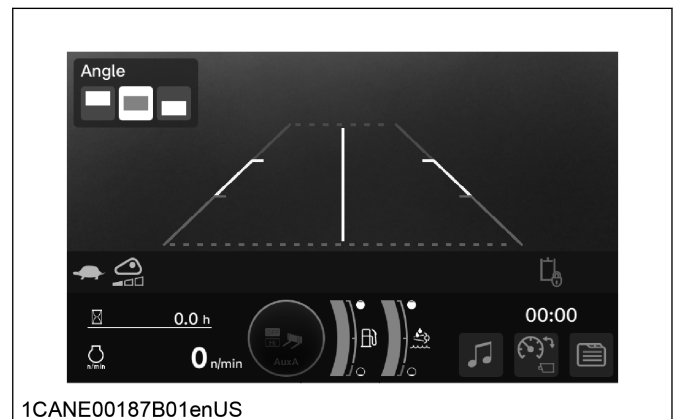
For touch operation, touch the desired angle.



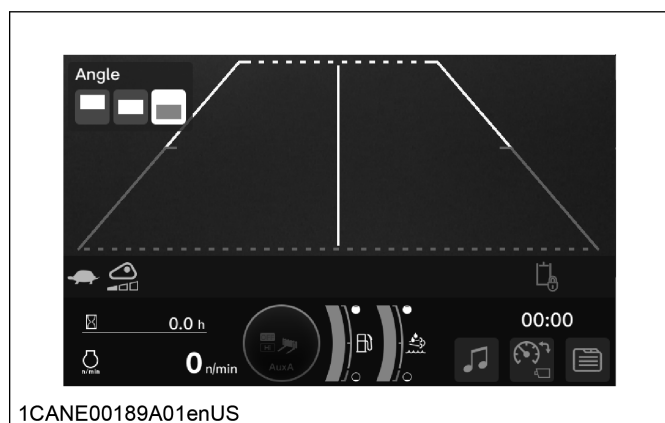
Upper screen



Middle screen



Lower screen



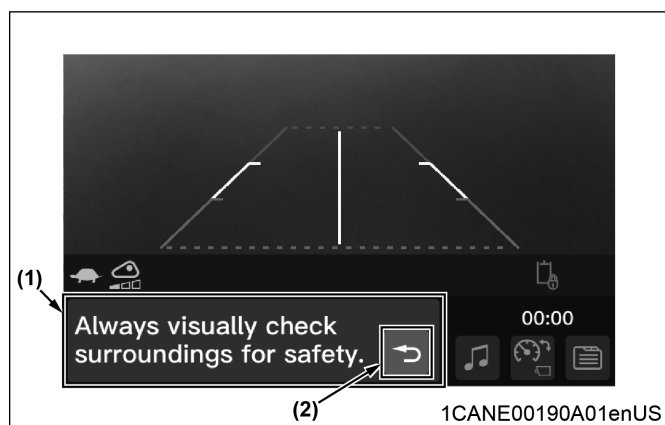
NOTE :

- The style of each screen and the guide line can be changed.
(See Setting the rearview camera on page 79 "Setting the rearview camera.")

3. Function of alert popup of the rearview camera

This is a text that appears when switching between the camera screens to alert the user.

Pressing the return switch, touching the return button, or rotating the jog dial to select the return button, and pressing the jog dial switch will close the popup.



(1) Alert popup

(2) Return button

NOTE :

- The popup function can be turned off, in the Upper and the Middle screens.
(See Setting the rearview camera on page 79)
- The Camera popup will appear in the Lower screen even when it is turned OFF.

AUDIO MODE

1. Change to the audio screen

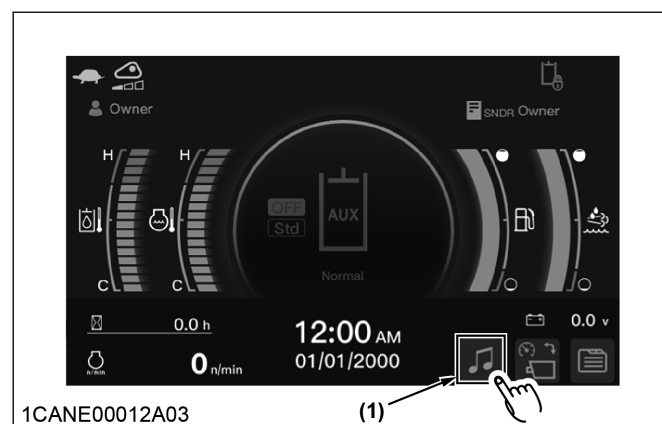
You can change to the audio screen with the operation as following.

- Operation of audio icon
- Swipe
- Operation of menu bar
- Operation of audio pop-up

How to change using the audio icon operations

- Rotate the jog dial to select the audio icon, and press the jog dial switch to make the audio screen appear on the display.

For touch operation, touch the audio icon.



(1) Audio icon

How to change using swipe

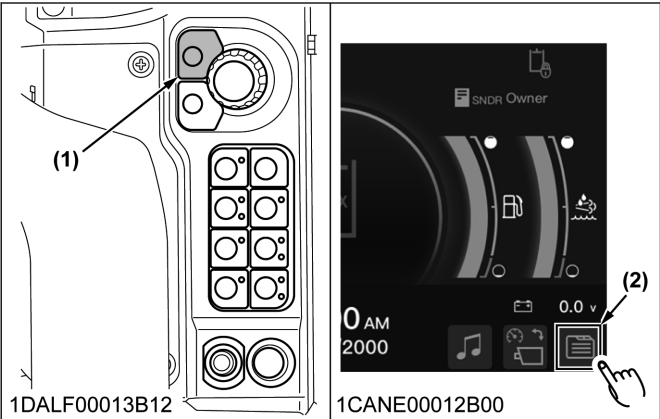
- On the home screen, swipe the display to the right to make the audio screen appear on the display.



(A) Swipe

How to change from the menu bar

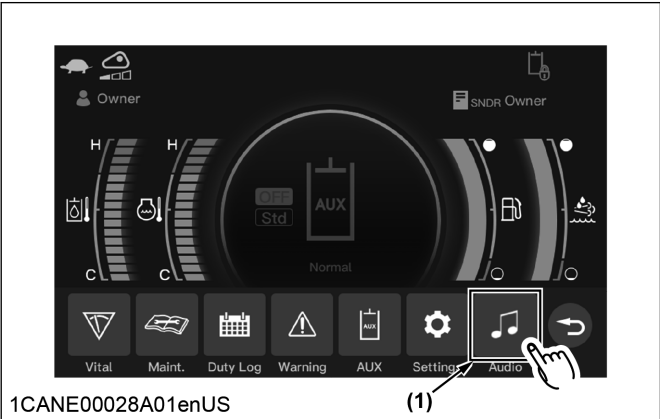
- Press the home switch or touch the menu button to make the menu bar appear on the display.



(1) Home switch

(2) Menu icon

2. Rotate the jog dial to select the icon **[Audio]**, and press the jog dial switch to make the audio screen appear on the display.
For touch operation, touch the icon **[Audio]**.

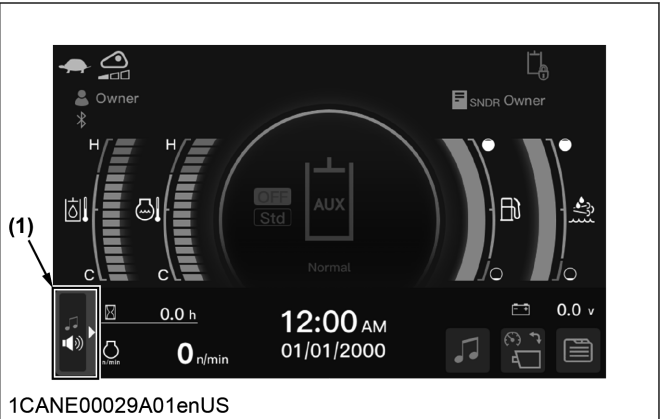


(1) Icon

How to change from the audio pop-up

NOTE :

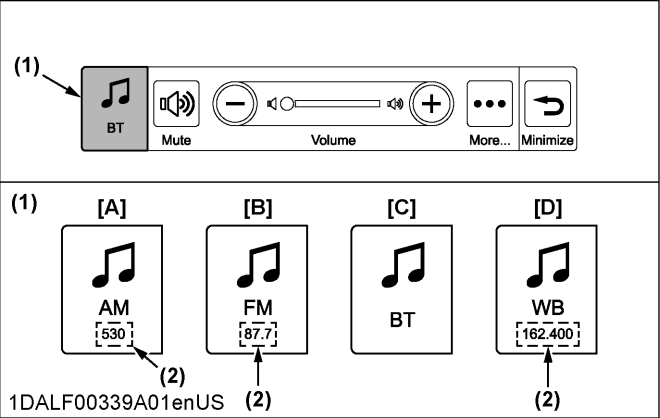
- The audio pop-up appears only when the audio power is on.
1. Rotate the jog dial to select the audio pop-up button, and press the jog dial switch to make the audio pop-up appear on the display.
For touch operation, touch the audio pop-up button.



(1) Audio pop-up button

NOTE :

- The selected source display area of the audio pop-up shows the currently selected audio source and receiving frequency.



(1) Selected source display area

[A] AM radio selected

(2) Receiving frequency

[B] FM radio selected

[C] Bluetooth selected

[D] Weather band selected

2. Rotate the jog dial to select the icon **[More...]**, and press the jog dial switch to make the audio screen appear on the display.
For touch operation, touch the icon **[More...]**.



(1) More... icon

2. Switch audio power ON/OFF

1. Make the audio screen appear on the display.
2. Rotate the jog dial to select the icon **[Power]** and press the jog dial switch to turn the power ON/OFF.
For touch operation, touch the **[Power]** icon.

Power off state



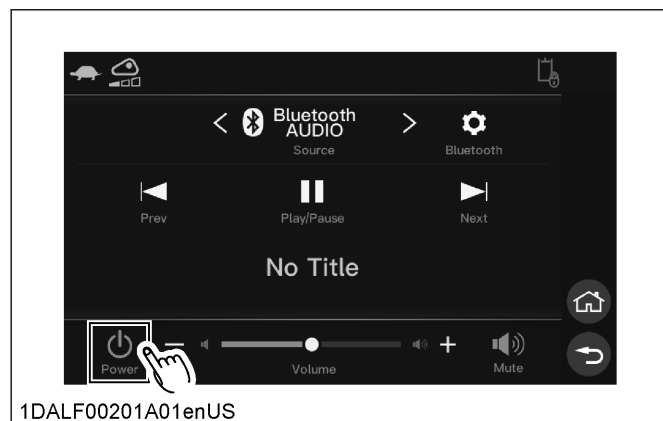
Powered on state, AM radio selected



Powered on state, FM radio selected



Powered on state, Bluetooth device connected



Powered on state, Bluetooth device not connected



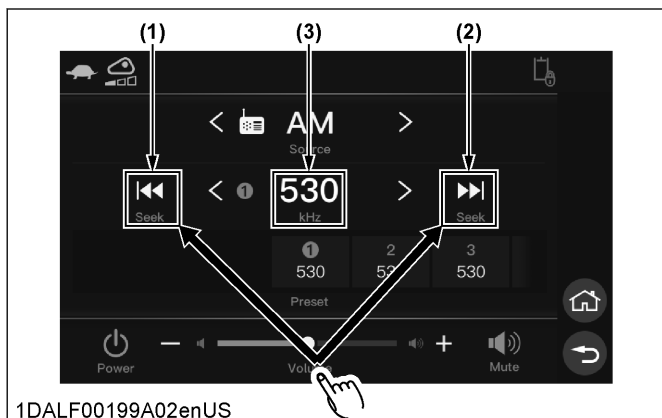
Powered on state, weather band selected



3. Operation of AM mode

Auto seek

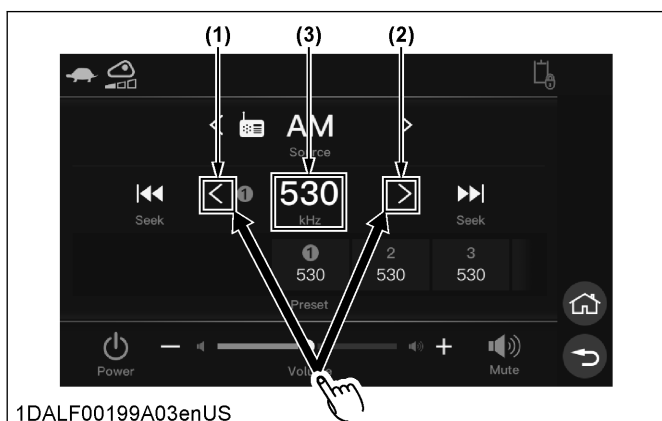
1. Rotate the jog dial, select the auto seek down button or auto seek up button, press the jog dial switch to search for frequencies that are available for reception.
For touch operation, touch the auto seek down button or auto seek up button



1DALF00199A02enUS
 (1) Auto seek down button (3) Receiver frequency
 (2) Auto seek up button

Increase or decrease the frequency

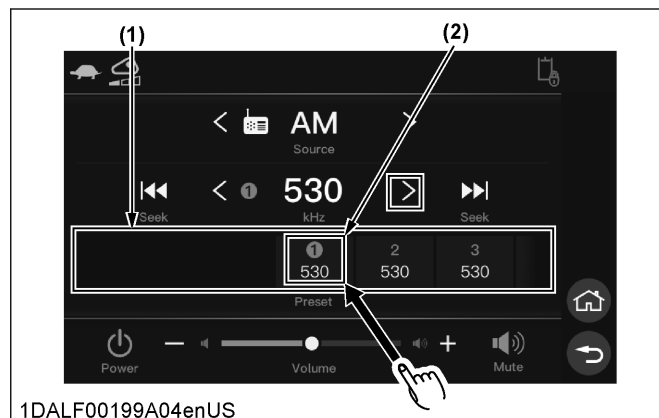
1. Rotate the jog dial, select the frequency decrease button or frequency increase button, press the jog dial switch to change the reception frequency. For touch operation, touch the frequency decrease button or frequency increase button



1DALF00199A03enUS
 (1) Frequency down button (3) Receiver frequency
 (2) Frequency up button

Change the channel

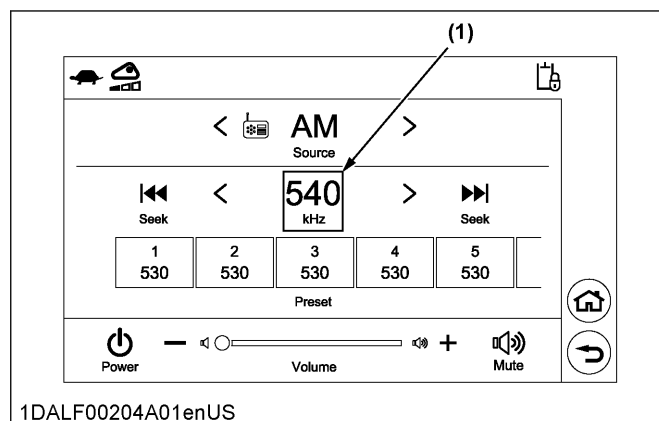
1. Rotate the jog dial to select the channel area and press the jog dial switch.
2. Rotate the jog dial and select the required channel, press the jog dial switch to confirm the selected channel. For touch operation, scroll to the left or right and touch the required channel.



1DALF00199A04enUS
 (1) Channel area (2) Channel

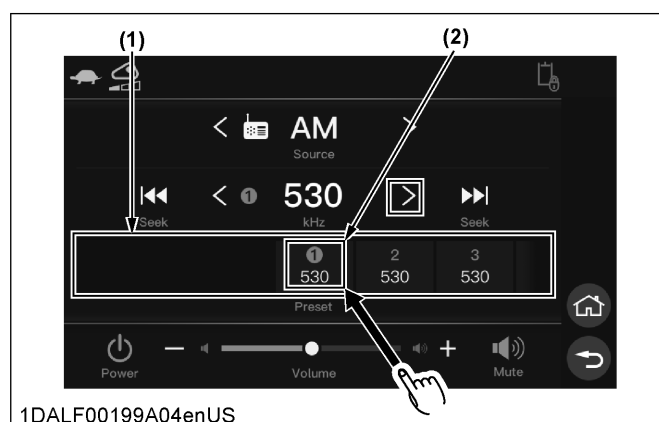
Registration of frequency

1. Changes the receive frequency to the frequency you want to register.



1DALF00204A01enUS

- (1) Receiver frequency
2. Rotate the jog dial to select the channel area and press the jog dial switch.
3. Rotate the jog dial to select the channel you want to register, and press and hold the jog dial switch. For touch operation, scroll to the left or right and touch the channel you want to register.



1DALF00199A04enUS

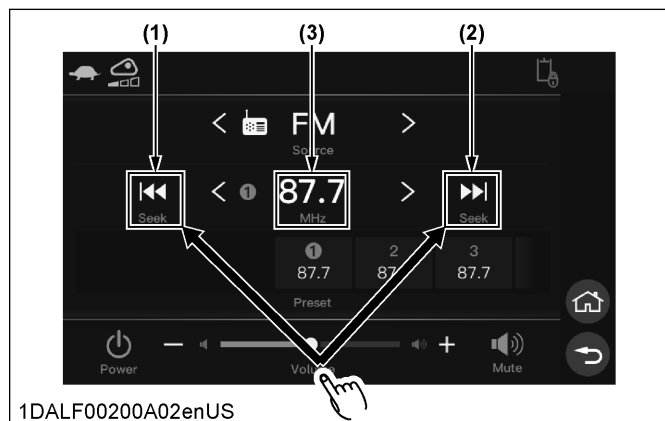
(1) Channel area (2) Channel

4. Operation of FM mode

Auto seek

1. Rotate the jog dial, select the auto seek down button or auto seek up button, press the jog dial switch to search for frequencies that are available for reception.

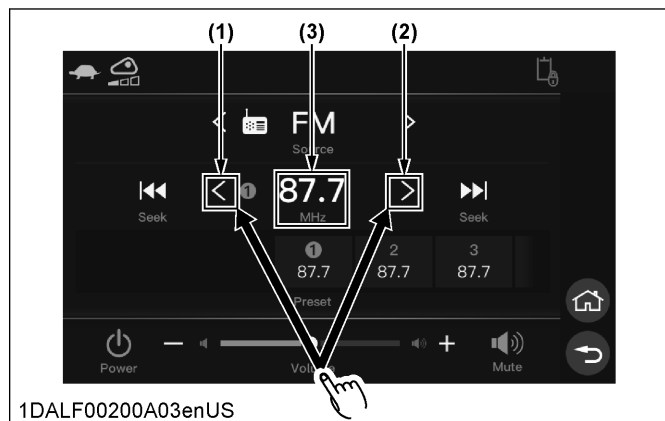
For touch operation, touch the auto seek down button or auto seek up button



- (1) Auto seek down button (3) Receiver frequency
(2) Auto seek up button

Increase or decrease the frequency

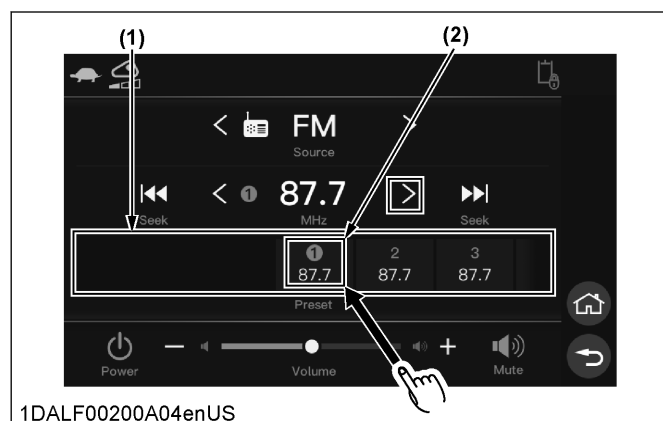
1. Rotate the jog dial, select the frequency decrease button or frequency increase button, press the jog dial switch to change the reception frequency.
- For touch operation, touch the frequency decrease button or frequency increase button



- (1) Frequency down button (3) Receiver frequency
(2) Frequency up button

Change the channel

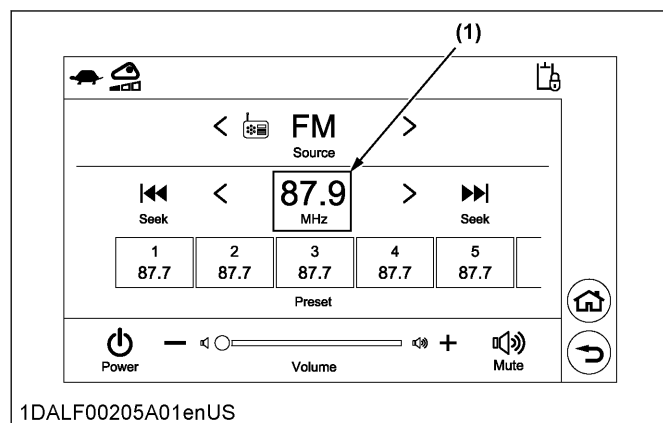
1. Rotate the jog dial to select the channel area and press the jog dial switch.
 2. Rotate the jog dial and select the required channel, press the jog dial switch to confirm the selected channel.
- For touch operation, scroll to the left or right and touch the required channel.



- (1) Channel area (2) Channel

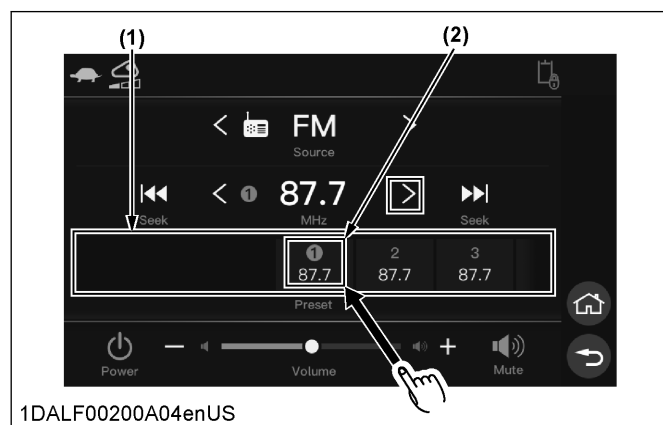
Registration of frequency

1. Changes the receive frequency to the frequency you want to register.



- (1) Receiver frequency

2. Rotate the jog dial to select the channel area and press the jog dial switch.
 3. Rotate the jog dial to select the channel you want to register, and press and hold the jog dial switch.
- For touch operation, scroll to the left or right and touch the channel you want to register.

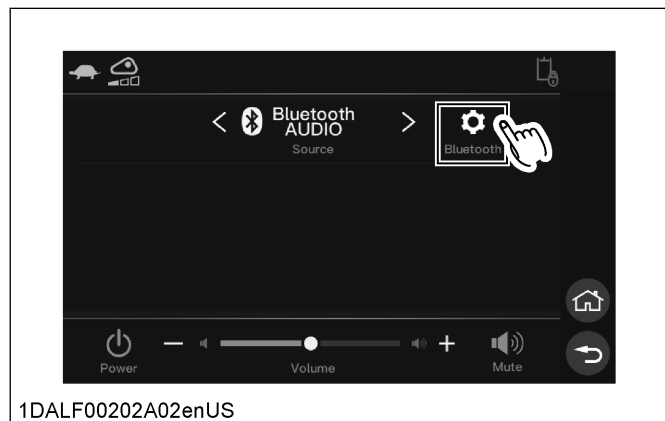


- (1) Channel area (2) Channel

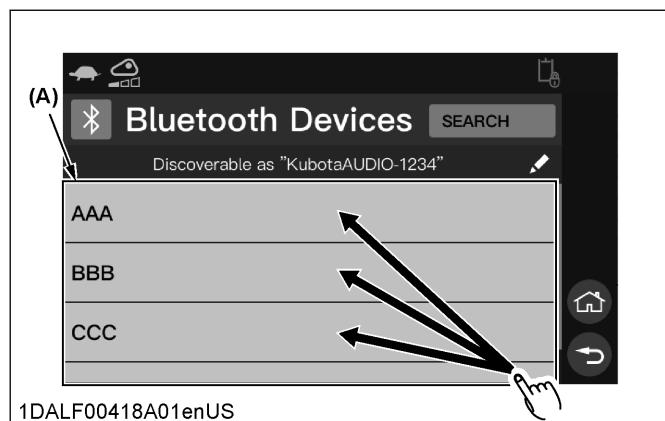
5. Bluetooth mode operation

Connect to a paired Bluetooth device

1. Rotate the jog dial to select the Bluetooth connection setting button, press the jog dial switch to display the Bluetooth device selection screen.
For touch operation, touch the Bluetooth connection settings button.



2. Rotate the jog dial to select the paired Bluetooth device you want to connect and press the jog dial switch to establish the Bluetooth connection.
For touch operation, touch the paired Bluetooth device that you want to connect.



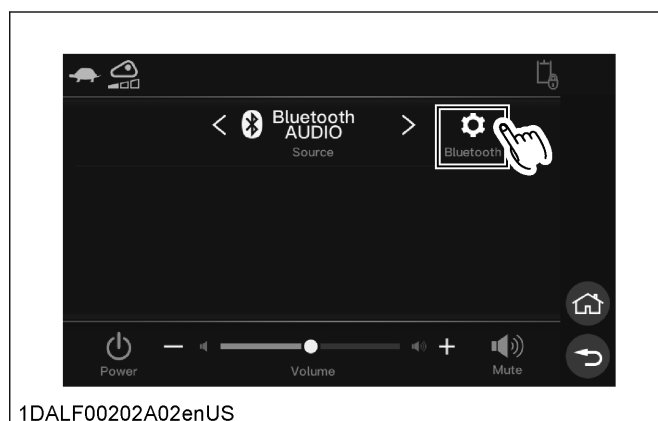
(A) List of paired Bluetooth devices

NOTE :

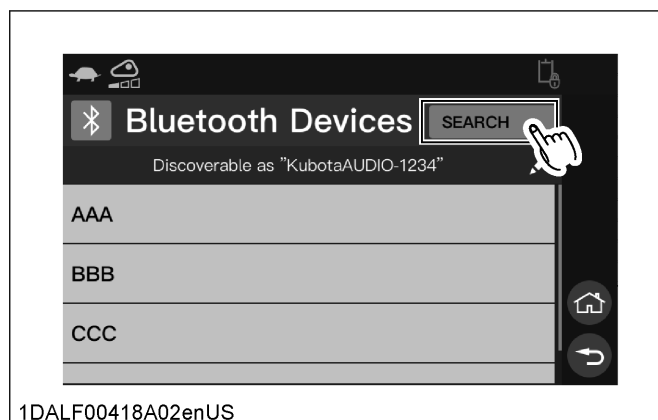
- If you cannot connect to a Bluetooth device, restart the Bluetooth device and try connecting again.
- Up to 5 paired Bluetooth devices can be registered.

Connect to an unpaired Bluetooth device

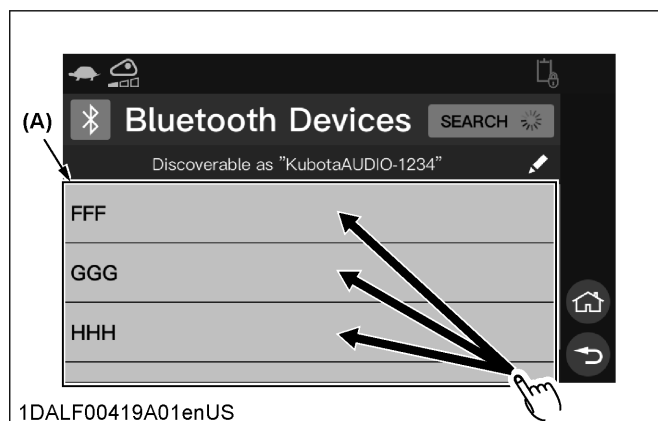
1. Rotate the jog dial to select the Bluetooth connection setting button, press the jog dial switch to display the Bluetooth device selection screen.
For touch operation, touch the Bluetooth connection settings button.



2. Rotate the jog dial to select the search button, press the jog dial switch to search the Bluetooth device.
For touch operation, touch the search button.



3. Rotate the jog dial and select the Bluetooth device you want to connect from the list of detected Bluetooth devices and press the jog dial switch.
For touch operation, touch the Bluetooth device you want to connect to from the list of detected Bluetooth devices.



(A) List Bluetooth devices detected

NOTE :

- If you cannot connect to a Bluetooth device, restart the Bluetooth device and try connecting again.

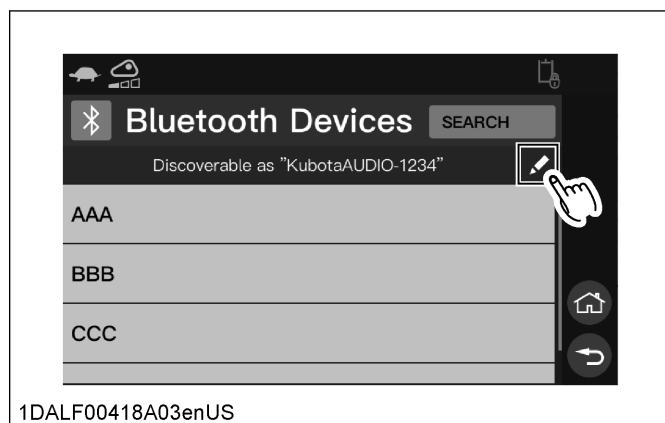
- The Bluetooth devices that can be connected are smartphones or audio players.
- Up to 5 paired Bluetooth devices can be registered.
- After the machine is turned on and the home screen is displayed on the instrument panel, you can make a Bluetooth connection.

Change the name of the Bluetooth device of the Machine.

1. Rotate the jog dial to select the Bluetooth connection setting button, press the jog dial switch to display the Bluetooth device selection screen.
For touch operation, touch the Bluetooth connection settings button.



2. Rotate the jog dial to select the Bluetooth device name change button and then press the jog dial switch.
For touch operation, touch the Bluetooth device name change button.

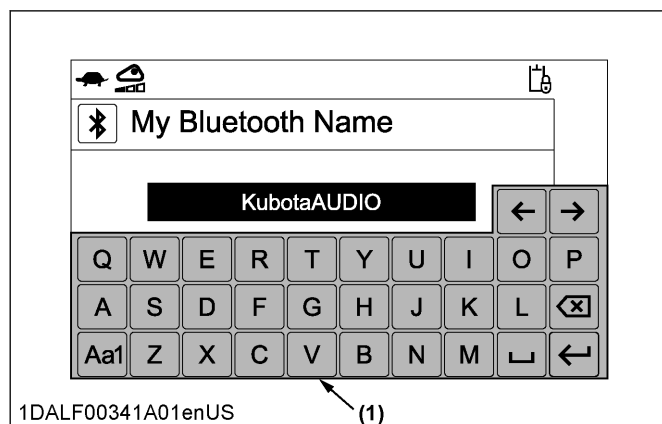
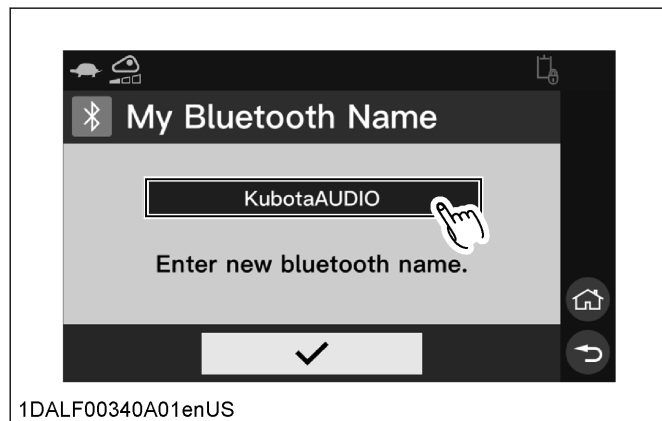


3. Rotate the jog dial to select the machine Bluetooth name entry field, and press the jog dial switch.
The keyboard appears on the screen.
For touch operation, touch the machine Bluetooth name entry field.

NOTE :

- The text displayed after "-" (hyphen) in the Bluetooth device name of the Machine is a

radio-specific number that cannot be changed.



4. Rotate the jog dial left or right to select the characters you want to enter, and press the jog dial switch to enter the Bluetooth device name.
For touch operation, touch the characters you want to enter.
5. Rotate the jog dial to select the icon [↩], and press the jog dial switch. For touch operation, touch the icon [↩].

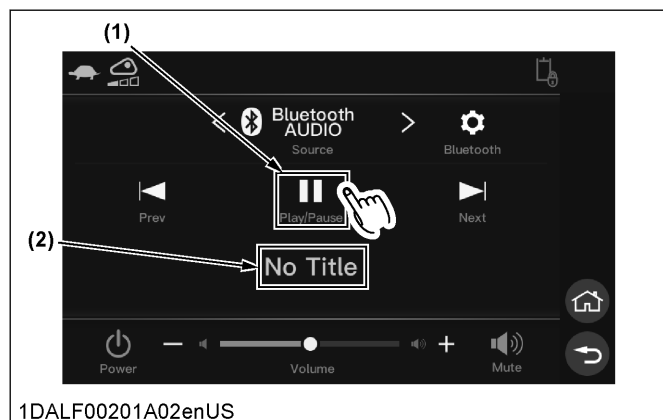


6. Rotate the jog dial to select the icon [✓], and press the jog dial switch to save the new settings. For touch operation, touch the icon [✓].

Play and stop music

1. Rotate the jog dial to select the Play/Pause button, and press the jog dial to toggle between music play and stop.

For touch operation, touch the Play/Pause button.

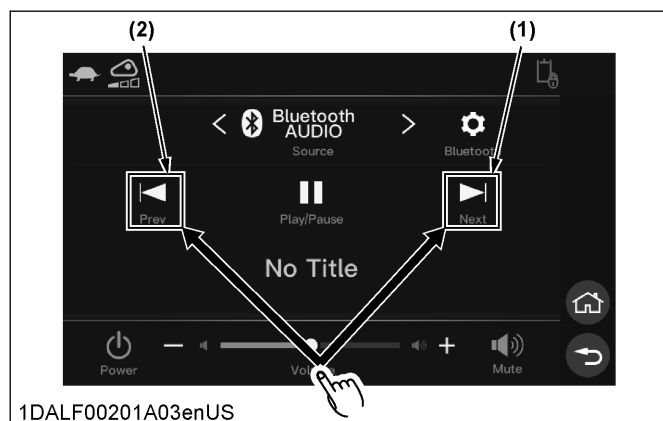


- (1) Play/Pause button (2) Singer name and song title

Select next or previous track

1. Rotate the jog dial to select the Next button or Previous button and press the jog dial switch to change the music to be played.

For touch operation, touch the Next button or Previous button.



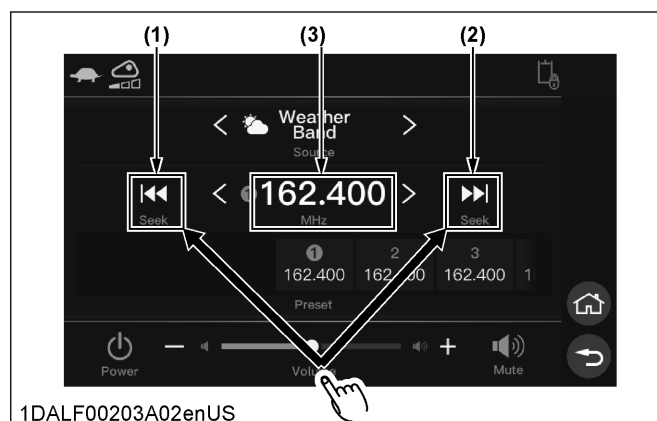
- (1) Next button (2) Previous button

6. Operation of the weather band mode

Auto seek

1. Rotate the jog dial to select the auto seek down button or auto seek up button and press the jog dial switch to search for frequencies that are available for reception.

For touch operation, touch the auto seek down button or auto seek up button

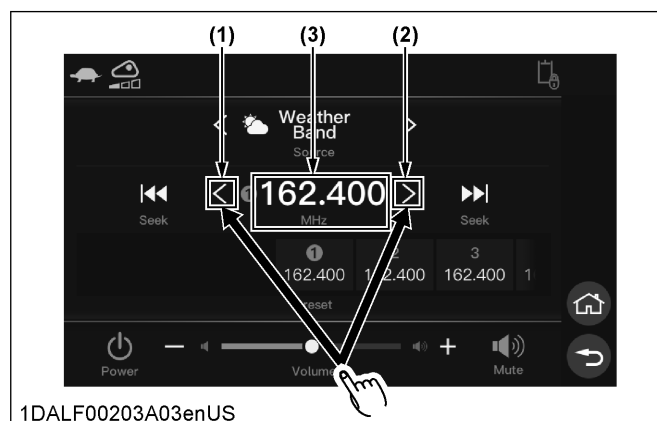


- (1) Auto seek down button (2) Auto seek up button (3) Receiver frequency

Increase or decrease the frequency

1. Rotate the jog dial to select the frequency increase button or frequency decrease button and press the jog dial switch to change the reception frequency.

For touch operation, touch the frequency increase button or frequency decrease button

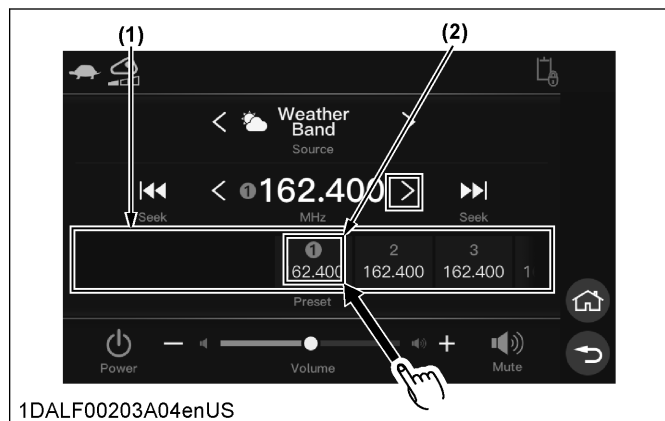


- (1) Frequency up button (2) Frequency down button (3) Receiver frequency

Change the channel

1. Rotate the jog dial to select the channel area and press the jog dial switch.
2. Rotate the jog dial to select the required channel and press the jog dial switch to confirm the selected channel.

For touch operation, scroll to the left or right and touch the required channel.

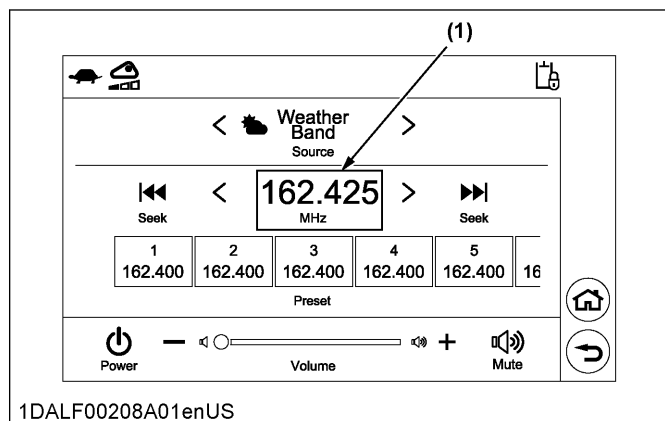


(1) Channel area

(2) Channel

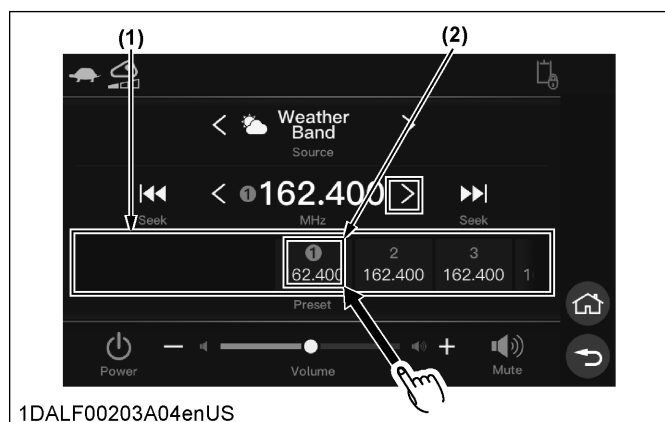
Registration of frequency

1. Changes the receive frequency to the frequency you want to register.
2. Rotate the jog dial to select the channel area and press the jog dial switch.



(1) Receiver frequency

3. Rotate the jog dial select the channel that you want to register and press and hold the jog dial switch. For touch operation, scroll to the left or right and touch the channel you want to register.



(1) Channel area

(2) Channel

7. Call control for Bluetooth connected cell phone

When the Bluetooth connected cell phone receives a call, an incoming call pop-up is displayed.

While talking on a Bluetooth connected cell phone, a Talking pop-up appears on the display.

While making a call on a Bluetooth connected cell phone, an outgoing call popup will appear on the display.

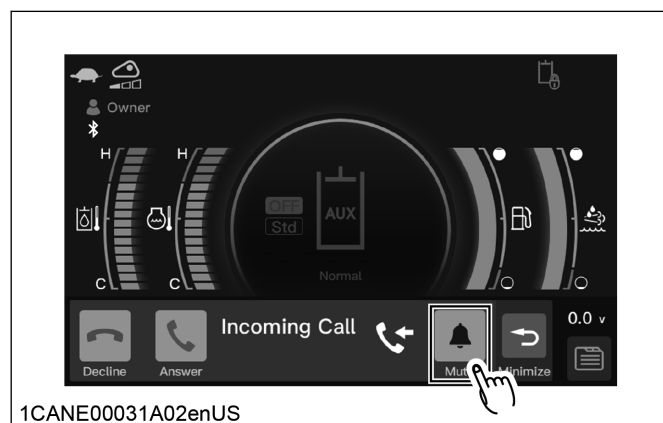
Incoming

1. While the Incoming Call pop-up is displayed, rotate the jog dial to select the answer button, and press the jog dial switch to connect the call. Rotate the jog dial to select the decline button, and press the jog dial switch to end without receiving the call. For touch operations, touch the button you want.



Mute ringtone

1. While the Incoming Call pop-up is displayed, rotate the jog dial to select the mute button, and press the jog dial switch to mute the ringtone. For touch operation, touch the mute button.



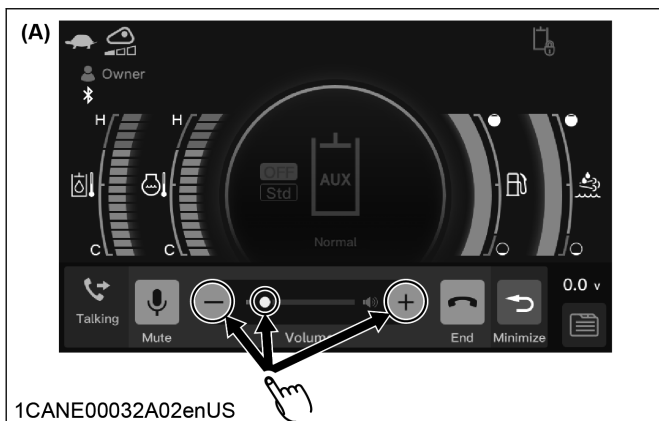
Ending a call

1. While the Talking pop-up is displayed, rotate the jog dial to select the end button, and press the jog dial switch to end the call. For touch operation, touch the end button.

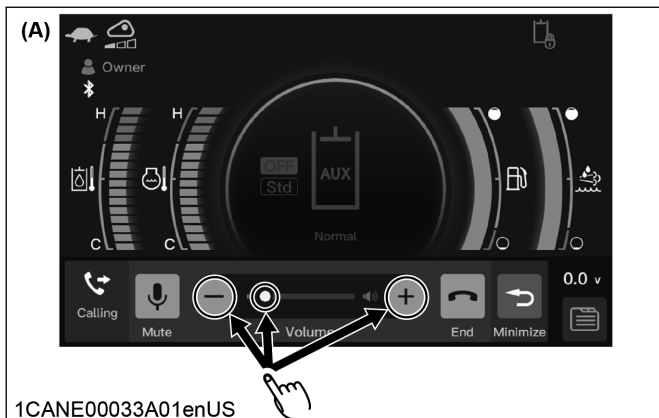


Adjustment of outgoing ring and incoming ring volume

1. While the Calling pop or Talking pop-up is displayed, rotate the jog dial to select the volume adjustment area, and press the jog dial switch.
 2. Rotate the jog dial left or right to the required setting, and press the jog dial switch to confirm the setting.
- For touch operations, touch the [-] or [+] buttons or move the slider button left or right to the required setting.



(A) Telephone call in progress pop-up



(A) Outgoing call pop-up

Mute the incoming call ring

1. While the Calling pop or Talking pop-up is displayed, rotate the jog dial to select the mute button, and press the jog dial switch to mute the voice input from the microphone.



(A) Telephone call in progress pop-up



(A) Outgoing call pop-up

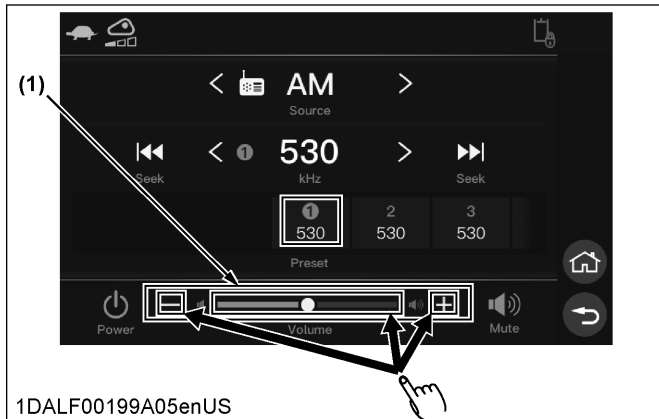
8. Adjustment of audio volume

NOTE :

- Volume can only be adjusted when the audio is switched on.

Volume adjustment on the audio screen

1. Rotate the jog dial to select the volume button, and press the jog dial switch.
 2. Rotate the jog dial left or right to adjust to the required volume and press the jog dial switch to confirm the setting.
- For touch operations, touch the volume increase or volume decrease buttons, or slide the button on the volume adjustment slider left or right to adjust to the required volume.



(1) Volume adjustment button

Mute Setting on the audio screen

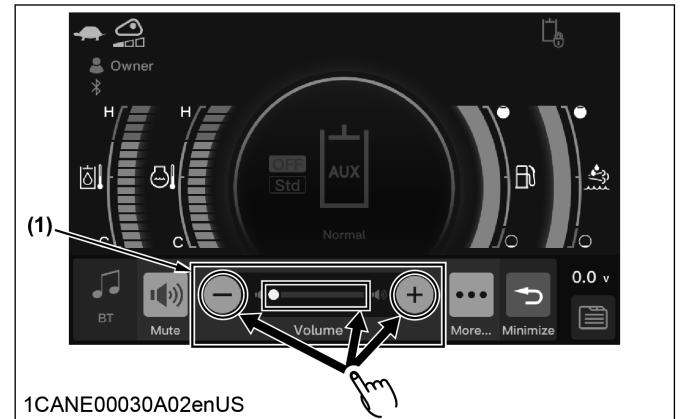
1. Rotate the jog dial to select the mute button, and press the jog dial switch.
For touch operation, touch the mute button.



(1) Mute button

Volume adjustment on the audio pop-up

1. Rotate the jog dial to select the volume button, and press the jog dial switch.
2. Rotate the jog dial left or right to adjust to the required volume and press the jog dial switch to confirm the setting.
For touch operations, touch the volume increase or volume decrease buttons, or slide the button on the volume adjustment slider left or right to adjust to the required volume.



(1) Volume adjustment button

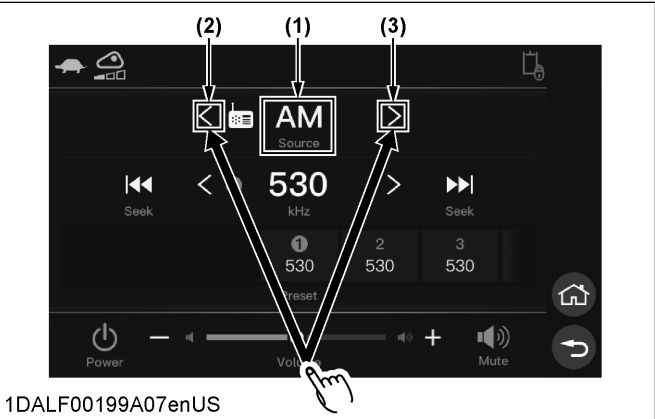
Mute setting on the audio pop-up

1. Rotate the jog dial to select the mute button, and press the jog dial switch.
For touch operation, touch the mute button.



9. Switching audio source

1. Rotate the jog dial on the audio screen to select the audio source area, and press the jog dial switch. The audio source switches every time you press the jog dial switch.
For touch operation, touch the next source button or previous source button.



(1) Audio source area (2) Source down button (3) Source up button

- NOTE :**
- You can select AM, FM, Bluetooth, or Weather Band

MEMO MODE

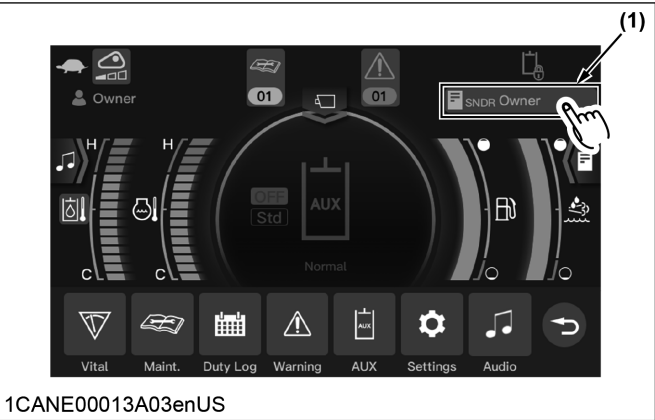
1. Switching to the memo screen

You can switch to the memo screen by the following operations:

- Memo screen icon operation
- Swipe
- Operation of menu bar

Switching method using the memo screen icon

1. Touch the memo screen icon on the home screen.



(1) Memo screen icon

- NOTE :**
- Once you touch the memo screen icon to display the memo screen, the icon will not appear until the next time you log in.

Switching using swipe operation

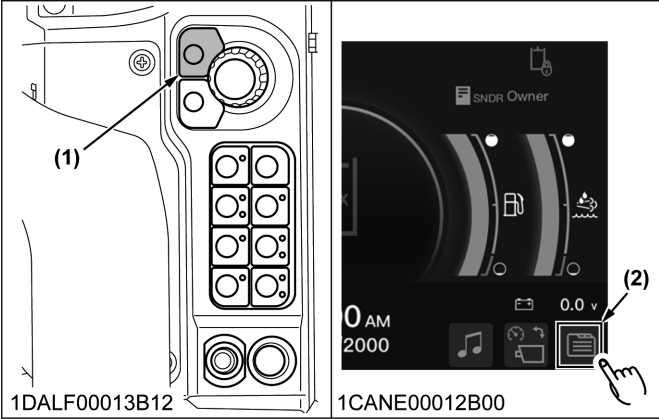
1. On the home screen, swipe the display to the left to make the memo screen appear on the display.



(1) Swipe

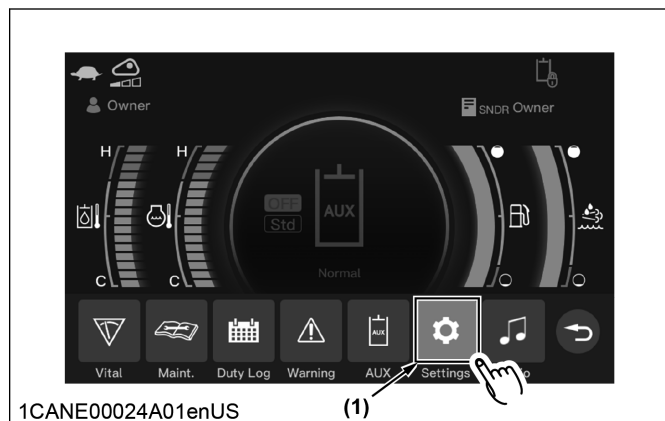
Switching using the menu bar

1. Press the home switch or touch the menu button to make the menu bar appear on the display.



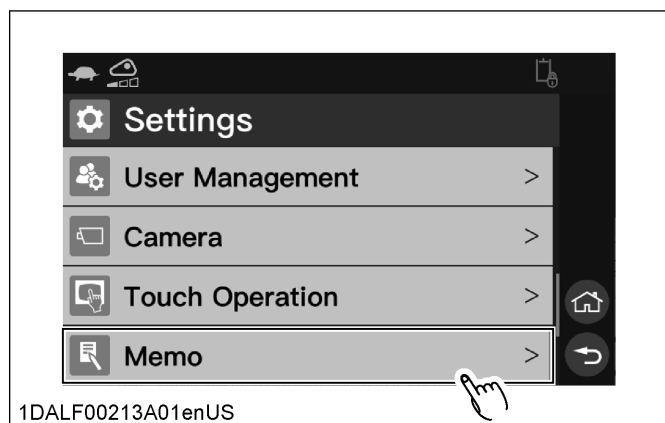
(1) Home switch (2) Menu icon

2. Rotate the jog dial to select the icon [Settings], and press the jog dial switch.
For touch operation, touch the icon [Settings].



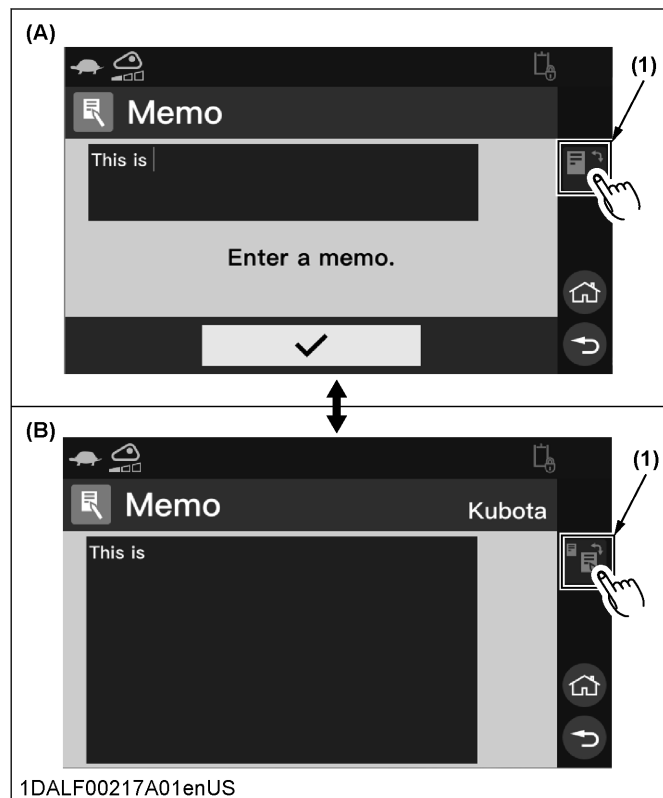
(1) Icon

3. Rotate the jog dial to select **[Memo]**, and press the jog dial switch.
For touch operation, touch **[Memo]**.



NOTE :

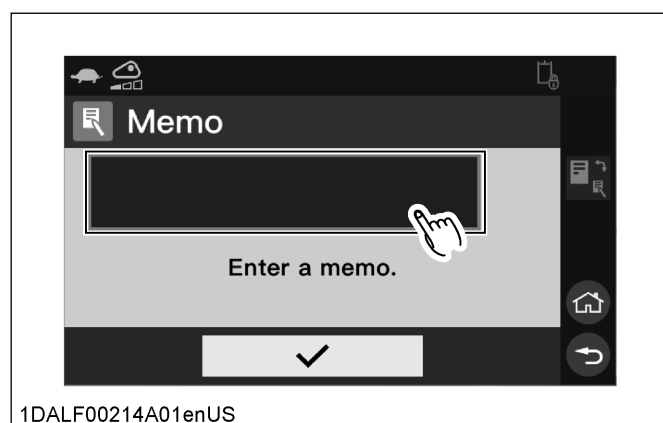
- You can switch between the memo edit screen and the memo display screen by pressing the memo edit-display switch button.
- If the memo screen is displayed by using the memo screen icon or swipe operation, the memo display screen is displayed.



- (1) Edit memo - Display switch (A) Memo edit screen
button (B) Memo display screen

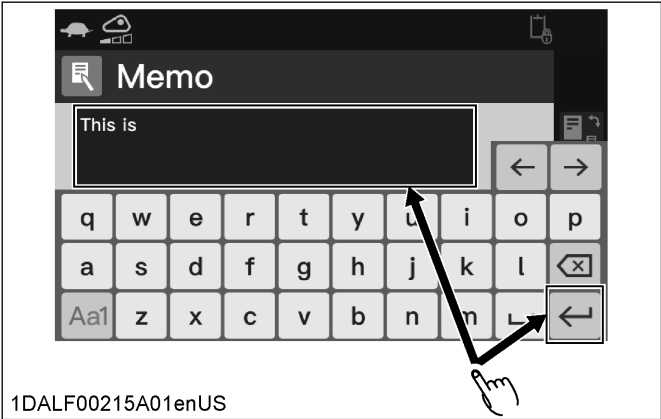
2. How to enter a memo

1. Make the memo edit screen appear on the display.
2. Rotate the jog dial to select the memo entry field, and press the jog dial switch. The keyboard appears on the screen.
For touch operation, touch the memo entry field.

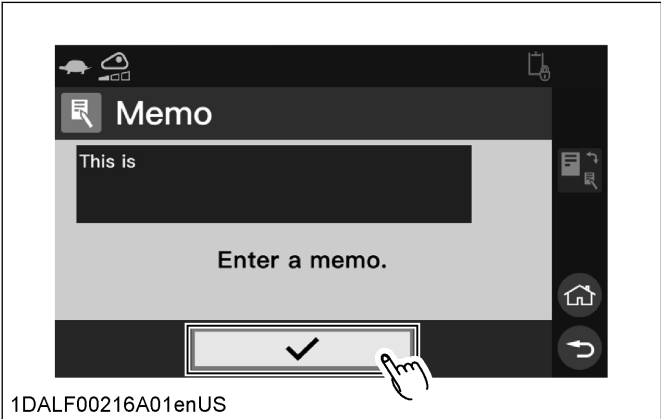


3. Rotate the jog dial left or right to select the characters you want to enter, and press the jog dial switch to enter the memo.
For touch operation, touch the characters you want to enter.

4. Rotate the jog dial to select the icon [↩], and press the jog dial switch.
For touch operation, touch the icon [↩] or memo entry field.

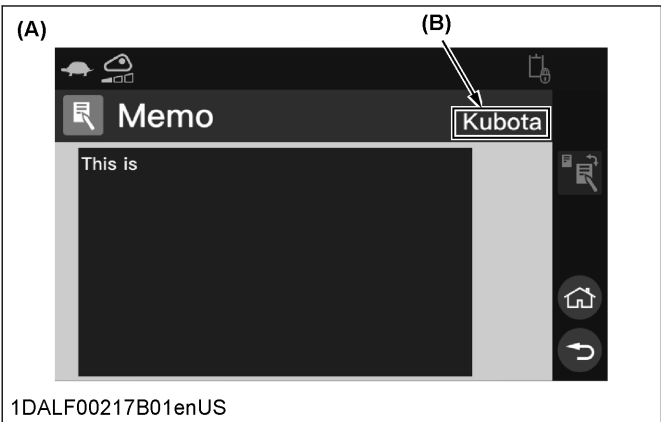


5. Rotate the jog dial to select the icon [✓], and press the jog dial switch.
For touch operation, touch the icon [✓].



NOTE :

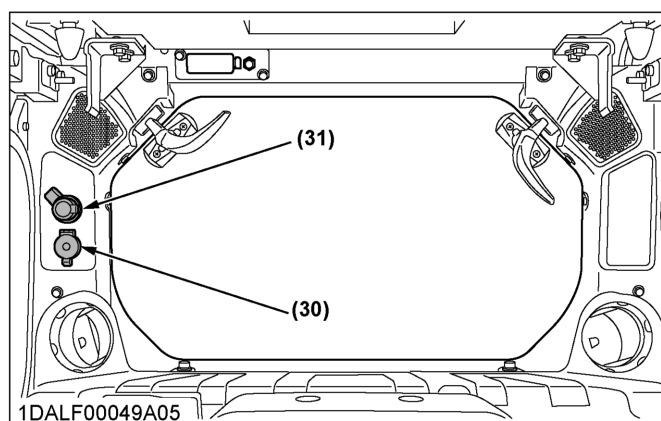
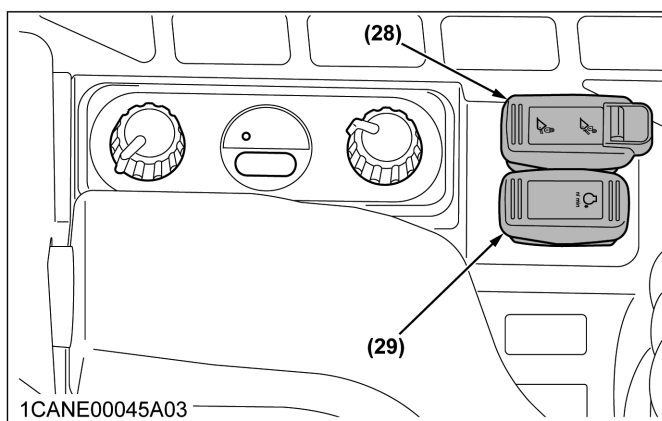
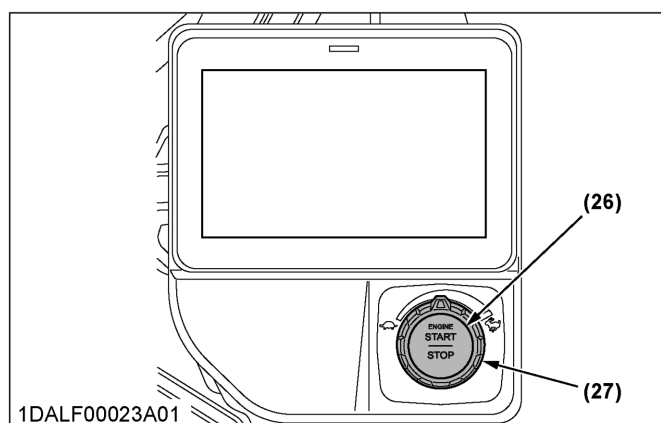
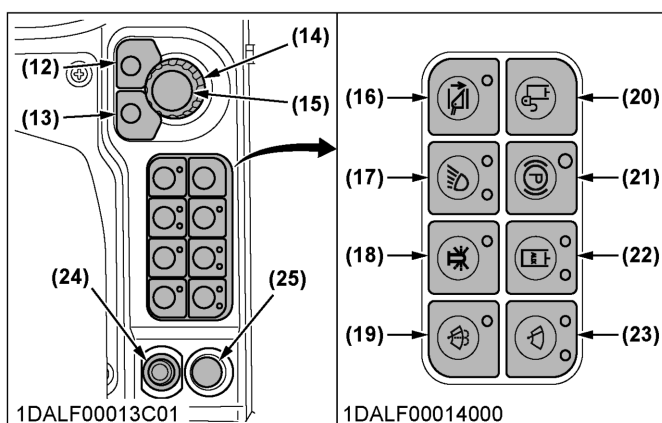
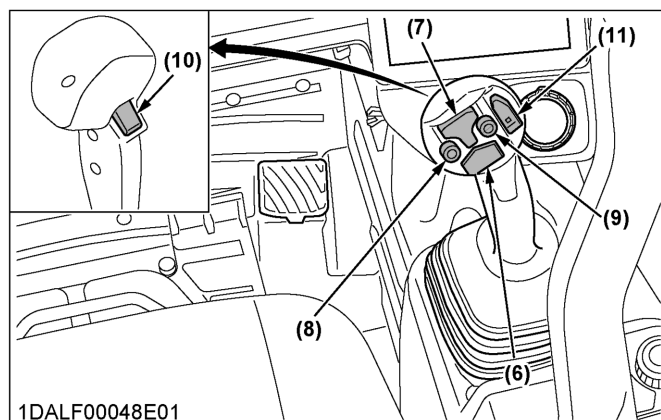
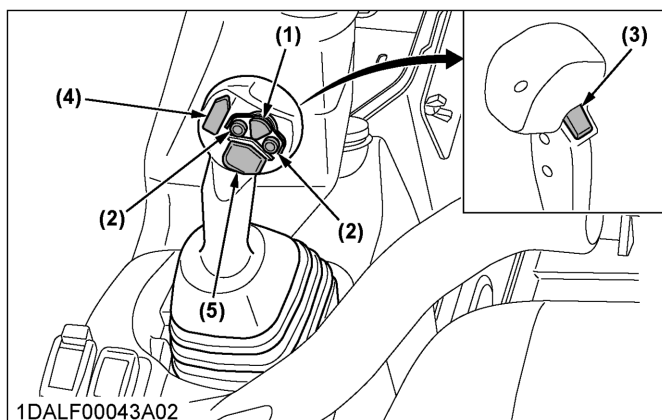
- The user name of the user entering the memo is displayed on the memo display screen.



(A) Memo display screen

(B) Name of user who entered the memo

SWITCHES, ELECTRICAL OUTLET, AND USB OUTLET

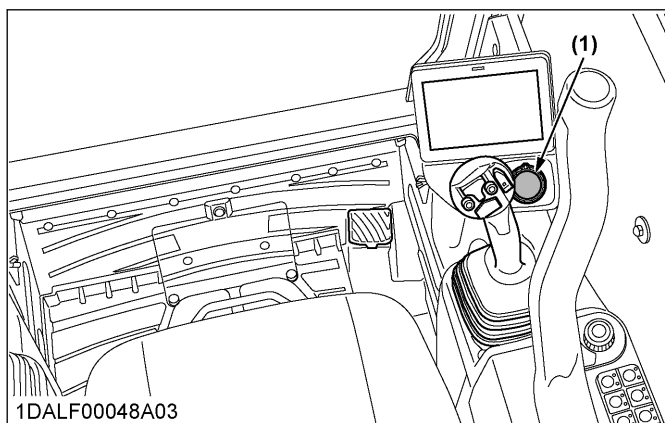


- | | | | |
|---|--|--|--|
| (1) Horn switch | (10) Float switch | (18) Beacon light switch | (27) Engine speed control dial |
| (2) AUX electrical control switch | (11) AUX electrical mode change switch (multi function model only) | (19) Washer switch | (28) Hydraulic quick-hitch switch (hydraulic quick-hitch model only) |
| (3) Travel speed switch | (12) Home switch | (20) Hydraulic unlock switch | (29) Decelerator pedal switch |
| (4) Ride control switch (option) | (13) Return switch | (21) Parking brake switch | (30) Electrical outlet |
| (5) AUX electrical control switch (multi function model only) | (14) Jog dial | (22) AUX port switch | (31) USB outlet |
| (6) AUX electrical control switch | (15) Jog dial switch | (23) Wiper switch | |
| (7) AUX port variable switch | (16) Self leveling switch | (24) Inhibit diesel particulate filter (DPF) regeneration switch | |
| (8) AUX hold switch (left) | (17) Working light switch | (25) Emergency engine stop button | |
| (9) AUX hold switch (right) | | (26) Start switch | |

1. Start switch

NOTE :

- Before pressing the start switch, make sure that the emergency engine stop button is pushed. (See Emergency engine stop button on page 124)
- **"OFF"**
The engine is stopped and the electrical parts cannot be used.
- **"ACCESSORY"**
Press the start switch 1 time when the machine is off, all the circuitry gets energized to start preheating and the glow-plug-indicator is displayed. Check for breakage of any light and indicator. The light or indicator lights up and stays on for about 1 second, if they are not broken.
- **"ON"**
 1. Press and hold the start switch in the "ACCESSORY" mode, then the starter motor is activated to get the engine started.
 2. Once the engine has started, release your finger.



(1) Start switch

Press the start switch in the "ACCESSORY" mode or the "ON" mode to change the mode to "OFF."

IMPORTANT :

- When the start switch is the "OFF" mode, the engine will not start even if you press and hold the start switch. To start the engine, change the mode to the "ACCESSORY," then press and hold the switch.

NOTE :

- If you press the start switch for too short a time, the machine may not recognize the operation.
- When pressing and holding the start switch, hold the start switch 0.5 seconds or more.

2. Parking brake switch

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

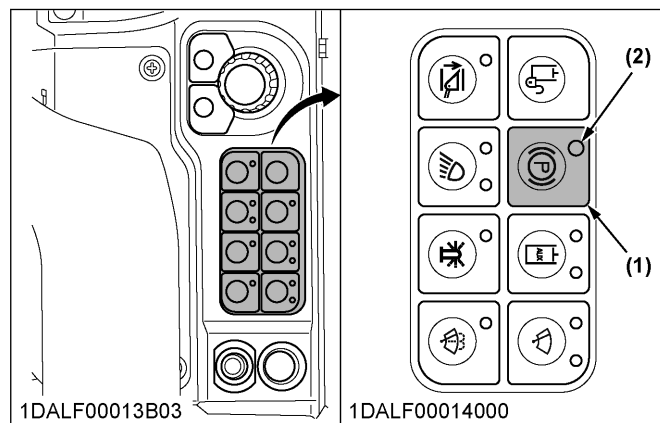


WARNING

To avoid personal injury or death:

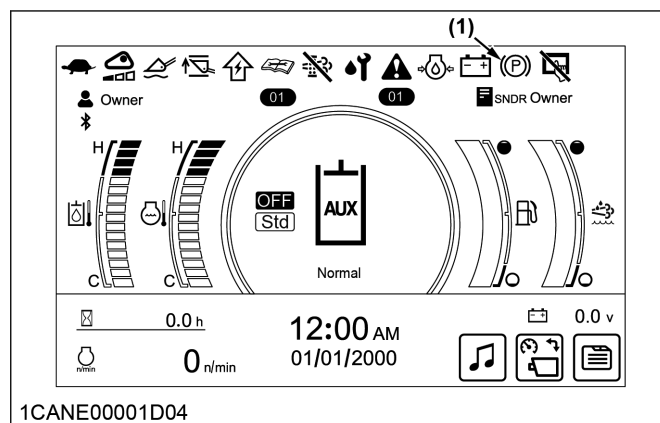
- When dismounting the machine or when servicing or hauling, apply the parking brake.

1. When the parking brake switch is pressed, the parking brake is applied, the indicator on the parking brake switch lights on, and the parking brake indicator on the instrument panel appears.
2. When the parking brake switch is pressed again, the parking brake is released, the indicator on the parking brake switch lights off, and the parking brake indicator on the instrument panel disappears.



(1) Parking brake switch

(2) Indicator



(1) Parking brake indicator

NOTE :

- Suppose that the parking brake switch is on (indicator is lit). Even if the hydraulic system gets unlocked, the travel system remains out of service and the brakes are still applied. When the hydraulic system has been locked, the travel system gets locked too, and the brakes are applied.
- The status of the parking brake is memorized, and even if the start switch is turned "OFF"

then turned “ON”, the previous status is retained.

- If the keypad malfunctions, you can not release the parking brake by pressing the parking brake switch. In this case, press and hold the travel speed switch to release the parking brake temporarily.

3. Hydraulic unlock switch

The hydraulic-unlock-switch enables the hydraulic system.

The hydraulic-unlock-switch is intended to get ready for use of the hydraulic system (traveling and attachments), but is not equipped with the locking function.

To unlock the hydraulic system, ensure the following requirements are met:

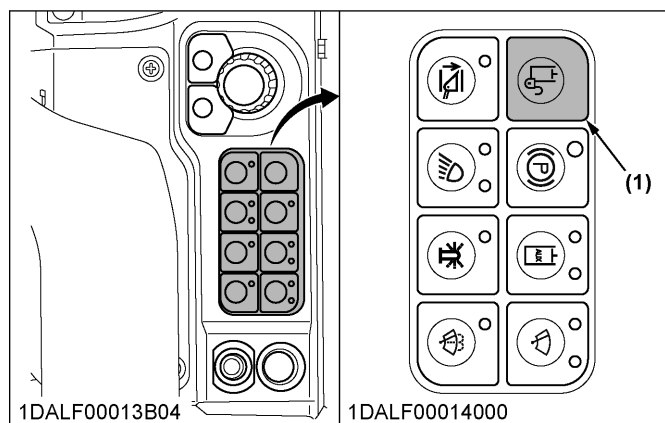
1. The engine is running;
2. The armrests are down; AND
3. The operator is seated in the seat.

When the hydraulic system has been unlocked, the hydraulic-lock-indicator on the instrument panel disappears.

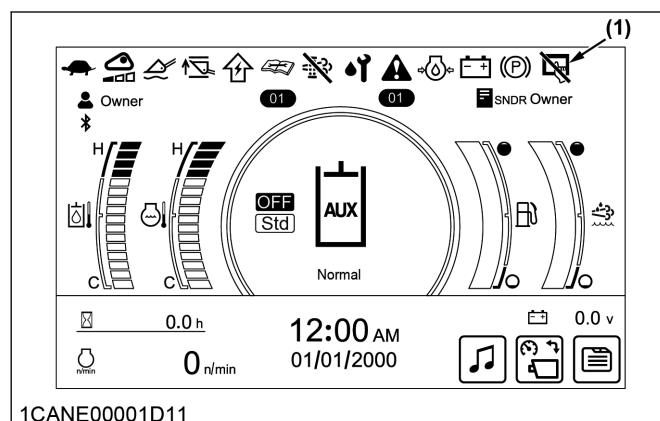
If any of the preceding conditions are not met, the hydraulic system stays locked.

NOTE :

- When the hydraulic-lock-indicator is turned off, the touch-operation restriction indicator may turn on depending on the settings.



(1) Hydraulic unlock switch



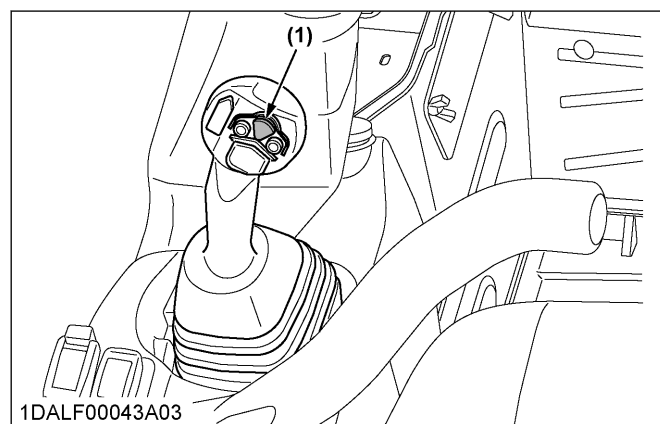
(1) Touch operation restriction indicator

- If the keypad malfunctions, you can not release the hydraulic lock by pressing the hydraulic-unlock-switch. In this case, press and hold the travel speed switch to release the hydraulic lock temporarily.

4. Horn switch

When pressing the horn switch, the horn will beep.

The horn switch is operative even when the machine is not turned on.



(1) Horn switch

5. Travel speed switch

Travel speed will increase when you depress the travel-speed-switch.

Switching the dual travel speed:

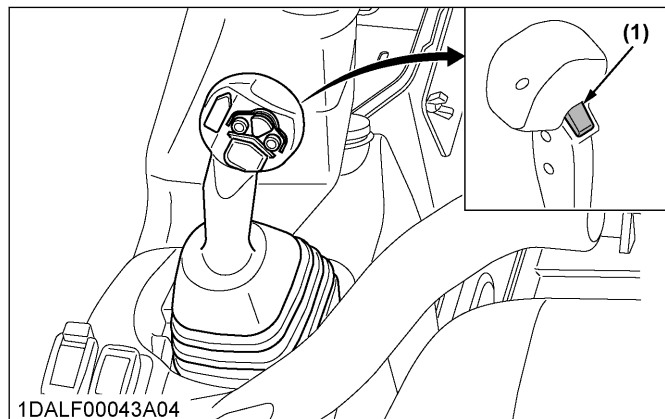
1. When pressing the travel-speed-switch, the buzzer beeps twice, the travel speed changes from low to high speed, and the  symbol appears.
2. When pressing the travel-speed-switch again, the buzzer beeps once, the travel speed changes from high to low speed, and the  symbol appears.

IMPORTANT :

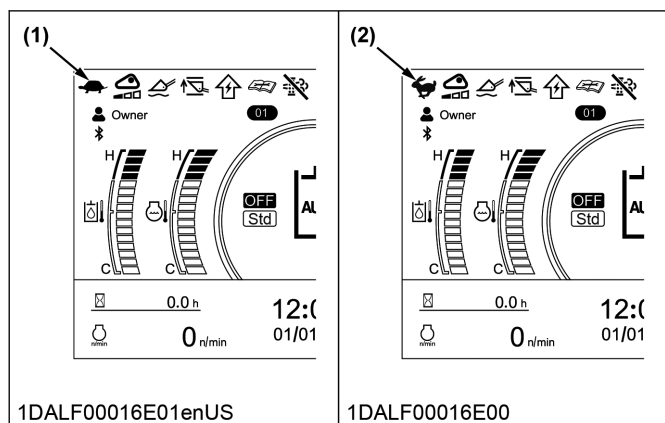
- The travel speed automatically shifts into low speed when the drive resistance increases

while traveling in high speed. Thereafter, when the resistance decreases, it returns to high speed.

While the travel speed shifts into low speed automatically, the  symbol blinks.



(1) Travel speed switch



(1) Speed indicator (low speed) (2) Speed indicator (high speed)

NOTE :

- The travel speed is set to low speed immediately after the engine starts.
- When activating the travel-speed-switch, press it completely. The travel-speed-switch is operative only when the travel system is unlocked.
- Each time the travel-speed-switch is pressed, the travel speed is switched between high and low speed.

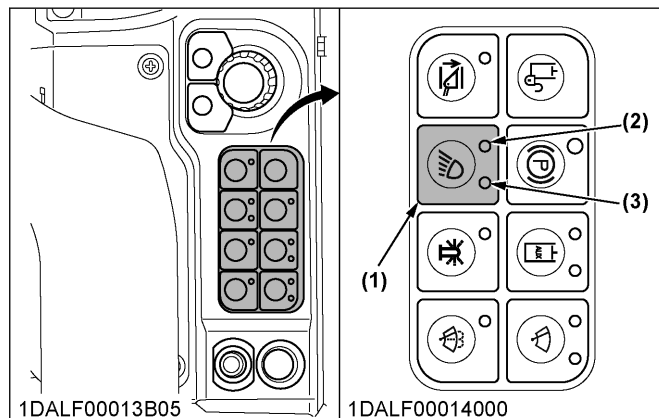
6. Working light switch

The working-light-switch is operative when the engine is running, or the start switch mode is the "ACCESSORY" mode.

Operate the working light switch as follows:

- Press once and the front working light turns on. The upper indicator lights up.
- Press a second time and the rear working light turns on. Both the upper indicator and the lower indicator light up.

- Press a third time and both the the front working light and the rear working light turn off. Both the upper indicator and the lower indicator go out.



(1) Working light switch

(2) Upper indicator

(3) Lower indicator

Night operation

! CAUTION

To avoid personal injury:

- Visibility is reduced in darkness, therefore, in the event the working light alone does not provide sufficient visibility, use additional stationary artificial lighting. Observe all safety rules and any special regulations for night work.

7. Seat switch

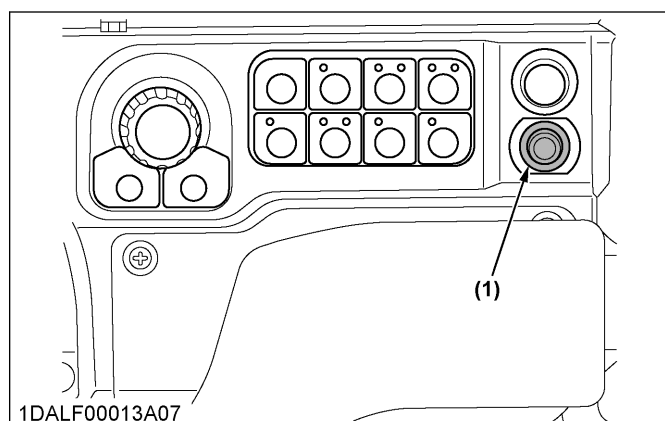
The seat switch is used to detect the operator sitting on the seat and to signal the hydraulic system that it can be unlocked.

(See Hydraulic unlock switch on page 119)

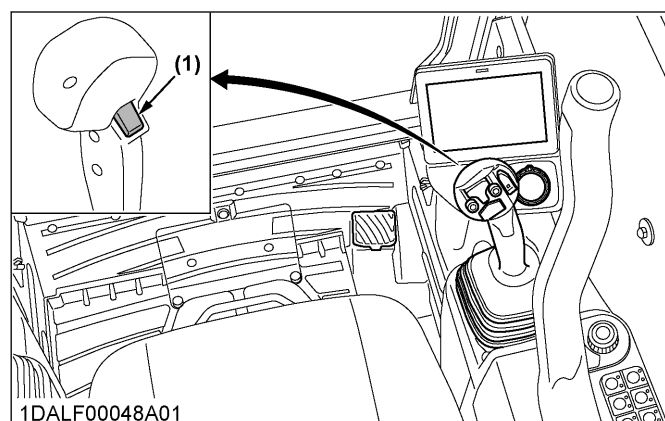
8. Inhibit diesel particulate filter (DPF) regeneration switch

The inhibit-diesel-particulate-filter (DPF)-regeneration-switch (hereinafter called inhibit-DPF-regeneration-switch) disables the auto DPF regeneration cycle. Activate the inhibit-DPF-regeneration-switch to turn off the auto DPF regeneration when working around people, animals, plants, and flammable materials. Certain work conditions may require the auto DPF regeneration cycle to be disabled.

1. When pressing the inhibit-DPF-regeneration-switch once, the automatic mode turns off.
2. When pressing the inhibit-DPF-regeneration-switch once again, the automatic mode returns from disable.



(1) Inhibit DPF regeneration switch



(1) Float switch

9. 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 the lift arms to fall and is extremely dangerous.
- Do not drive the machine forward with the lift arms in the float position.

Entering the float mode

While moving down the lift arm by tilting the right-control-lever forward, press the float switch on the right-control-lever and release it no later than 1 second. The float mode then turns on.

While in the float mode, the  mark on the instrument panel stays on.

IMPORTANT :

- When the hydraulic oil temperature is low, warm up the machine before entering the float mode. If you try to enter the float mode when the oil temperature is low, a warning message will be displayed on the instrument panel.

Exiting the float mode

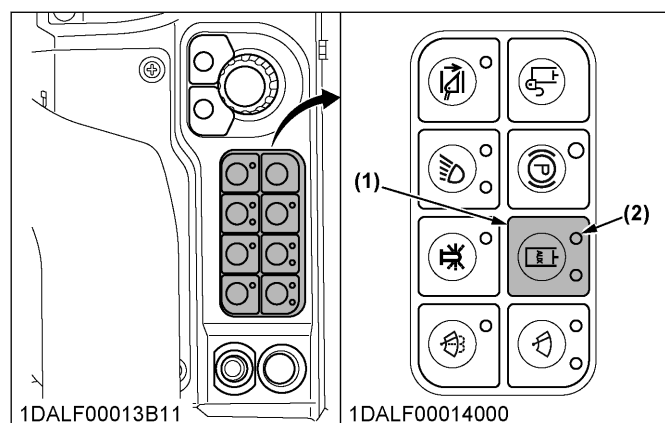
While the machine is in the float mode, perform either of the following methods.

- Press the float switch on the right-control-lever.
- Move up the lift arm (pulling the right-control-lever backward).

10. AUX port switch [Standard-Flow model only]

The AUX-port-switch is used to enable the AUX port. The AUX-port-switch can be used only when the AUX-port-variable-switch on the right-control-lever is in the neutral position.

1. When pressing the AUX-port-switch once, the AUX port is unlocked and the  mark on the instrument panel lights up. In addition, the upper indicator of the AUX-port-switch lights up.
2. When pressing the AUX-port-switch again, the AUX port then gets locked and the  mark on the instrument panel turns off. In addition, the upper indicator of the AUX-port-switch turns off.



(1) AUX port switch

(2) Upper indicator

11. AUX port switch [High-Flow model only]

IMPORTANT :

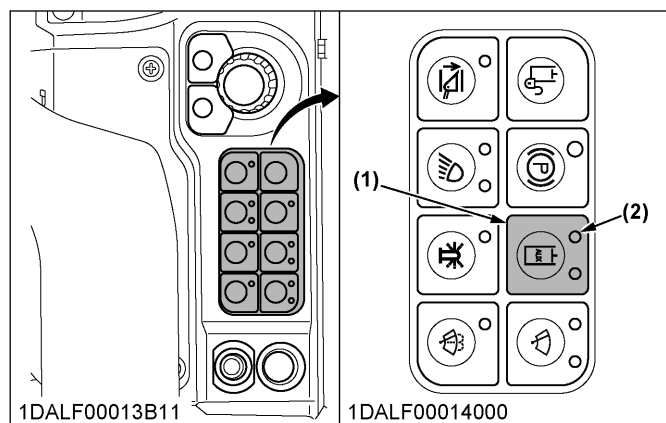
- Be careful not to use any High-Flow-incompatible attachment in the High-Flow mode. Otherwise the attachment may be damaged.

The AUX-port-switch is used to enable the AUX port.

The AUX-port-switch can be used only when the AUX-port-variable-switch on the right-control-lever is in the neutral position.

If the AUX flow rate is set to Standard-Flow (Volume 6) or lower

1. When pressing the AUX-port-switch once, the AUX port is unlocked and the  mark on the instrument panel lights up. In addition, the upper indicator of the AUX-port-switch lights up.
2. When pressing the AUX-port-switch again, the AUX port then gets locked and the  mark on the instrument panel turns off. In addition, the upper indicator of the AUX-port-switch turns off.

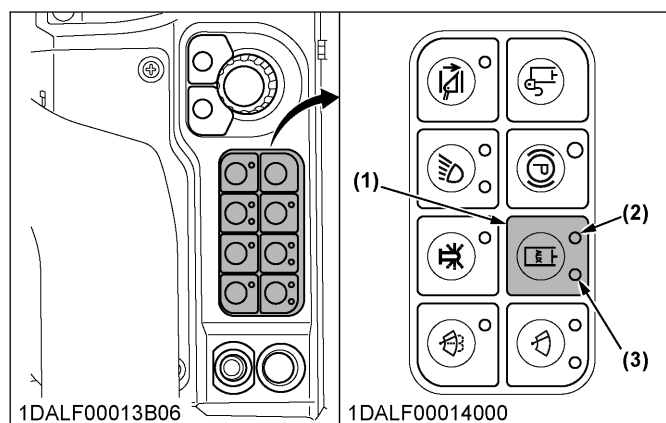


(1) AUX port switch

(2) Upper indicator

If the AUX flow rate is set to the one higher than Standard-Flow (Volume 6)

1. When pressing the AUX-port-switch once, the AUX port is unlocked and the mark on the instrument panel blinks. In addition, the upper and the lower indicators of the AUX-port-switch light up.
2. When pressing the AUX-port-switch again, the AUX port then gets locked and the mark on the instrument panel turns off. In addition, the upper and the lower indicators of the AUX-port-switch turns off.



(1) AUX port switch

(2) Upper indicator

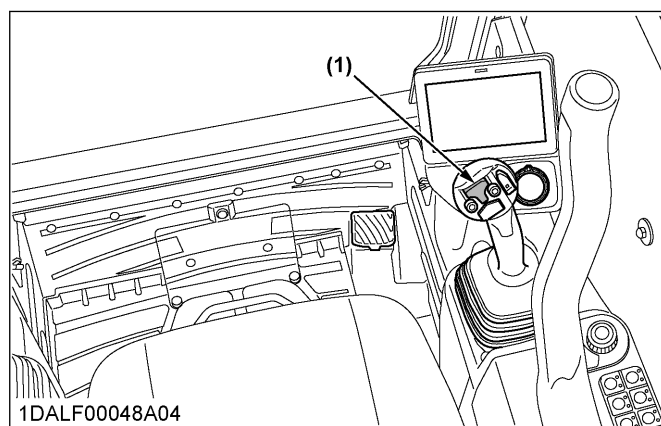
(3) Lower indicator

See Setting the AUX flow rate [High-Flow model only] on page 61 for the procedures to change the AUX flow rate.

12. AUX port variable switch

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

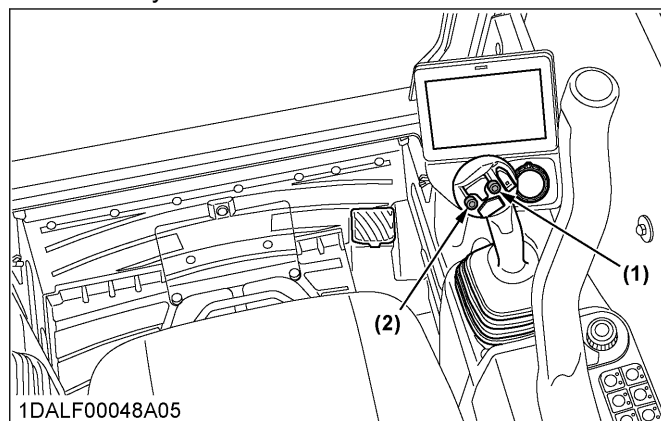
- Right-hand control
The flow rate of the hydraulic oil through the right-hand port (male) varies.
- Left-hand control
The flow rate through the left-hand port (female) varies.



(1) AUX port variable switch

13. AUX hold switch

By pressing the right or left AUX-hold-switch, the flow rate of the hydraulic oil is maximized.

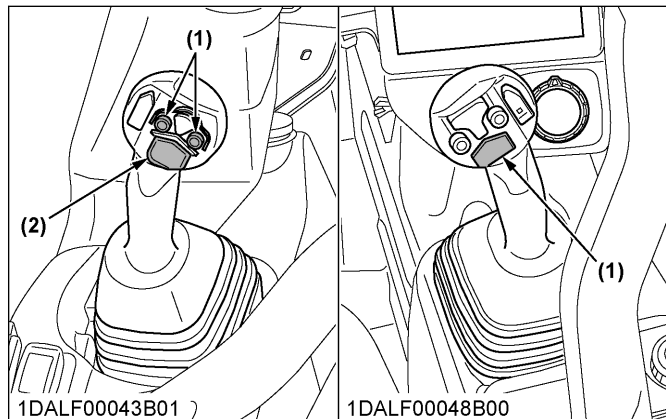


(1) AUX hold switch (right)

(2) AUX hold switch (left)

14. AUX electrical control switch (option)

With the AUX port switch unlocked, the AUX-electrical-control-switch serves to feed electrical power to attachments.



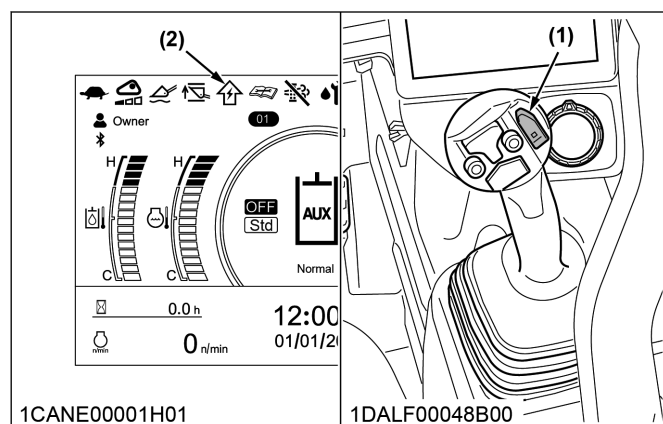
(1) AUX electrical control switch (2) AUX electrical control switch (Multi Function model only)

NOTE :

- Using the AUX-electrical-control-switch requires the 14-pin coupler (option).

15. AUX electrical mode change switch (option)

- By pressing the AUX-electrical-mode-change-switch, the AUX-electrical-mode-change-function will turn on.
The AUX-electrical-mode-change-indicator and a light on the AUX-electrical-mode-change-switch will light up.
- By pressing the AUX-electrical-mode-switch again, the AUX-electrical-mode-change-function will turn off.
The AUX-electrical-mode-change-indicator and the light on the AUX-electrical-mode-change-switch will go off.



(1) AUX electrical mode change switch (Multi Function model only) (2) AUX electrical mode change indicator

NOTE :

- Using the AUX-electrical-mode-change-switch require the 14-pin coupler (option).

16. Hydraulic quick-hitch switch [Hydraulic quick-hitch model only]

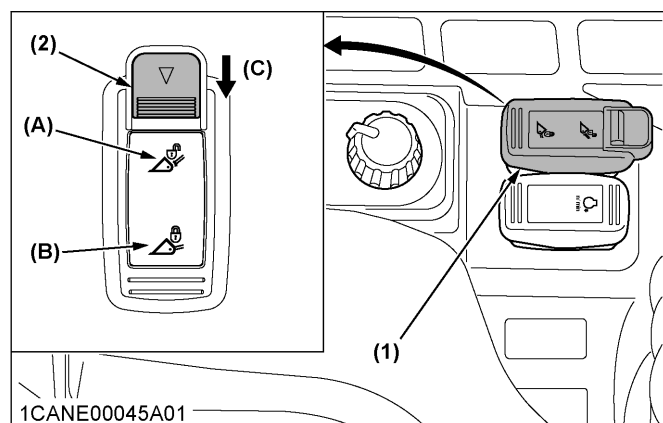
The hydraulic quick-hitch switch is used to attach and detach an attachment by activating the hydraulic quick-hitch.

Press the hydraulic quick-hitch switch. This switch has a guard to protect against inadvertent activation. To press the switch, slide the guard and unlock the attachment.

The quick coupler pin can then be retracted. After the quick coupler pins have been retracted, the release button can be let go.

NOTE :

- Unlocking is only possible while the unlock switch is pressed. After unlocking the attachment, press the hydraulic quick-hitch switch back to the lock position.

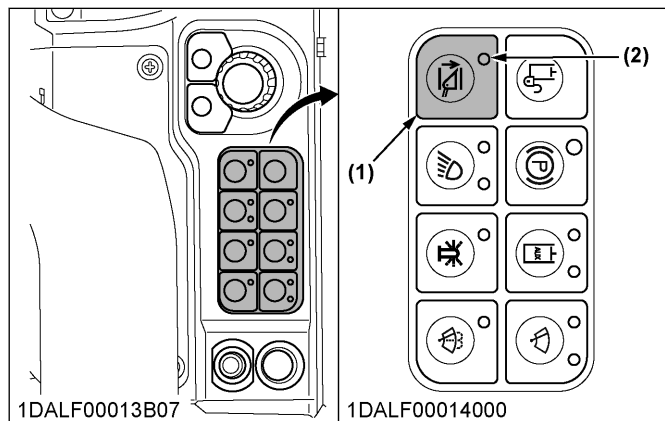


(1) Hydraulic quick-hitch switch (A) Unlock (B) Lock (C) Slide

17. Self leveling switch

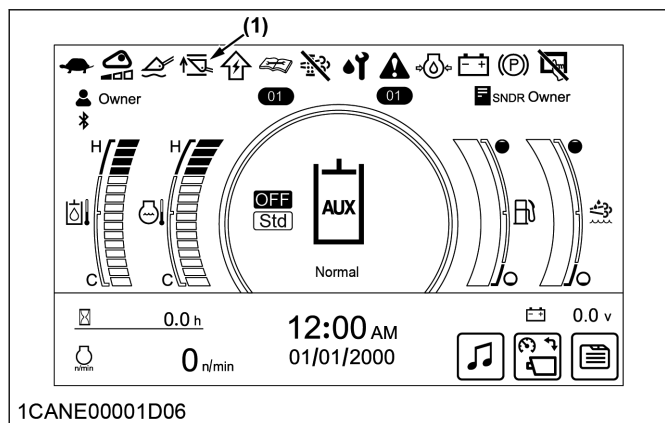
When pressing the self-leveling-switch, the self leveling indicator on the instrument panel lights up and the upper indicator on the self-leveling-switch lights up.

When pressing the self-leveling-switch again, self leveling indicator on the instrument panel turns off and the upper indicator on the self-leveling-switch turns off.



(1) Self leveling switch

(2) Upper indicator



(1) Self leveling indicator

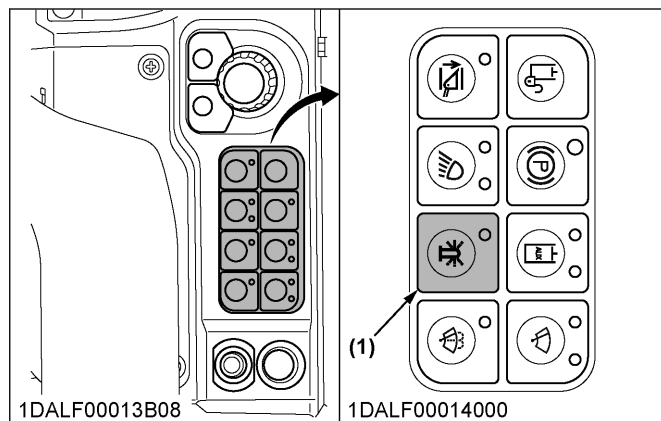
NOTE :

- Self leveling is only operational during the lift arms raise function.

18. Beacon light switch

This machine is only equipped with the beacon light switch (It contains a coupler for connecting and is located in the speaker cover at the back right of the cab).

The machine is not equipped with the beacon main part. Please install the part if required.



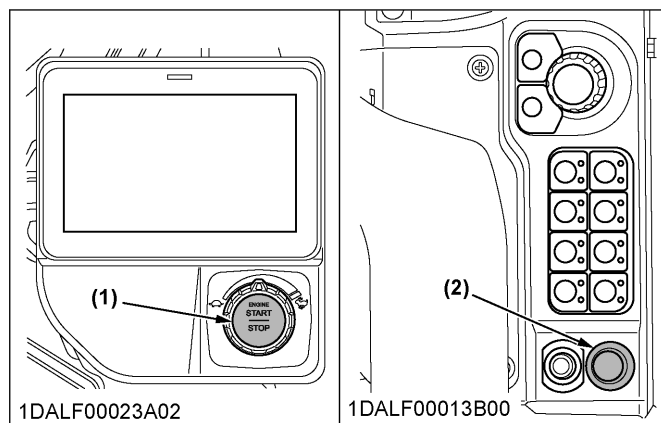
(1) Beacon light switch

19. Emergency engine stop button

IMPORTANT :

- Return the stop button to its original position after the engine stops.

The engine stops when the start switch is pushed off. If the engine does not stop, pull the stop button to stop the engine.

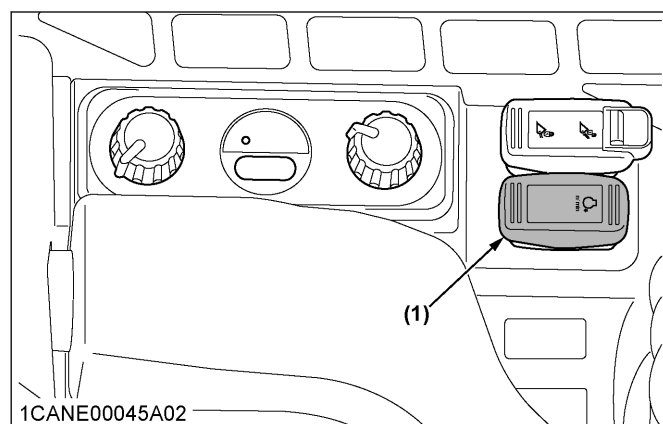
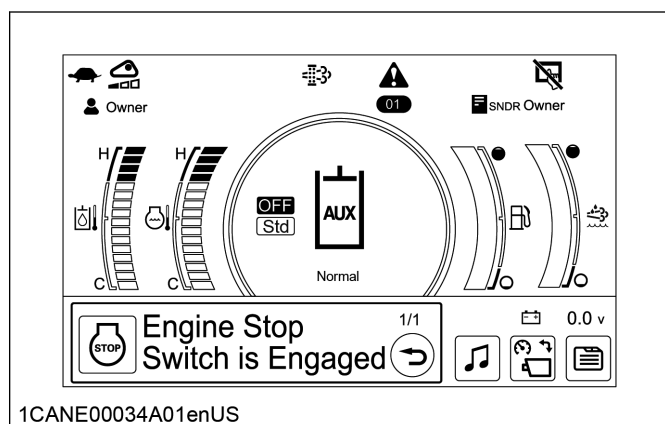


(1) Start switch

(2) Emergency engine stop button

NOTE :

- If the emergency engine stop button is activated, a message will appear on the display as shown in the following figure.



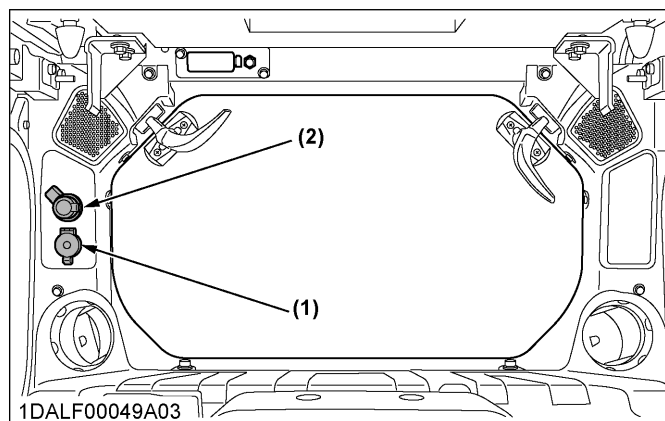
(1) Decelerator pedal switch

20. Electrical outlet and USB outlet

Max power of electrical outlet is less than 120 W.

If you need another auxiliary electric, contact your Kubota dealer for details.

Max output current of USB outlet is less than 2 A.



(1) Electrical outlet

(2) USB outlet

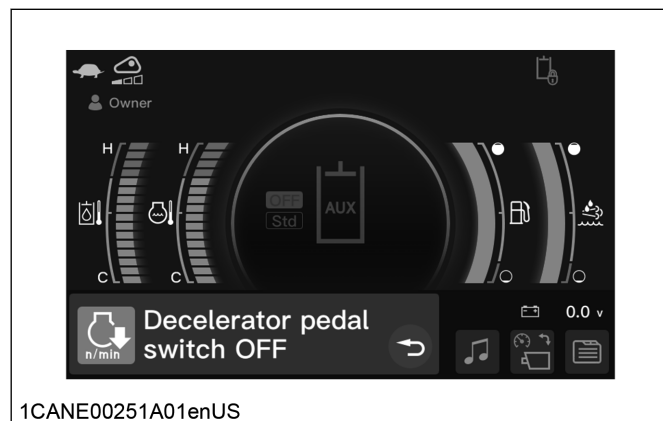
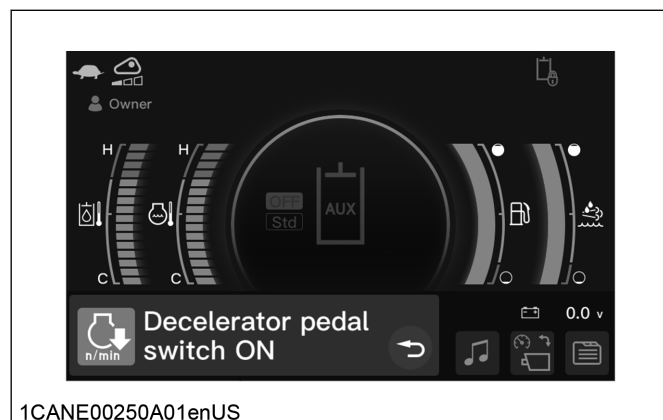
21. Decelerator pedal switch

The decelerator pedal function can be turned ON/OFF by operating the decelerator pedal switch without operating the accelerator pedal.

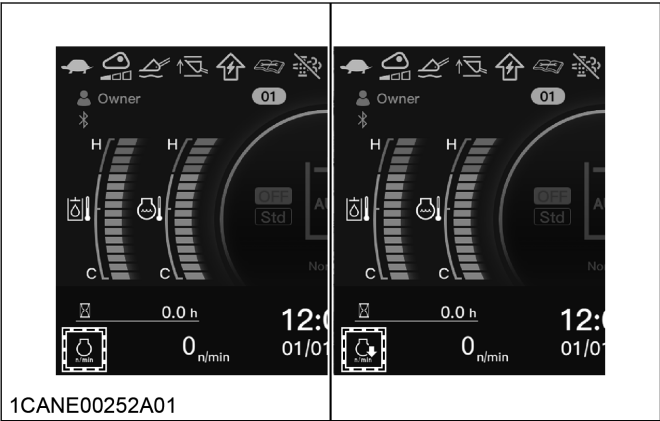
NOTE :

- If the switch is operated while the accelerator pedal is operated, the ON/OFF status cannot be changed. This condition is notified by the warning screen and buzzer.
- When the machine is turned on, the decelerator pedal function is disabled, regardless of the setting before turning off the machine.

When the decelerator pedal switch is turned ON/OFF, a popup will appear on the display.

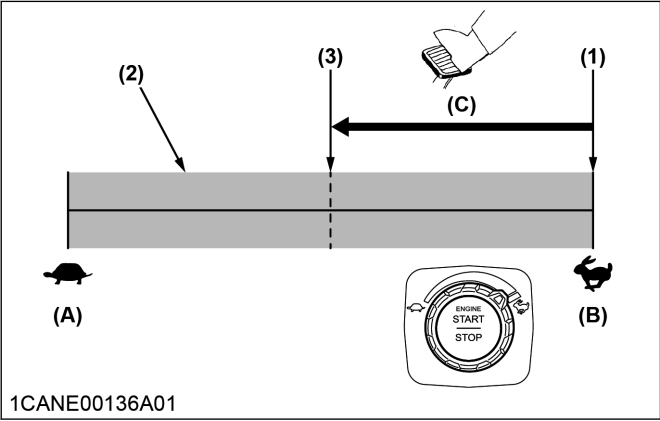


When this function is turned "ON", the icon next to the engine RPM indicator changes as shown below.



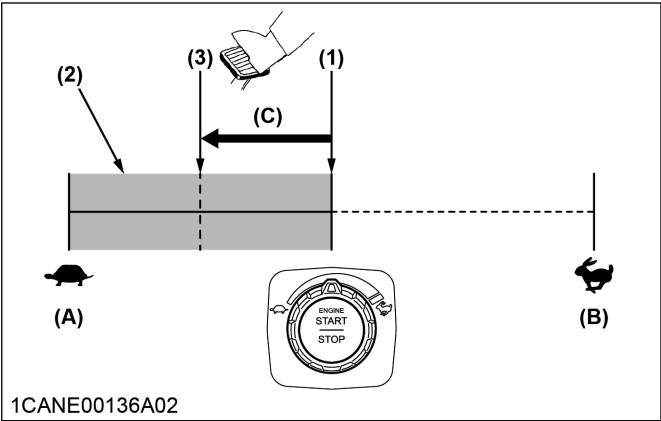
Normally, the engine RPM increases according to the amount of pressing of the accelerator pedal. However, by turning “ON” the decelerator pedal function, the engine RPM increased by operating the engine speed control dial can be reduced by pressing the foot-operated accelerator.

With the decelerator pedal function turned “ON”: When the engine speed control dial is set to the rightmost (maximum) position and the accelerator pedal is depressed to the middle position.



- (1) Setting value of engine speed control dial
- (2) Adjustable range with accelerator pedal
- (3) Actual engine speed
- (A) Low idling engine speed
- (B) High idling engine speed
- (C) Depressing pedal: To the middle position

With the decelerator pedal function turned “ON”: When the engine speed control dial is set to the middle position and the accelerator pedal is depressed to the middle position.



- (1) Setting value of engine speed control dial
- (2) Adjustable range with accelerator pedal
- (3) Actual engine speed
- (A) Low idling engine speed
- (B) High idling engine speed
- (C) Depressing pedal: To the middle position

22. Ride control switch (option)

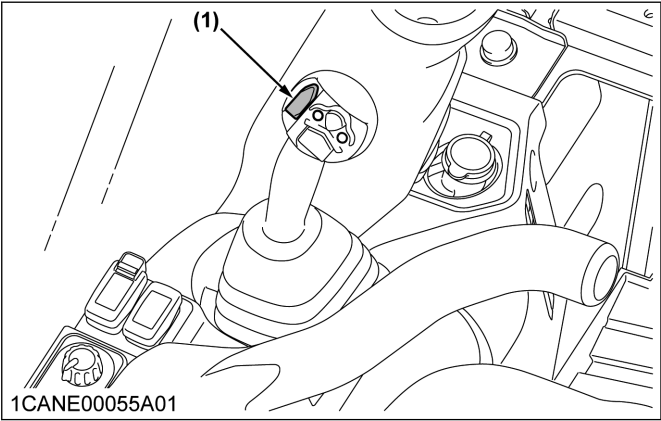
WARNING

To avoid personal injury or death:

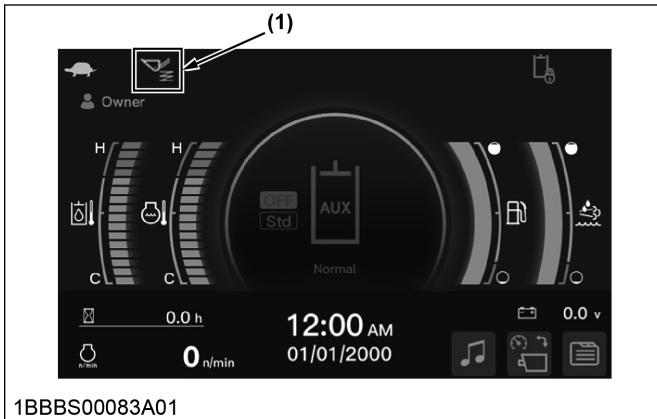
- Do not jack up the machine with the ride control function ON, as this will cause the lift arm cylinders to extend and the machine to gradually lower.

The ride control function mitigates the swaying of the bucket and other attachments.

When the ride control switch is pressed after the hydraulic lock is released, the following icon appears on the meter screen and the ride control function turns ON.



- (1) Ride control switch



(1) Ride control indicator

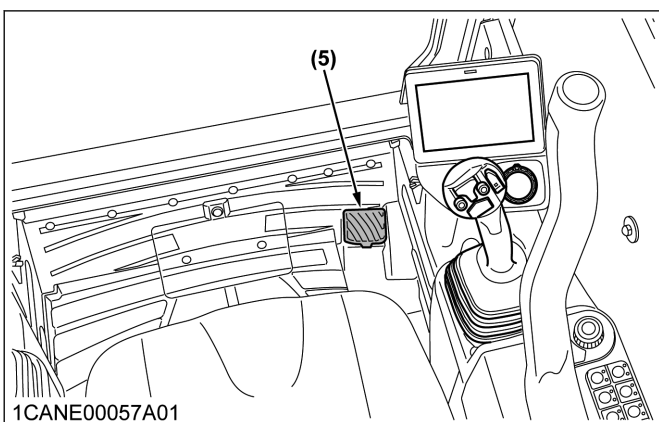
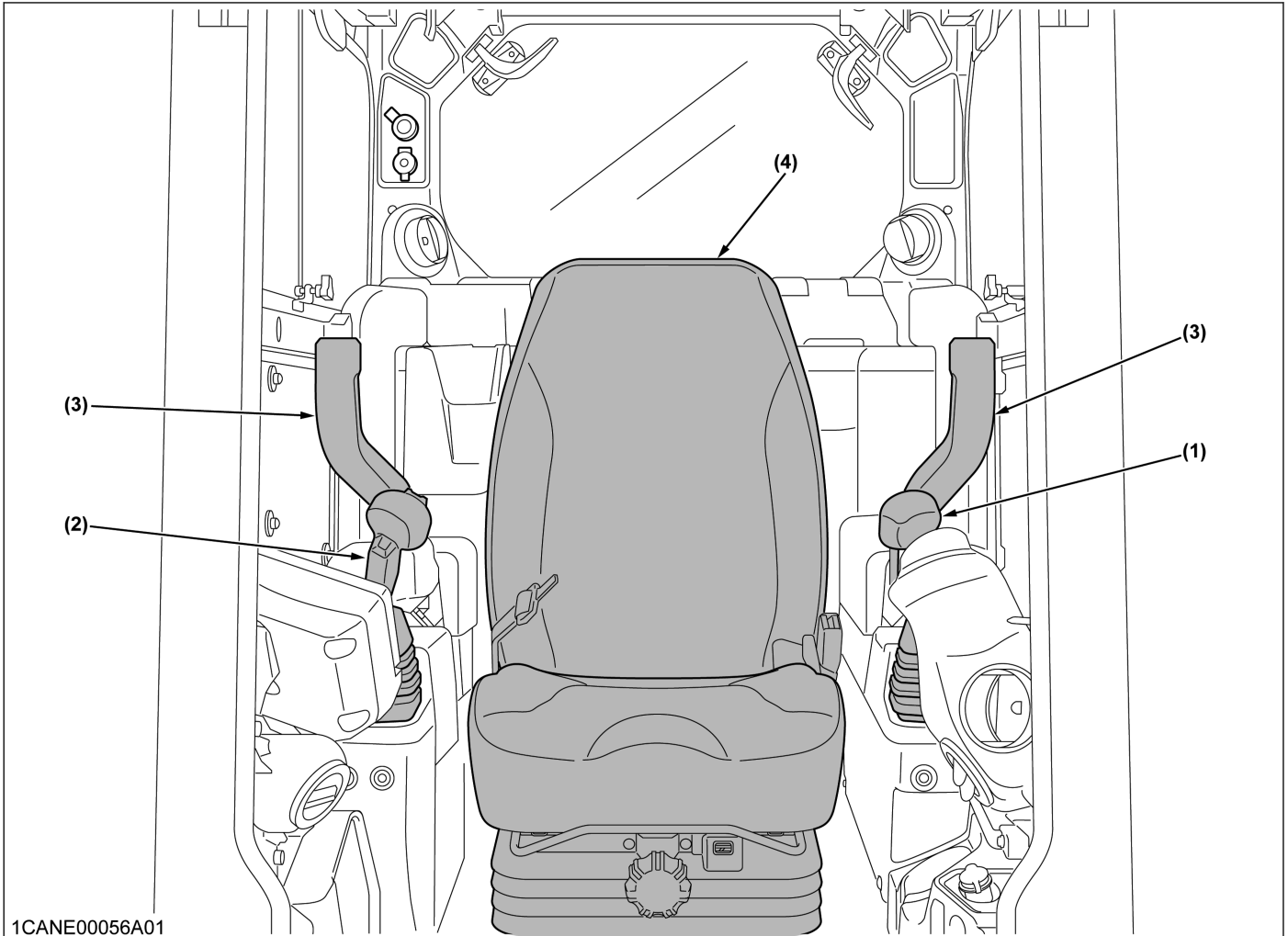
If the ride control switch is pressed again or if the hydraulic lock becomes engaged, the icon disappears and the ride control function turns OFF.

NOTE :

- This function is OFF immediately after the engine starts.
- When the ride control function is turned on, the lift arm lowers slightly depending on the bucket load.

PEDAL AND LEVERS

CONTROL PEDALS AND LEVERS



- (1) Left control (traveling) lever
- (2) Right control (front operating) lever
- (3) Armrest
- (4) Seat
- (5) Accelerator pedal

SAFETY FEATURES



WARNING

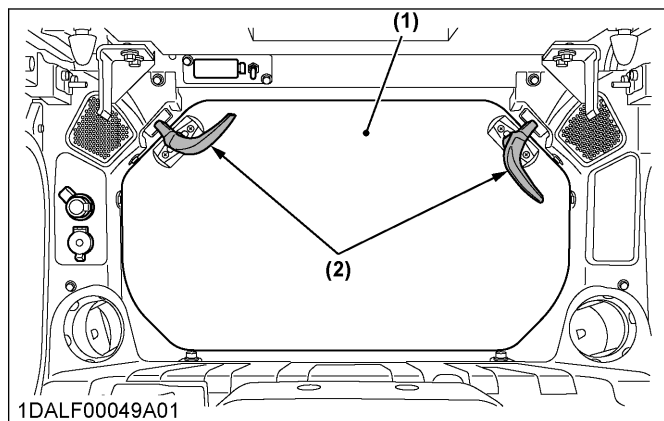
To avoid personal injury or death:

- Place the machine on a firm, flat and level surface
- Before starting the engine, make sure that no one is near the machine.

HOW TO USE THE EMERGENCY EXIT

This window is equipped with latches. If you become trapped in the cab, you can open the rear window to get out.

1. Turn both latches clockwise until they disengage from the window frame.
2. Push the rear window out of the rear of the operator cab.
3. Exit through the rear of the operator cab.



(1) Window

(2) Latch

OPC FUNCTION

OPC function is used to detect the operator sitting on the seat and to signal the hydraulic system that it can be unlocked.

When the operator sits on the operator's seat and lowers the armrests, the hydraulic system can be unlocked.

HOW TO USE AND CHECK THE FUNCTION OF THE ARMREST

1. Sit in the operator's seat.

2. Fasten the seat belt.
3. Start the engine.
4. Push down both armrests.
5. Push on the hydraulic-unlock-switch, and make sure that the hydraulic-lock-indicator on the instrument panel goes out.
6. Move the right-control-lever (front-operating-lever) slowly, and make sure that the lift arms and bucket move slowly.
7. Raise the left armrest, and make sure that the hydraulic-lock-indicator on the instrument panel lights up.
8. Move the right-control-lever (front-operating-lever), and make sure that the lift arms and bucket do not operate.
9. Push down the left armrest.
10. Push on the hydraulic-unlock-switch, and make sure that the hydraulic-lock-indicator on the instrument panel goes out.
11. Raise the right armrest, and make sure that the hydraulic-lock-indicator on the instrument panel lights up.
12. Move the right-control-lever (front-operating-lever), and make sure that the lift arms and bucket do not operate.

When checking the function of the armrest, also check the OPC function.

(See HOW TO USE AND CHECK THE SEAT FUNCTION on page 129)

HOW TO USE AND CHECK THE SEAT FUNCTION

1. Sit in the operator's seat.
2. Start the engine.
3. Push down both the armrests.
4. Push on the hydraulic-unlock-switch, and make sure that the hydraulic-lock-indicator on the instrument panel goes out.

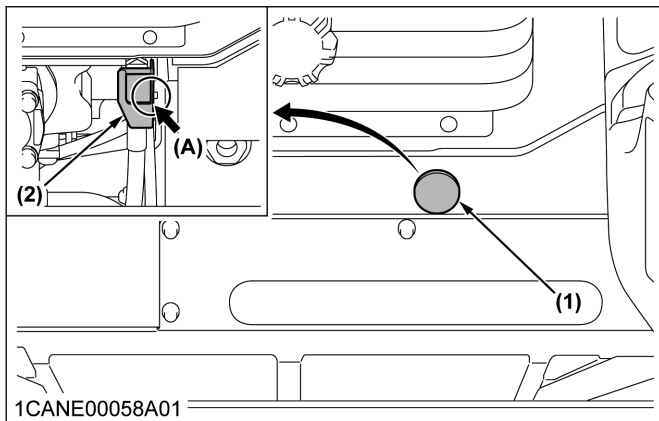
HOW TO CHECK THE BACK-UP ALARM

1. Start the engine.
2. If clear, engage hydraulics and start to reverse. Alarms should sound. If not, contact your Kubota dealer.

HOW TO USE THE FORCED LIFT ARMS LOWERING DEVICE

Even if the engine is stopped, you can lower the lift arms without restarting the engine.

1. Slide the operator's seat all the way backward.
2. Remove the rubber cap.
3. Push the lever to make sure that the lift arms descend.
4. Release the lever to make sure that the lift arms stop descending.
5. Place the rubber cap back to its original position.



(1) Rubber cap
(2) Lever

(A) Push

EXHAUST AFTERTREATMENT DEVICE

CATALYST-CONTAINING DIESEL-PARTICULATE-FILTER (DPF) DEVICE

The catalyst-containing-DPF-device has the following 2 functions.

- Reducing certain emissions, like hydrocarbon (HC) and carbon monoxide (CO), to harmless carbon dioxide (CO₂) and water.
- Trapping and eliminating PM (particulate-matter) through the filter at the same time.

Carefully read the following items before using the machine. The machine owner and operator are responsible for using the catalyst-containing-DPF-device correctly to protect the environment and to prevent damage to the DPF, and comply with federal and state regulations.

Use instructions

IMPORTANT :

- If you fail to use the specified fuel or engine oil, the cleaning interval of the DPF cannot be secured and the DPF will clog after a shorter operating time than expected.

The cleaning interval of the DPF	3000 hours to 6000 hours
----------------------------------	-----------------------------

- **Regardless of the service hours, clean the DPF if the message "DPF requires cleaning soon" appears on the display.**
- **Fuel**
Use the following fuel.
Use of other diesel fuel other than the following fuel may adversely affect the engine and the emission-control-device and may damage them.

Fuel	ULTRA LOW SULFUR FUEL (S15)
------	-----------------------------

- **Engine oil**
Use the following engine oil.

Engine oil	DPF-compatible engine oil (CJ-4 or CK-4)
------------	--

Any unspecified oil may damage the DPF earlier than expected and lower fuel economy.

Prohibited unnecessary idling

Generally speaking, the lower the engine rpm is, the lower the exhaust gas temperature is. It is more difficult to burn PM (particulate-matter) in the DPF at low rpm. With this in mind, do not keep the engine idling unnecessarily.

If you leave the machine with the engine running, to protect the DPF, the engine may automatically stop.

DPF regeneration system

On the Kubota CTL, the ECU prompts the DPF-regeneration cycle. When starting the engine, auto-regeneration-mode is set by default. When all the conditions are met, regeneration automatically starts, unless the inhibit switch is engaged.

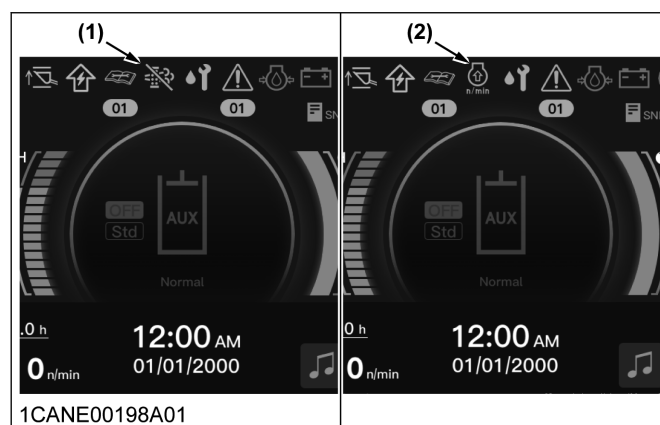
REGENERATION OF DIESEL-PARTICULATE-FILTER (DPF)

WARNING

To avoid personal injury or death:

- When the DPF is in the regenerating mode, the exhaust gas and the DPF muffler become hot. During the DPF regeneration, keep the machine away from other people, animals, plants, and flammable material. Also keep the area near the DPF muffler clean and away from flammable material.
- Do not leave the machine during DPF regeneration.

Indicator symbol and buzzer indicate the DPF level of PM during operation of the machine.



(1) DPF regeneration indicator (2) Engine rev up indicator

NOTE :

- During DPF regeneration cycle, keep the surrounding environment in mind. Do not allow the ambient temperature to rise excessively due to heat from the DPF regeneration. If the ambient temperature rises excessively, activate the inhibit switch.

EXHAUST AFTERTREATMENT DEVICE

- The DPF regeneration cycle only starts in the following conditions. If any of the conditions are not met, the DPF regeneration cycle may be interrupted.

Coolant temperature	above 50 °C
DPF temperature	above 250 °C
Engine rpm	above 1800 rpm

- The DPF regeneration usually takes about the following times.

DPF regeneration time	15 minutes to 20 minutes
-----------------------	--------------------------

The DPF regeneration time depends, however, on the outside air temperature, exhaust gas temperature and filter PM level.

- Do not interrupt the DPF regeneration cycle unnecessarily.

SCR (SELECTIVE CATALYTIC REDUCTION) SYSTEM



WARNING

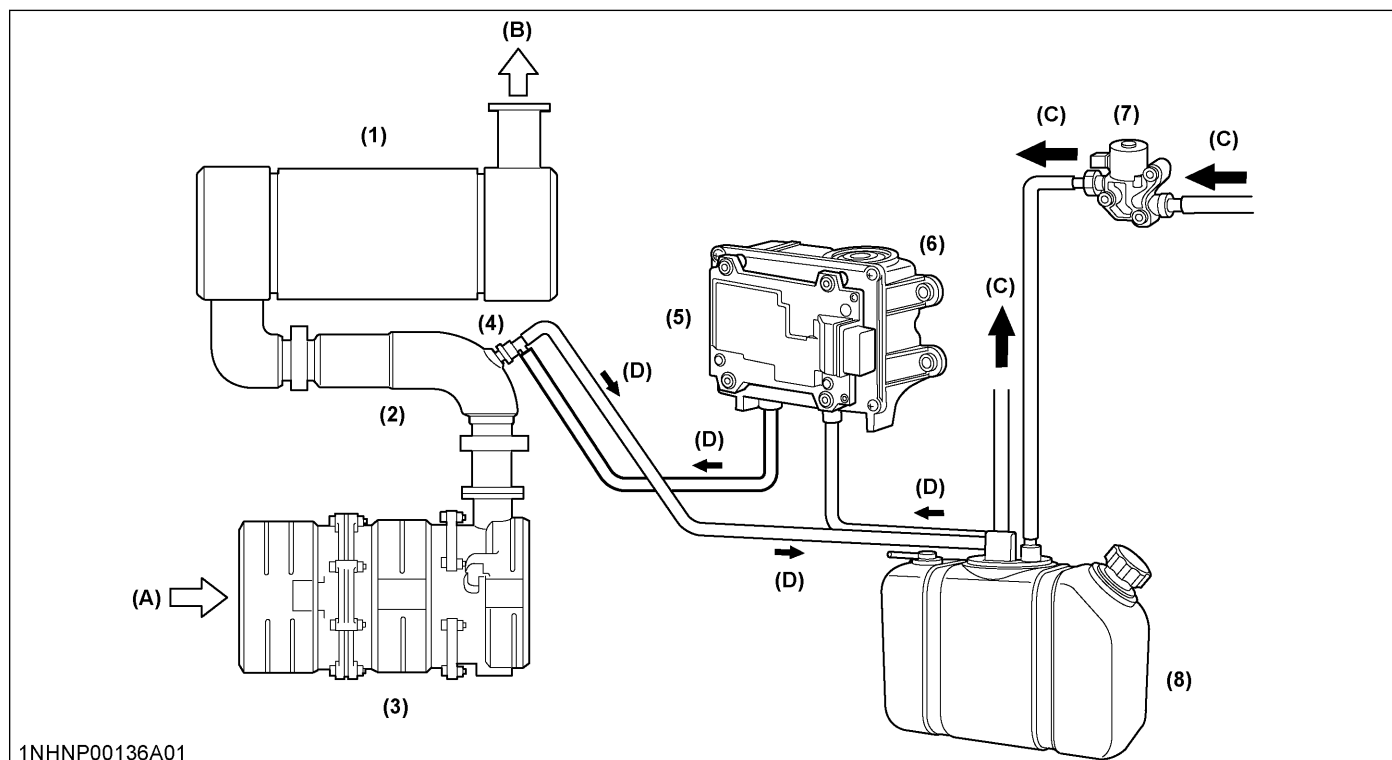
To avoid personal injury or death:

- Do not allow the fluid that comes out of the muffler to contact skin. Wash or flush immediately with large quantities of water after contact with fluid.

IMPORTANT :

- Modifying the SCR system is a violation of local laws and regulations. Do not modify the SCR system for any reason, as doing so could result in monetary sanctions and fines.
- Do not run the engine when the DEF (AdBlue) tank is empty.
- If the remaining amount of DEF (AdBlue) is insufficient, the quality is poor, or if an abnormality occurs in the SCR system, the auto regeneration and manual (parking) regeneration functions of the Diesel Particulate Filter (DPF) muffler may not operate properly.
- The SCR system is intended to reduce or eliminate nitrogen oxides (NOx) from diesel exhaust gas. The system uses Diesel Exhaust Fluid (DEF) as a reducing agent and hydrolyzes it with the heat of exhaust gas to produce ammonia (NH₃). The generated ammonia reduces NOx and decomposes them into nitrogen and water for emissions reduction. Due to this NOx reduction from the exhaust gas, the odor of the exhaust gas discharged from the SCR device differs from that of conventional diesel engines.
- Diesel Exhaust Fluid (DEF) is sold under many brand names, with one of the more common ones being AdBlue. In the text, DEF is described as DEF (AdBlue).
- DEF (AdBlue) freezes below -11 °C, but this does not affect the start-up of the engine. The frozen DEF (AdBlue) is thawed by the heat of the engine coolant while the engine is running.

Structural drawing



- (1) Selective catalytic reduction (SCR) device
 (2) Mixing pipe
 (3) Diesel particulate filter (DPF)
 (4) DEF (AdBlue) injector

- (5) Aftertreatment control unit (ACU)
 (6) DEF (AdBlue) pump
 (7) Coolant valve
 (8) DEF (AdBlue) tank

- (A) Exhaust gas before purification
 (B) Exhaust gas after purification
 (C) Coolant flow
 (D) DEF (AdBlue) flow

1. DEF (AdBlue)

- The DEF (AdBlue), used as a reducing agent for the SCR system, is a 32.5% aqueous urea solution.
- No qualification is needed for handling DEF (AdBlue). In addition, DEF (AdBlue) is not designated as a hazardous material.
- Use DEF (AdBlue) that conforms to ISO 22241.

NOTE :

- In North America, the high-grade NO_x reducing agent (aqueous urea solution) is sold under the name of DEF (Diesel Exhaust Fluid). In Europe and in Japan, aqueous urea solution is sold under the brand name AdBlue.

2. Handling DEF (AdBlue)

CAUTION

To avoid personal injury, note the following when handling DEF (AdBlue):

- If DEF (AdBlue) gets into your eyes, immediately rinse your eyes with a large amount of water for at least 15 minutes and consult a doctor.
- Do not swallow DEF (AdBlue). If you have accidentally swallowed DEF (AdBlue), seek medical attention immediately.
- If DEF (AdBlue) gets on your skin, rinse immediately with water. In rare cases, DEF (AdBlue) may irritate the skin.
- If DEF (AdBlue) gets on your clothes or shoes, wash it off immediately. Simply wiping off or leaving DEF (AdBlue) on clothes or shoes will leave a white residue.

For more details, obtain and read the Safety Data Sheet (SDS) from the DEF (AdBlue) supplier.

If you spill DEF (AdBlue), immediately rinse with clean water. If left untouched, DEF (AdBlue) may rust metal parts or corrode painted surfaces. Also, resin and rubber parts may be deformed.

3. Quality of DEF (AdBlue)

IMPORTANT :

- If the DEF (AdBlue) emits a strong ammonia odor, the quality of the fluid may have deteriorated. To check the quality of the DEF (AdBlue), check the odor of the DEF (AdBlue) in the DEF (AdBlue) tank once every 3 months.
- If the DEF (AdBlue) in the DEF (AdBlue) tank emits a strong ammonia odor, drain all DEF (AdBlue) from the DEF (AdBlue) tank into a container.

Details regarding how to drain the DEF (AdBlue) can be found in a different section.

(See Draining DEF (AdBlue) on page 136)

After draining the DEF (AdBlue), flush the inside of the DEF (AdBlue) tank with distilled water, then refill the tank with new or high-quality DEF (AdBlue).

- **When you do not use the machine for more than 3 months, drain all DEF (AdBlue) from the DEF (AdBlue) tank.**
- Purchasing DEF (AdBlue) from a KUBOTA Dealer is recommended. The product is also available at gas stations, truck stops and specialty shops. Use an ISO 22241 compliant product. Using non-compliant products may lead to engine failure.
- The appropriate environment for storing DEF (AdBlue) is between -5 °C to 30 °C. See the following table for more information about the storage life of DEF (AdBlue). Avoid storing in environments that exceed 30 °C to avoid shortening the storage life of the DEF (AdBlue).

Details regarding the storage of DEF (AdBlue) can be found in a different section.

(See Storing purchased DEF (AdBlue) on page 137)

Ambient temperature	Storage life
10 °C or below	36 months
25 °C or below	18 months
30 °C or below	12 months
35 °C or below	6 months
40 °C or below	3 months

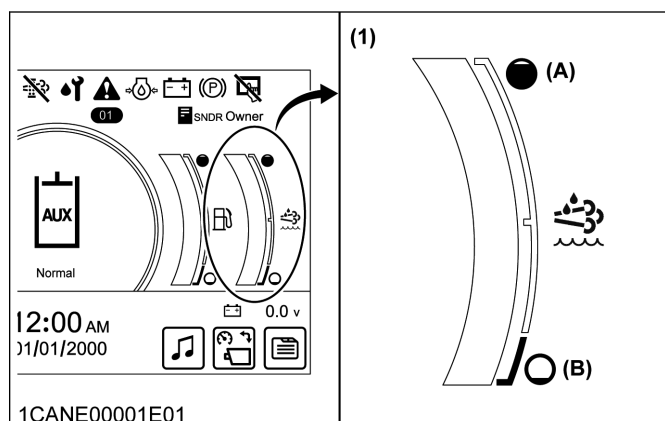
- Do not dilute the DEF (AdBlue) fluid.
- DEF (AdBlue) of deteriorated quality may cause a drop in engine output or an engine malfunction.

NOTE :

- **If distilled water is not available for flushing the inside of the DEF tank, rinse with clean water first, then rinse thoroughly with DEF (AdBlue) again. Afterward, replenish with new or high-quality DEF (AdBlue).**
- **Turn off the machine when replacing the DEF (AdBlue).**

4. DEF (AdBlue) gauge indicator

Press the start switch when the machine is off, the DEF (AdBlue)-gauge-indicator indicates that the DEF (AdBlue) remains in the DEF (AdBlue) tank.



(1) DEF (AdBlue) gauge indicator

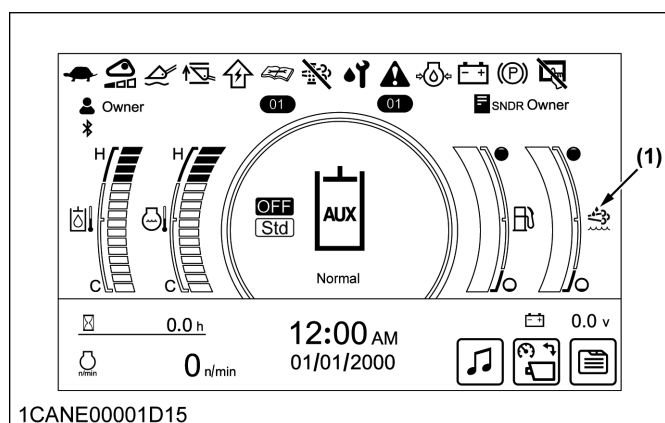
(A) Full
(B) Empty

5. Low DEF (AdBlue) warning indicator

This machine controls the engine output according to the remaining amount of DEF (AdBlue) to comply with emission regulations.

After starting the engine, check the remaining amount of DEF (AdBlue) with the DEF (AdBlue) gauge indicator located on the instrument panel.

If the DEF (AdBlue) runs low, the low DEF (AdBlue) warning indicator will blink. If you continue running the machine in its current state, the engine output will be limited by about 50 %. If operation is continued, the engine will be limited to idling.



(1) Low DEF (AdBlue) warning indicator

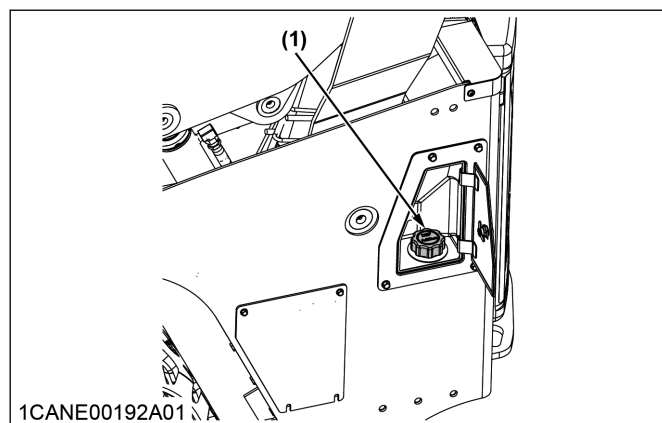
6. Adding DEF (AdBlue)

IMPORTANT :

- The DEF (AdBlue) tank cap is blue and the fuel tank cap is green.
Do not add DEF (AdBlue) to the fuel tank. Also, do not add diesel fuel to the DEF (AdBlue) tank.
- If anything other than DEF (AdBlue) is mixed into the DEF (AdBlue) tank and the engine is started, the SCR system may fail. Do not start the engine if the DEF (AdBlue) is contaminated

with diesel fuel. Contact your KUBOTA Dealer immediately.

- The warranty does not cover failures caused by adding or mixing anything other than DEF (AdBlue) into the DEF (AdBlue) tank. If that occurs, all repair costs will be the customer's responsibility.



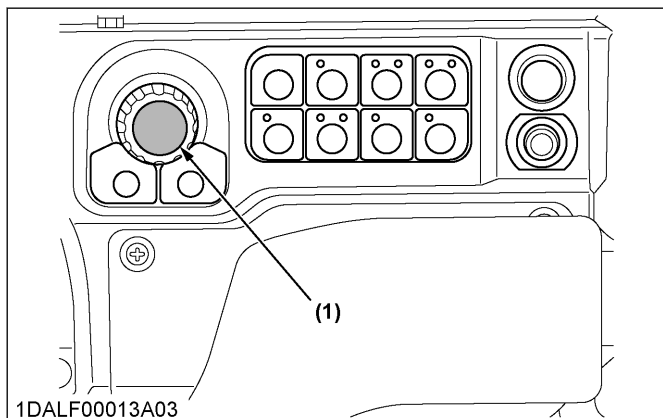
(1) DEF (AdBlue) tank cap (Blue tank cap)

- Before adding DEF (AdBlue) to the DEF (AdBlue) tank, clean the area around the nozzle and supply port to prevent foreign matter such as soil and dust from entering.
- In order to maintain the performance of the SCR system, it is recommended to refill the DEF (AdBlue) tank with DEF (AdBlue) each time the fuel tank is refueled.
- Turn off the machine before adding DEF (AdBlue). After stopping the engine, the SCR system continues to operate for up to about 25 minutes. Do not add DEF (AdBlue) before the SCR system stops. Otherwise, DEF (AdBlue) may overflow from the breather hose of the DEF (AdBlue) tank.
- If DEF (AdBlue) is stored in a reusable container, periodically clean and refill it. If the container is dirty, wash with distilled water. If distilled water is not available for washing the container, rinse with clean water first, then rinse again with DEF (AdBlue) before refilling.

6.1 Fill level monitor when refilling DEF (AdBlue)

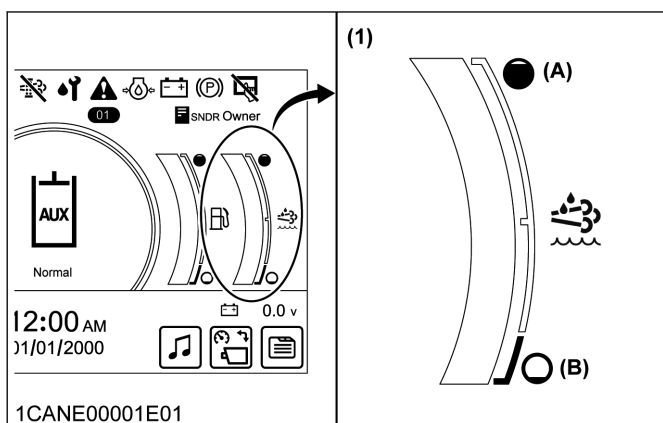
The buzzer sounds to notify the DEF (AdBlue) refilling status.

1. With the machine turned off, press the jog dial switch. Doing so turns on the fuel notification buzzer.



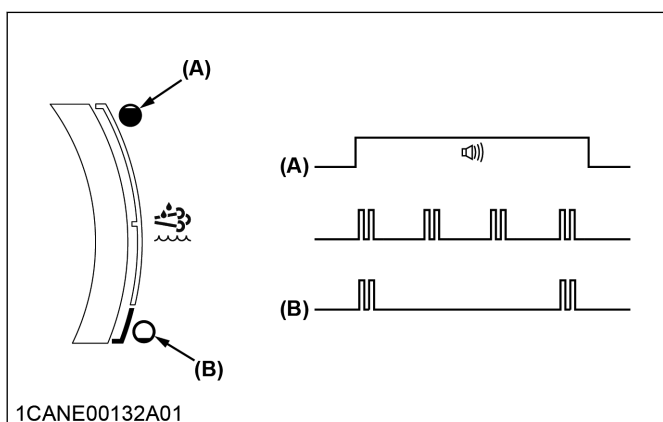
(1) Jog dial switch

2. Make sure the DEF (AdBlue) tank is not full.



(1) DEF (AdBlue) gauge indicator

3. Start refilling DEF (AdBlue) to the machine. When a certain amount of DEF (AdBlue) is refilled, the buzzer sound changes from the fuel notification sound to DEF (AdBlue) notification sound.

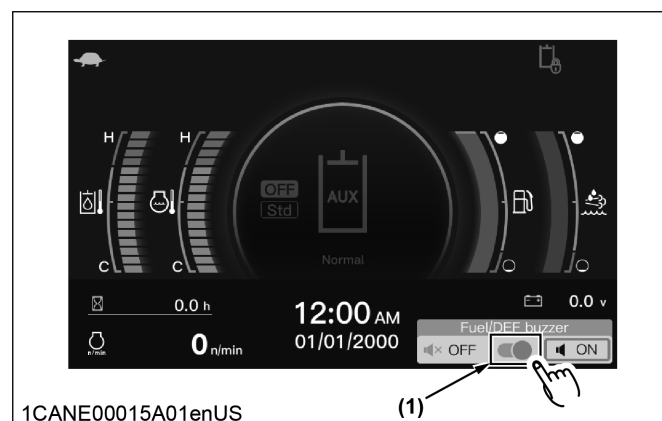


(A) Full
(B) Empty

4. When the DEF (AdBlue) tank becomes full, the buzzer starts producing continuous sound and then stops.

NOTE :

- Pressing the start switch during DEF (AdBlue) refilling operation changes the start switch mode to the ACCESSORY mode.
- After stopping the DEF (AdBlue) refilling process and refilling the fuel tank with a certain amount of fuel, the buzzer sound changes from the DEF (AdBlue) notification sound to fuel notification sound. Note that the buzzer sound will not change to the fuel notification sound unless the DEF (AdBlue) refilling operation is halted.
- To shut off the buzzer without turning off the machine, touch the buzzer mute button to set it to the OFF position. When the buzzer mute button is touched and set to the ON position, the buzzer turns ON again.
- If both fuel refilling and DEF (AdBlue) refilling operations are interrupted for a certain period of time, the machine turns off. If the machine has been turned off, pressing the jog dial switch again resumes the function.



(1) Fuel buzzer mute button

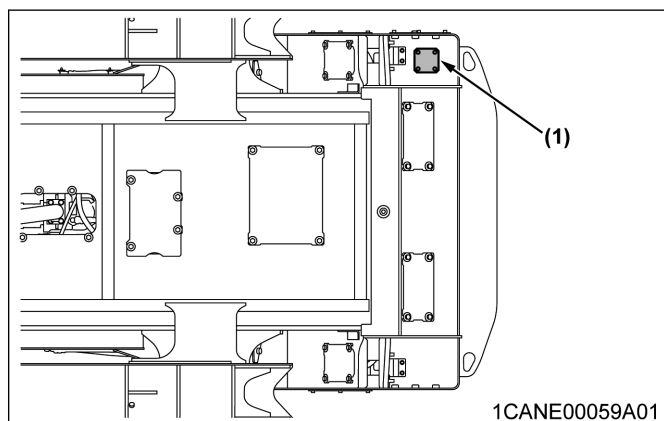
5. To stop the DEF (AdBlue) refilling operation before the tank becomes full, press the jog dial switch.

7. Draining DEF (AdBlue)

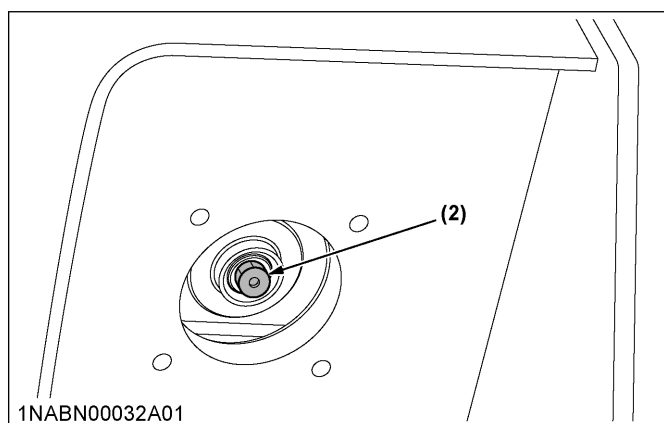
IMPORTANT :

- Do not run the engine when the DEF (AdBlue) tank is empty.
- Remove the frame cover and the drain plug shown in the following illustration, then drain the DEF (AdBlue) into a container.
- Do not use a power tool when reinstalling the drain plug. Overtightening the drain plug may cause damage.

- Make sure to keep the rubber O-ring of the drain plug clean of oil.



(1) Frame cover



(2) Drain plug

Drain plug tightening torque	4.0 N·m to 6.0 N·m
------------------------------	--------------------

- Turn off the machine when draining DEF (AdBlue).
- When draining and refilling the DEF (AdBlue) in the DEF (AdBlue) tank, if the refilled amount is less than the drained amount, a “DEF (AdBlue) warning” could be displayed on the instrument panel. If the error/warning is displayed after running the engine for more than 30 minutes, contact your local Kubota dealer. In order to avoid the aforementioned error, it is recommended that you fully refill the DEF (AdBlue) tank every time.
- For the disposal of drained DEF (AdBlue), read the following information.
(See Disposing DEF (AdBlue) on page 138)

8. Storing purchased DEF (AdBlue)

- Note the following when storing DEF (AdBlue):
 - Close the container firmly.
 - Avoid direct sunlight.
 - Store in a well-ventilated room.
 - Store in a place with little temperature change.

- Do not use the following DEF (AdBlue) even if it is still unused. The DEF (AdBlue) may be deteriorated, which may cause SCR system failure.
 - When the storage period is unknown.
 - When the storage environment is unknown, especially in a high-temperature environment.
 - When DEF (AdBlue) has a strong ammonia odor.
- When storing and carrying DEF (AdBlue), use the original container. Otherwise, prepare a dedicated container. For the dedicated container, use a clean polyethylene resin tank (PE) or a stainless steel container free of foreign matter such as water and dust.
- Keep containers used for storing and refilling DEF (AdBlue) free from dirt and dust. Use distilled water to clean the containers. If distilled water is not available for cleaning the containers, rinse with clean water first, then rinse again thoroughly with DEF (AdBlue) before refilling.
- The appropriate environment for storing DEF (AdBlue) is between -5 °C to 30 °C. See the following table for more information about the storage life of DEF (AdBlue). To prevent the shortening of the DEF (AdBlue) storage life, avoid storing the DEF (AdBlue) in environments that exceed 30 °C.

Ambient temperature	Storage life
10 °C or below	36 months
25 °C or below	18 months
30 °C or below	12 months
35 °C or below	6 months
40 °C or below	3 months

NOTE :

- The aforementioned storage life is only a guide. Depending on how DEF (AdBlue) is stored, the storage life may be shorter than indicated.
- DEF (AdBlue) freezes when the temperature drops below -11 °C. The quality of DEF (AdBlue) will not be affected even if frozen. Thaw the DEF (AdBlue) before use.

9. Storing DEF (AdBlue) in the DEF (AdBlue) tank

IMPORTANT :

- If the DEF (AdBlue) emits a strong ammonia odor, the quality of the fluid may have deteriorated. To check the quality of the DEF (AdBlue), check the odor of the DEF (AdBlue) in the DEF (AdBlue) tank once every 3 months.

- If the DEF (AdBlue) in the DEF (AdBlue) tank emits a strong ammonia odor, drain all DEF (AdBlue) from the DEF (AdBlue) tank into a container.

Details regarding how to drain the DEF (AdBlue) can be found in a different section.

(See Draining DEF (AdBlue) on page 136)

After draining the DEF (AdBlue), flush the inside of the DEF (AdBlue) tank with distilled water. Then refill the DEF (AdBlue) tank with new or high-quality DEF (AdBlue).

- If you do not use the machine for more than 3 months, drain all DEF (AdBlue) from the DEF (AdBlue) tank. When using the machine after 3 months of inactivity, fully refill the DEF (AdBlue) tank with new or high quality DEF (AdBlue).

NOTE :

- DEF (AdBlue) of deteriorated quality may cause a drop in engine output or an engine malfunction.
- If distilled water is not available for flushing the inside of the DEF (AdBlue) tank, rinse with clean water first, then rinse thoroughly with DEF (AdBlue) again. Afterward, replenish with new or high-quality DEF (AdBlue).
- Turn off the machine when replacing the DEF (AdBlue).
- When draining and refilling the DEF (AdBlue) in the DEF (AdBlue) tank, if the refilled amount is less than the drained amount, an SCR system error is displayed on the instrument panel, but this is not a malfunction.
(See Draining DEF (AdBlue) on page 136)

10. Disposing DEF (AdBlue)

Although not a hazardous substance, dispose the used DEF (AdBlue) properly to avoid environmental pollution. For disposal methods, consult your supplier or an industrial waste disposal contractor.

11. Handling precautions after stopping the engine

After stopping the engine, the SCR system automatically operates for up to about 25 minutes and returns the DEF (AdBlue) in the piping to the DEF tank to prevent freezing and clogging.

The SCR system may generate operating noise after the engine has stopped, but this is not a malfunction.

Note the following precautions after stopping the engine:

- Do not remove the battery terminal until the SCR system stops. This is to prevent damage to the system device.

- Do not refill with DEF (AdBlue) before the SCR system stops. Otherwise, DEF (AdBlue) may overflow from the breather hose of the DEF (AdBlue) tank.

12. Precautions when using in cold regions

- DEF (AdBlue) freezes below -11 °C, but this does not affect the start-up of the engine.
- The DEF (AdBlue) is automatically thawed while the engine is running.
- While thawing, output may be limited to protect the SCR system.
- However, in weather conditions of under -30 °C, the DEF (AdBlue) cannot be completely thawed and therefore, a “DEF (AdBlue) warning” appears on the instrument panel.
- If the “DEF (AdBlue) warning” appears on the screen, stop the engine and restart it after 10 seconds. After restarting the engine, the “DEF (AdBlue) warning” will disappear and the thawing of the DEF (AdBlue) will resume.
- If the “DEF (AdBlue) warning” remains on the screen even after restarting the engine several times, contact your local KUBOTA Dealer.

13. Maintenance of SCR system related parts

Regularly check, clean, and replace the SCR system related parts.

Details regarding maintenance can be found in a different section.

(See MAINTENANCE on page 174)

AIR CONDITIONER

ADJUSTING THE AIR FLOW OF THE AIR CONDITIONER

IMPORTANT :

- Do not allow water to enter the fresh-air-inlet when washing the machine.

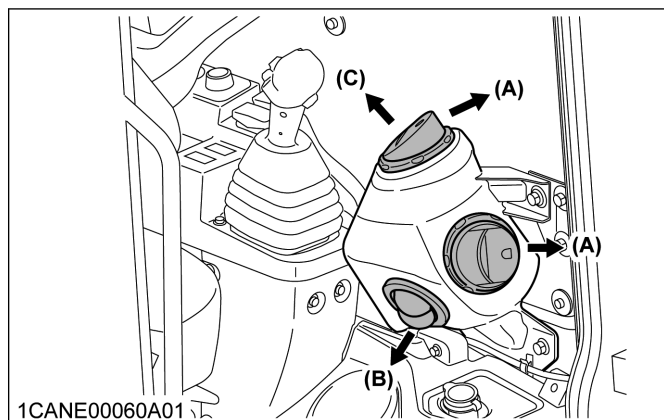
NOTE :

- To prevent dust from coming into the cab while working in a dusty condition:
 - Set the blower switch to level 2 or higher.
 - Open all air outlet ports. If you feel uncomfortable, point the air outlet ports toward windows.

Adjust the 6 air-outlet-ports to obtain the desired air flow.

The air flow in the cab and the fresh air flow into the cab flow is shown in the following figure.

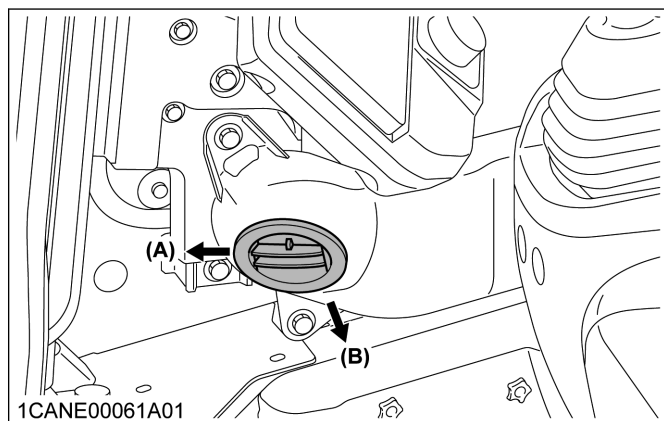
Front air outlet port (left side)



(A) Windshield
(B) Foot area

(C) Chest area

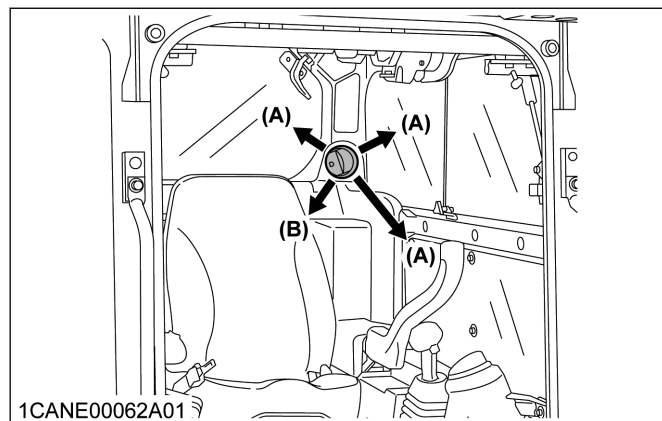
Front air outlet port (right side)



(A) Windshield

(B) Foot area

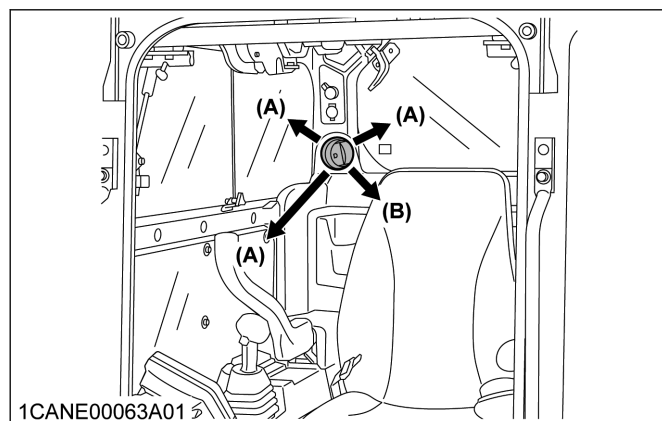
Rear air outlet port (left side)



(A) Windshield

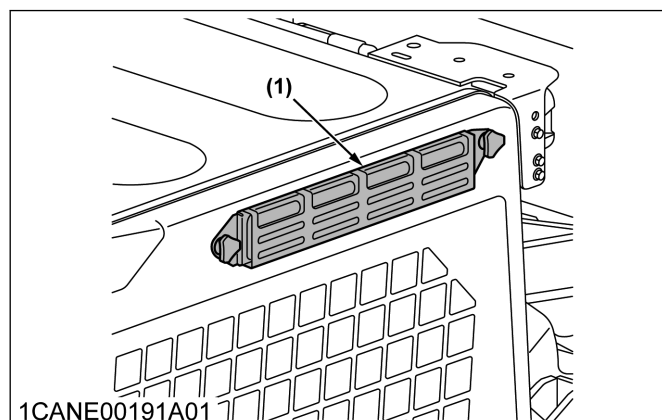
(B) Chest area

Rear air outlet port (right side)



(A) Windshield

(B) Chest area



(1) Fresh air inlet

AIR CONTROL VENT



CAUTION

To avoid personal injury:

- Replace the hoses of the air-conditioner every 2 years.
- Inspect the air control vent daily.
Have the machine repaired immediately if any of the following flaws are discovered.
The following flaws may cause burns or injury, and they may also cause engine failure and serious damage.
 - Scratches, cracks, or swelling in the hoses of the air-conditioner.
 - Water leaks at joints or connecting points.
 - Missing or damaged the hoses-protective sleeve or grommet of the air-conditioner.
 - Loose mounting bolt and damaged bracket.
- Do not touch the hoses of the air-conditioner or the heater with your hand. You may get burned.
- If the window fails to defrost in extreme conditions or becomes cloudy when dehumidifying the cab, remove moisture with soft cloth.

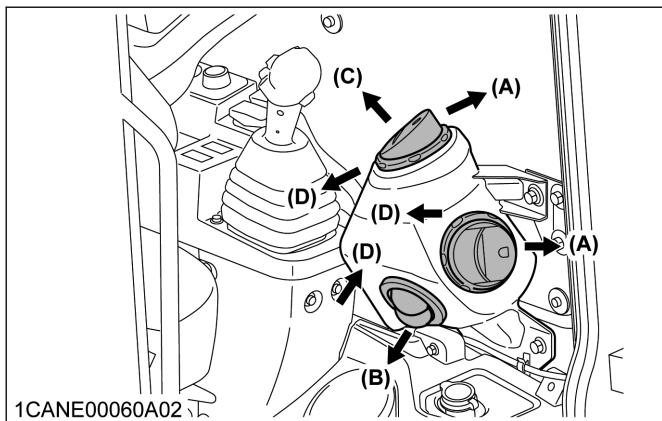
IMPORTANT :

- Never block all of the air outlets because the system malfunction may occur.

Air outlet

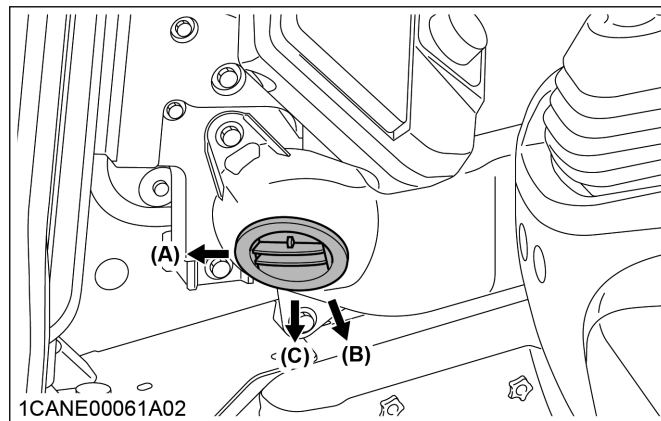
You can adjust the air-outlet-ports as required independently. To defrost the windshield, rotate the air-outlet-ports toward the windshield.

Front air outlet port (left side)



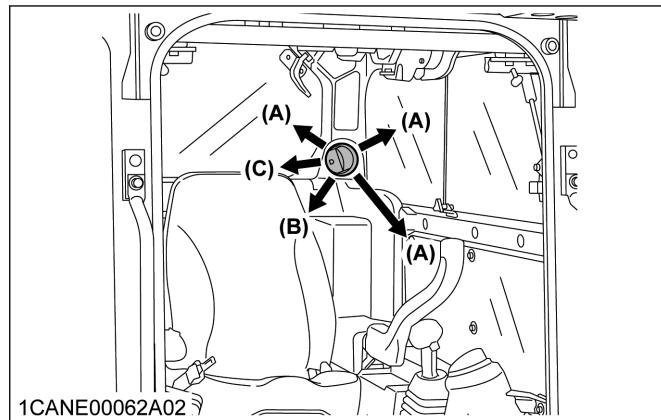
- (A) Windshield
(B) Foot area
(C) Chest area
(D) Closed

Front air outlet port (right side)



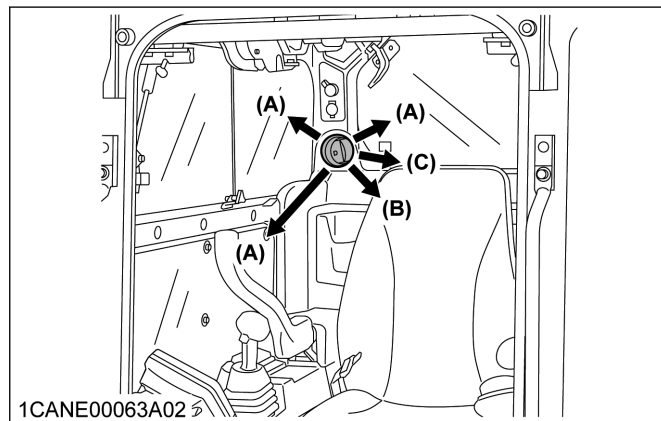
- (A) Windshield
(B) Foot area
(C) Closed

Rear air outlet port (left side)



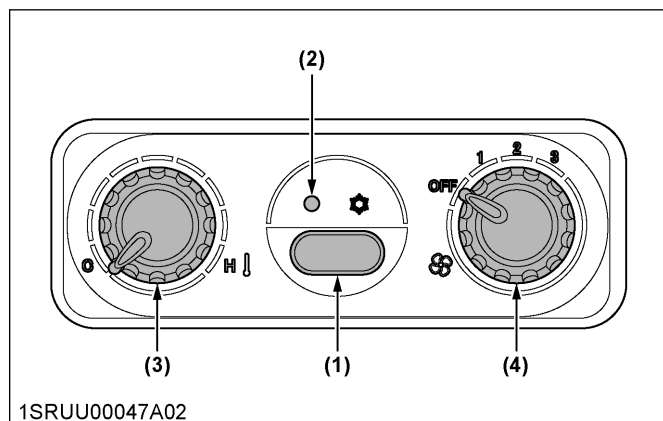
- (A) Windshield
(B) Chest area
(C) Closed

Rear air outlet port (right side)



- (A) Windshield
(B) Chest area
(C) Closed

HOW TO USE THE CONTROL PANEL



- (1) Air conditioner switch (3) Temperature control dial
(2) Indicator light (4) Blower switch

Air-conditioner switch and indicator light

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, in which case the indicator light will go off.

NOTE :

- The air-conditioner is operable only during engine operation.

Temperature control dial

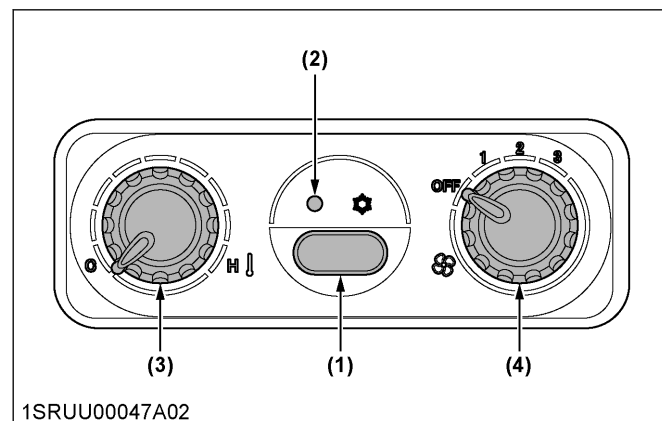
1. Set the temperature-control-dial at the desired position to obtain the desired air temperature.
 - Move the temperature-control-dial to the right to obtain warmer air.
 - Move the temperature-control-dial to the left to obtain cooler air.

Blower switch

The air flow (fan speed) equips 3 levels. At the [3] position, you can obtain the largest air flow.

1. Set the blower switch at the desired position to obtain the desired air flow (fan speed).

OPERATING THE CONTROL PANEL



- (1) Air conditioner switch (3) Temperature control dial
(2) Indicator light (4) Blower switch

Heating air

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

NOTE :

- In summer, when the heater is not used, keep the temperature-control-dial at the cool (leftmost) position. Otherwise, hot air will raise the temperature in the cab.

Dehumidifying-heating

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

NOTE :

- 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 the blower switch on [1], [2], or [3].
3. Adjust the temperature-control-dial to the cool (leftmost) or an intermediate position to achieve the desired temperature level.

NOTE :

- Close the door while the air-conditioner is on, otherwise you may overload the compressor.

Defrosting or demisting

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

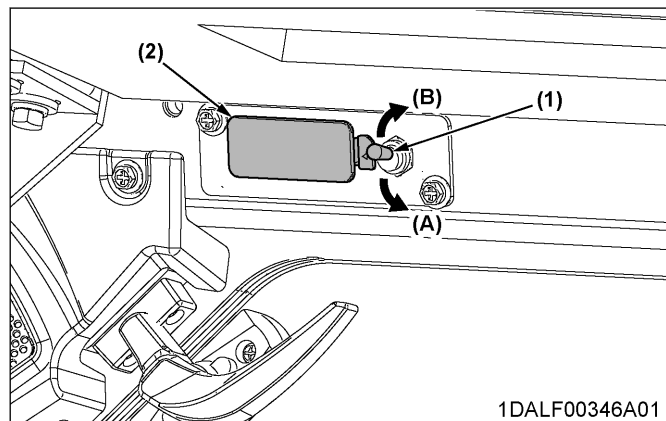
1. Open the front-air-outlet and direct it to the windshield.
2. Set the blower switch to the [3] position and set the temperature-control-dial to [warm] (rightmost) position.

OPERATION

CAB TYPE MACHINE

1. Interior lamp

The interior-lamp-switch is operative even when the machine is not turned on.



(1) Interior lamp switch (A) On
(2) Interior lamp (B) Off

2. How to use the wiper/washer switch

IMPORTANT :

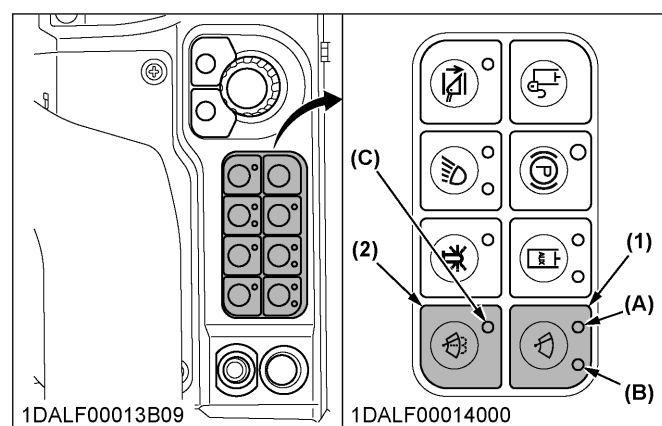
- Do not activate the washer switch if the tank for the cleaning fluid is empty because the pump can be damaged.
- Do not activate the wiper switch if the window is dry. In this case, make sure that the cleaning fluid is applied to the pane before activating the wiper.
- In freezing conditions, make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

Wiper switch

- Press the wiper switch to activate the windscreen wiper when the engine is running, or the start switch mode is "ACCESSORY."
 - Press once and the wiper activates intermittently. The upper indicator lights up.
 - Press a second time and the wiper activates continuously. The lower indicator lights up.
 - Press a third time and the wiper stops. Both the upper indicator and the lower indicator go out.

Washer switch

- Press the washer switch to activate the washer when the engine is running, or the start switch mode is "ACCESSORY."
 - The washer system runs for as long as the switch is held down. The indicator lights up.
 - Hold down the switch for longer, and the wiper starts.
 - Release the switch, and the wiper will swing several times before stopping.



(1) Wiper switch (A) Upper indicator
(2) Washer switch (B) Lower indicator
(C) Indicator

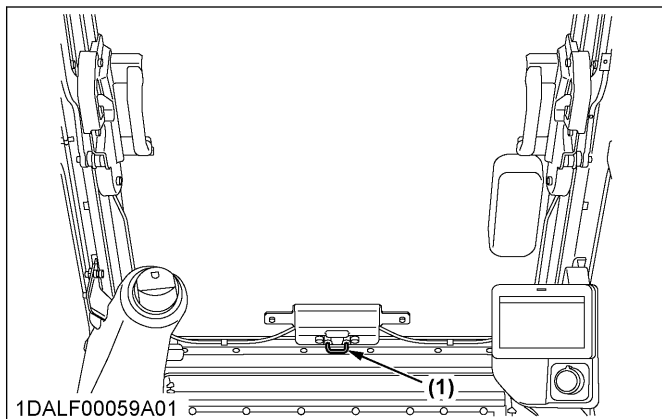
3. Opening and closing the cab door



WARNING

To avoid personal injury or death:

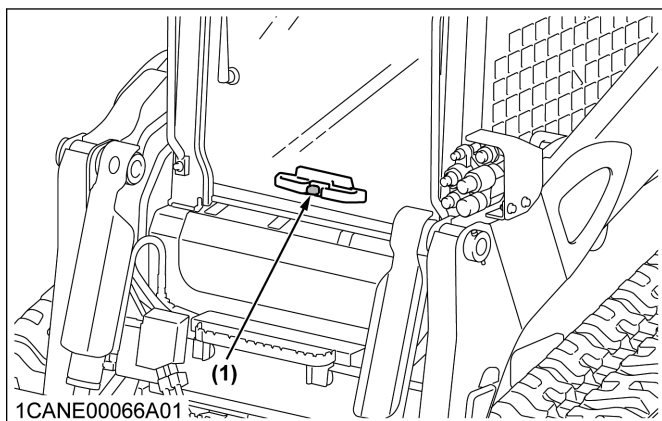
- Keep hands and feet away from the area between the cab door and the cab frame. Otherwise the risks of serious injuries by pinching or crushing to the operator increase.
- Other persons should stay away when opening the cab door.
- Do not use the lock lever at the bottom of the cab door from inside.
- Use caution and both hands to open/close the cab door to avoid contact with your head.



(1) Lock lever (bottom)

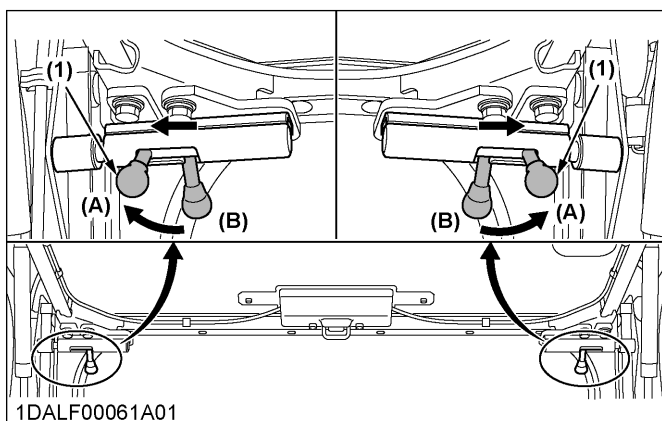
Opening the cab door from outside

1. Unlock the cab door and push the button. The cab door will open upward.



(1) Button

2. Push the cab door all the way up until it locks to the top of the cab.
3. After opening of the cab door, lock in place by moving both lock pins to outside to prevent the cab door from inadvertently falling.



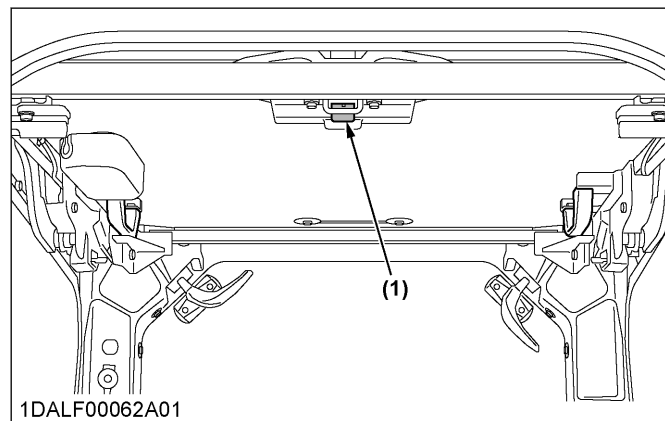
(1) Lock pin

(A) Lock
(B) Unlock

Closing the cab door from outside

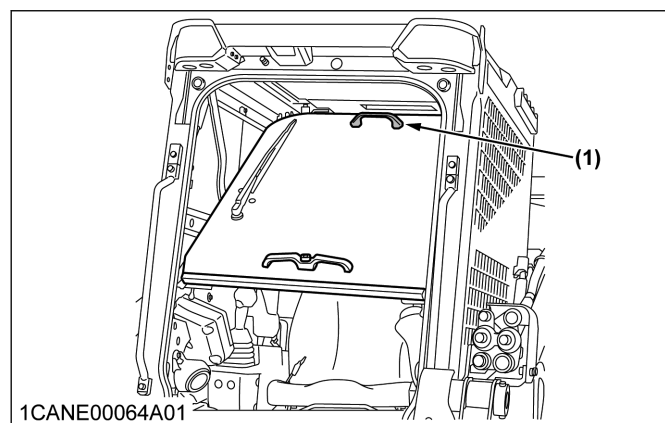
1. Before closing, unlock the cab door in place by moving both lock pins to inside.

2. Push the lock lever at the bottom of the cab door, and slowly lower the cab door half way.



(1) Lock lever (bottom)

3. Grasp the top handle and pull it toward yourself to latch the cab door.

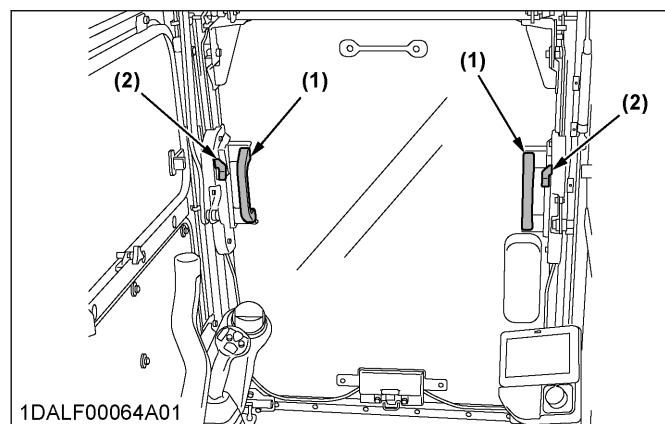


(1) Top handle

4. When leaving the machine, always lock the cab door.

Opening the cab door from inside

1. Hold the handles tightly with both hands, and push the lock levers beside the handles.

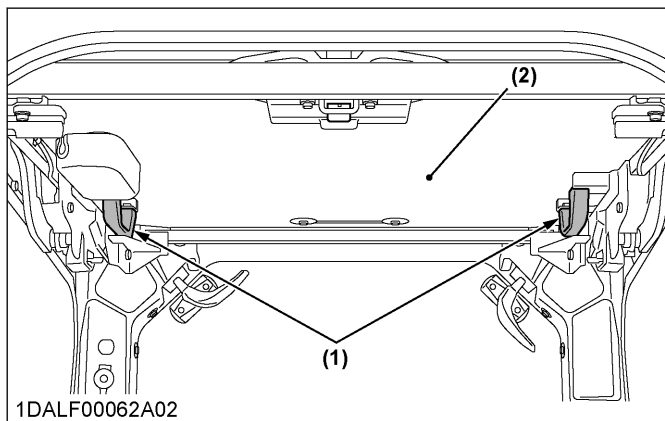


(1) Handle

(2) Lock lever

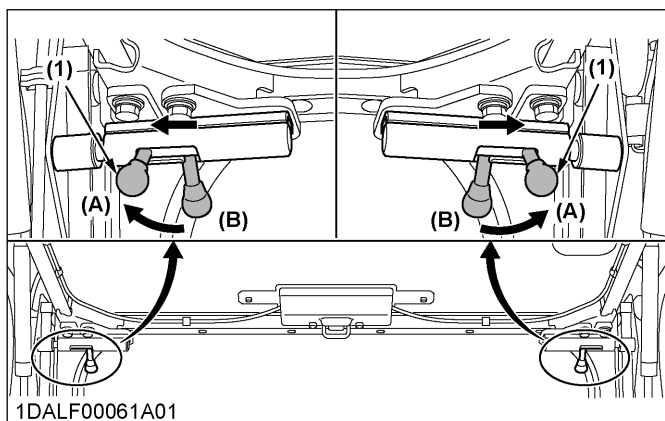
2. Pull the handles slightly upward and toward yourself to let the cab door slide inward.

3. Pull the cab door all the way to the lock at the back of cab.



(1) Handle (2) Cab door

4. After opening the cab door, lock it in place by moving both lock pins to outside to prevent the cab door from inadvertently falling.



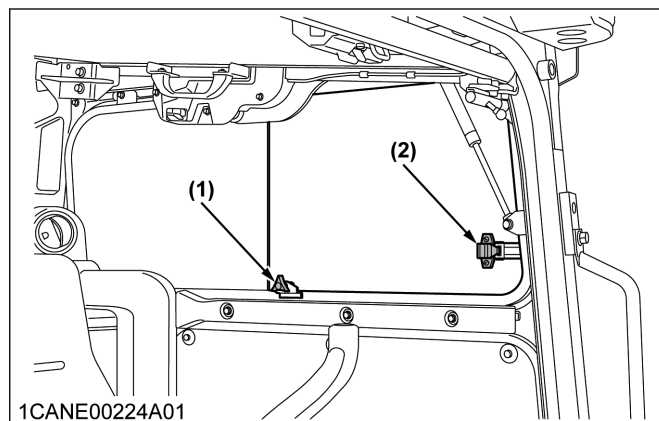
(1) Lock pin (A) Lock (B) Unlock

Closing the cab door from inside

1. Before closing the cab door, unlock it in place by moving both lock pins to inside.
2. Hold the handles tightly with both hands.
3. Pull the handles down and forward to move the cab door from the horizontal to the vertical position.
4. Push the cab door until it is latched in the cab door opening.

4. Opening and closing the side cab window

1. Turn the knob bolt before opening the window.
2. Pull the grip to release the lock, and pull side cab window to open it to the rear or to the front.
3. To close the side window, slide it forward or backward until the lock snaps into the window frame.
4. Turn the knob bolt after closing the window.



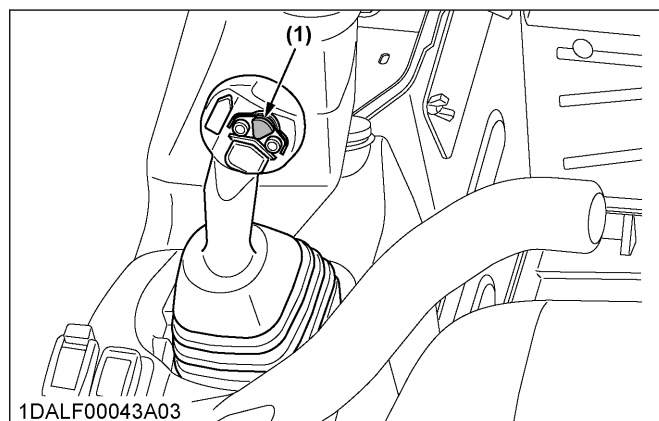
(1) Knob bolt (2) Grip

OPERATION OF THE ENGINE

! WARNING

To avoid personal injury or death:

- To avoid the danger of exhaust-fumes-poisoning, do not operate the machine in a closed building 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 engaging the starter for more than 10 seconds.
- If the engine does not start in 10 seconds, please wait 20 seconds or more, before restarting.

1. Starting the engine

WARNING

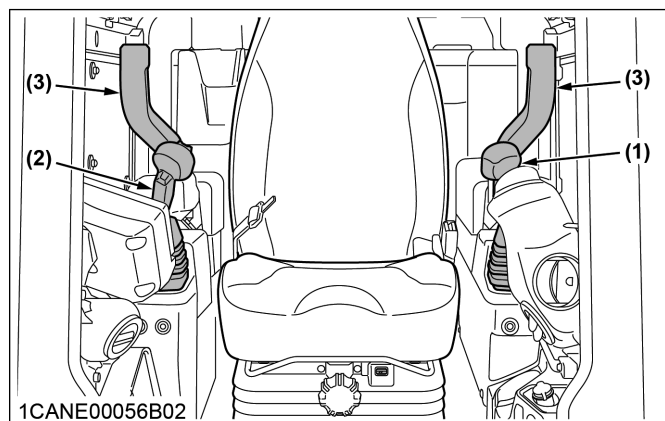
To avoid personal injury or death:

- The operator should not depend solely on the warning lights, but should always conduct the routine checks section.
(See MAINTENANCE INTERVALS on page 176)
- Make sure that the rear door is securely closed before starting the engine.

IMPORTANT :

- The starter motor consumes large current. Avoid running it longer than 10 seconds continuously.
If the engine fails to start within 10 seconds, follow the following procedure.
 1. Make sure that the start switch is in the "OFF" mode.
 2. Wait for 20 seconds or longer.
 3. Repeat the following step 2. through step 5..
- If the battery is dead and must be connected to another battery with jumper cable, use a 12 V battery. Never use any 24 V batteries.
- To protect the machine, the machine is equipped with engine rpm limit control.
When the engine rpm is limited, the master warning light starts blinking.

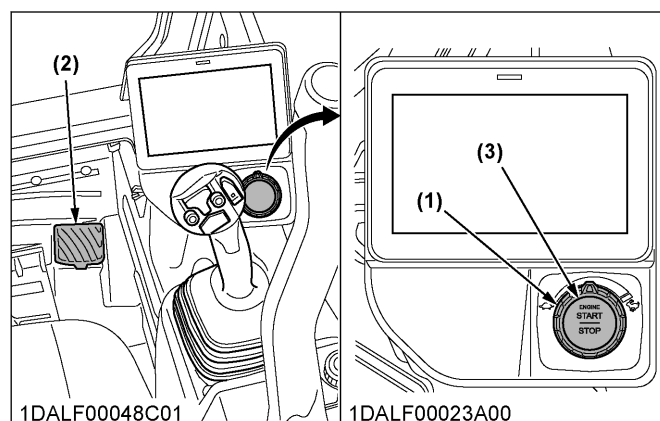
Before starting the engine, make sure that the armrests are in the raised position, the control levers are in their neutral position, and the seat belt is fastened correctly.



(1) Left control (traveling) lever (3) Armrest
(2) Right control (front operating) lever

Start the engine in the following manner:

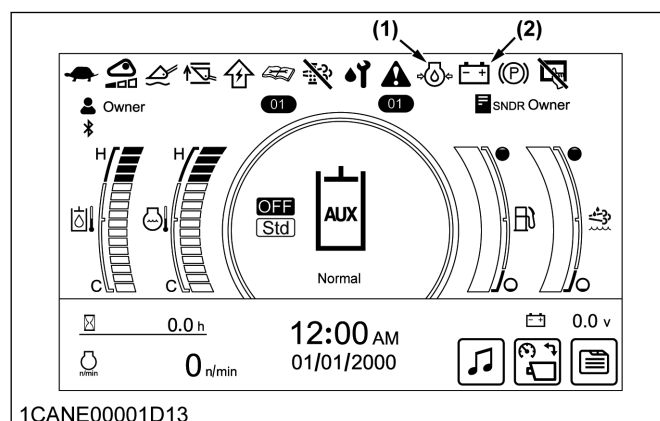
1. Turn the engine speed control dial counterclockwise until it stops and keep the accelerator pedal free.
2. Press the start switch to change the mode from the "OFF" mode to the "ACCESSORY" mode.
(See Start switch on page 118)



(1) Engine speed control dial (3) Start switch
(2) Accelerator pedal

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 not, the system is malfunctioned. Contact your local KUBOTA dealer.



(1) Engine oil pressure indicator (2) Battery charge warning indicator

4. Press and hold the start switch, and release your finger after the engine has started.
5. Check if all warning indicators (except the hydraulic-lock-indicator and the parking-brake-warning-indicator) have gone out. If a warning indicator still be lit up, stop the engine and check for the cause.

NOTE :

- If any screen does not appear when changing the start switch to the "ACCESSORY" mode, or after starting the engine, set the start switch to the "OFF" mode and restart the engine.

2. Checking the machine after starting the engine

After starting the engine, but before starting operation of the machine, check the machine conditions.

1. Idle the engine. (warm up)

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

2. Once the engine has warmed up, check the following items.

- The engine-oil-pressure-indicator has gone out.
- The battery-charge-warning-indicator goes out when engine speed is increased.
- The color of the exhaust is normal.
- You do not hear abnormal noises and do not feel vibrations.
- No fluid is leaking from pipes or hoses.

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

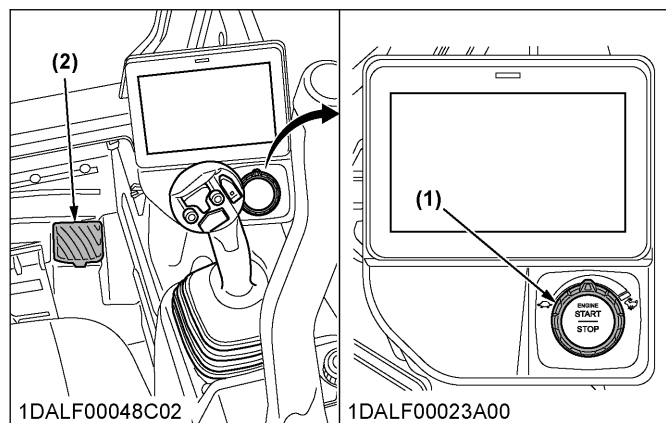
- The engine rpm increases or decreases suddenly.
- You hear abnormal noises suddenly.
- Exhaust is black.
- The engine-oil-pressure-indicator lights up during operation of the machine.

IMPORTANT :

- If any preceding conditions occur, check the machine and contact your local KUBOTA dealer for service of the machine.

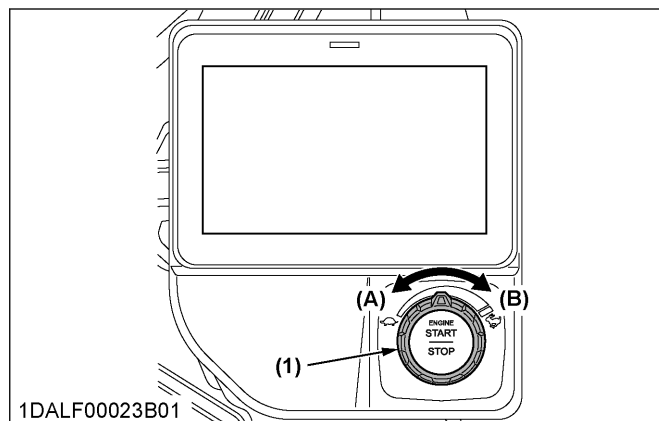
3. Adjusting the engine speed

The operator can adjust the engine speed with the engine speed control dial and the accelerator pedal.



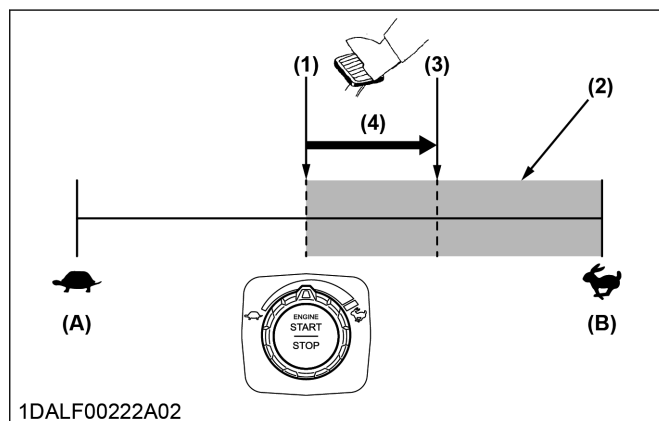
(1) Engine speed control dial (2) Accelerator pedal

The engine speed control dial sets the lower limit of engine speed. Turn the engine speed control dial clockwise to increase the lower limit of engine speed, and counterclockwise to decrease the lower limit of engine speed.



(1) Engine speed control dial (A) Decrease (B) Increase

The accelerator pedal adjusts the engine speed between the lower and upper limits depending on the amount of pressure applied to the accelerator pedal.



(1) Setting value of engine speed control dial (A) Low idling engine speed
(2) Adjustable range with accelerator pedal (B) High idling engine speed
(3) Actual engine speed
(4) Depressing pedal: To the middle position

STARTING THE ENGINE UNDER COLD CONDITIONS



CAUTION

To avoid personal injury:

- Make sure that the armrests are in the raised position during warm-up.

Start the engine in the following manner.

1. Press the start switch to change the mode from the "OFF" mode to "ACCESSORY" mode and keep it until the glow-plug-indicator has gone out.

- Press and hold the start switch, and release your finger after the engine has started.

IMPORTANT :

- Let the engine warm up after start-up for approximately 15 minutes under no load conditions. If the hydraulic-fluid-temperature is too low, it will affect the operations or the function of the pressure sensors.
Do not operate the machine under full load before the engine has thoroughly warmed up.
- DEF (AdBlue) freezes at temperatures below -11 °C. Even if it is frozen, the engine is not affected at its start-up and running.

STOPPING THE ENGINE

WARNING

To avoid personal injury or death:

- Lower the bucket or attachments to avoid a person accidentally touching levers and causing a serious accident.

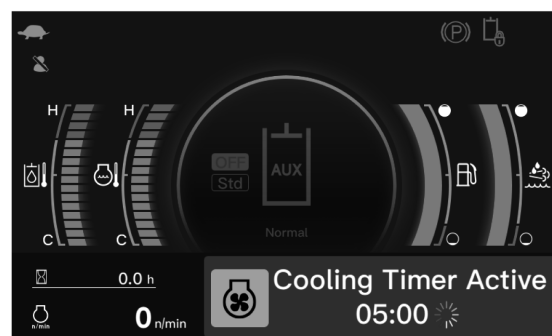
- Place the bucket or attachments on the ground.
- After slowing the engine to idle, press the start switch to stop the engine.

IMPORTANT :

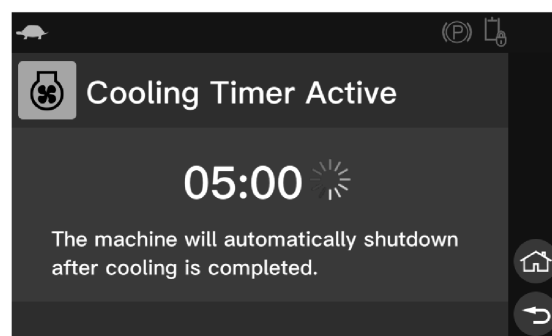
- Do not stop the engine by shutting down the battery power directly.
Doing so may cause failure or malfunction.
- When the engine does not stop even if the start switch is pressed, pull the emergency engine stop button to stop the engine.
See Emergency engine stop button on page 124 for more details on the emergency engine stop.
- Do not remove the battery terminal until the SCR system stops. This is to prevent damage to the system device.
- Do not refill with DEF (AdBlue) before the SCR system stops. Otherwise, DEF (AdBlue) may overflow from the breather hose of the DEF (AdBlue) tank.
- Even if the start switch is pressed to stop the engine, if the engine compartment needs to be cooled down, the engine will continue to run at low idling for up to 5 minutes in the "cooling timer mode" to cool it down.
- During the cooling timer mode, it is notified by the popup on the display and a buzzer.
- After the cooling timer mode expires, the engine stops automatically. However, pressing the start switch again during the cooling timer mode will close the popup on

the display and stop the buzzer, returning to the engine's normal operating state.

- To protect the machine, do not stop the engine during the cooling timer mode. However, in case of an emergency, pull the emergency engine stop button to stop the engine urgently, even if it is during the cooling timer mode.



1CANE00199A01enUS



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NOTE :

- When the engine stops, the parking brake automatically engages.
- After stopping the engine, the SCR system automatically operates for up to about 25 minutes and returns the DEF (AdBlue) in the piping to the DEF tank to prevent freezing and clogging.
- The SCR system may generate operating noise after the engine has stopped, but this is not a malfunction.

1. 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.

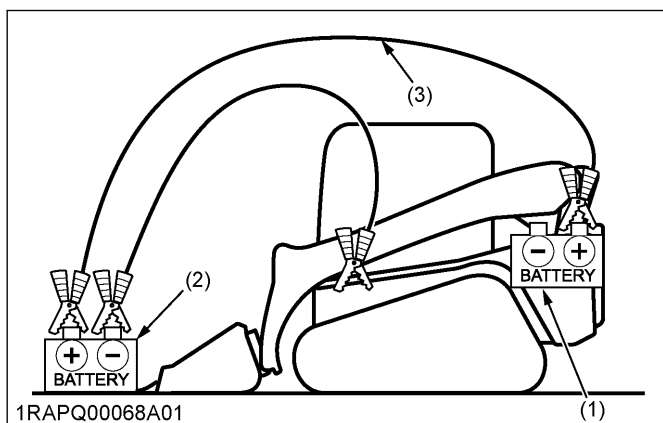
Do not smoke and keep sparks and flames away.

- **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 positive (+) terminal of the low battery and connect the other end of the red cable to the positive (+) terminal of the auxiliary battery.
 6. Connect the black negative cable to the negative (-) terminal of the auxiliary battery.
 7. 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.
 8. Start the engine of the helping machine and let it run for a while.
 9. Start the machine with the low battery.
 10. Disconnect the jumper cables in the reverse sequence.



(1) Low battery (3) Jumper cables
(2) Auxiliary battery

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

1. Running-in of the machine

It is most important to run-in your machine properly in order to achieve its full performance and longevity.

The operation and care of the new machine influence its life span. Your new machine has been carefully checked and tested before leaving the factory. In spite of careful check and test, all movable components must be run-in during the first 50 work hours.

During the running-in period, 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.

See Changing the engine oil on page 198 for more details on the oil-change intervals.

2. Start of the machine



WARNING

To avoid personal injury or death:

- **Mount the machine and dismount the machine only at locations that have steps and/or handholds.**
Before you mount the machine, clean the steps and the handholds.
- **Start the machine only from the operator's seat.**
Never short across the starter terminals or across the batteries.
Shorting could damage the electrical system by bypassing the engine-neutral-start-system.
- **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 seat so that full pedal travel can be achieved with the operator's body against back 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, and the rear door is securely closed.

2.1 Adjusting the operator's seat



CAUTION

To avoid personal injury:

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

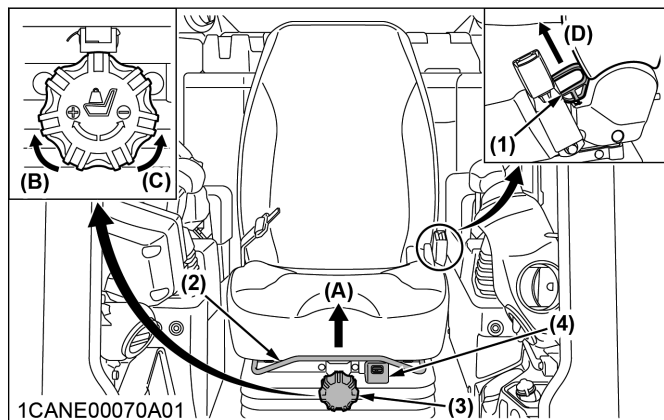
IMPORTANT :

- Replace the operator's seat with the new one if it is damaged and got holes. Water or dust could penetrate the hole causing erroneous seat switch operation.

NOTE :

- If water splashes on the fabric seat, it enters the inside the seat. Be careful not to splash water on the seat. If the seat becomes wet, wipe off immediately.

2.1.1 Adjusting the suspension seat



- (1) Backrest tilt adjust lever (A) Unlock
 (2) Travel adjust lever (B) To raise the seat
 (3) Weight and height adjust dial (C) To lower the seat
 (4) Ride indicator (D) Unlock

Travel adjustment

1. Pull the travel-adjust-lever in the direction of unlock (A) and slide the seat backward or forward, as required.
The seat will lock in position when the lever is released.

Weight and height adjustment

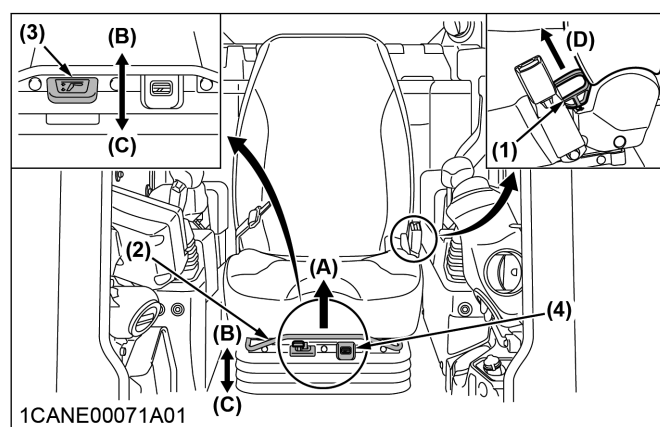
1. Turn the weight-and-height-adjust-dial to achieve the optimum suspension setting.
2. Make sure that the ride indicator shows green. If red, readjust the suspension setting.
Within the green band of the ride indicator, there is the following height adjustment for any operator.

Height adjustment	60 mm
-------------------	-------

Tilt adjustment

1. Pull the backrest-tilt-adjust-lever in the direction of unlock (D) and move the backrest to the desired angle.

2.1.2 Adjusting the air-suspension seat



- (1) Backrest tilt adjust lever (A) Unlock
 (2) Travel adjust lever (B) To raise the seat
 (3) Weight and height adjust lever (C) To lower the seat
 (4) Ride indicator (D) Unlock

Travel adjustment

1. Pull the travel-adjust-lever in the direction of unlock (A) and slide the seat backward or forward, as required.
The seat will lock in position when the lever is released.

Weight and height adjustment

1. Press the weight-and-height-adjust-lever to achieve the optimum suspension setting.
2. Make sure that the ride indicator shows green. If red, readjust the suspension setting.
Within the green band of the ride indicator, there is the following height adjustment for any operator.

Height adjustment	60 mm
-------------------	-------

IMPORTANT :

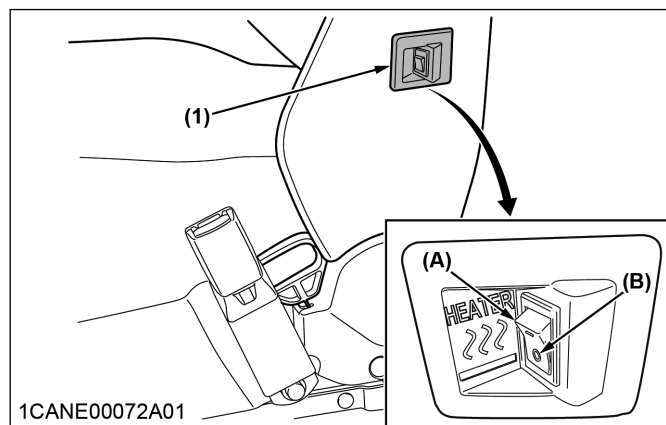
- Do not hold up the weight-and-height-adjustment-lever longer than 30 seconds.
The air suspension may get damaged.

Tilt adjustment

1. Pull the backrest-tilt-adjust-lever in the direction of unlock (D) and move the backrest to the desired angle.

Activating the seat heater

1. Pressing the switch located on the left side of the seat toggles the seat heater ON or OFF.



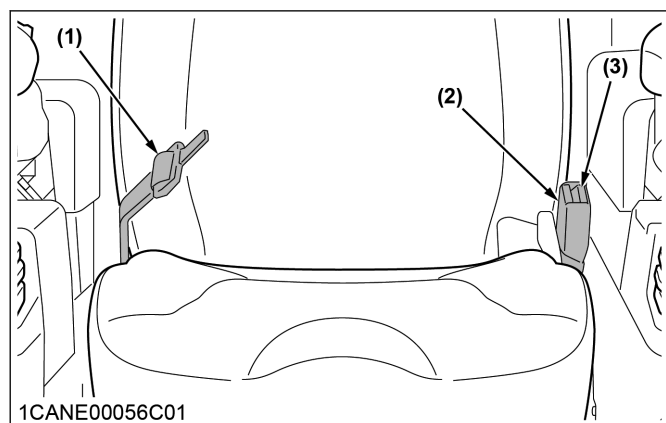
(1) Seat heater
(A) ON
(B) OFF

2.2 How to use the seat belt

! WARNING

To avoid personal injury or death:

- Always use the seat belt with a ROPS and 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

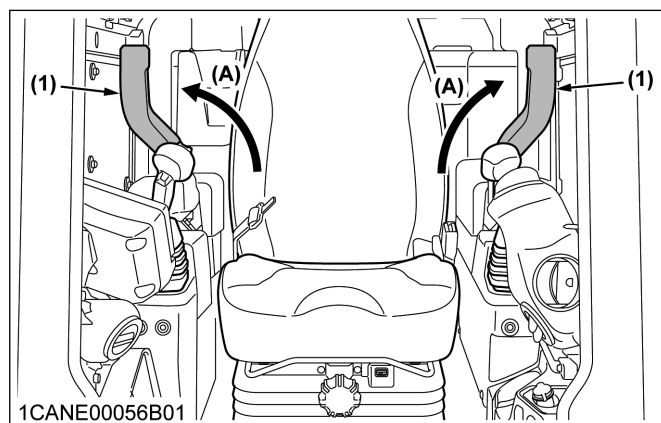
1. Pull the seat belt from the retractable (right) side of the operator's seat.
2. Insert the fixture of the seat belt into the socket at the left side of the operator's seat until the fixture clicks deep into position.

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.

2.3 How to use the armrest

1. Move the armrests to the raised position to lock out the hydraulic and electric systems.



(1) Armrest
(A) Raise

NOTE :

- When the armrests are moved to the raised position, the parking brake will engage and the hydraulic and operation system will be locked.
Move the armrests to the lowered position and push the hydraulic-unlock-switch in order to activate the hydraulic controls.
- When you start the engine, disengage the hydraulic lock so that the hydraulic controls are activated.
If the armrests are raised and then lowered during the operation, you must disengage the hydraulic lock so that the hydraulic controls are activated.

3. Driving

! WARNING

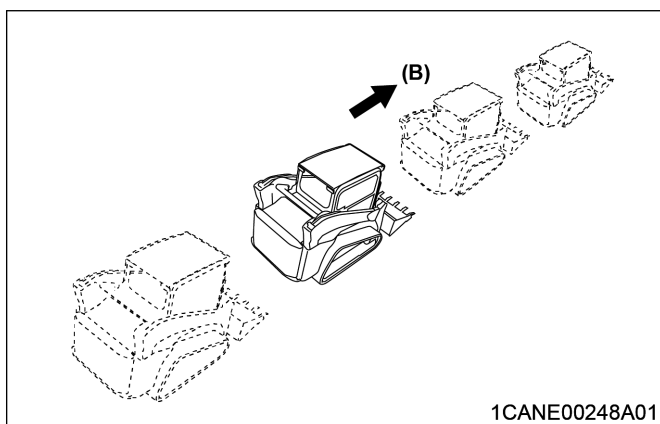
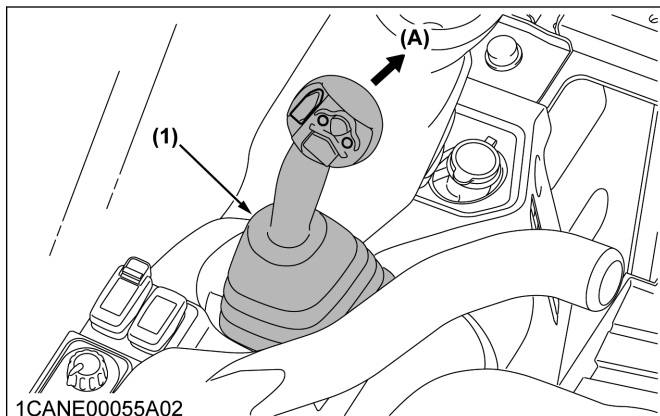
To avoid personal injury or death:

- Before starting the engine, make sure that no one is near the machine.

3.1 Traveling forward and backward

To move forward

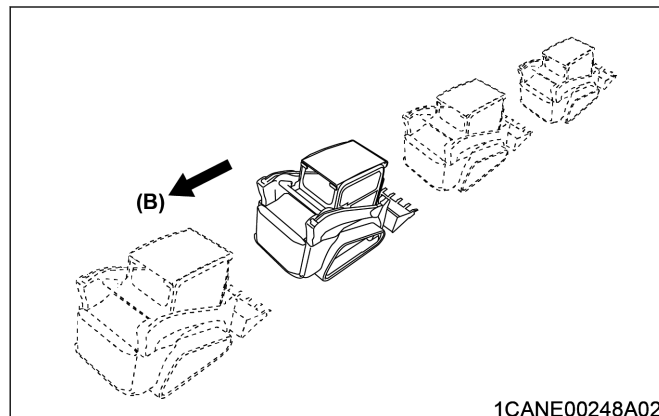
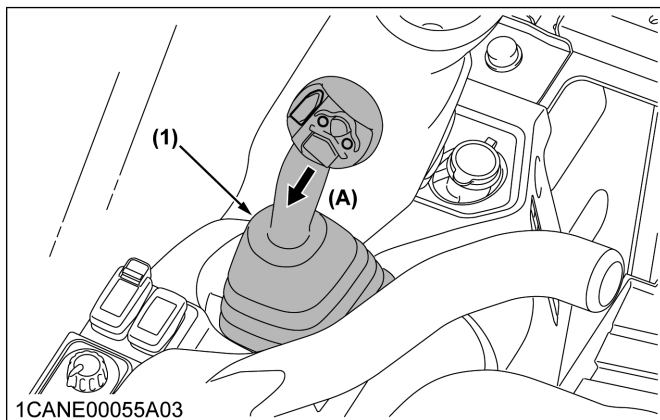
1. Push the left control (traveling) lever forward.



(1) Left control (traveling) lever (A) Push
(B) Forward

To move backward

1. Pull the left control (traveling) lever backward.



(1) Left control (traveling) lever (A) Pull
(B) Backward

NOTE :

- When the machine begins to travel backward, the back-up alarm starts sounding.
- Braking is automatic with the HST system when the left control (traveling) lever is in the neutral position.

IMPORTANT :

- If the temperature of the hydraulic oil is too low, the back-up alarm may start sounding when switching from the backward to the forward travel. This alarm is not a problem. Just run for warm-up, and then the hydraulic oil temperature rises, this will stop the alarm. If the alarm still keeps sounding, contact your local dealer.

4. Turning the machine



WARNING

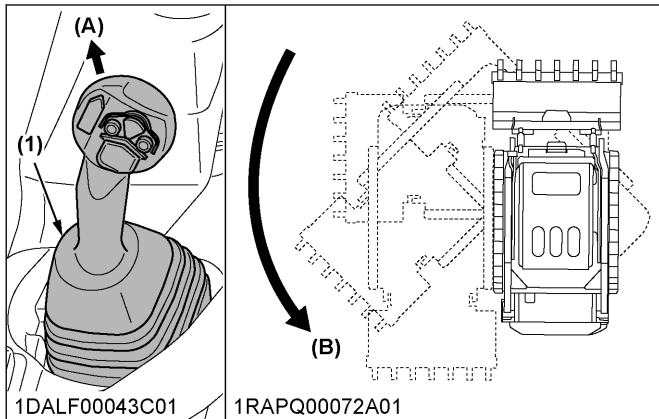
To avoid personal injury or death:

- Before changing direction of the machine, beware of people in the work area.
- Avoid turning the machine when the lift arms and the bucket or attachment are in the raised position.

4.1 How to use pivot turn

To turn the machine forward to the left

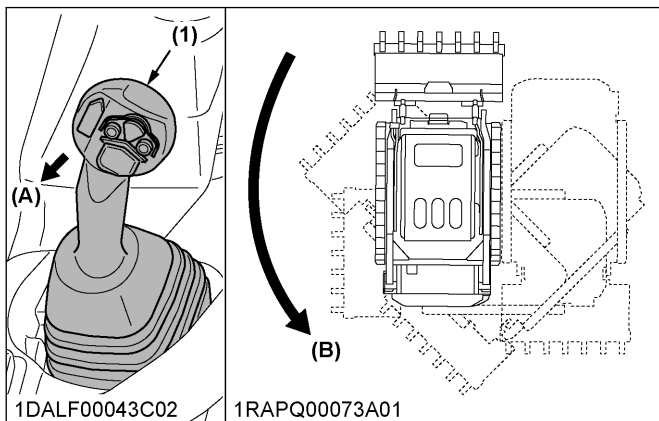
1. Tilt the left control (traveling) lever forward to the left.



(1) Left control (traveling) lever (A) Tilt
(B) Forward to the left

To turn machine backward to the left

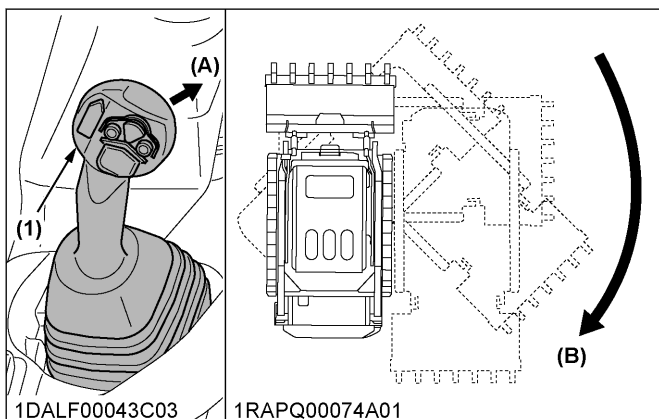
1. Tilt the left control (traveling) lever backward to the left.



(1) Left control (traveling) lever (A) Tilt
(B) Backward to the left

To turn machine forward to the right

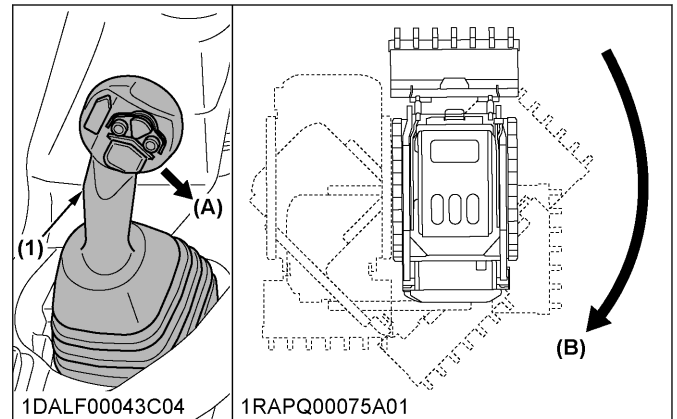
1. Tilt the left control (traveling) lever forward to the right.



(1) Left control (traveling) lever (A) Tilt
(B) Forward to the right

To turn machine backward to the right

1. Tilt the left control (traveling) lever backward to the right.

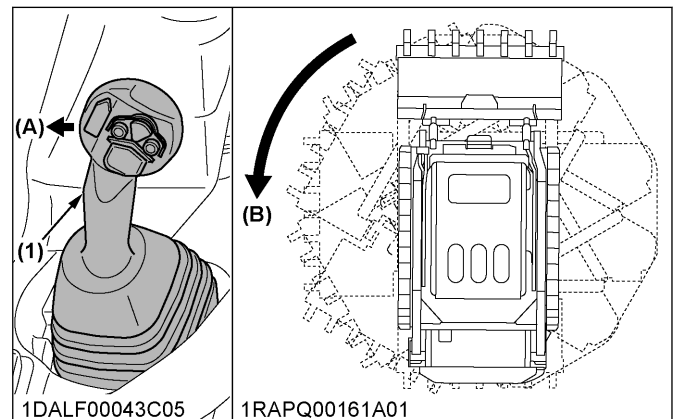


(1) Left control (traveling) lever (A) Tilt
(B) Backward to the right

4.2 How to use spin turn

To spin the machine left

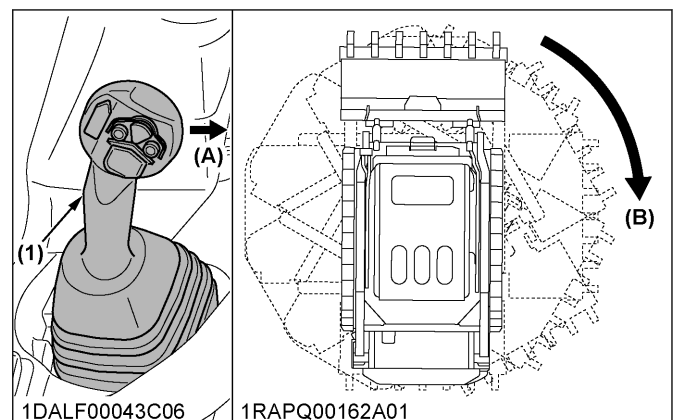
1. Tilt the left control (traveling) lever to the left.



(1) Left control (traveling) lever (A) Tilt
(B) Left

To spin the machine right

1. Tilt the left control (traveling) lever to the right.



(1) Left control (traveling) lever (A) Tilt
(B) Right

5. Operating the lift arms

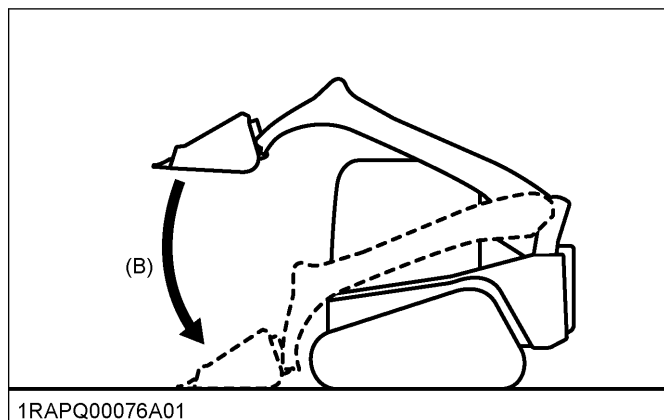
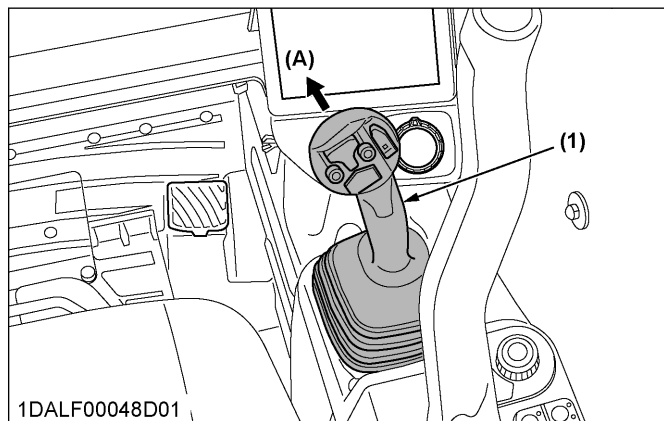
WARNING

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" and "bucket roll back" or "auxiliary hydraulic control" commands are input together, which can result in the lift arms lowering slowly. If you begin to experience a hydraulic imbalance, either place the lift arms control in neutral or input full raise control, and lift arms lowering will cease.

To lower the lift arms

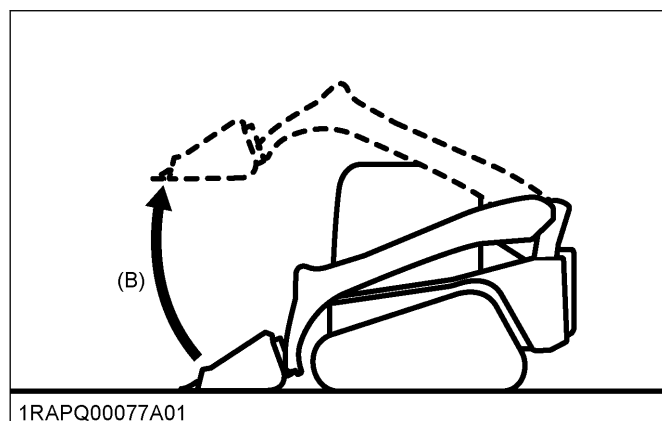
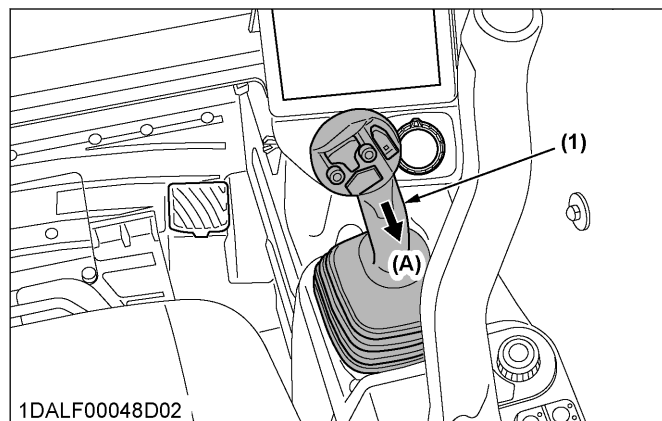
- Push the right control (front operating) lever forward.



- (1) Right control (front operating) lever (A) Push
(B) Lower

To raise the lift arms

- Pull the right control (front operating) lever backward.



- (1) Right control (front operating) lever (A) Pull
(B) Raise

NOTE :

- To stop the lift arm operation, return the right control (front operating) lever to the neutral position.

5.1 How to use the lift arm stopper

WARNING

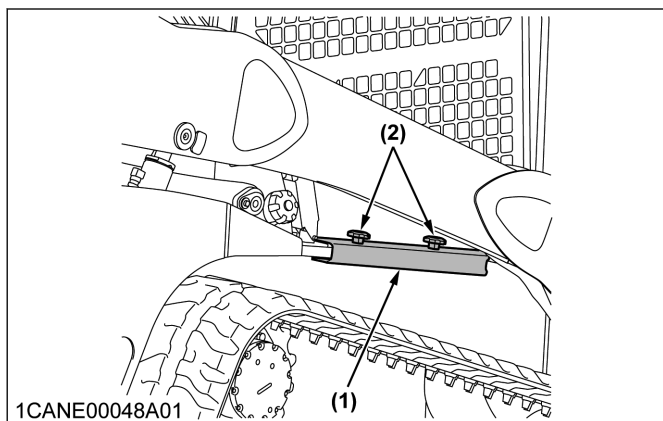
To avoid personal injury or death:

- Never work on a machine with the lift arms up unless the lift arms are secured by an approved lift-arm-stopper.

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

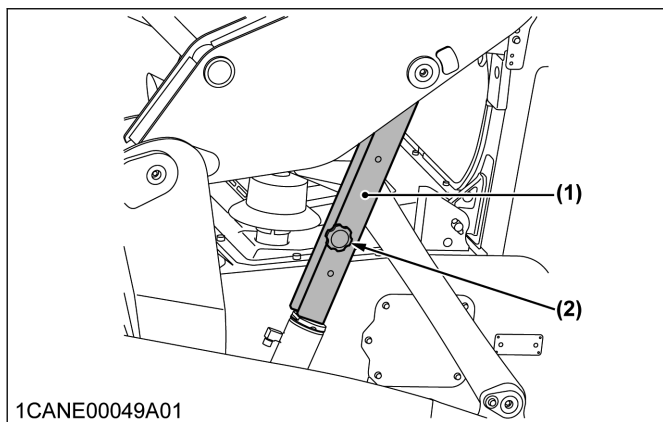
Installing

- Park the machine on level and firm ground, and lower the lift arms fully to the ground.
- Remove the front attachment.
- Stop the engine.
- Ask the second person to remove the lift-arm-stopper from the storage position.



(1) Lift arm stopper (2) Knob bolt

5. Start the engine.
6. Turn on the parking brake switch.
7. Slowly raise the lift arms to the maximum height.
8. Stop the engine.
Operator must stay in the operator's seat with the seat belt fastened.
9. Ask the second person to install the lift-arm-stopper.
10. Place the top (dented) of lift-arm-stopper upward, and cover the rod with the lift-arm-stopper from front.
Using one of the knob bolts, secure the lift-arm-stopper in position.

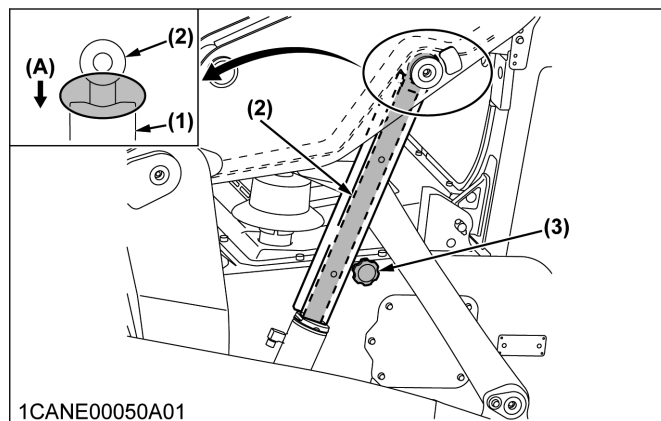


(1) Lift arm stopper (2) Knob bolt

11. Start the engine.
12. Turn on the parking brake switch.
13. Slowly lower the lift arms against the lift-arm-stopper.

IMPORTANT :

- Make sure that the dent on top of the lift-arm-stopper fits the round part of the lift arm and that the flat bottom of lift-arm-stopper fits the flat top of the arm-cylinder-tube. Do not allow any gap in both locations top and bottom of the lift-arm-stopper.



(1) Lift arm stopper (A) Fit
(2) Arm cylinder tube
(3) Knob bolt

Removing

1. Sit in the operator's seat with the seat belt fastened.
2. Start the engine.
3. Turn on the parking brake switch.
4. Slowly raise the lift arms to the maximum height.
5. Stop the engine.
6. Ask the second person to remove the lift-arm-stopper.
7. Start the engine.
8. Lower the lift arms fully to the ground.
9. Stop the engine.
10. Return the lift-arm-stopper to the storage position and secure it with 2 knob bolts.

6. Operating the bucket

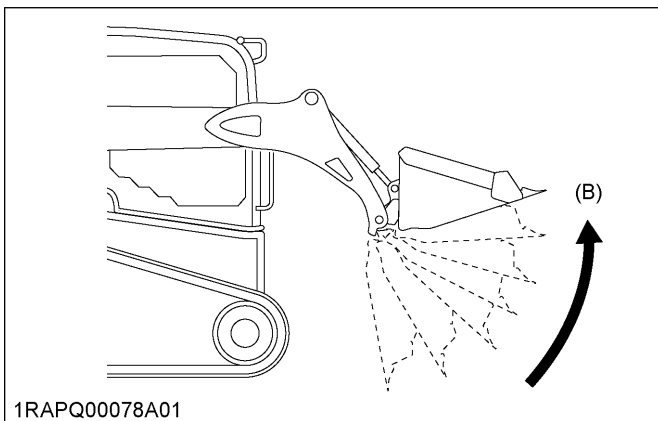
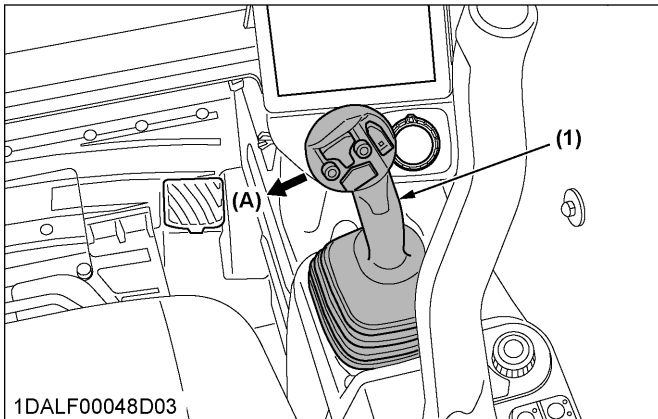
! WARNING

To avoid personal injury or death:

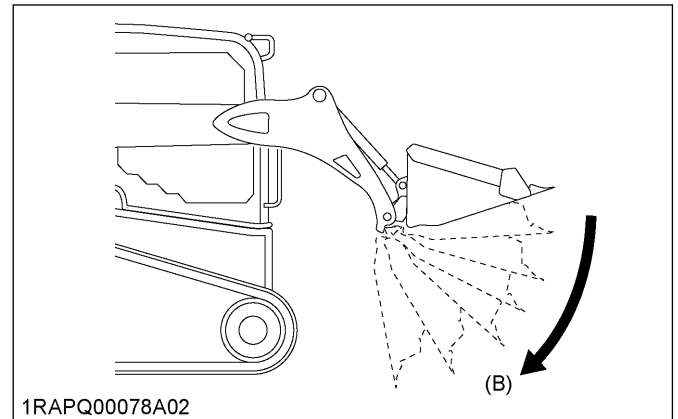
- Do not exceed the rated operating capacity of the unit. If loads exceed the rated operating capacity, the unit can experience a hydraulic imbalance when half or medium "lift arms raise" and "bucket roll back" or "auxiliary hydraulic control" commands are input together, which can result in the lift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

To roll the bucket back

1. Tilt the right control (front operating) lever to the left.



(1) Right control (front operating) lever (A) Tilt (B) Roll back



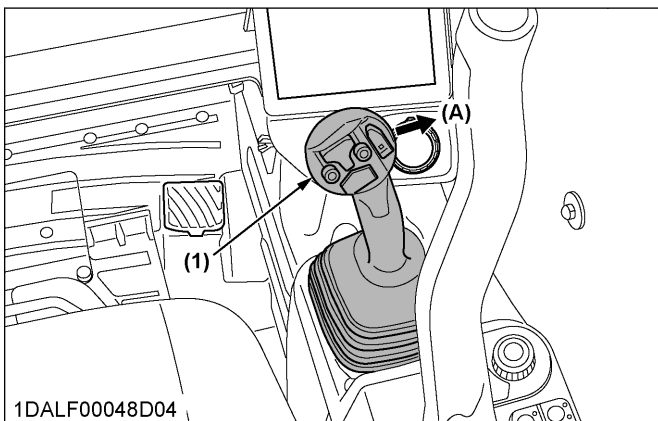
(1) Right control (front operating) lever (A) Tilt (B) Dump

NOTE :

- To stop the bucket operation, return the right control (front operating) lever to the neutral position.

To dump the bucket

1. Tilt the right control (front operating) lever to the right.



AUXILIARY HYDRAULIC

HOW TO USE THE AUXILIARY HYDRAULIC CONTROL

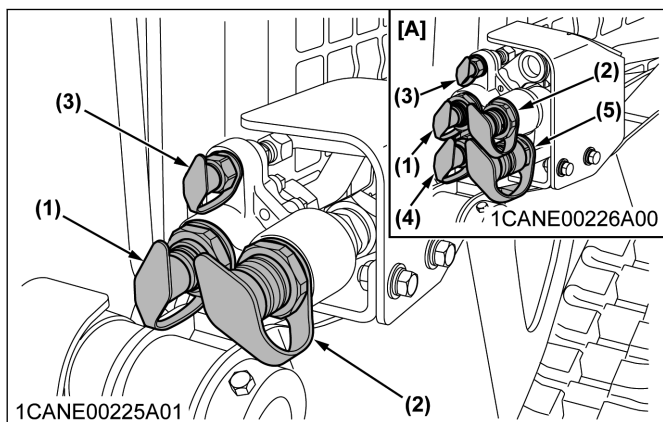
WARNING

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" and "bucket roll back" or "auxiliary hydraulic control" commands are input together, which can result in the lift arms lowering slowly. If you begin to experience a hydraulic imbalance, either place the lift arms control in neutral or input full raise control, and lift arms lowering will cease.
- Stop the engine and relieve pressure before connecting or disconnecting lines.
- Do not use your hand to check for leaks.

Connecting

1. Remove the dust caps.
2. Remove dirt or debris from the surface of both the male and female couplers, and from the outside diameter of the male coupler.
3. Visually check the couplers for corroding, cracking, damage, or excessive wear. If any of these conditions exist, the coupler must be replaced.
4. Push the quick couplers tightly and hold them for a few seconds, the pressure is relieved automatically (Pressure relief system).
5. Connect the couplers.



- (1) Male coupler (small)
- (2) Female coupler (small)
- (3) Male case drain coupler
- (4) Male coupler (large)
- (5) Female coupler (large)

[A] High-Flow model

IMPORTANT :

- When relieving pressure, use the couplers of (1) and (2) in the preceding figure.
- When relieving pressure, do not apply excessive shock, such as hitting the coupler with a hammer. It may cause damage to the coupler.
- Use long enough hoses when connecting the attachment. Otherwise the couplers could be damaged due to the frequent side load and impact to them during working.

IMPORTANT :

[High-Flow model only]

- Depending on the attachment coupler size and flow rate, select the proper coupler socket size, large or small in diameter.
- The Standard-Flow mode functions in a bidirectional way, whereas the High-Flow mode runs in one way.
- When an attachment is connected, Keep in mind that oil flows through the male port in the High-Flow mode.

Disconnecting

1. Push the quick couplers tightly and hold them for a few seconds, the pressure is relieved automatically (Pressure relief system).
2. Detach the couplers.
3. Attach the dust caps.

1. Operating the auxiliary hydraulic control

WARNING

[High-Flow model only]

To avoid personal injury or death:

- Certain high-flow attachments may require the use of a protective door (polycarbonate) such as a hammer or mulcher.

IMPORTANT :

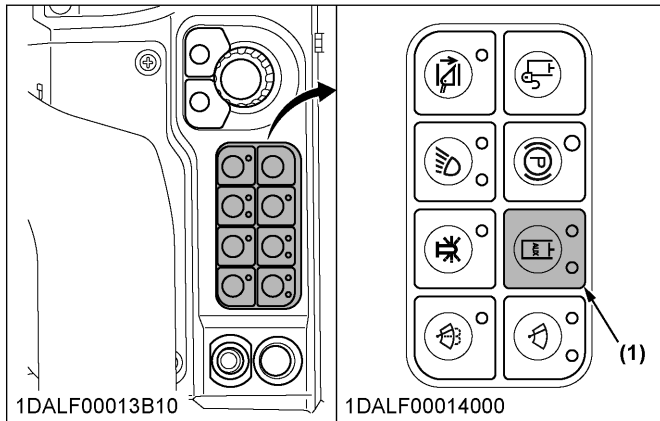
[High-Flow model only]

- Be careful not to use any High-Flow-incompatible attachment in the High-Flow mode. Otherwise the attachment may be damaged.

If you use a High-Flow model, see AUX port switch [High-Flow model only] on page 121.

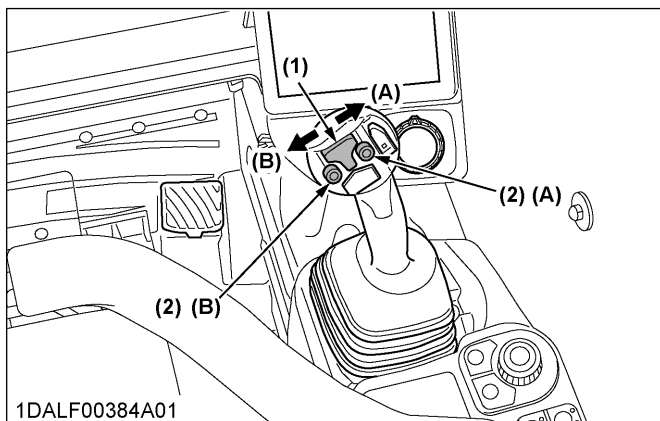
(For details of the AUX settings, see Setting the AUX on page 54)

1. Start the engine.
(See Starting the engine on page 145 and Start of the machine on page 148)
2. Press the hydraulic-unlock-switch.
3. Press the AUX port switch.



(1) AUX port switch

4. Tilt the AUX-port-variable-switch toward side (A) or press the right AUX-hold-switch.
Oil starts flowing out of the male port.
5. Tilt the AUX-port-variable-switch toward side (B) or press the left AUX-hold-switch.
Oil starts flowing out of the female port.



(1) AUX port variable switch (A) Male port
(2) AUX hold switch (B) Female port

IMPORTANT :

[High-Flow model only]

- In the High-Flow mode, operate the machine with the male-port-switch (A) of the right-control-lever.
- When operating the machine with the female-port-switch (B) of the right-control-lever, standard-flow oil passes through the female port.

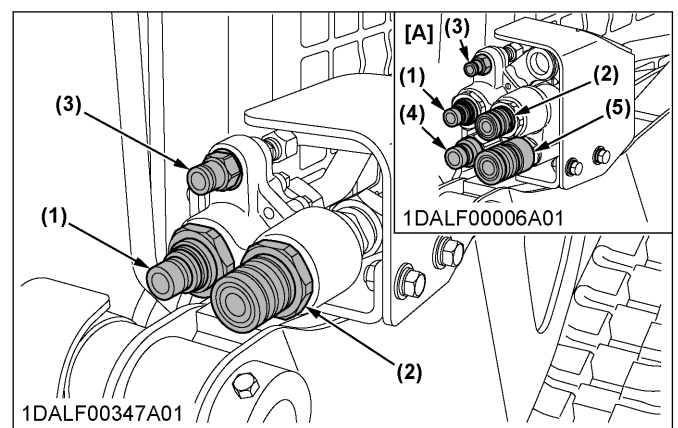
NOTE :

- The oil flow rate responds to the tilt of the AUX-port-variable-switch.
- Press the AUX-hold-switch, and the oil continues to flow at its highest flow rate. To interrupt the oil flow, press AUX-hold-switch again.

[High-Flow model only]

- To prevent overheating, the AUX flow rate is automatically controlled when the oil temperature or the water temperature gets close to overheating.

6. If the tank must be drained, depending on an attachment in use, use the male-case-drain-port.



(1) Male coupler (small) [A] High-Flow model
(2) Female coupler (small)
(3) Male case drain coupler
(4) Male coupler (large)
(5) Female coupler (large)

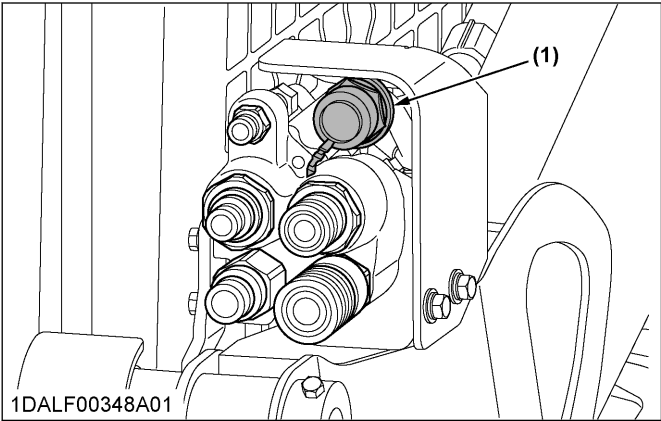
2. Operating the attachment control device (option)

You can use the attachment-control-device to feed electrical power for an attachment. For instance, to drive a valve.

With the AUX port ready for use, you can supply power. Use K (+12 V) and B (GND) of the 14-pin coupler attached on the arm. See the following figures and table.

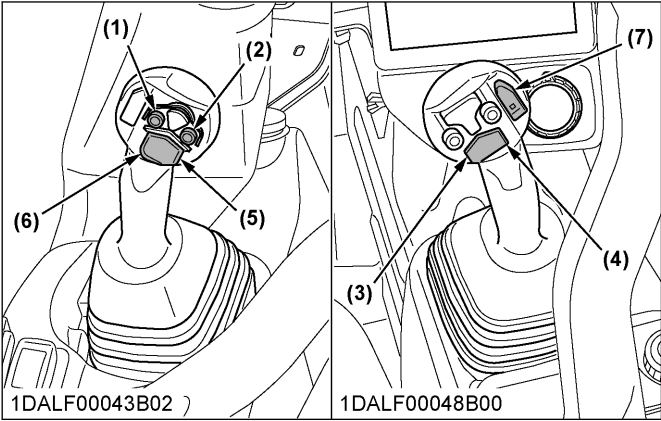
NOTE :

- The K (+12 V) of the 14-pin coupler turns on when the start switch is in "ACCESSORY" position.

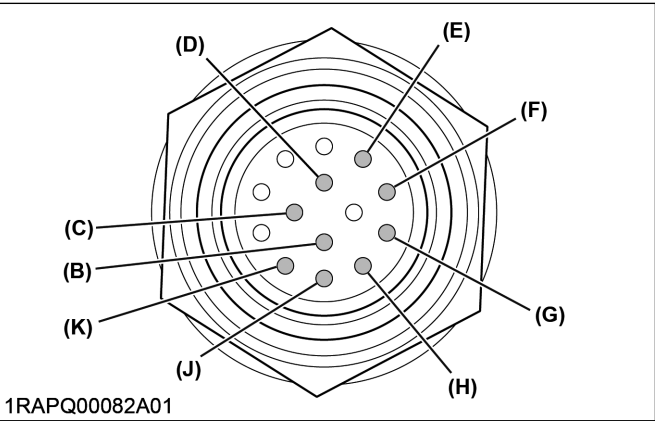


(1) 14-pin coupler

1. Press the numbered electrical control switch on the left or right lever that corresponds with the desired valve function, to be powered at +12 V.



- (1) Ref. no. 1
(2) Ref. no. 2
(3) Ref. no. 3
(4) Ref. no. 4
(5) Ref. no. 5
(6) Ref. no. 6
(7) Ref. no. 7



- (B) Pin port-B
(C) Pin port-C
(D) Pin port-D
(E) Pin port-E
(F) Pin port-F
(G) Pin port-G
(H) Pin port-H
(J) Pin port-J
(K) Pin port-K

14-pin coupler harness connection chart

Ref. no.	Pin port	Remarks
-	B	GND
1	C	AUX 1st func.
2	D	AUX 1st func.
3	E	AUX 2nd func.
4	F	AUX 2nd func.
5	G	AUX 3rd func.
6	H	AUX 3rd func.
7	J	AUX electrical mode change
-	K	+12 V

- NOTE :**
- **AUX 3rd func. is momentary action.**
 - **AUX electrical mode change is alternate action.**

QUICK-HITCH

HOW TO USE THE MECHANICAL QUICK-HITCH

This machine utilizes a quick-hitch 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.



DANGER

To avoid personal injury or death:

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



WARNING

To avoid personal injury, death or machine damage:

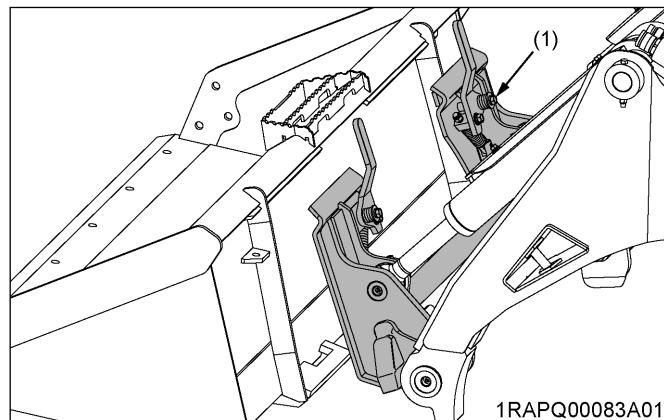
- Never operate or transport attachments that are not attached completely.
- Always replace damaged hardware immediately.

NOTE :

- Locate the attachments on a level, firm surface when attaching and detaching them from the quick-hitch.

Attaching attachments

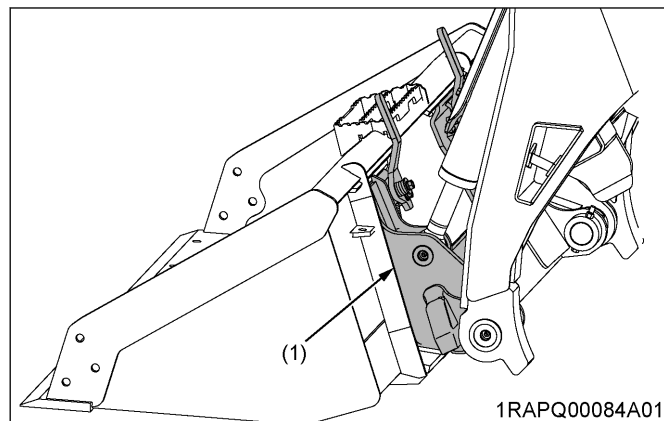
1. To mount an attachment, pull the levers of the quick-hitch lock pins to the unlocked position. Pull the quick-hitch levers all the way up to ensure that the lock pins are fully retracted.
2. Position the machine squarely in front of the attachment and tilt the quick-hitch forward with the tilt cylinders.



(1) Quick-hitch

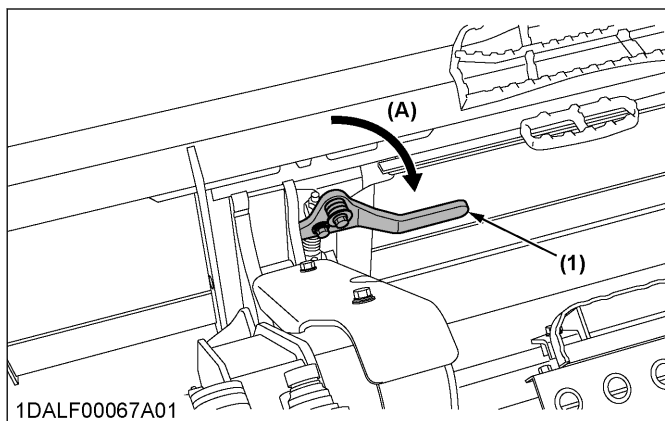
3. Ease the quick-hitch mounting plate into the saddle of the attachment.
4. Roll the quick-hitch back using the tilt cylinders and raise the lift arms slightly.

The back of the attachment should rest against the front of the quick-hitch mounting plate, and you should support the weight of the attachment by the lift arms.



(1) Quick-hitch

5. When the attachment is properly seated in the saddle of the attachment and against the front of the quick-hitch mounting plate, stop the engine.
6. Push the quick-hitch levers to the fully locked position.



(1) Quick-hitch lever (A) Lock

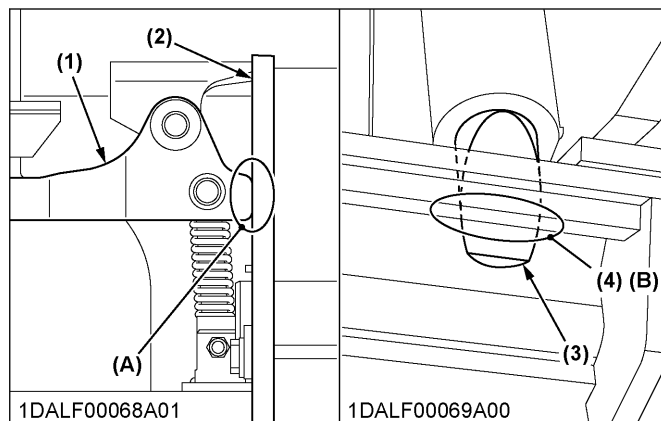
7. Verify that both lock pins are completely engaged in the base of the attachment.
8. With an attachment in place, lift the lift arms and empty out the bucket.
9. Tilt the bucket downwards and verify that the lock pins are fully engaged.



DANGER

To avoid personal injury or death:

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



(1) Quick-hitch lever (2) Ear plate (3) Lock pin (4) Pin slot (A) The lever contacts the ear plate at the points (B) The pin protrudes through the slot

10. When pushing the quick-hitch levers into the locked position, visually verify that the lock pins protrude through the slot.
11. When attaching different attachments, visually inspect for broken or damaged pins. If broken or damaged pins are found, replace them 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 or death:

- After attaching the attachments of quick-hitch, make sure that the attachment is securely attached to the quick-hitch, or the attachment may be detached.
- When handling the control lever, make sure that the attachment is securely attached to the quick-hitch after lowering the lift arm, making sure that all control levers are in their neutral positions, and stopping the engine.

Detaching the attachments

1. Lower the attachment to ground level with the attachment slightly in the rolled back position.
2. Stop the engine.
3. Disconnect the electrical harness and hydraulic lines of the attachment from the lift arms if equipped.
4. Pull the quick-hitch lever up to the unlocked position to release the lock pins.
5. While sitting in the machine operator's seat, start the engine and slowly move the right control (front operating) lever to the dump position until the attachment is pushed away from the quick-hitch.
6. Lower the lift arms so that the quick-hitch mounting plate clears the saddle of the attachment.
7. Back the machine away from the attachment slowly.

8. If an attachment is not going to be attached to the quick-hitch immediately, push the lever of the quick-hitch to the locked position to prevent damage to the lever assembly.

HOW TO USE THE HYDRAULIC QUICK-HITCH



WARNING

To avoid personal injury, death or machine damage:

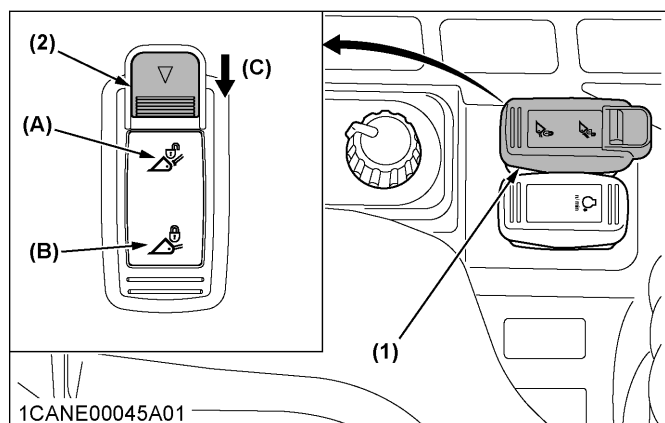
- Never operate or transport attachments that are not attached completely.
- Always replace damaged hardware immediately.

NOTE :

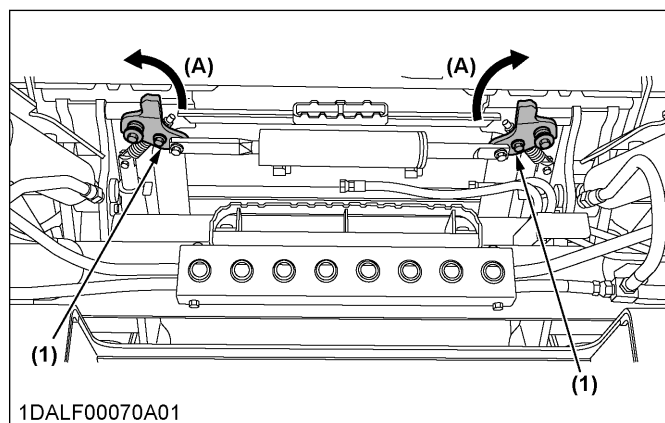
- Locate the attachments on a level, firm surface when attaching and detaching them from the quick-hitch.

Attaching attachments

1. Push the hydraulic quick-hitch switch in the unlocked  position and hold it to make sure that the quick-hitch levers are up (unlocked position).

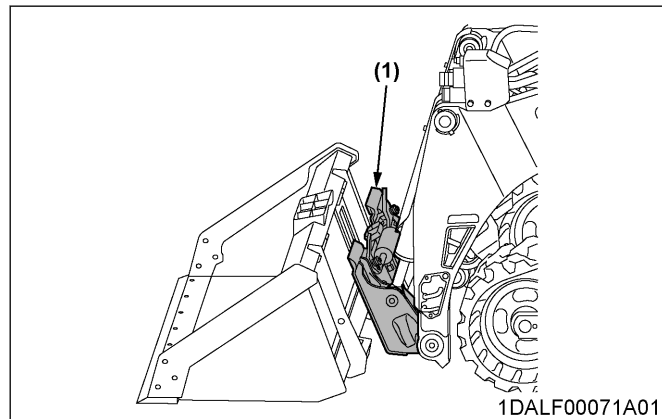


- (1) Hydraulic quick-hitch switch (A) Unlock
(2) Guard (B) Lock
(C) Slide



- (1) Quick-hitch lever (A) Unlock

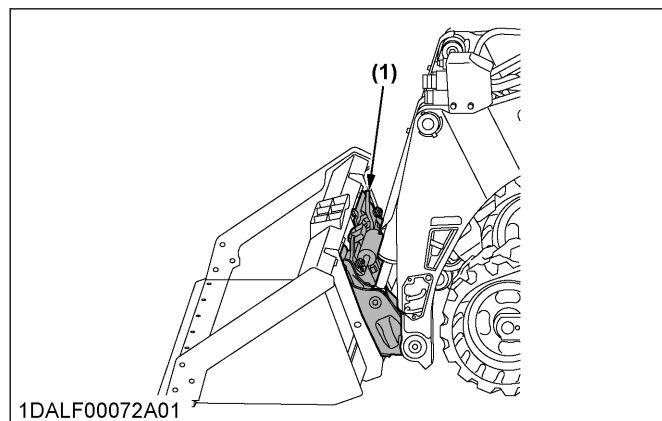
2. Position the machine squarely in front of the attachment and tilt the quick-hitch forward with the tilt cylinders.



- (1) Quick-hitch

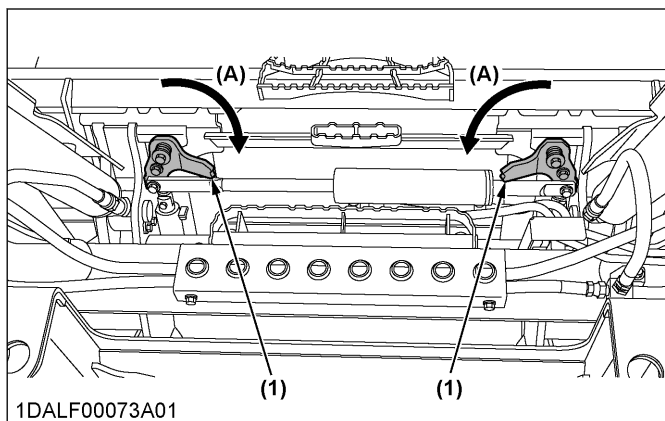
3. Ease the quick-hitch mounting plate into the saddle of the attachment.
4. Roll the quick-hitch back using the tilt cylinders and raise the lift arms slightly.

The back of the attachment should rest against the front of the quick-hitch mounting plate and you should support the weight of the attachment by the lift arms.



- (1) Quick-hitch

5. When the attachment is properly seated in the saddle of the attachment and against the front of the quick-hitch mounting plate, push and hold the hydraulic quick-hitch switch in the locked position until the quick-hitch levers are fully in locked position.



(1) Quick-hitch lever (A) Lock

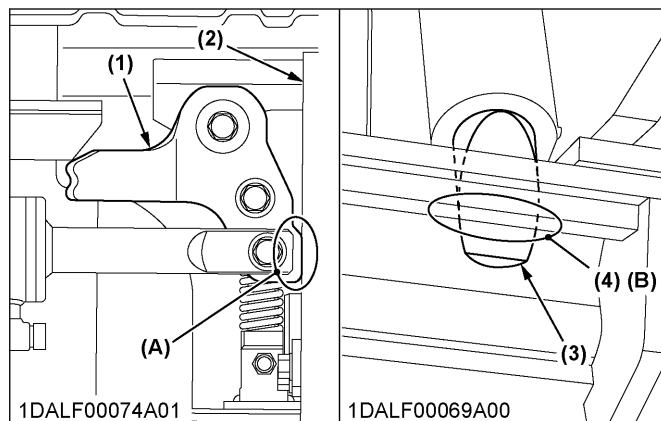
6. Verify that both lock pins are completely engaged in the base of the attachment.
7. With an attachment in place, lift the lift arms and empty out the bucket.
8. Tilt the bucket downwards and verify that the lock pins are fully engaged.



DANGER

To avoid personal injury or death:

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



(1) Quick-hitch lever (2) Ear plate (3) Lock pin (4) Pin slot (A) The lever contacts the ear plate at the points. (B) The pin protrudes through the slot.

9. When pushing the quick-hitch levers into the locked position, visually verify that the lock pins protrude through the slot.
10. When attaching different attachments, visually inspect for broken or damaged pins. If broken or damaged pins are found, replace them 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 or death:

- After attaching the attachments of quick-hitch, make sure that the attachment is securely attached to the quick-hitch, or the attachment may be detached.

Detaching attachments

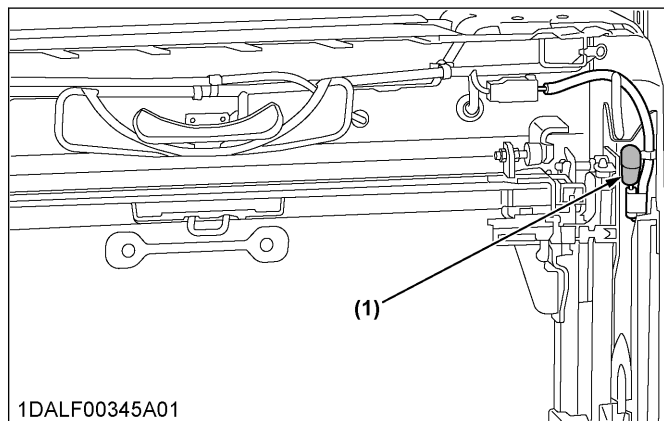
1. Lower the attachment to ground level with the attachment slightly in the rolled back position.
2. Stop the engine.
3. Disconnect the electrical harness and hydraulic lines of the attachment from the lift arms if equipped.
4. Start the engine and push the hydraulic quick-hitch switch in the unlocked position. Hold the hydraulic quick-hitch switch in the unlocked position to make sure that the quick-hitch levers are up.
5. While sitting in the operator's seat, slowly move the right control (front operating) lever to the dump position until the attachment is pushed away from the quick-hitch.
6. Lower the lift arms so that the quick-hitch mounting plate clears the saddle of the attachment.
7. Back the machine away from the attachment slowly.

RADIO

BLUETOOTH MICROPHONE

The Bluetooth microphone is used to make hands-free calls.

(See Bluetooth mode operation on page 108 for instructions on how to use the hands-free phone)



1DALF00345A01

(1) Bluetooth microphone

NOTE :

- To use the Bluetooth microphone, settings on your mobile phone may be required. See the operating manual of your mobile phone for details of connecting the device.

IMPACT OF BLUETOOTH

Bluetooth specifications and supported profiles

Supported Bluetooth specifications

Version : 5.0

Class : 1

Supported profiles: A2DP, AVRCP, HFP

Number of registered pairings allowed: Maximum 5

NOTE :

- We do not guarantee that all Bluetooth devices can be operated with this machine.
- In case the Bluetooth of the connected device is older than recommended version or incompatible, the Bluetooth functions may not work properly.
- This product complies with the legally stipulated technical standards regarding the required standards for radio equipment and EMC regulations for radio equipment. The sticker affixed on the products is the proof. Do not remove the sticker.
- Disassembling or modification of this product is punishable by law.

IMPORTANT :

- Do not use Bluetooth connected mobile devices near the radio unit. If the Bluetooth connected mobile device gets too near, the sound quality and connection will deteriorate.

Persons using a pacemaker or other electrical device for medical treatment,

note of the following points regarding radio waves in Bluetooth communication.



WARNING

To avoid personal injury or death:

- The antenna for Bluetooth communication is built in the radio unit.
With the exception of an implantable cardiac pacemaker, implantable biventricular pacing pulse generator, and implantable cardioverter defibrillator, if you are using an electrical device for medical treatment, check in advance with your physician and the manufacturer of the medical device about the impact of radio waves. Radio waves may affect the operation of electrical devices for medical treatment.

Bluetooth connected mobile devices

A Bluetooth connected mobile device is used for wireless (Bluetooth) communication with this machine. For example, hands-free mobile use is possible even when your device is in your pocket.

NOTE :

- If the Bluetooth connected mobile device is used simultaneously with other radio devices, it can adversely impact their communication.
- If Wi-Fi®, Miracast® and Bluetooth connected mobile devices using the 2.4 GHz band radio communication are used simultaneously with this machine, it can adversely impact their communication.
- Batteries of Bluetooth connected mobile devices will drain faster due to Bluetooth connection.
- The frequency band used by Bluetooth connected mobile devices are used for industrial use such as microwave ovens, scientific use, and use in medical devices, in addition to the following radio stations.
 - On-site radio stations for moving object identification used in factory production lines, etc. (radio stations that require a license)

- Specified low-power radio stations (radio stations that do not require a license)
- Amateur radio stations (radio stations that require a license)

(The 3 types of radio stations mentioned above are hereinafter abbreviated as "other radio stations")

Before using a Bluetooth connected mobile device, ensure there are no "other radio stations" operating nearby.

In the unlikely event of hazardous radio interference from a Bluetooth connected mobile device to "other radio stations", immediately change the location of use to avoid radio interference.

- The frequency band used by Bluetooth connected mobile devices is the 2.4 GHz band. FH-SS modulation is used as the modulation method.

The expected giving interference distance is 10 m or less.

Bluetooth connected mobile devices use the entire bandwidth and can evade the bandwidth of moving object identification equipment.

Hands-free

By connecting an operation-confirmed Bluetooth connected mobile device* (hereinafter referred to as "mobile phone") to this machine, you can use the phone functions of "calling" and "receiving calls" without directly operating the mobile phone. This is called the hands-free function.

To connect to this machine, use a mobile phone that is compatible with the specifications of this machine. However, some functionality may be limited depending on the mobile phone model.

WARNING

To avoid personal injury or death:

- The driver should not operate the mobile phone while driving.
- Stop the machine at a safe place and make your call. If you receive a phone call while driving, drive carefully and keep the call brief.

Situations when the hands-free function cannot be used

- Hands-free operation is not possible in the following cases:
 - When outside the calling area
 - When outgoing calls are restricted, such as when the line is busy
 - When on an emergency call
 - When the mobile phone is dial-locked
 - When the mobile phone is in use, such as when data communication is in progress
 - When the mobile phone is malfunctioning

- When the mobile phone is not connected to this machine
- When the mobile phone battery is low
- When the mobile phone is switched off
- When the mobile phone is not set to hands-free mode
- And also, when the mobile phone is not usable

NOTE :

- If there is a contract for three-way calling, deactivate three-way calling on the mobile phone before use.

Calls

Use the microphone for calls.

- Audio such as incoming call notifications and on-call voice is output from the speaker.
- Audio sounds are muted (silenced) when voice, ring tone, etc. are output in hands-free mode.

NOTE :

- Adjust the receiving volume as low as possible. If the volume is too loud, the other person's voice may be heard outside the vehicle or they might hear an echo during the call.
- In the following cases, it may be difficult for the other party to hear your voice.
 - When driving on rough roads
 - When the window is open
 - When the air conditioner is noisy
 - When a cell phone is placed close to the microphone
- The sound quality may deteriorate (noise, echoes, etc.) due to the cell phone or network used.

IMPORTANT :

- Do not touch the microphone or insert pointed objects into it. This may cause the microphone to malfunction.

MACHINE PRECAUTION

IMPORTANT INFORMATION ON MACHINE OPERATION



WARNING

To avoid personal injury or death:

- **Always avoid working on an incline as the machine can become unstable and rollover, causing serious injury or death.**
- Avoid moving the machine when the lift arms and the bucket are in the raised position. If you must move the machine when the lift arms and the bucket are raised, travel at low speeds in order to maintain control of the machine at all times.
- Whenever the machine is in motion, keep the bucket as close to the ground as possible. Never change directions when the bucket is in the raised position.
- Always move the machine at speeds that are appropriate to the conditions. Take particular care if you are ever moving through areas where view may be obstructed or when transporting hazardous material.
- Never operate the machine in the vicinity of explosive gases. Always keep exhaust from machine away from any combustible material.
- Never turn or spin the machine at high speed.
- Never approach an incline horizontally, which can cause the track to slide off and cause excessive wearing of tracks.
- Never exceed the operating capacity of the machine.
- Never use the machine to move material or perform work that exceeds the capacity of the bucket or attachments.
- Never use the bucket as a hammer to drive poles or studs into the ground.
- Never dig too deeply with the bucket, which can damage the bucket or the lift arms.
- Avoid hitting the bucket against rocks or similar solid material, which will damage the bucket or the bucket cylinder.
- Never fully extend cylinders to perform an operation. Working while cylinders are fully extended can cause damage from excessive force.
- Never scoop or grade areas while the tilt cylinders are fully extended. Extremely heavy loads apply excessive traction force to the bucket cylinders and can cause damage. Avoid loads that are too heavy.

1. Caution while traveling

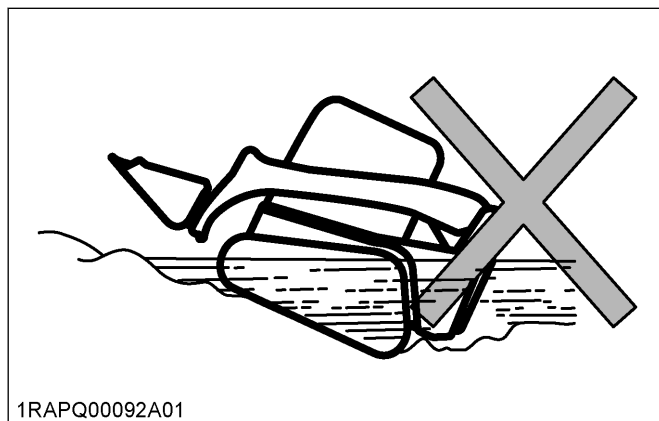
- Running over large debris as rocks, stumps, and blocks may cause such debris to fly up and damage the machine. Avoid debris whenever possible.
- If obstacles cannot be avoided, travel slowly over them with the bucket in the lowered position. Approach the obstacles so that it is at the center of the tracks.

2. Precaution when traveling in high speed

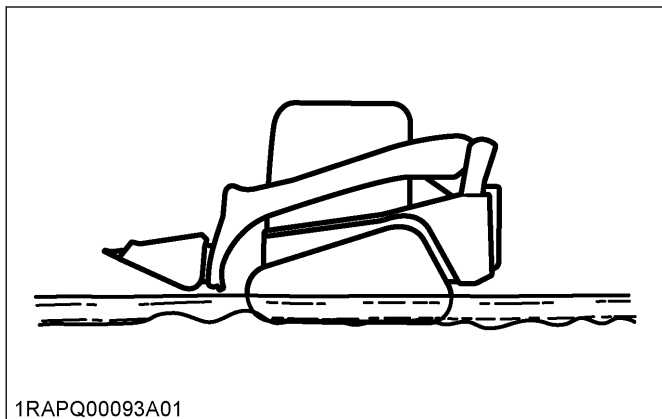
- Whenever traveling over uneven ground surfaces, travel at low speed. Avoid any sudden movements with the machine such as accelerating, stopping, or turning quickly.

3. Precautions for use of machine near water

- Whenever working near water, pay particular attention not to submerge any part of the machine. Always keep working machine parts out of water, especially when coming out of a shoreline, for example, at a sharp angle.



- **Permissible water depth**
Never allow the machine to become submerged in water above the bottom of the body.



- If parts that require lubrication are exposed to water for long periods of time, make sure that they are re-lubricated with grease to remove old grease.
- After working in the mud and in the water, make sure that there is no invasion of the soil inside the frame. If soil is deposited, clean the internal frame. (See Cleaning inside of the main frame on page 201)
- Never allow the main body of the machine to become submerged in water or sand. Contact your KUBOTA Dealer or Service Outlet if the main body of the machine is exposed to water.

4. Precautions when traveling on inclines

WARNING

To avoid personal injury or death:

- Know and understand the machine capabilities and operating conditions, and never exceed any of these conditions. Keep in mind that poor or difficult working conditions may reduce the capability of the machine, requiring a reduction in speed to maintain stability.
- Always travel at low speed when moving on an incline. When moving down a incline, reduce the engine speed (rpm). Traveling too fast down an incline can lead to loss of control and accident or injury.
- Always lower the bucket to the following height from the ground whenever traveling on an incline. Lower the bucket completely to the ground and stop the machine in case of emergency.

Bucket height	20 cm to 30 cm
---------------	----------------

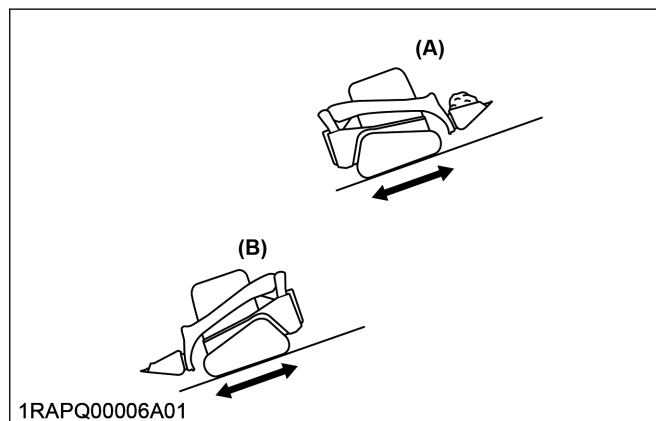
- Whenever traveling over uneven ground surfaces, travel at low speed. Avoid any sudden movements with the machine such as accelerating, stopping, or turning quickly.
- Never approach an incline horizontally or diagonally. Always return to a flat surface and redirect the machine.

- Beware of unstable and slippery surfaces such as grass, leaves, wet metal, or ice. The machine can slide very easily even on low grade inclines.

Orientation of machine when traveling on an incline

- Always make sure that the heavy end of the machine is facing up the incline when traveling either direction on a hill inclined at the following angle or more. Failure to do so may cause the machine to tip over.

Gradient of a hill	15°
--------------------	-----



(A) With bucket full

(B) With bucket empty

What to do when engine stops suddenly

- If the engine stops suddenly when moving down an incline, follow the following procedure.
1. Put the control levers into the neutral position.
 2. Stop the machine.
 3. Then restart the machine in the normal manner.

5. Parking on an incline

- It is best to park the machine on firm, level ground using the parking brake. But if you must park the machine on an incline, make sure that you block the tracks to prevent any movement.
- Make sure that the machine is highly visible when parking near streets by using barriers, appropriate caution signs, and lights to avoid any accident or collision with other vehicles.
- Always raise the armrests to the raised position and stop the engine before leaving the operator's seat.
- Never leave the machine running unattended or with the lift arms raised. Whenever the lift arms are raised, always restrain them using the lift-arm-stopper.

Whenever leaving the machine, perform the following procedure.

1. Put the control levers into the neutral position.
2. Reduce the engine speed using the engine-speed-control-dial.
3. Lower the bucket to the ground.
4. Move the armrest in the raised position.

5. Stop the engine.

6. Prohibited actions for the machine



CAUTION

To avoid personal injury:

- Whenever operating the machine, adhere to the following:
 - Take particular care when operating, transporting material, or traveling in snowy conditions or on ice because tracks may slip.

IMPORTANT :

- Always avoid sudden changes in direction or spinning on concrete surfaces. Excessive friction on the tracks will cause them to wear out or become damaged.
- Always avoid sudden impact to the tracks such as allowing the machine to drop down or hit objects.
- Chemical such as salt, potassium chloride, ammonium sulfate, potassium sulfate, and triple-super phosphate of lime can damage the track belts. If the tracks are exposed to any of chemical such as salt potassium chloride, ammonium sulfate, potassium sulfate, and triple-super phosphate of lime, immediately wash thoroughly with water.
- Avoid scraping the rubber tracks along concrete and other rough surfaces.
- Operate the machine between the following temperature for proper functioning of rubber track belts.
- If machine must be stored for 3 months or longer, keep it indoors and out of direct sunlight and prevent exposure to the elements to prevent wear on the rubber tracks.

Temperature for proper functioning of rubber track belts	-20 °C to +50 °C
--	------------------

Actions that must not be performed with the machine

- Never move, transport material, or operate the machine in the following places: mud, broken stone, jagged or unstable base rock, iron beams, iron scrapes, and iron sheets.
Navigating, turning, and moving the machine over sharp material may damage or break the tracks.
- When traveling on riverbeds and other areas where loose gravel can get into the tracks, gravel can cause the tracks to slip off or become damaged.
- Do not use near the oceanfront where salt water can corrode the various parts of the machine.
- Always prevent fuel, oil, salt, or other chemical agents from getting into the tracks, which can

cause corrosion to the metal track cores. If the track and its parts are exposed to such material, immediately remove by using water.

- Always avoid traveling on roads directly after they have been resurfaced or on other hot surfaces such as fire or metal surfaces under direct sunlight. Excessive heat can cause irregular wear and damage to tracks.
- Do not move material where the surface is unstable and could cause slippage in the tracks. Unnecessary and excessive slipping of tracks will damage and cause abnormal wearing of the tracks.

7. Prevention of slippage of rubber tracks

Always follow the following to prevent slippage of rubber tracks.

- Make sure that the tracks are kept at the proper tension.
Never change directions when there is excessive slack in the track belts.
- When ascending an incline, never change direction at the base of the incline.
- Always avoid operating the machine with one track on a different surface than the other track, or with one track partially on an incline. Make sure that both tracks are on stable, firm surfaces when in motion.

LIFTING

LIFTING THE MACHINE

DANGER

To avoid personal injury or death:

- The instructions for safe lifting are described in the *Lifting the machine* section. Read instructions in the *Lifting the machine* section carefully before lifting the machine. Make sure that the operating personnel read the operator's manual carefully before lifting.

WARNING

To avoid personal injury or death:

- Do not use damaged chains and lifting hardware.

IMPORTANT :

- Follow the procedure so the unit cannot roll.
 1. Select a firm, level surface.
 2. Lower the working equipment to the ground.
 3. Stop the engine.
 4. Set the armrest to the locked position.
- Do not lift loads that exceed the maximum rated capacity of the hoist and attaching hardware.
- Refer to the 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. Only move the load 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 or if the safety latch is missing.
- Do not use attaching hardware, including chains, hooks, and master links, in extreme temperature or other environmental conditions that exceed the manufacturer's specifications.
- Disengagement of the load can cause severe injury or death. The use of a hook with a safety latch or other master link device does not preclude inadvertent detachment of a slack sling load from the hook or master link. Visually

verify proper engagement of hook or shackle in all instances.

- Comply with all federal, state, and local regulations and safety standards before lifting the machine.
- Do not use the holes on the roof structure to lift the machine.
- Make sure that the lifting chains, hooks, and master links are strong enough to withstand the load being lifted.
- Be sure that the hooks have safety latch.
- Before lifting the machine, be sure that attachments are properly attached.

Preparations

- Lifting chains (with hook at each end)

Approximate overall length	3.43 m
	2 pc.
Approximate overall length	8.84 m
	1 pc.

- Pads (to protect the machine and lifting chain)
- Master links, 2pc.

Model name	SVL97-3
Model type	Closed Cab
Machine weight ^{*1}	5336 kg ^{*2}
Recommended chain working load limit > 2565 kg ^{*3}	3/8 in. lifting grade 80 alloy
Recommended master link working load limit > 5125 kg ^{*3}	Size not specified
Recommended attachment hardware working load limit > 2565 kg ^{*3}	Size not specified

^{*1} CTL weight with standard (non-hydraulic) bucket

^{*2} CTL weight shown with standard track (450 mm)

^{*3} Recommended chain, master link, and attachment hardware shall meet OSHA regulations and applicable ANSI (American-national-standards-institute), NACM (national-association-of-chain-manufacturers), and federal standards.

NOTE :

- Before connecting chains, remove any covers that may interfere with the chains or the hooks.

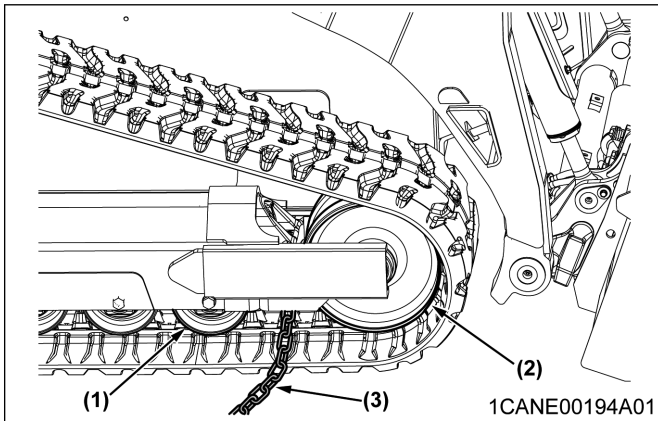
Procedure for connecting chains

1. Locate the chain and position the hook.

• Front of the machine

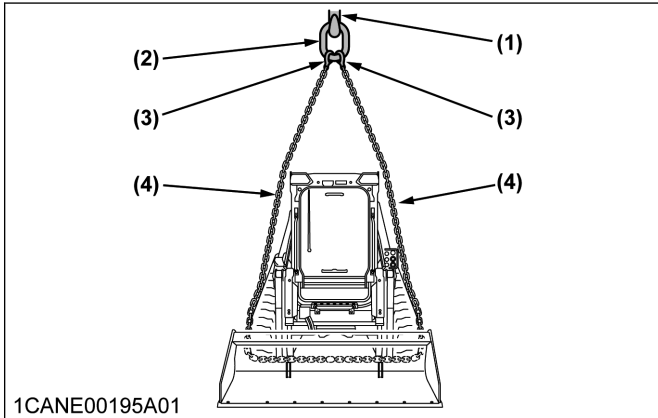
Pass the chain between the front idler and the front track roller, under the machine on each side, as shown in Fig. 1 and Fig. 2.

Fig. 1 (Chain location at front of the machine)



- (1) Front track roller (3) Front lifting chain
(2) Front idler

Fig. 2 (Front view)

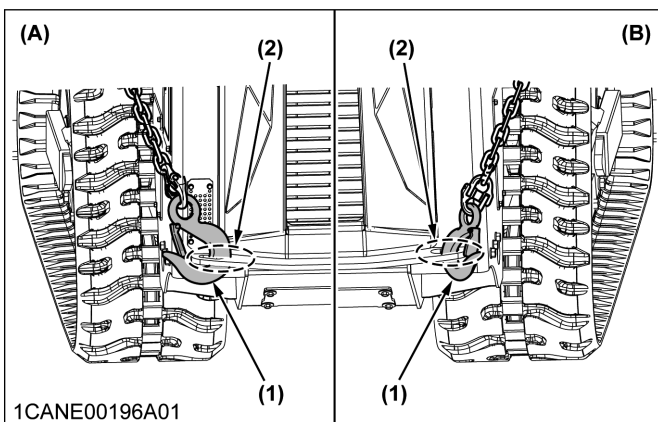


- (1) Hoist hook (4) Front lifting chain
(2) Front master link
(3) Hook

• Hook positions at rear of the machine

Lifting fixture mount at rear corners of the machine.

Fig. 3 (Hook positions at rear of the machine)



- (1) Hook (A) LH
(2) Lifting fixture mount (Rear tie down point) (B) RH

2. Connect the hook.

- At the front of the machine, use the following chain length.

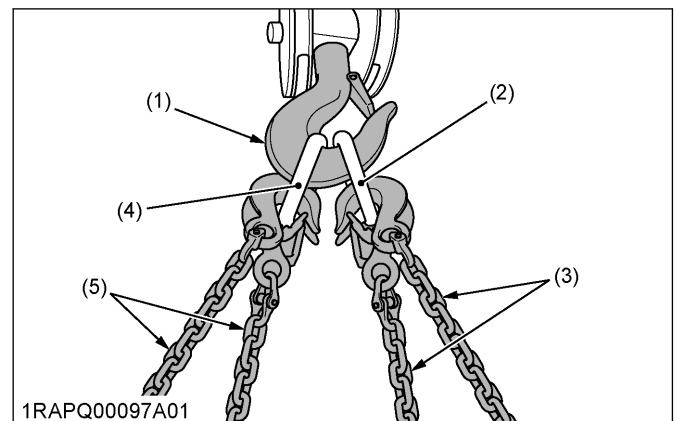
Chain length	8.84 m
--------------	--------

- Pass the lifting chain and the hook between the front-track-roller and the front idler under machine.
 - Pass the lifting chain and the hook again between front track roller and front idler at other side.
- Connect both hooks to the front-master-link, and connect the master link to the hoist hook as shown in Fig. 4.
 - At the rear of the machine, use the following chain length.

Chain length	3.43 m
--------------	--------

- Attach one end at the rear-lifting-fixture-mount and attach the other hook to master link.
- Then connect the master link to the hoist hook as shown in Fig. 3 and Fig. 4.

Fig. 4 (Hoist hook and master links)



- (1) Hoist hook (4) Rear master link
(2) Front master link (5) Rear lifting chain
(3) Front lifting chain

IMPORTANT :

- Pass the rear-lifting-chains to the sides of the machine body as shown in Fig. 3 and Fig. 5.

3. Apply the pads.

Apply the pads at locations shown in Fig. 5 and Fig. 6, where the chains come in contact with the machine to reduce damage of the machine and the chains.

• Locations to apply the pads

- Cab top
- Lift arm
- Track
- Track frames

LIFTING

- Rear lifting chains contact locations (frame and lift arm)

Fig. 5 (Lifting chain with pads)

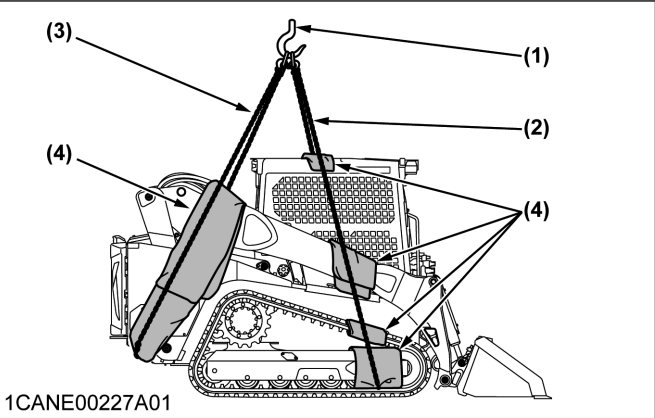
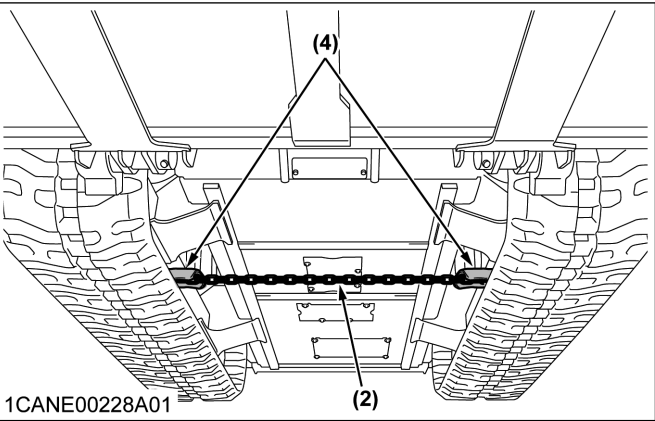


Fig. 6 (Front lifting chain location)



- (1) Hoist hook
- (2) Front lifting chain
- (3) Rear lifting chain
- (4) Pads

Front lifting chain (2)	8.84 m
Rear lifting chain (3)	3.43 m

4. Before lifting the machine, locate the hoist hook at the point which is shown in Fig. 5 and Fig. 6.

IMPORTANT :

- **Never put yourself around the machine when it is lifted.**
- **Never lift the machine with person in operator station or on the attachment.**

Procedure for lifting the machine

1. Lift the machine slowly and vertically.
2. Move the machine slowly into place.

TRANSPORTING



DANGER

To avoid personal injury or death:

- Make sure that the load capacity of the ramps is greater than the machine and attachment weight.
- Make sure that the ramps are clean, not damaged, and properly secured to the transport bed.
- Position the machine so that the heaviest end of the machine is going up the ramps first.
- Do not change directions when the machine is on the ramp. If a change of direction be necessary, drive off the ramp completely and turn the machine.
- When the machine reaches the point between the ramps and the bed, move the machine very slowly until it reaches the horizontal position on the bed.

LOADING THE MACHINE ON A TRANSPORT VEHICLE

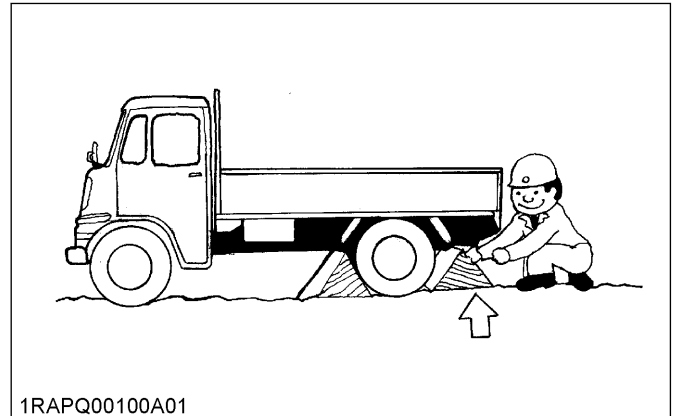


WARNING

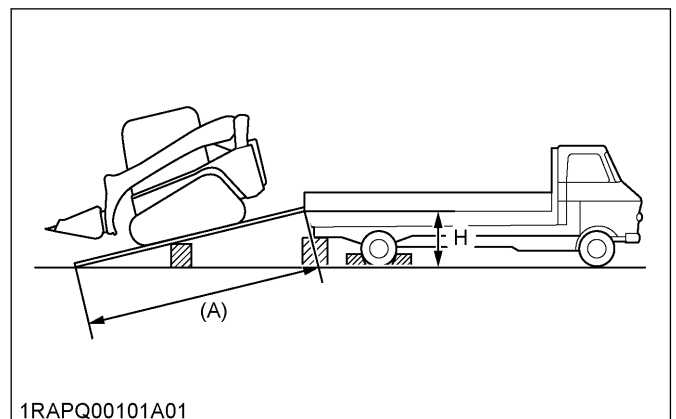
To avoid personal injury or death:

- When preparing to load or unload the machine, follow the steps in this section.
- Use a truck or trailer with sufficient size and weight capacity to transport the machine with attachment. Use of truck or trailer with an underrated capacity can cause unpredictable handling and loss of control. Always comply with government transportation laws and regulations.

1. Apply the parking brakes on the truck, and block the drive wheels both sides as shown in the following figure.



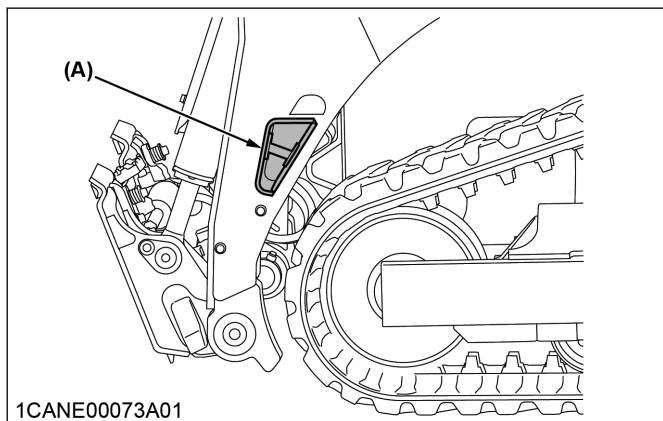
2. Use the mounting brackets to secure the ramps properly to the truck or the trailer.
3. Determine and use the correct length of the ramps to avoid a steep angle of approach as shown in the following figure.



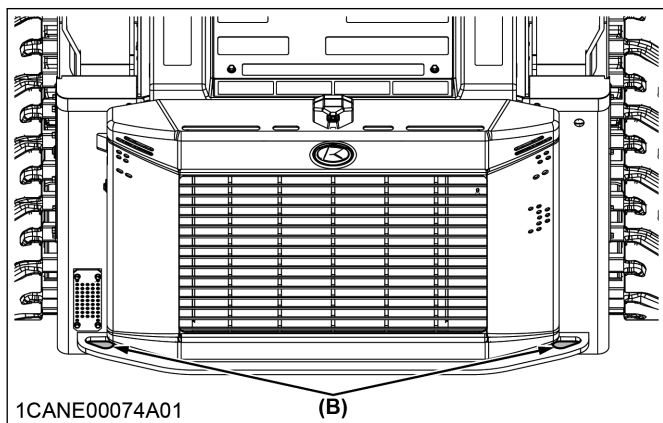
(A) $4 \times H$ or more

4. If necessary, support the rear end of the bed to prevent front of the truck or trailer from rising.
5. Align the machine with the ramps before traveling on ramps. If the ramps are wet, use caution during loading the machine.
6. Load the machine with empty bucket or no attachment installed, and with the rear of machine going up the ramp first.
If the bucket or attachment is installed, avoid them from contacting with ramps during travel.
7. Once the machine is loaded, lower the bucket or attachment completely.
8. Stop the engine.

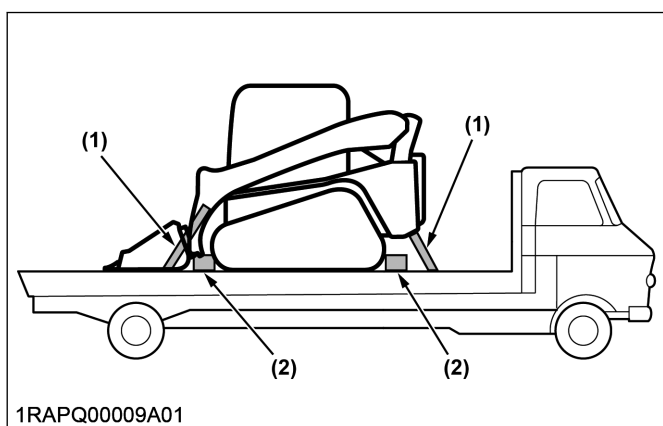
9. Block the tracks and tie down the machine using 2 tie-downs at the front and 2 tie-downs at the rear.



(A) Front tie-down locations
(both sides)



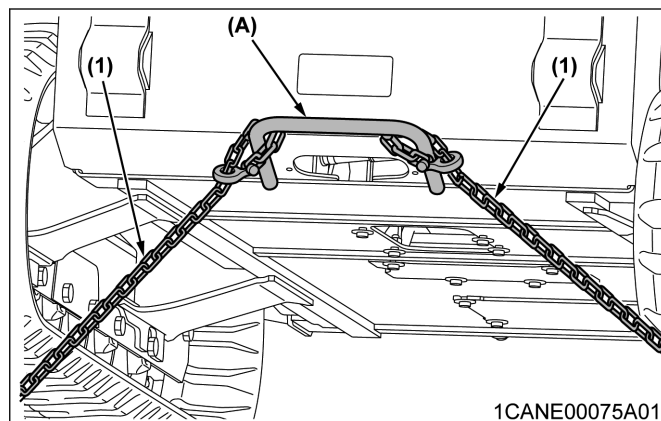
(B) Rear tie-down locations



(1) Chain or strap

(2) Blocks

Depending on the attachment installed, the loader arms may not come in contact with rest stop. Therefore it may be necessary to use the alternate front center tie-down for securement of the machine. Use 2 separate straps or chains as shown in the following figure and secure the attachment with a separate strap or chain. Consult your government transportation laws and regulations.



(1) Chain or strap

(A) Alternate front tie-down

10. When installing the chains or the strap from tie-down location of the machine to tie-down points of the truck or trailer, maintain proper angles to provide lateral and downward securement.
11. When using alternate or standard tie-down points, also tie-down the attachment in addition to the machine.

TOWING AN OPERABLE MACHINE



WARNING

To avoid personal injury or death:

- Tow only from both rear tie-downs as shown in the figure.
- Towing is only allowed for a short distance at walking speed.
- Use a tow chain or rope and hardware that is rated at least 1.5 times the machine weight. See the *Technical data* section in this operator's manual to find machine weight.

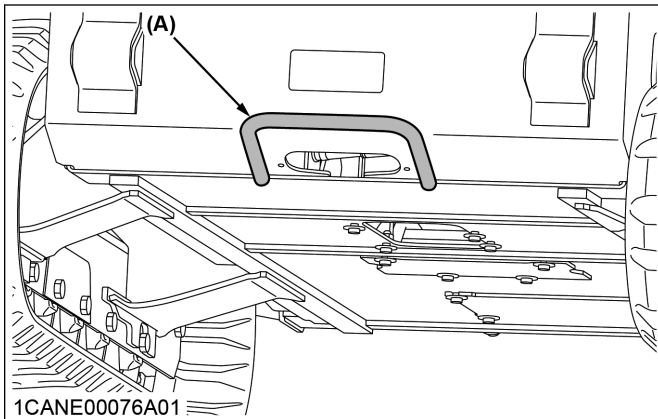
(See SPECIFICATION TABLE on page 29)



CAUTION

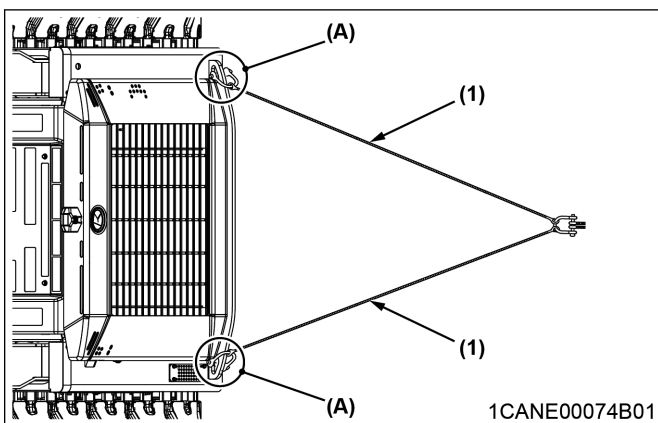
To avoid personal injury:

- Do not tow the machine using the front tie-down points of the attachment located on each side of the lift arms or tie-down point at center of machine.



(A) Tie-down point (Do not tow here.)

1. Attach towing hardware using both rear tow points and to the towing machine as shown in the following figure.



(1) Chain or strap (A) Rear tow and tie-down points

2. Sit on the operator's seated in the towed machine with the seat belt connected during the recovery process, and assist when towed using the machine movement in the direction of towing. Keep the parking brake released while towing.
3. Tow slowly at a walking pace with recovery machine and towed machine, avoid abrupt loads while towing.

TOWING AN INOPERABLE MACHINE

IMPORTANT :

- Towing an inoperable machine will damage the hydraulic drive or track system. Contact your local KUBOTA dealer for towing an inoperable machine.

MAINTENANCE

WARNING

To avoid personal injury or death:

- Before performing maintenance on the machine, place the machine on a firm, flat, and level surface, lower the lift arms slowly to the ground, and stop the engine.
- When performing maintenance on the machine, do not allow any persons within the cab.
- To prevent the machine from being damaged, set the washing nozzle to spreading water, and keep the distance 2 m away from the machine to clean it. When the water is directed at a pin point area, or when the machine is washed from too close a position with a high pressure flow:
 - The cover of the wiring may be damaged or the wiring may be cut off, causing fire.
 - The hydraulic hose may be damaged, causing a high pressure oil blow out. This may cause injury.

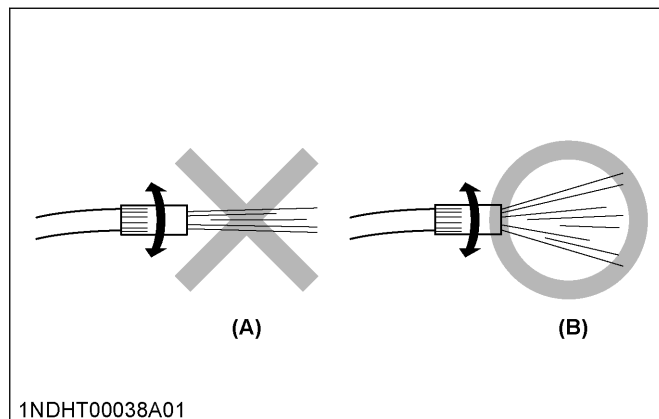
IMPORTANT :

- If the machine is not washed as specified, the following peel-off, damage or malfunction may result.

Examples:

- The stickers or labels may peel away.
- The electronic components, engine compartment, cab and others may get wet inside and adversely affected.
- The tracks, oil seals and other rubber-based components, the decorative covers and other plastic-based components, and the windows and other glass-based components may get damaged.
- The paint, coating, and plating may peel away.

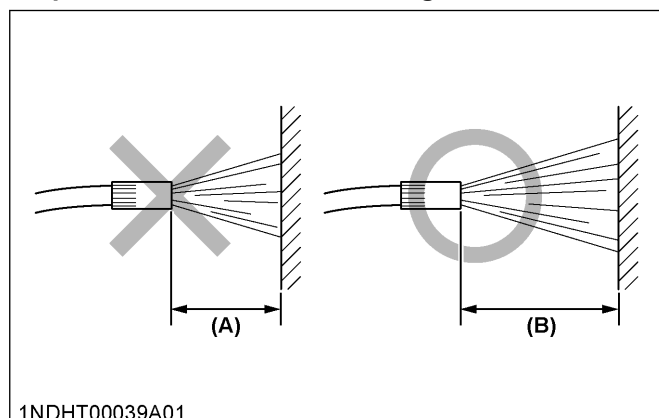
No high pressure-washer



(A) High pressure

(B) Low pressure

No pressure-washer at short range



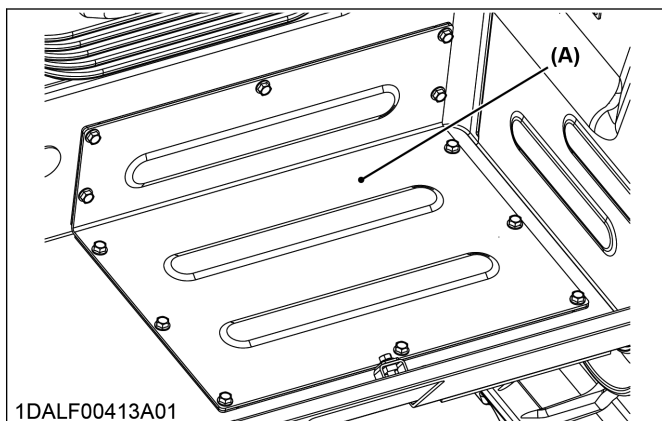
(A) Less than 2 m

(B) 2 m or more

Whether the machine is properly lubricated and maintained directly determines the service life of the machine. Periodically check and maintain your machine, and you will find in the long run that the jobs can be finished earlier and more economically.

IMPORTANT :

- Do not remove the plate (step). Once this plate is removed, the airtightness of the cab will degrade.



(1) Plate (step)

MAINTENANCE INTERVALS

When hours indicated on the hour meter or operating intervals reach the hours or the intervals shown in the following chart, perform relevant inspection and maintenance. If the machine is used in harder-than-usual working conditions, check and maintain the machine at shorter intervals.

No.	Check points		Measures	Hour meter indicator						Interval	Ref. page		
				50	250	500	1000	1500	2000				3000
1	Coolant		Check	Daily check						(Every 10 hrs)	184		
			Change							Every 2 years	213		
2	Fuel		Check	Daily check						(Every 10 hrs)	185		
3	DEF (AdBlue)		Check	Daily check						(Every 10 hrs)	185		
4	Engine oil		Check	Daily check						(Every 10 hrs)	187		
			Change		○	○	○	○	○	○	Every 1 year or 250 hrs	198	
5	Hydraulic oil		Check	Daily check						(Every 10 hrs)	188		
			Change				○		○	○	Every 1000 hrs	208	*1
6	Greasing		Grease	Daily check						(Every 10 hrs)	188		
7	Radiator and oil cooler		Check	Daily check						(Every 10 hrs)	189		
8	Engine and electrical wiring		Check	Daily check						(Every 10 hrs)	189		
9	Fan belt tension		Check	Daily check						(Every 10 hrs)	189		
			Adjust		○	○	○	○	○	○	Every 250 hrs	200	
10	Water separator		Drain	Daily check						(Every 10 hrs)	189		
11	Evacuator valve		Check	Daily check						(Every 10 hrs)	190		
			Clean	○	○	○	○	○	○	○	Every 50 hrs	197	
12	Pre-cleaner		Check	Daily check						(Every 10 hrs)	190		
13	DPF muffler		Check	Daily check						(Every 10 hrs)	190		
14	Washer liquid		Check	Daily check						(Every 10 hrs)	191		
15	Battery condition		Check	Daily check						(Every 10 hrs)	191		
16	Fuel tank cap		Clean	Daily check						(Every 10 hrs)	192		
17	Fuel tank		Drain	○	○	○	○	○	○	○	Every 50 hrs	195	
18	Track tension		Check	○	○	○	○	○	○	○	Every 50 hrs	195	
19	Inside of arm cylinder mast		Check	○	○	○	○	○	○	○	Every 50 hrs	197	
			Clean		○	○	○	○	○	○	○	Every 250 hrs	203
20	Air cleaner ele- ment	Outer element	Clean	○	○	○	○	○	○	○	Every 50 hrs	196	*3
			Replace		○	○	○	○	○	○	○	Every 250 hrs	202
		Inner element	Replace		○	○	○	○	○	○	○	Every 250 hrs	202
21	Radiator hoses and clamps		Check		○	○	○	○	○	○	Every 250 hrs	199	
			Replace								Every 2 years or 4000 hrs	215 245	
22	Fuel line and intake air line		Check		○	○	○	○	○	○	Every 250 hrs	200	
			Replace								Every 2 years or 4000 hrs	215 245	
23	Inside of main frame		Clean		○	○	○	○	○	○	Every 250 hrs	201	
24	Intercooler		Check		○	○	○	○	○	○	Every 250 hrs	203	*4
25	Engine oil filter cartridge		Replace		○	○	○	○	○	○	Every 250 hrs	199	
26	Water separator filter element		Replace			○	○	○	○	○	Every 500 hrs	204	
27	Fuel pump filter		Clean			○	○	○	○	○	Every 500 hrs	205	
28	Fuel filter cartridge		Replace			○	○	○	○	○	Every 500 hrs	206	
29	Fuel breather pipe		Clean			○	○	○	○	○	Every 500 hrs	207	*5

(Continued)

No.	Check points	Measures	Hour meter indicator							Interval	Ref. page	
			50	250	500	1000	1500	2000	3000			
30	Travel motor gear oil	Change		⊙	○	○	○	○	○	Every 500 hrs	207	
31	Hydraulic return filter	Replace		⊙	○	○	○	○	○	Every 500 hrs	207	
32	Hydraulic breather filter of the hydraulic tank	Replace			○	○	○	○	○	Every 500 hrs	207	
33	Hydraulic oil filter	Replace	⊙		○	○	○	○	○	Every 500 hrs	208	
34	Front window roller	Clean			○	○	○	○	○	Every 500 hrs	208	*6
		Replace				○		○	○	Every 1000 hrs	210	*6
35	Hydraulic suction filter	Replace				○		○	○	Every 1000 hrs	208	
36	Engine valve clearance	Adjust				○		○	○	Every 1000 hrs	210	*6
37	Injector tip	Check					○		○	Every 1500 hrs	210	*6
38	CCV Filter	Replace					○		○	Every 1500 hrs	210	
39	PCV valve	Check					○		○	Every 1500 hrs	210	
40	EGR cooler	Check					○		○	Every 1500 hrs	210	*6
41	DEF (AdBlue) injector tip	Check					○		○	Every 1500 hrs	210	
42	DEF (AdBlue) hoses	Check					○		○	Every 1500 hrs	210	
43	Alternator and starter motor	Check						○		Every 2000 hrs	211	
44	EGR system	Check							○	Every 3000 hrs	211	*6
44	Turbo charger	Check							○	Every 3000 hrs	211	*6
45	DPF	Clean								Every 3000 to 6000 hrs	211	*6
46	DEF (AdBlue) pump filter	Replace							○	Every 3000 hrs	211	
47	DEF (AdBlue) injector	Check							○	Every 3000 hrs	211	
48	DEF (AdBlue) tank filter	Replace								Every 8000 hrs	211	
49	DEF (AdBlue) quality	Check								Every 3 months	212	
50	Exhaust manifold (crack, gas, leakage and mounting screw)	Check								Every 1 year	212	*6
51	Intake air line for air leaks	Check								Every 1 year	212	*6
52	Boost sensor	Check								Every 1 year	212	*6
53	Condition of DPF muffler	Check								Every 1 year	212	*6
55	DPF differential pressure sensor and piping for gas leak	Check								Every 1 year	212	*6
56	DPF exhaust gas temperature sensor	Check								Every 1 year	213	*6
57	EGR and piping for gas leak	Check								Every 1 year	213	*6
58	Antifrost heater for oil separator (CCV heater)	Check								Every 1 year	213	*6
59	CCV internal pressure switch	Check								Every 1 year	213	*6
60	Relief valve	Check								Every 1 year	213	*6
61	Hydraulic hoses	Replace								Every 2 years or 4000 hrs	216 245	*6
62	Radiator system	Rinse								Every 2 years	213	
63	Coolant rubber piping	Replace								Every 2 years	214	*6
64	CCV rubber piping	Replace								Every 2 years or 4000 hrs	216 245	*6
65	DPF differential pressure sensor rubber piping (Front and back)	Replace								Every 2 years or 4000 hrs	216 245	*6
66	Suction pipe downstream the AFS (air flow sensor)	Replace								Every 2 years or 4000 hrs	216 245	*6
67	Suction hoses upstream and downstream the turbocharger	Replace								Every 2 years or 4000 hrs	216 245	*6

(Continued)

MAINTENANCE

No.	Check points	Measures	Hour meter indicator							Interval	Ref. page	
			50	250	500	1000	1500	2000	3000			
68	Boost sensor pressure rubber piping	Replace								Every 2 years or 4000 hrs	216 245	*6
69	EGR cooler hose	Replace								Every 2 years	214	*6
70	Plastic parts and synthetic leather	Clean								Service as required	217	

IMPORTANT :

- Perform the job indicated by **○** at the first operation.
- When using biodiesel, check the maintenance requirements of biodiesel fuel as the intervals will change in some of the items.

- *1 When using a hydraulic hammer, change hydraulic oil and return filter. See Changing the hydraulic oil including replacing the suction filter and the return filter in the hydraulic tank on page 208.
- *2 Check inside of arm cylinder mast more frequently if used in dusty or muddy conditions. When the mast is filled with dust or mud up to arm cylinder boss, clean inside the mast.
- *3 Clean and replace the air cleaner element more frequently if used under dusty conditions. When the filter is very dirty from dusty conditions, replace the filter.
- *4 Check the top surface of the intercooler more frequently under dusty conditions. If the top surface of the intercooler is clogged, clean it.
- *5 Clean more frequently if used under dusty conditions.
- *6 Contact your local Kubota dealer for this service.

Air-conditioner

No.	Check points	Measures	Hour meter indicator							Interval	Ref. page	
			50	250	500	1000	1500	2000	3000			
1	Air-conditioner belt tension	Check	Daily check							(Every 10 hrs)	193	
		Adjust		○	○	○	○	○	○	Every 250 hrs	201	
2	Air filter	Check	Daily check							(Every 10 hrs)	193	*1
		Replace			○	○	○	○	○	Every 500 hrs	-	*1
3	Air-conditioner condenser	Check		○	○	○	○	○	○	Every 250 hrs	202	
4	Air-conditioner drain	Check			○	○	○	○	○	Every 500 hrs	208	
5	Air-conditioner pipes and hose	Check								Every 1 year	212	
		Replace								Every 2 years	214	
6	Refrigerant (gas)	Check								Service as required	216	

- *1 Check and replace the air filter more frequently if used under dusty conditions. When the filter is very dirty from dusty conditions, replace the filter.

OPENING AND CLOSING OF COMPONENTS

1. Opening and closing the rear door

CAUTION

To avoid personal injury:

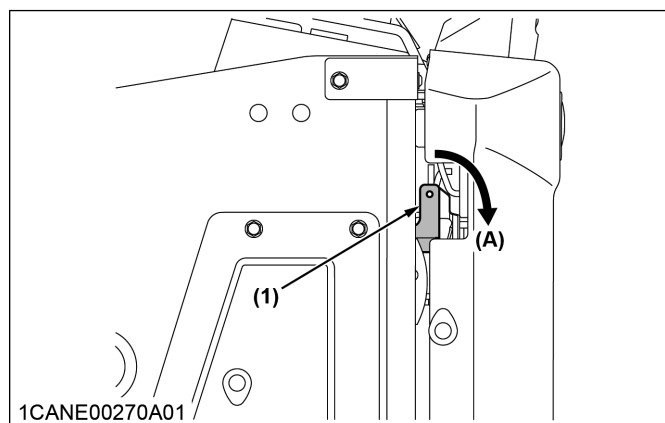
- When opening the rear door, open it firmly to the locked position.
- When opening and closing the rear door, be careful not to get your hands or other parts of your body caught.

Opening

1. Pull the lever and open the rear door.
2. Insert the pin into the locked position to fix the rear door.

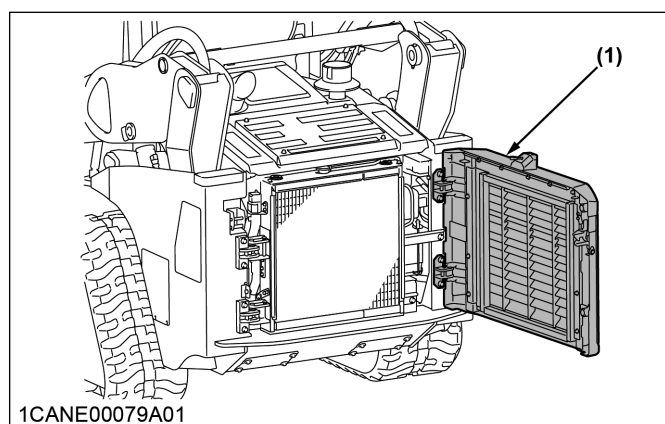
Closing

1. Close the engine hood before closing the rear door.
2. Support the rear door by hand, remove the pin from the locked position, and insert it into original position.
3. Close the rear door firmly until the lever is fully returned.

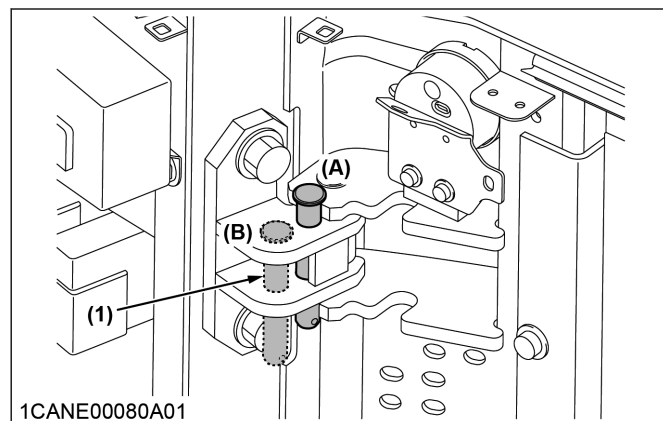


(1) Lever

(A) Pull



(1) Rear door



(1) Pin

(A) Locked position

(B) Original position

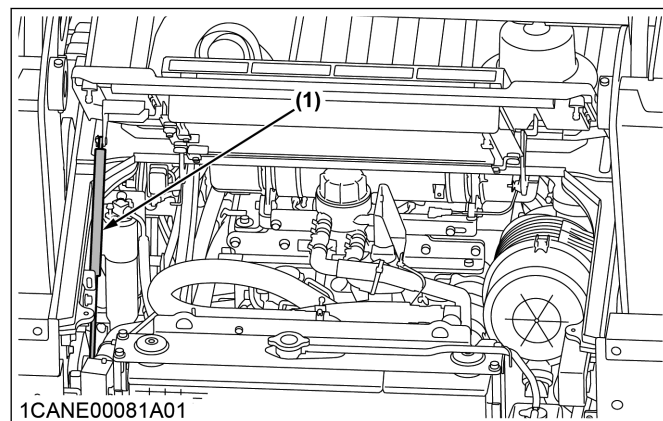
2. Opening the engine hood

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.
- When opening and closing the engine hood, be careful not to get your hands pinched or other parts of your body caught.

1. Hold up the engine hood and fix it with the stay rod.



(1) Stay rod

3. Opening the radiator and the oil cooler

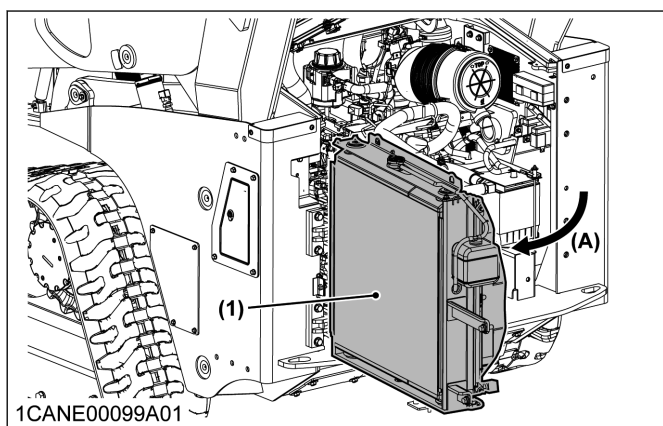
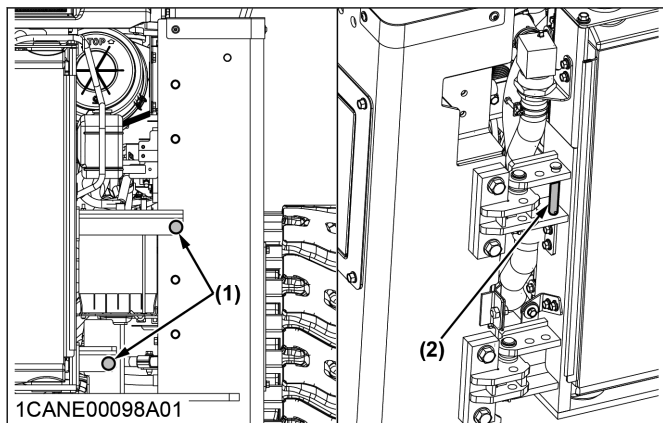
WARNING

To avoid personal injury or death:

- Always stop the engine before opening the radiator and the oil cooler.

- Wear the eye protection when cleaning with compressed air.
- Allow the engine and radiator to cool down completely before attempting maintenance on the radiator or oil cooler. A hot radiator can cause severe burns and/or injury.

1. Remove the 2 bolts and detach the stopper pin.

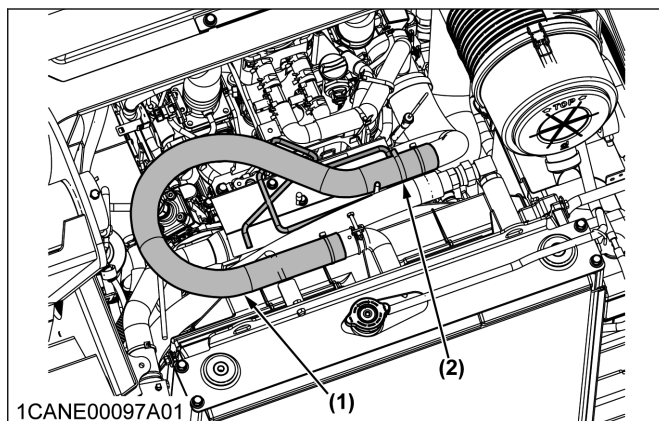


- (1) Bolts
(2) Stopper pin
(3) Radiator and oil cooler

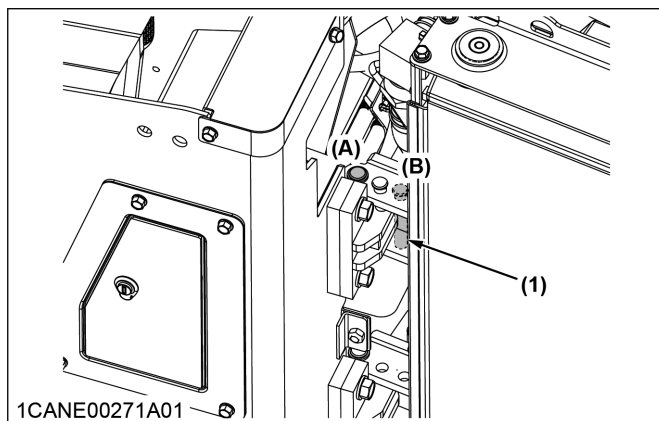
2. Open the radiator and oil cooler.

IMPORTANT :

- Before positioning the radiator and oil cooler back in place, secure the radiator hose to the stay so that the hose does not get caught between the shroud and the engine, or does not make contact with the fan.

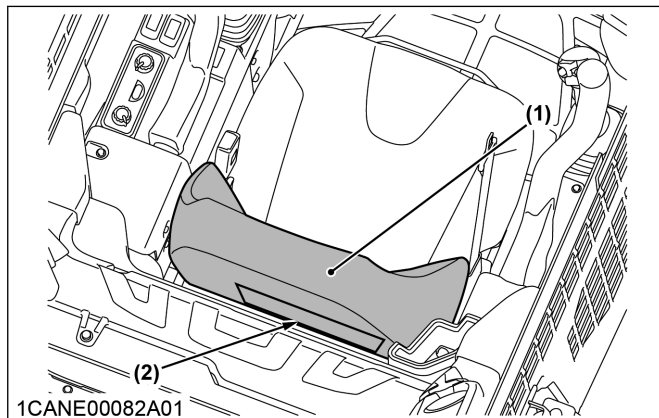


3. Place the stopper pin to prevent your body from caught.



4. Where to keep the operator's manual

Keep the operator's manual at the back of the operator's seat.



5. Tilting up the cab

WARNING

To avoid personal injury or death:

- Raising or lowering the cab while the engine is running may cause the machine to move, and cause personal injury or death. Place the machine on a firm, flat and level surface, lower the lift arms slowly to the ground and stop the engine before raising the cab.
- When tilting up the cab, use the stopper lock. Do not release the stopper lock suddenly.
- Do not enter beneath the cab, while raising or lowering the cab.
- More than one person may be needed to tilt the cab.
- Do not tilt up the cab at temperatures below -30 °C.
- Be careful not to pinch your hands between the cab and the frame while raising and lowering the cab.
- When tilting up the cab, do not allow any persons to get into the cab. The stopper may be damaged.
- When lowering the cab, tighten the lock bolts to the correct tightening torque.

IMPORTANT :

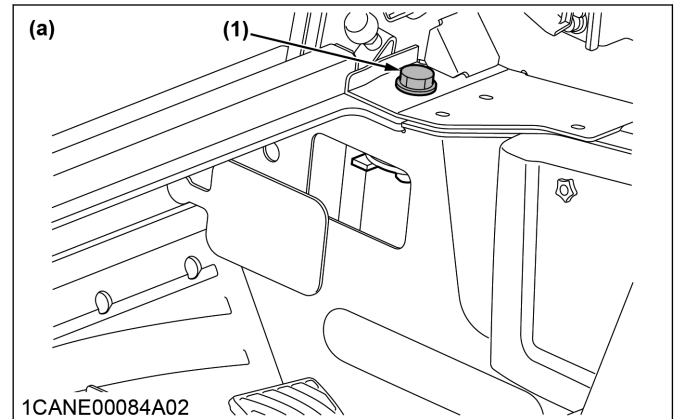
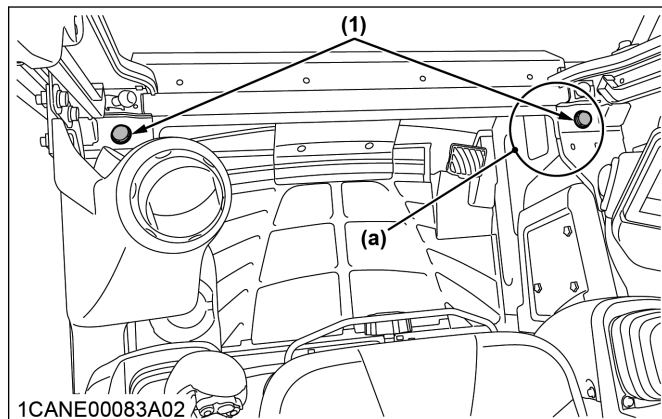
- If the cab is lowered without releasing the latching mechanism, the cab damper may bend.

For inspection and maintenance, the cab is designed so that you can tilt up it.

Raising (Tilt up)

Select a firm, level surface, lower the lift arms fully to the ground, and stop the engine.

1. Clean the cab tilt fulcrums before tilting the cab.
2. Set the armrest to the raised position.
3. Remove the lock bolts from the front of the machine.

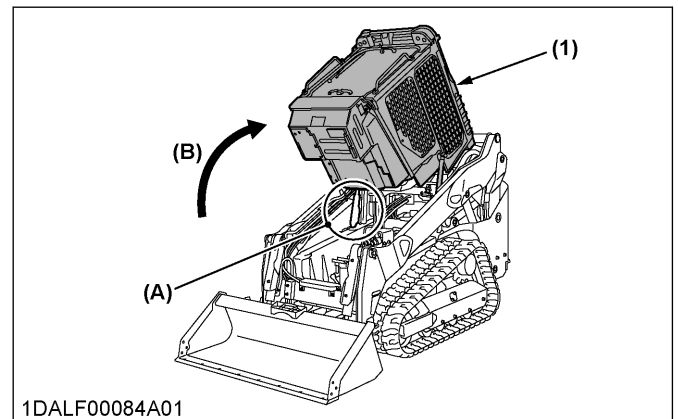


(1) Lock bolt

4. Stand on the ground when tilting the cab up. Slowly raise the cab until the stopper is engaged.

NOTE :

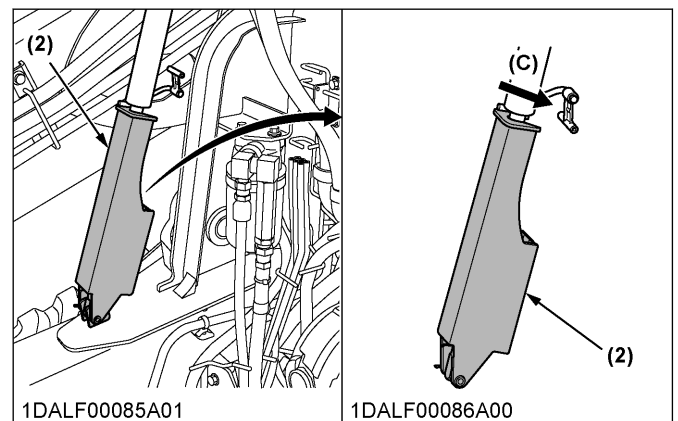
- The required force to lift the cab is affected by the temperature.



(1) Cab

(A) Fig [A]
(B) Raise

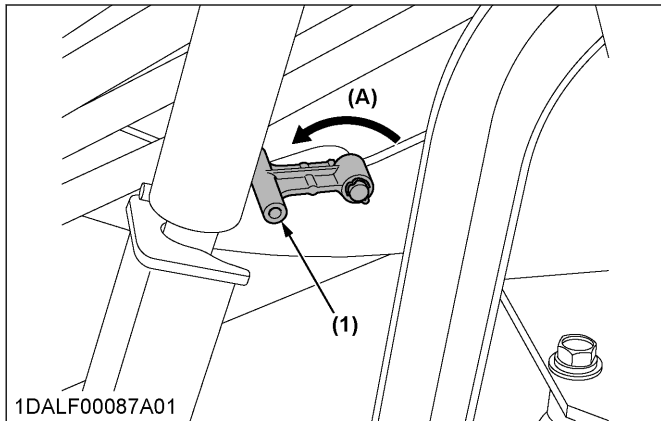
Fig [A]



(2) Stopper

(C) Engage

5. Set the stopper lock to the locked position.

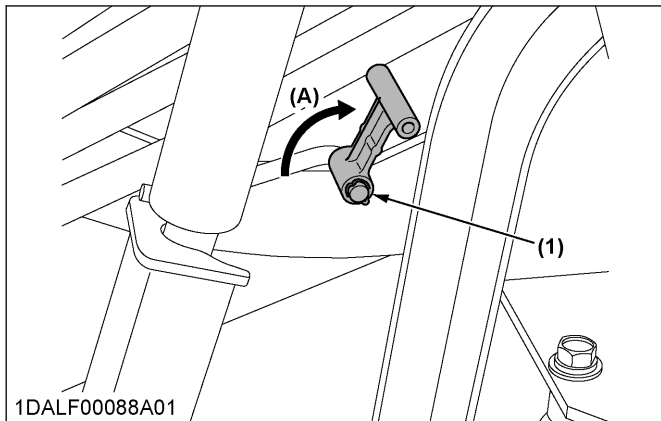


(1) Stopper lock

(A) Locked position

Lowering (Tilt down)

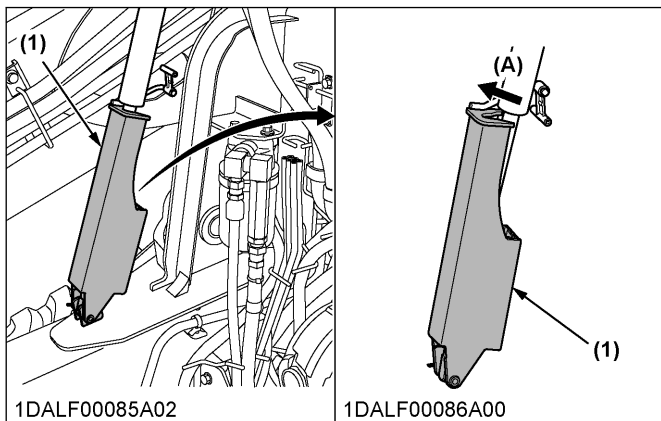
1. Set the stopper lock to the release position.



(1) Stopper lock

(A) Release

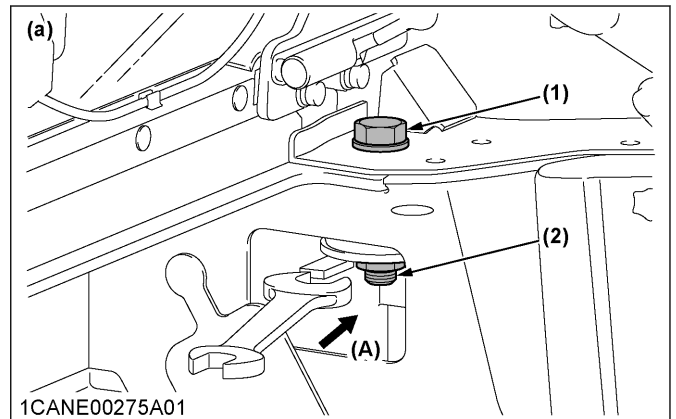
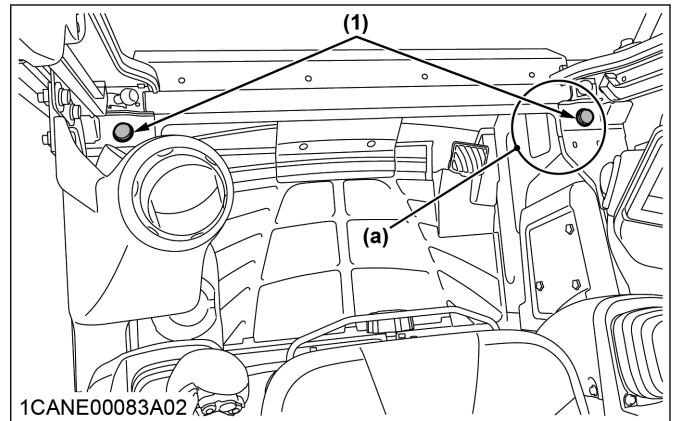
2. Support the cab and release the latching mechanism.



(1) Stopper

(A) Release

3. Stand on the ground when tilting the cab. Lower the cab slowly all the way down.
4. Tighten the lock bolts for the ROPS while holding the nut.



(1) Lock bolt

(2) Nut

(A) Hold

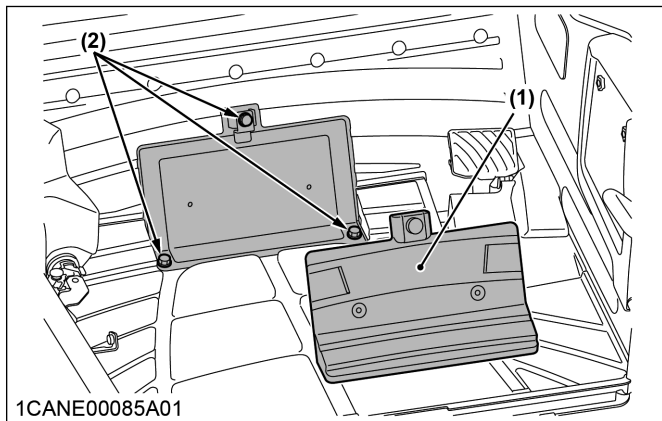
Tightening torque

77.5 N·m to 90.2 N·m

DISCHARGING MUD FROM OPERATOR CAB AND MAIN FRAME

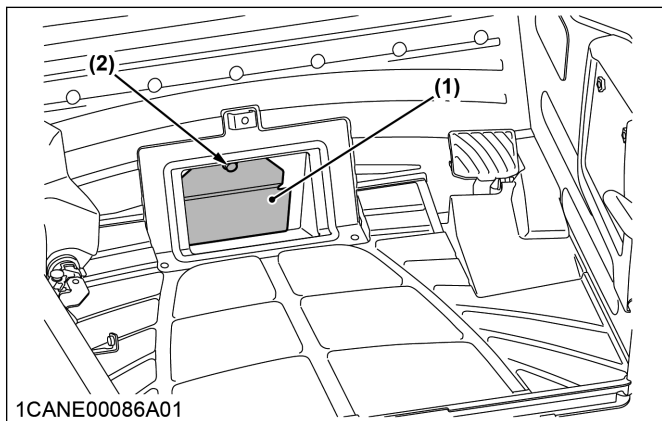
1. Discharging mud from the operator cab

1. With removing the bolts, remove the floor outlets.



(1) Floor outlet

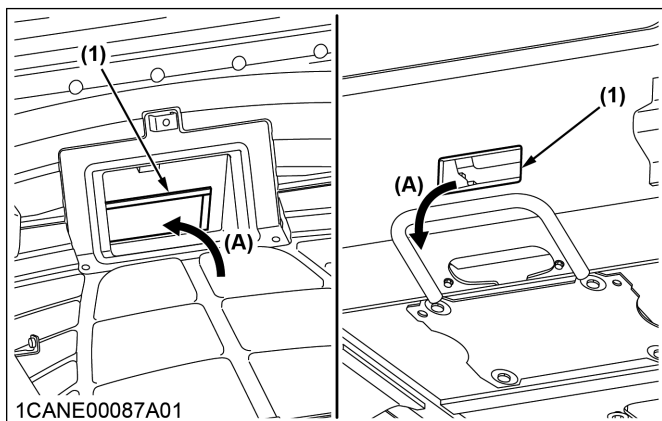
(2) Bolts



(1) Floor outlet

(2) Bolt

2. Discharge mud on the floor through the hole.

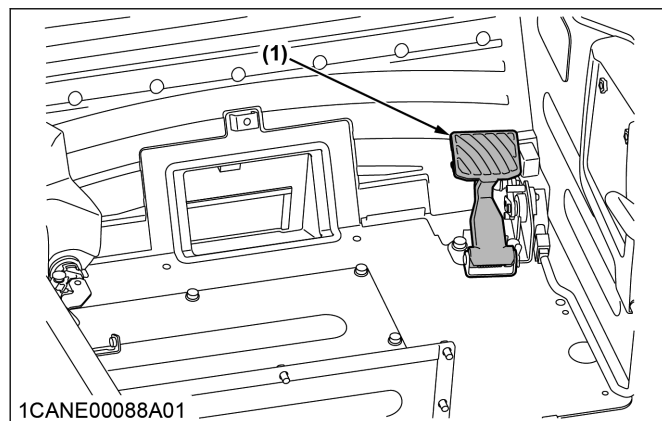


(1) Hole

(A) Discharge

NOTE :

- If the engine speed does not increase to the maximum even with depressing the accelerator pedal fully, mud may accumulate under the pedal. In this case, remove the mat and discharge the mud from under the pedal.



(1) Accelerator pedal

2. Discharging mud from the main frame



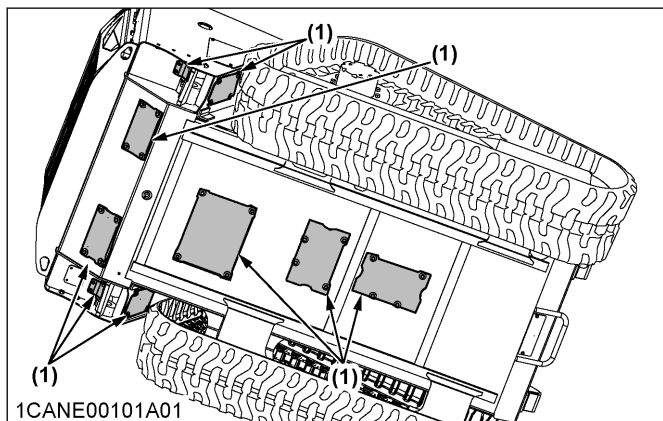
WARNING

To avoid personal injury or death:

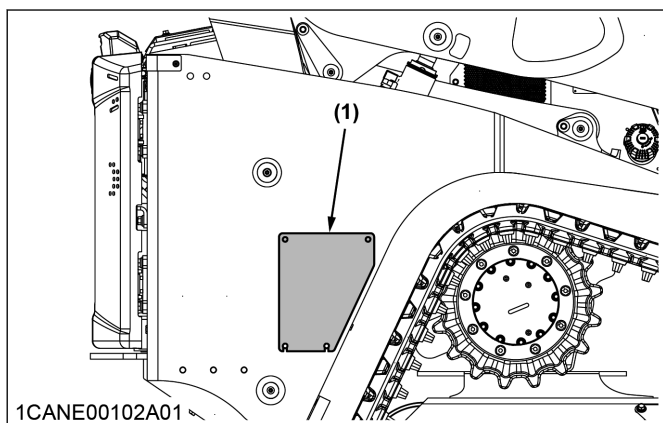
- Before entering underneath the machine, stop the engine, check your surroundings, and ensure its safety.
- The plate on the bottom of the main frame may get heavy with accumulated mud. In case plate of the bottom of the main frame suddenly falls, do not get under the plate and remove with much care.

1. Tilt the cab.
2. Open the rear door.
3. Open the radiator.

4. Open the plates on the bottom and side of the main frame.

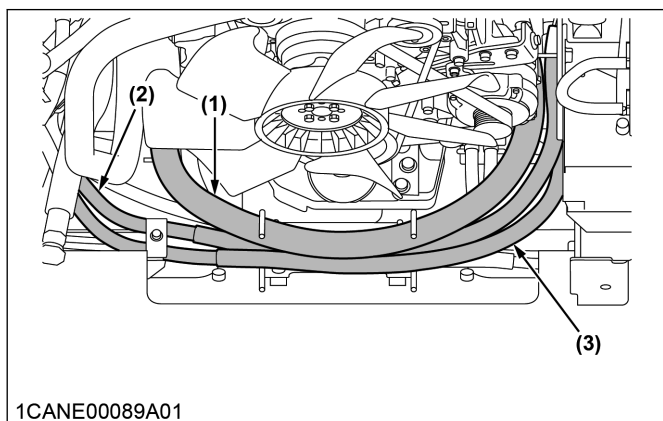


(1) Bottom plates



(1) Side plate

5. Discharge mud on the main frame to the hole.
6. Return the hoses at rear frame as illustrated below.



(1) Oil drain hose
(2) Hydraulic hose (arm cylinder rod (LH))
(3) Hydraulic hose (arm cylinder bottom (LH))

NOTE :

- Make sure that the hoses do not appear above the bumper surface.

DAILY CHECKS

For your own safety and to assure the long life of your machine, carry out a careful check before each operation.

1. Daily check items before starting the machine

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



WARNING

To avoid personal injury or death:

- Perform the maintenance work on the machine only on level ground with the engine off and the armrest in the raised position.

Checks

- Go around the machine and check for visual damage and wear.
- Check the coolant level.
(See Checking the coolant level on page 184)
- Check the fuel level.
- Check the DEF (AdBlue) level
- Check the engine oil level.
- Check the hydraulic fluid level.
- Check all control lamps, indicators, and the hour meter.
- Check the light system.
- Check the seat belt and the ROPS and FOPS safety device.
- Check the diesel-particulate-filter (DPF) muffler.
- Check the condition of the safety labels.
(See Care for safety labels on page 26)
- Check around moving parts such as quick hitch, bucket cylinder, arm cylinder for sand, mud, or debris accumulation. Remove them as required.

2. Checking the coolant level

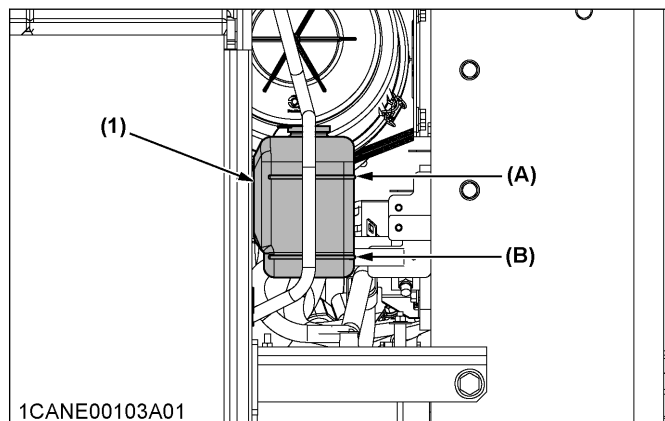


WARNING

To avoid personal injury or death:

- Place the machine on a firm, flat, and level surface, lower the lift arms slowly to the ground, and stop the engine.
- Do not open the radiator cap right after the engine has been stopped. Serious burns can occur from contact with escaping hot coolant fluid.
- Check the coolant level in the coolant-recovery tank only after the engine has cooled down.
- Remove the radiator cap only if absolutely necessary.

1. Check to see that the coolant level is between the **[FULL]** and **[LOW]** marks of coolant-recovery tank. When the coolant level drops due to evaporation, add water only up to the full level. In case of leakage, add antifreeze and water in the specified mixing ratio up to the full level.



(1) Coolant recovery tank

(A) FULL
(B) LOW

IMPORTANT :

- Do not fill the coolant-recovery tank over the **[FULL]** marking.
- Do not fill with dirty or salty water.

3. Checking the fuel level

WARNING

To avoid personal injury or death:

- Stop the engine before fueling.
- Do not smoke while fueling.
- Tighten the fuel cap after refueling.

IMPORTANT :

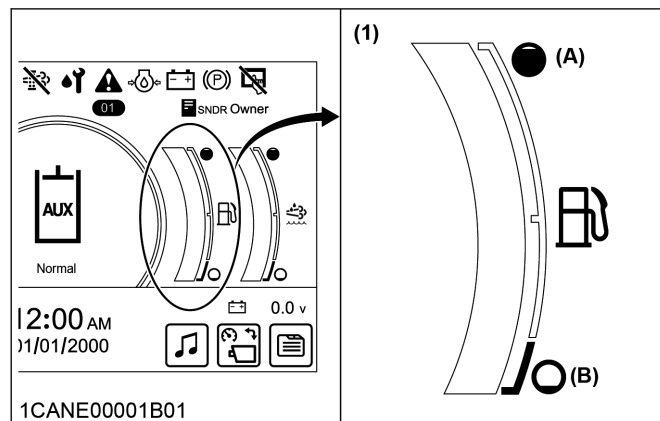
- According to the temperatures, use the proper diesel fuel as follows.

Temperatures	Diesel fuel
Over -5 °C	No.2-D diesel fuel
Under -5 °C	No.1-D diesel fuel

- Make sure that the fuel tank will not run empty. Air will enter the fuel system, and must be purged before restarting engine.
- Be very attentive to the remaining fuel for the engine not to stall. If the engine stalls, it may not restart for some time to protect the emission purifying device.
- See Purging of the fuel system on page 217.
- To prevent condensation (water) accumulations in the fuel tank, fill the fuel tank full before parking overnight.

- The DEF (AdBlue) tank cap is blue and the fuel tank cap is green. Do not add DEF (AdBlue) to the fuel tank. Also, do not add diesel fuel to the DEF (AdBlue) tank.

1. Check the fuel level by the fuel gauge indicator.



(1) Fuel gauge indicator

(A) Full
(B) Empty

2. If necessary, open the fuel tank cap and fill the fuel. (See Fuel gauge indicator on page 35)

Fuel tank capacity	115.7 L
--------------------	---------

4. Checking the DEF (AdBlue) level and adding the fluid

WARNING

To avoid personal injury or death:

- Before adding DEF (AdBlue), stop the engine.

CAUTION

To avoid personal injury, note the following when handling DEF (AdBlue):

- If DEF (AdBlue) gets into your eyes, immediately rinse your eyes with a large amount of water for at least 15 minutes and consult a doctor.
- Do not swallow DEF (AdBlue). If you have accidentally swallowed DEF (AdBlue), seek medical attention immediately.
- If DEF (AdBlue) gets on your skin, rinse immediately with water. In rare cases, DEF (AdBlue) may irritate the skin.
- If DEF (AdBlue) gets on your clothes or shoes, wash it off immediately. Simply wiping off or leaving DEF (AdBlue) on clothes or shoes will leave a white residue.

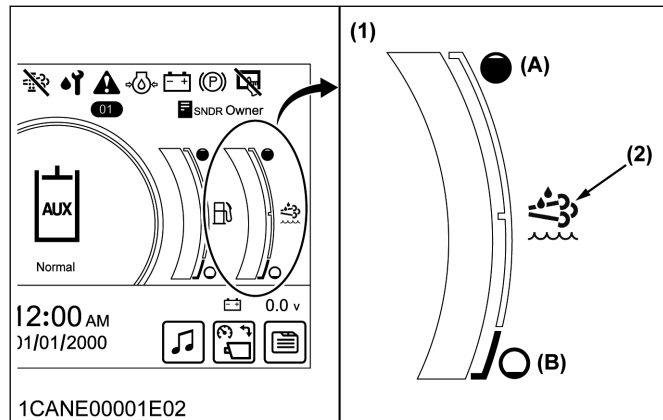
For more details, obtain and read the Safety Data Sheet (SDS) from the DEF (AdBlue) supplier.

Before starting the operation, check the DEF (AdBlue) level in the DEF (AdBlue) tank. The remaining amount

of DEF (AdBlue) is shown on the DEF (AdBlue) gauge indicator on the instrument panel.

If the DEF (AdBlue) runs low, the low DEF (AdBlue) warning indicator will blink. If you continue running the machine in its current state, the engine output will be limited by about 50 %. If operation is continued, the engine will be limited to idling.

Purchasing DEF (AdBlue) from a KUBOTA Dealer is recommended. The product is also available at gas stations, truck stops and specialty shops. Use an ISO 22241 compliant product. Using noncompliant products may lead to engine failure.



- (1) DEF gauge indicator (A) Full
(2) Low DEF (AdBlue) warning indicator (B) Empty

4. Replenish the tank with DEF (AdBlue) to its specified level.
(See DEF (AdBlue) gauge indicator on page 134)
5. Screw the tank cap to tighten it up to the DEF (AdBlue) tank.

- Before adding DEF (AdBlue) to the DEF (AdBlue) tank, clean the area around the nozzle and supply port to prevent foreign matter such as soil and dust from entering.
- In order to maintain the performance of the SCR system, it is recommended to refill the DEF (AdBlue) tank with DEF (AdBlue) each time the fuel tank is refueled.
- After stopping the engine, the SCR system continues to operate for up to about 25 minutes. Do not add DEF (AdBlue) before the SCR system stops. Otherwise, DEF (AdBlue) may overflow from the breather hose of the DEF (AdBlue) tank.
- If DEF (AdBlue) is stored in a reusable container, periodically clean and refill it. If the container is dirty, wash with distilled water. If distilled water is not available for washing the container, rinse with clean water first, then rinse again with DEF (AdBlue) before refilling.

4.1 Adding DEF (AdBlue) in the DEF (AdBlue) tank

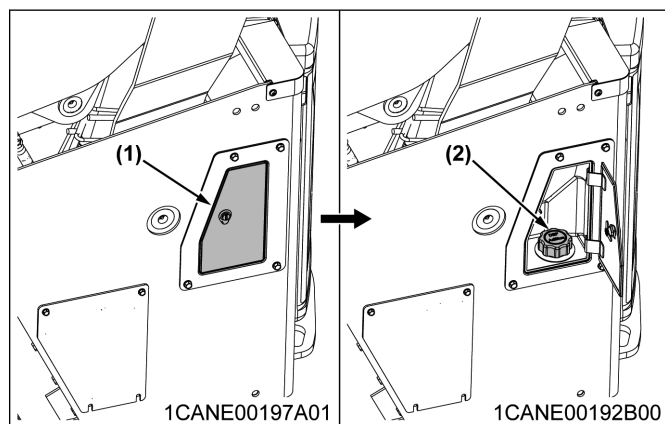
1. Stop the engine.
2. Open the cover, slightly remove the DEF (AdBlue) tank cap and wipe clean the cap and filler port to remove dust and mud. (The cap is colored in blue.)
3. Slowly remove the tank cap to fully open it.

6. Make sure the tank cap is tight, and close the cover.

DEF (AdBlue) tank capacity	12.7 L
----------------------------	--------

IMPORTANT :

- The DEF (AdBlue) tank cap is blue and the fuel tank cap is green. Do not add DEF (AdBlue) to the fuel tank. Also, do not add diesel fuel to the DEF (AdBlue) tank.
- If anything other than DEF (AdBlue) is mixed into the DEF (AdBlue) tank and the engine is started, the SCR system may fail. Do not start the engine if the DEF (AdBlue) is contaminated with diesel fuel. Contact your KUBOTA Dealer immediately.
- The warranty does not cover failures caused by adding or mixing anything other than DEF (AdBlue) into the DEF (AdBlue) tank. If that occurs, all repair costs will be the customer's responsibility.



(1) Cover

(2) DEF (AdBlue) tank cap (Blue tank cap)

- If contamination such as above has occurred, inspection of the SCR system by your local dealer is necessary. Repair or overhaul as needed.
- When removing the DEF (AdBlue) tank cap, be careful not to allow mud or any debris into the DEF (AdBlue) tank. Otherwise, the DEF (AdBlue) filter may become clogged or the DEF (AdBlue) quality degraded, possibly resulting in a SCR system failure.
- Do not stand on or place anything on the DEF (AdBlue) tank as the tank, piping and sensor damage may result.
- Do not tamper with the exhaust pipe and muffler. Do not relocate the DEF (AdBlue) tank, either. Such action may adversely affect the exhaust gas purifying performance.
- When DEF (AdBlue) stuck on the filler port has dried up, white powder may be found. This is nothing unusual. Wipe it off carefully

so as not to allow it into the DEF (AdBlue) tank.

5. Checking the engine oil level

WARNING

To avoid personal injury or death:

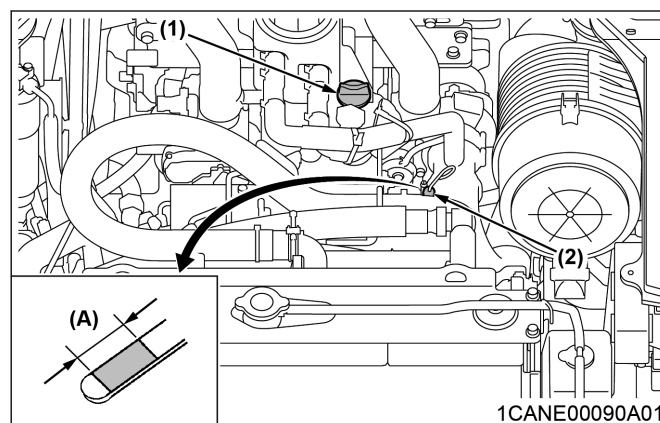
- Stop the engine before checking the oil level.

IMPORTANT :

- Use the engine oil with the correct viscosity according to the outside temperature.
- After stopping the engine, wait 5 minutes, then check the oil level. Park the machine on level ground.
- A small amount of fuel that is used for the DPF-regeneration may get mixed with the engine oil, which can increase the oil level slightly.
- Do not repeat or interrupt the DPF-regeneration process unnecessarily. Repetition and interruption of the process may 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 that the oil has been diluted too much. In such case, immediately change the oil for new one.

To check the oil level, follow the following procedure.

1. Draw out the dipstick.
2. Wipe the dipstick clean.
3. Replace the dipstick.
4. Draw the dipstick out again.
5. Check to see that the oil level lies between the 2 notches.
6. If the level is too low, add new oil to the prescribed level at the oil filling port.



(1) Oil filling port

(2) Engine oil dipstick

(A) Required oil level range

6. Checking the hydraulic oil level

**WARNING**
To avoid personal injury or death:

- Stop the engine before checking the oil level.

IMPORTANT :

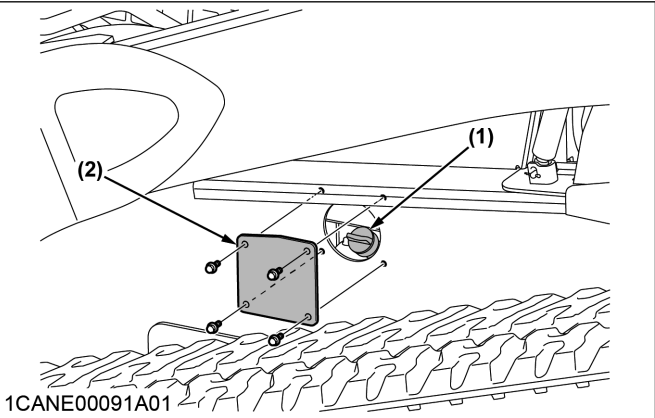
- Before filling oil, wipe away all sand and dust from around the oil port. Make sure to use an identical type of hydraulic fluid.
- The machine has been filled with hydraulic fluid before delivery.
(See **RECOMMENDED OILS, GREASES, AND FUELS** on page 247)
Do not mix different oils.

1. Park the machine on a firm, flat, and level surface.
2. Lower the lift arms slowly to the ground.
3. Tilt down the attachments.
4. Check the oil level by the hydraulic oil gauge indicator at normal temperature.

Normal temperature	10 °C to 30 °C
--------------------	----------------



(1) Oil level gauge indicator (A) Full (B) Empty



(1) Hydraulic tank cap (2) Cover

When the oil level gauge indicator reads full, the oil is sufficient.

5. If the oil level gauge indicator does not read full, fill up with oil through the oil port before working on the machine.

IMPORTANT :

- If the oil level is too low, it may cause damage to the hydraulic system.

7. Lubrication points of the machine

**WARNING**
To avoid personal injury or death:

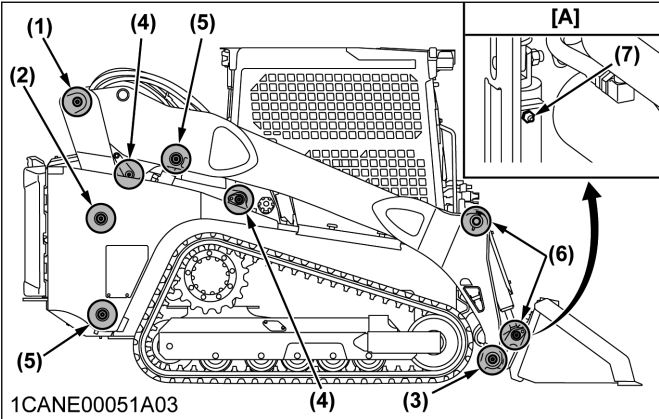
- First lower all attachments on the ground, and then stop the engine.

IMPORTANT :

- When using the loader in water, generously grease the following points. After ending work with the loader, grease again.

Grease the marked grease fittings (both sides) shown by arrows in the following illustration.

Lubrication points



[A] Quick-hitch model

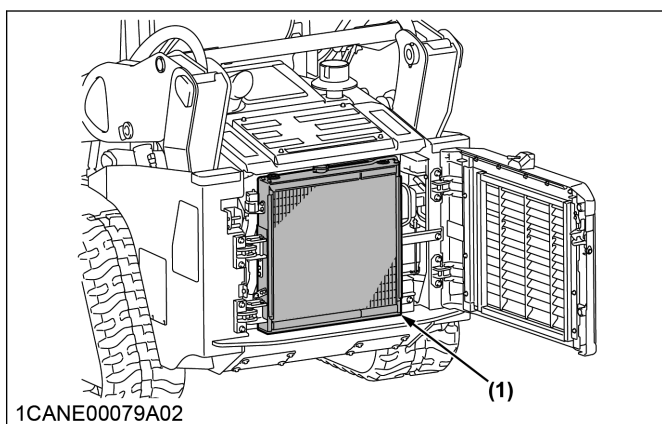
(1)	Lift arm linkage	1 place
(2)	Link 1	1 place
(3)	Bucket link pin	1 place
(4)	Control link	2 places
(5)	Lift arm cylinder boss	2 places
(6)	Tilt cylinder boss	2 places
(7)	Quick-hitch pin	1 place

8. Checking the radiator and the oil cooler

**WARNING**
To avoid personal injury or death:

- Always stop the engine before checking the radiator and the oil cooler.
- Wear eye protection when cleaning the radiator and the oil cooler with compressed air.
- Allow the engine and radiator to cool down completely before attempting maintenance on the radiator or oil cooler. A hot radiator can cause severe burns and injury.

- Check if the fins and ribs of the radiator and oil cooler are clogged. If the fins and ribs of the radiator and oil cooler are clogged, clean them with compressed air or steam.
- Check the rubber hoses for damage and replace them if they are cracked or old. Check if the hose clamps are tight enough.



(1) Radiator and oil cooler

IMPORTANT :

- Keep the fins and ribs of the radiator and oil cooler clean in order not to overheat the engine and not to allow free flow of air through the cooling elements.
- Keep the pressure of compressed air under the following values.

Pressure of compressed air	205 kPa (2.1 kgf/cm ²)
----------------------------	---------------------------------------

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

9. Checking and cleaning the engine and the electrical wiring



WARNING

To avoid personal injury or death:

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

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

10. Precautions for checking the fan belt



WARNING

To avoid personal injury or death:

- Stop the engine before checking the fan belt.

Check the fan belt for cracks and proper tension.
(See Checking and adjusting the fan belt tension on page 200)

11. Precautions for washing 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.

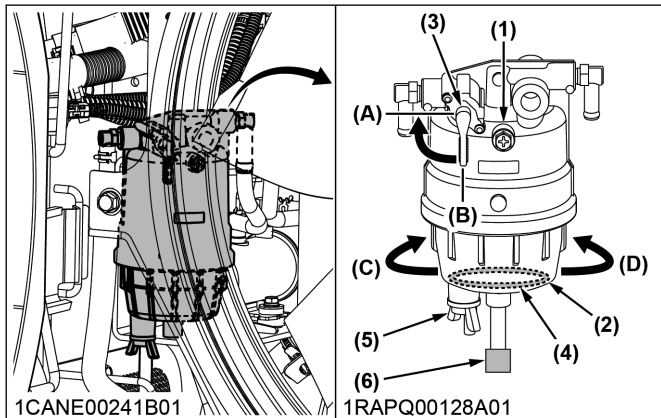
12. Draining the water separator

IMPORTANT :

- When water is collected, the red float goes up. When the float has reached the specified line, immediately drain the water separator.
- If the message “Water in fuel Drain separator” appears on the instrument panel, immediately drain the water separator.

1. Open the rear door.
2. When the separated water is entering the sediment cup, the red float moves upwards. If the float is 1 inch above the bottom, close the shutoff-valve so that no fuel can run out.
3. Place a container underneath the water separator to catch the water.
4. Then loosen the drain plug and let out water until the float drops down to the bottom.

- Finally, tighten the drain plug and turn the shutoff-valve back to its original position.



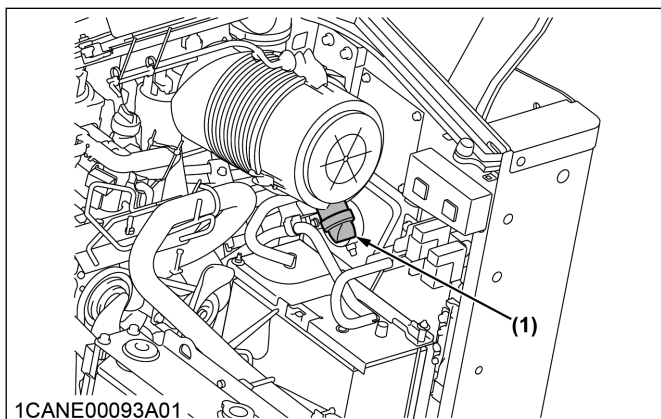
- | | |
|-------------------------------------|-------------|
| (1) Screw | (A) Close |
| (2) Cup | (B) Open |
| (3) Shutoff-valve | (C) Loosen |
| (4) Float | (D) Tighten |
| (5) Drain plug | |
| (6) Connector of water level sensor | |

IMPORTANT :

- In reattaching the water separator, be careful to keep off dust and dirt.
 - Purge the fuel system before getting the machine restarted.
- (See Purging of the fuel system on page 217)

13. Checking the evacuator valve

- Open the evacuator valve.
- Get rid of large particles of dust and dirt.



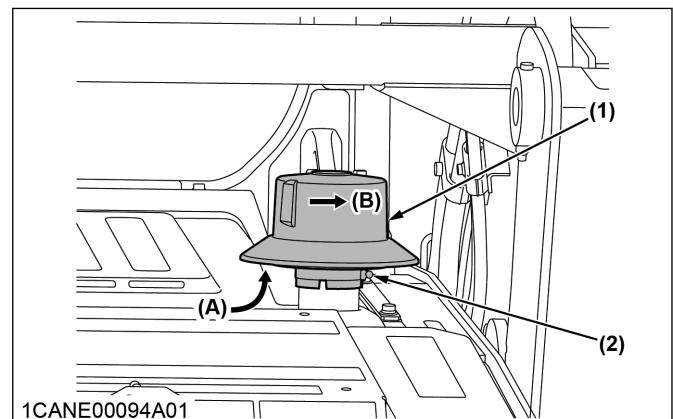
- (1) Evacuator valve

NOTE :

- If the evacuator valve is missing or damaged, the air cleaner does not function properly. Accordingly, its element's service life will get shorter.

14. Checking the pre-cleaner

- Check to see if the clamp is loose. If loose, retighten it up.
- Check the appearance of the pre-cleaner for noticeable damage or cracks. In such a case, replace the pre-cleaner with new one.
- Check to see if the pre-cleaner's suction and discharge ports are blocked with foreign matters. If so, remove such matters.
- Check around the pre-cleaner for sand, mud, dust, snow and such deposits. Remove them as required.



- | | |
|-----------------|--------------------|
| (1) Pre-cleaner | (A) Suction port |
| (2) Clamp | (B) Discharge port |

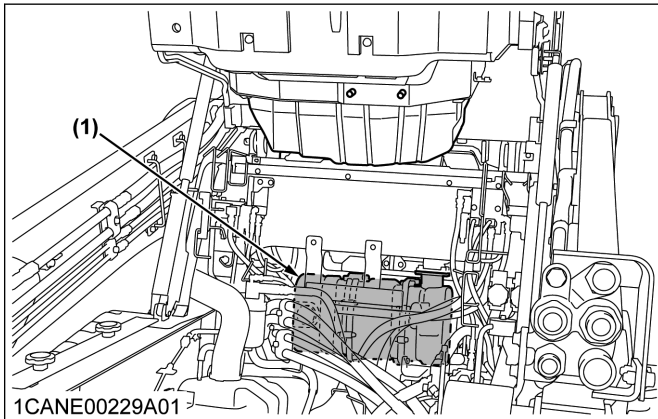
15. Checking the DPF (diesel-particulate-filter) muffler

! 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 flammable material is deposited around the DPF muffler.
If so, clean it out, otherwise a fire may result.

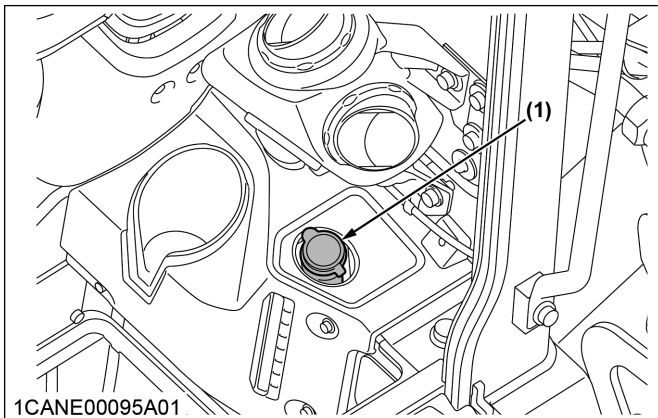


(1) DPF muffler

2. Check the insulation of the DPF. If oil adheres to the insulation of the DPF, replace the insulation.

16. Checking the washer liquid

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



(1) Washer liquid tank

IMPORTANT :

- The washer-liquid-tank should be half filled before working on a slope or a rough ground, otherwise the liquid may leak out when the machine bounces.

Half filled of the washer-liquid-tank

about 0.5 liter

17. 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 the battery may prematurely deteriorate, which may shorten the service life of the 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 electrolyte away from eyes, hands, and clothes. If you are spattered with electrolyte, wash it away completely with water immediately and get medical attention.
- Wear eye protection and rubber gloves when working around the battery.
- Before inspection or dismantling the battery, stop the engine and turn off the machine.
- When removing the battery, always disconnect the negative ground cable first. When installing a battery, always connect the ground cable last. Connecting and disconnecting the cables in proper order prevents a possible explosion caused by sparks.
- Always wear eye protection when working with the battery.

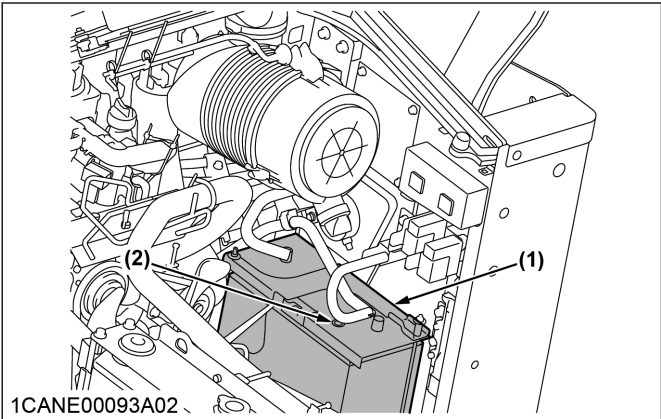
IMPORTANT :

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

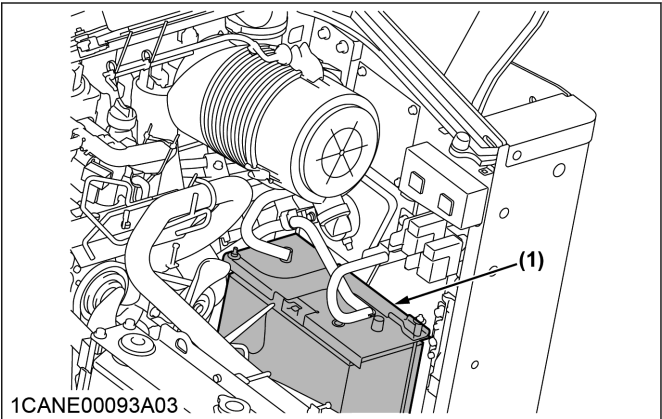
Mishandling the battery shortens the service life of it and adds to maintenance costs.

The original battery is maintenance free, but must be checked periodically.

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.



(1) Battery (2) Indicator



(1) Battery

How to read the indicator

Check the battery condition by reading the indicator.

State of indicator display	
Green	Specific gravity of electrolyte and quality of electrolyte are both in good condition.
Black	Needs charging battery.
White	Needs replacing battery.

Battery charging

! 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, ensure 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.

- To slow charge the battery, connect the battery positive terminal to the charger positive terminal and the negative to the negative, then recharge in the standard fashion.
- A boost charge is only for emergencies. The boost charge 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 may shorten the battery's service life.
- The battery is charged if the display of the indicator turns green from black.
- When exchanging an old battery for a new one, use a battery of equal specification.

Battery Type	Volts	Capacity
GP31 (105E41R)	12 V	80 AH (at 5 HR)

Battery Type	Reserve capacity	Cold cranking amps	Normal charging rate
GP31 (105E41R)	160 min	900 A	11 A

Direction for storage

- When storing the machine for long periods of time, follow the following procedure.
 1. Remove the battery from machine.
 2. Adjust the electrolyte to the proper level. Store the battery in a dry place out of direct sunlight.
- The battery self-discharges while it is stored. Recharge the battery once every 3 months in hot seasons and once every 6 months in cold seasons.

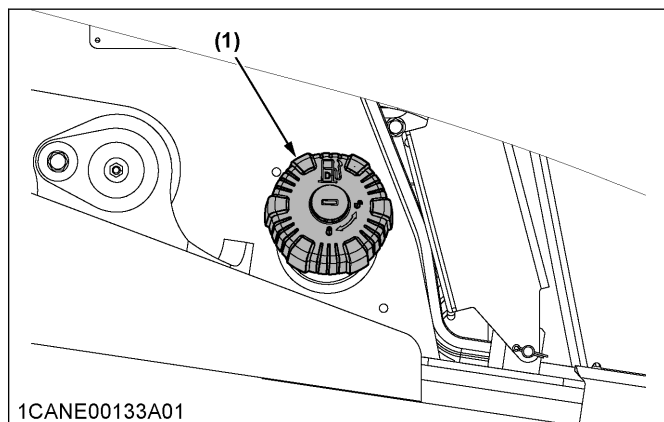
18. Cleaning the fuel tank cap

! WARNING

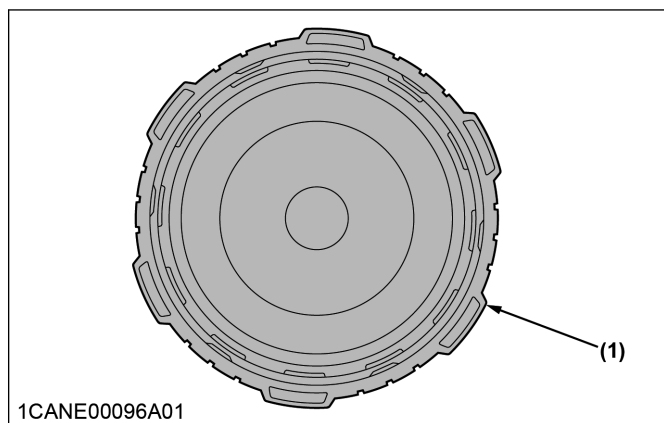
To avoid personal injury or death:

- Stop the engine before fueling.
- Do not smoke while fueling.

1. Remove the fuel tank cap.
2. Using compressed air, brush or the like, remove dust and dirt off the back of the fuel tank cap.
3. Reinstall the fuel tank cap.



(1) Fuel tank cap



(1) Fuel tank cap (Back side)

IMPORTANT :

- If dust or dirt is stuck in the fuel tank cap, the fuel tank cap possibly getting hard to rotate.
- While cleaning, be careful not to allow dust or dirt into the fuel tank.

19. Precautions for checking the air-conditioner belt

! WARNING

To avoid personal injury or death:

- Stop the engine before checking the air-conditioner belt.

Check the air-conditioner belt for cracks and proper tension.

(See Checking and adjusting the air-conditioner belt tension on page 201)

20. Checking the fresh air filter

! WARNING

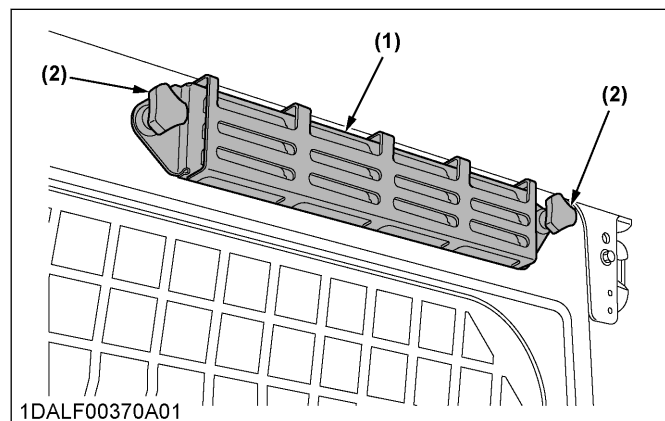
To avoid personal injury or death:

- When removing and attaching the air filter, stop the engine.

IMPORTANT :

- If the machine is used in extremely dusty areas, clean the fresh-air-filter more frequently than in the specified maintenance periods.

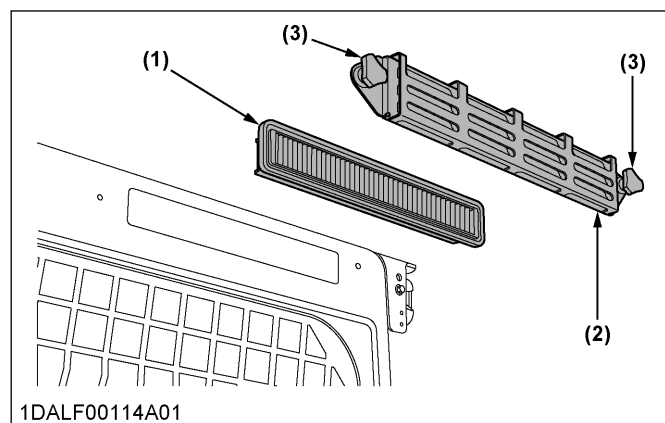
1. Remove the thumbscrews and cover, and pull out the fresh-air-filter.



(1) Cover

(2) Thumbscrew

2. Check if the fresh air filter is clogged. If so, clean them with compressed air.
3. Attach the filter and the cover as shown in the following illustration.



(1) Fresh air filter

(3) Thumbscrew

(2) Cover

20.1 Cleaning the fresh air filter

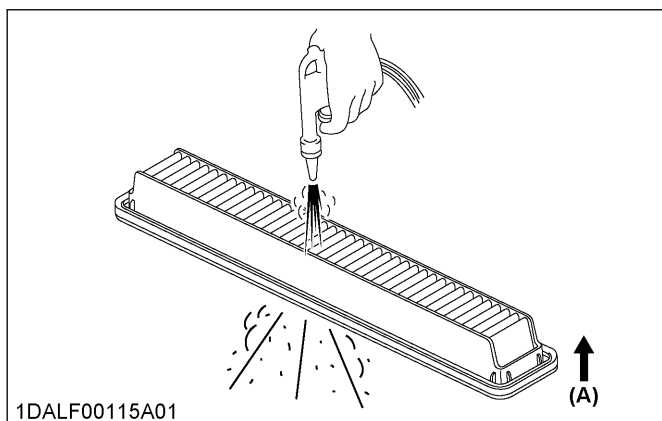
! WARNING

To avoid personal injury or death:

- Wear eye protection when cleaning the air filter with compressed air.

1. When the fresh air filter is clogged, blow air from the opposite direction to the normal air flow of the fresh air filter.
Keep the pressure of compressed air as follows.

Pressure of compressed air	Under 205 kPa (2.1 kgf/ cm ²)
----------------------------	---



(A) Airflow of air conditioner

IMPORTANT :

- Do not hit the fresh-air-filter. If the fresh-air-filter becomes deformed, dust may enter into the air-conditioner, which may cause damage and malfunction for the machine.
- Do not use gasoline, thinner, or similar chemicals to clean the fresh-air-filter because damage to it may occur.
- Using gasoline, thinner, or similar chemicals to clean the fresh-air-filter may also cause an unpleasant odor in the cab when the system is used next time.

21. Checking the recirculation air filter

! WARNING

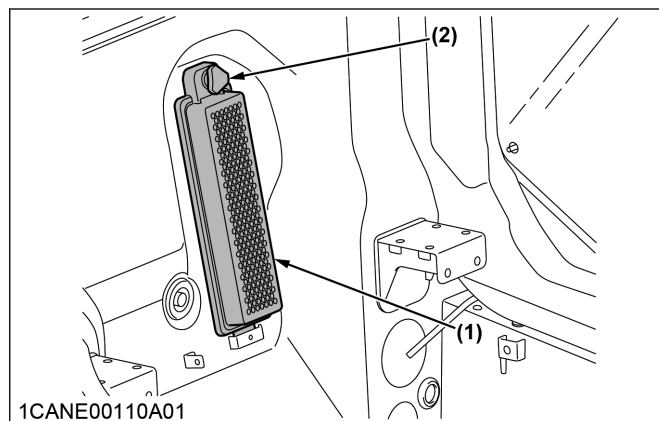
To avoid personal injury or death:

- When removing and attaching the recirculation-air-filter, stop the engine.

IMPORTANT :

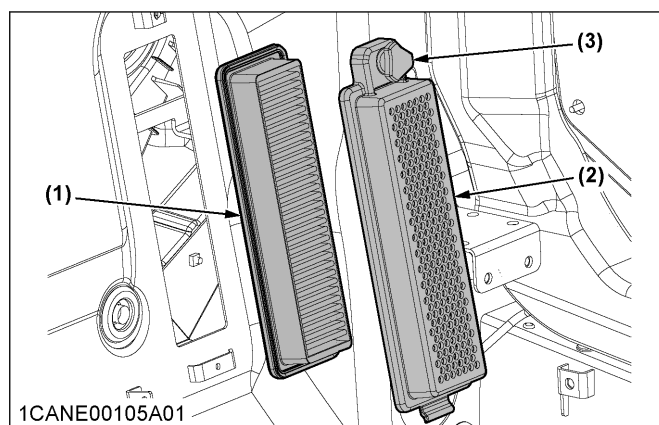
- If the machine is used in extremely dusty areas, clean the recirculation-air-filter more frequently than in the specified maintenance periods.

1. Remove the thumbscrews and pull out the recirculation-air-filter.



(1) Cover (2) Thumbscrew

2. Check if the recirculation air filter are clogged. If so, clean them with compressed air.
3. Attach the filter and the cover as shown in the following illustration.



(1) Recirculation air filter (2) Cover (3) Thumbscrew

21.1 Cleaning the recirculation air filter

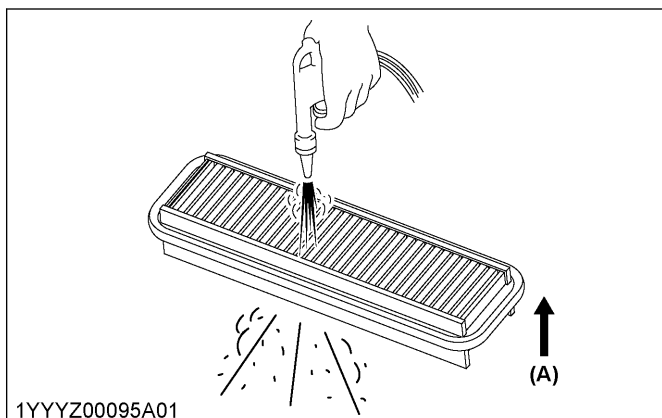
! WARNING

To avoid personal injury or death:

- Wear eye protection when cleaning the air filter with compressed air.

1. When the recirculation air filter is clogged, blow air from the opposite direction to the normal air flow of the recirculation-air-filter.
Keep the pressure of compressed air as follows.

Pressure of compressed air	Under 205 kPa (2.1 kgf/ cm ²)
----------------------------	---



(A) Airflow of air conditioner

IMPORTANT :

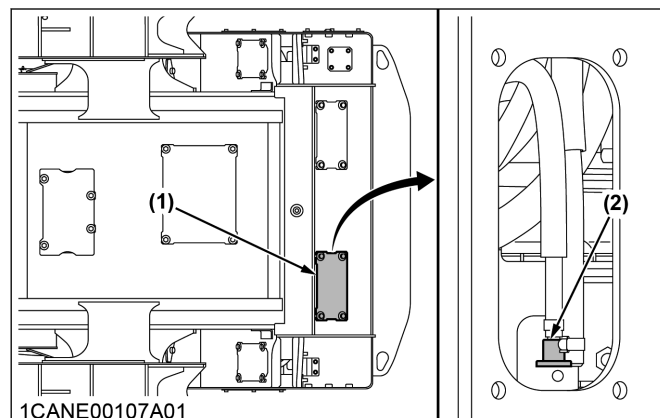
- Do not hit the recirculation-air-filter. If the recirculation-air-filter becomes deformed, dust may enter into the air-conditioner, which may cause damage and malfunction for the machine.
- Do not use gasoline, thinner, or similar chemicals to clean the recirculation-air-filter because damage to it may occur.
- Using gasoline, thinner, or similar chemicals to clean the recirculation-air-filter may also cause an unpleasant odor in the cab when the system is used next time.

EVERY 50 SERVICE HOURS**1. Draining the water from the fuel tank****! WARNING**

To avoid personal injury or death:

- Before draining the water from the fuel tank, stop the engine.
- Do not smoke during inspection.

1. Open the cover.
2. Open the drain plug.
3. Drain the water from the fuel tank.



(1) Cover

(2) Drain Plug

2. Checking the track tension**! WARNING**

To avoid personal injury or death:

- When lifting the machine itself with an attachment, place the jack stands under the main frame to prevent the machine from turning over.

IMPORTANT :

- Make sure that no obstacles such as stones are caught in the track. Remove obstacles such as stones before adjusting the track tension. (See ADJUSTING THE TRACKS on page 218)

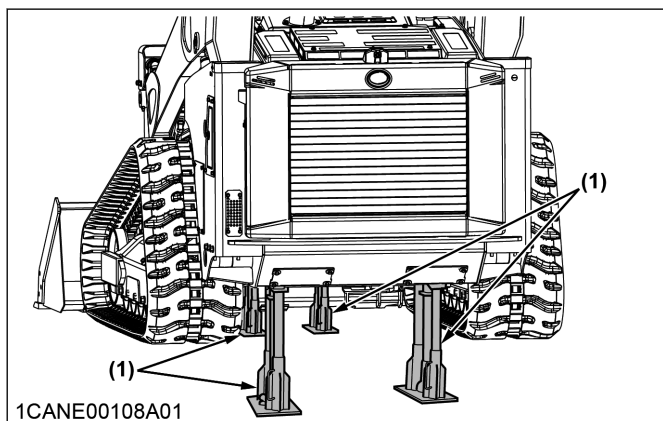
1. To check the track tension, put the machine on the jack stand.

! DANGER

To avoid personal injury or death:

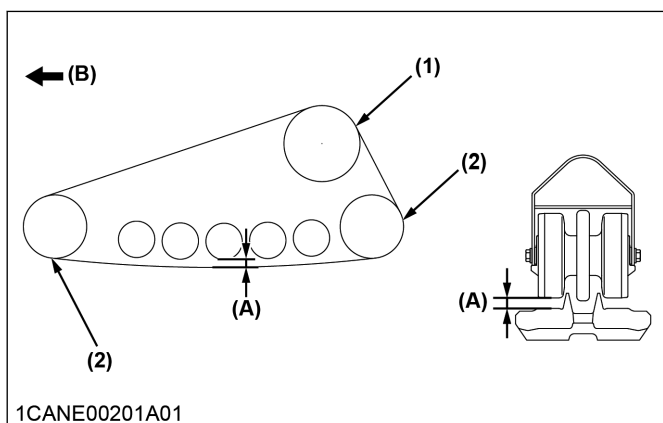
- Do not work under the machine when putting the machine on the jack stand.
- For your safety, do not rely on hydraulically supported devices. They may leak down and suddenly drop or be accidentally lowered.

2. Lift the track from the ground as shown.



(1) Jack stand

3. If necessary, adjust the track tension.
The track tension is correct if the distance of clearance between the outer end of the track roller and the track interior surface (A) corresponds to the dimension specified in the following table.



(1) Drive sprocket
(2) Idler

(A) Clearance between outer end of track roller and track interior surface
(B) Front

Clearance between outer end of track roller and track interior surface (A)	20 mm to 30 mm
--	----------------

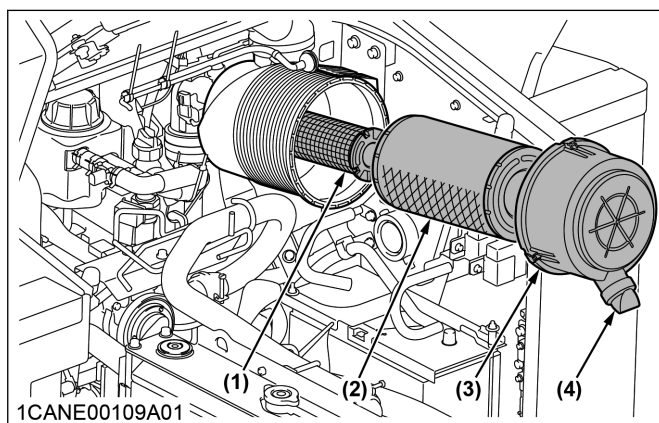
3. Checking the air cleaner element

IMPORTANT :

- If the machine is used in extremely dusty areas, inspect and clean the air-cleaner-element more frequently than in the specified maintenance periods.
- As some elements of air cleaner must be dry, keep them free from oil.
- Do not run the engine without the air cleaner.
- Once every 250 hours or after every sixth cleaning, whichever comes first, replace the air cleaner elements.

- Do not remove the inner element. If removed, replace it with new one.
(See Replacing the air cleaner element on page 202)
- Clean up the case inside with clean wet cloth. After cleaning, wipe it dry with clean dry cloth.
- Do not blow air to clean the case inside. It allows dust come into the inner element.

1. Open the rear door and remove the dust-cover.
2. Remove only outer element.
Do not remove the inner element.
3. Clean the outer element, the case inside and the evacuator valve.
4. Wipe the case inside.
5. Reassemble the outer element.
During reassembly, install the dust-cover so that its top-indicating-mark (arrow) faces up-wards.



(1) Inner element
(2) Outer element
(3) Dust-cover

(4) Evacuator valve

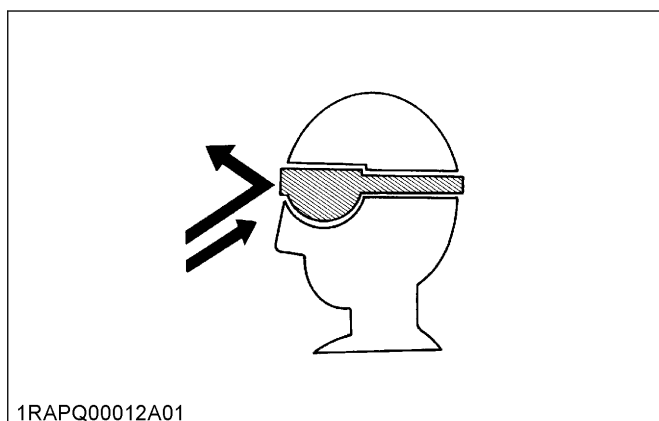
4. Cleaning the air cleaner element



WARNING

To avoid personal injury or death:

- Wear eye protection.



IMPORTANT :

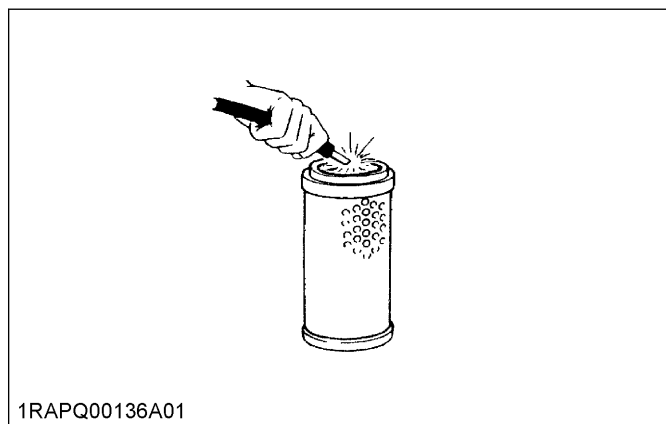
- Clean the air cleaner element regularly or foreign materials will accumulate, which will shorten the DPF filter cleaning interval (6000 hours or service as required).

The quickest and safest method of maintenance is the exchange of the element. However, there are different methods for cleaning the element.

Cleaning with compressed air

1. Blow the element clean from the inside to the outside until the dust deposits are noticeably reduced. Keep the pressure of compressed air as follows.

Pressure of compressed air	Under 205 kPa (2.1 kgf/ cm ²)
----------------------------	---



IMPORTANT :

- If the air suction is still inadequate or the color of the exhaust gases is abnormal even after the cleaning, replace the air cleaner element.
- Do not hit the element. The element may get deformed, which may adversely affect the air cleaner performance.

5. Cleaning the evacuator valve

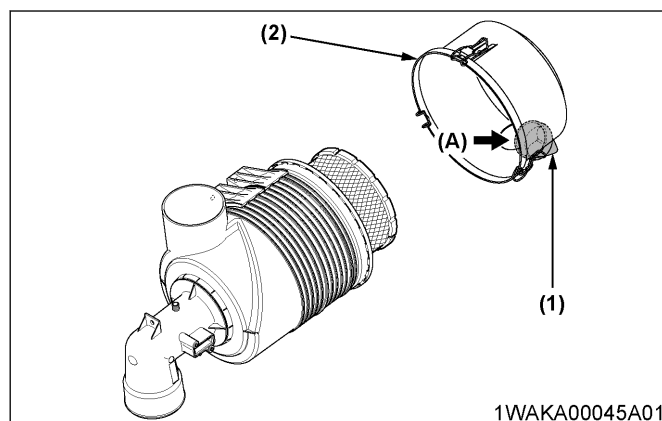
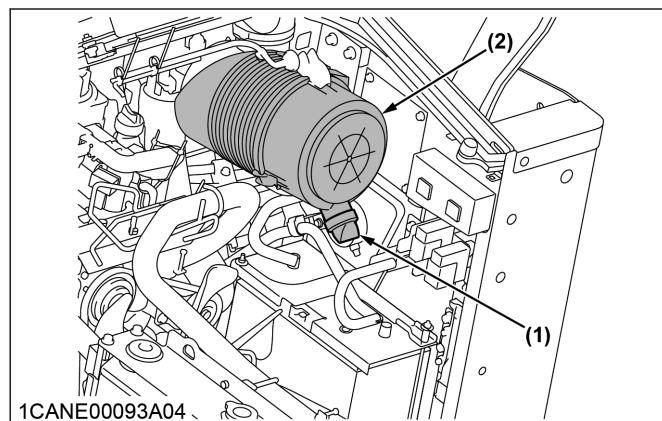


WARNING

To avoid personal injury or death:

- Wear eye protection.
- While cleaning, foreign matters may drop out of the evacuator valve.

1. Open the rear door and engine hood.
2. Remove the dust-cover.
3. From behind the dust-cover, remove foreign matter from the evacuator valve.



- (1) Evacuator valve
(2) Dust cover

(A) Clean from behind

IMPORTANT :

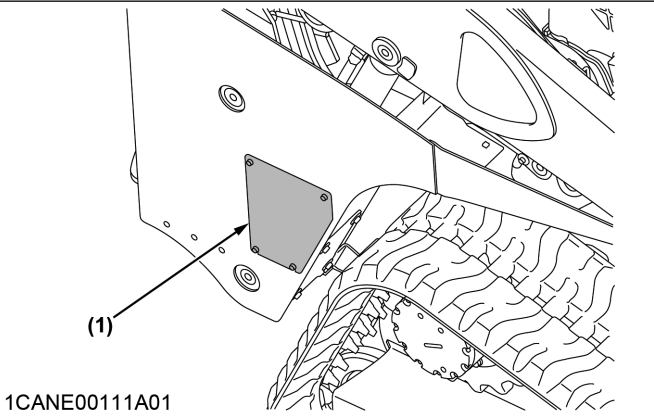
- Failure to clean the evacuator valve may shorten the air cleaner element's service life.

6. Checking the inside of the arm cylinder mast

IMPORTANT :

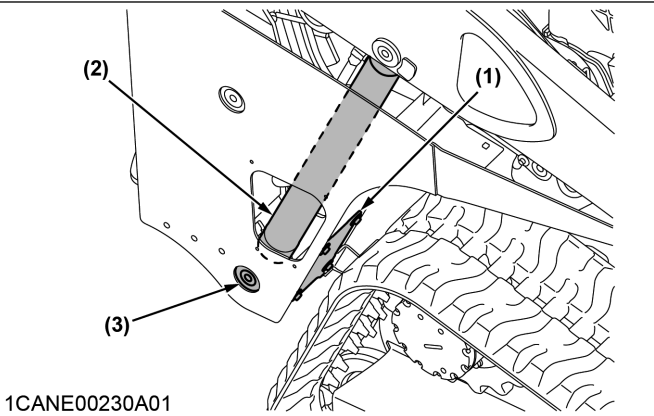
- If the machine is used in extremely dusty areas, check the inside of the arm cylinder mast more frequently than in the specified maintenance periods.

1. Open the plate near the bottom of the arm cylinder on the main frame.



(1) Plate

2. Check to see if the arm cylinder mast is filled with the dust or mud up to the arm cylinder boss. If so, remove the plate, and clean inside of the arm cylinder mast.



(1) Plate

(2) Arm cylinder mast

(3) Arm cylinder boss

EVERY 250 SERVICE HOURS

Carry out all 50 hour servicings at the same time.

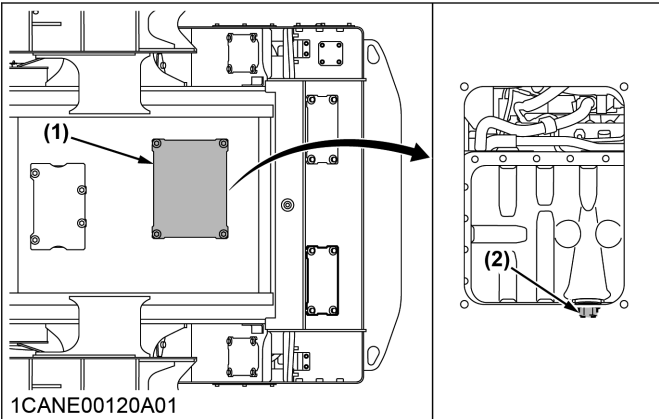
1. Changing the engine oil

WARNING

To avoid personal injury or death:

- First stop the engine, and wait long enough for the oil to cool down.

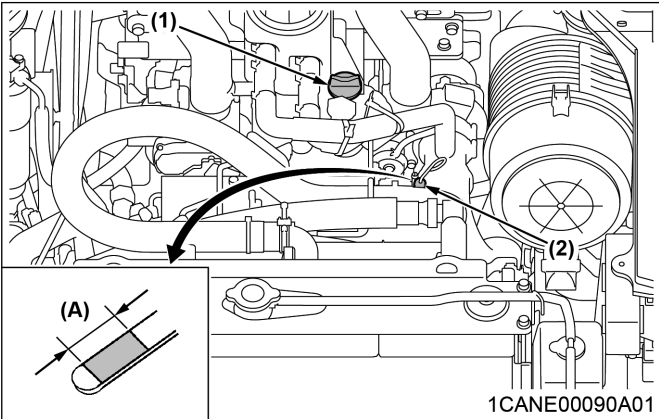
1. Remove the under cover on the bottom of the frame.
2. Remove the drain plug on the underside of the engine and drain all oil.



(1) Under cover

(2) Drain plug

3. Re-tighten the drain plug, and attach the under cover.
4. Fill up with new oil through the filling port to the specified level.



(1) Oil filling port

(2) Engine oil dipstick

(A) Required oil level range

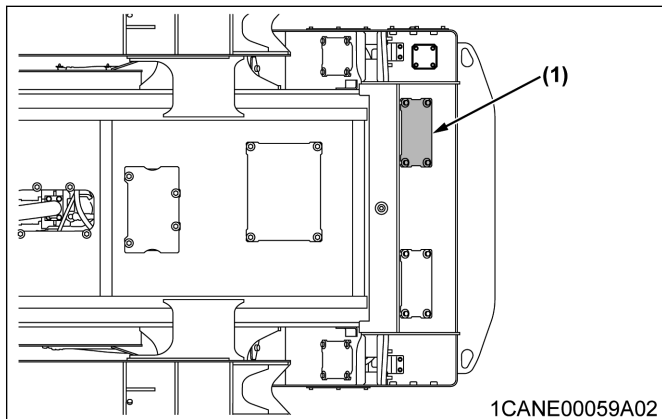
Engine oil volumes (with engine oil filter)	11.0 L
---	--------

IMPORTANT :

- When the annual operating hours are below 250 hours, change the engine oil every year.

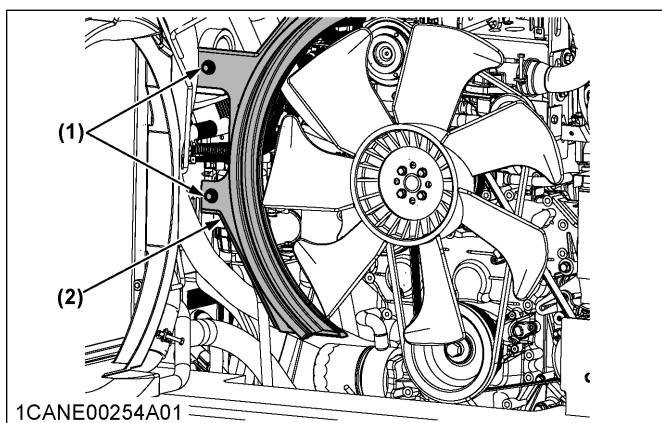
2. Replacing the engine oil filter cartridge

1. Remove the under cover on the bottom of the frame to drain the spilled engine oil from the engine-oil-filter-cartridge.



(1) Under cover

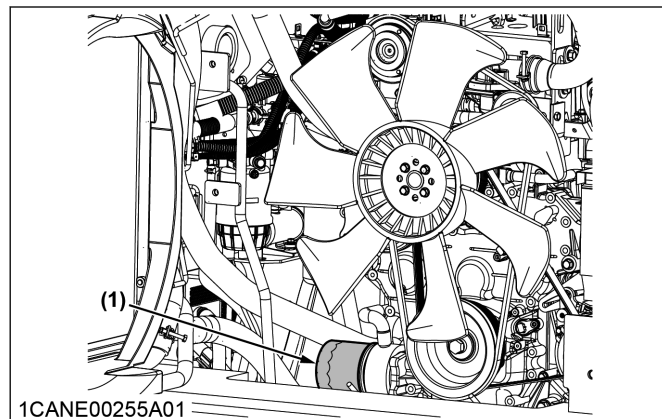
2. Replace the engine-oil-filter-cartridge at the same time as changing the engine oil.
 - a. Loosen the bolts, and remove the stay.



(1) Bolts

(2) Stay

- b. Remove the engine-oil-filter-cartridge with the filter wrench.
- c. Oil the O-ring of the new engine-oil-filter-cartridge lightly.
- d. Then tighten the engine-oil-filter-cartridge by hand.
- e. Fill engine oil to the specified level.
- f. Let the engine run for approximately 5 minutes and make sure that the engine oil pressure indicator does not light up.
The engine oil level is reduced by the amount of the filter capacity after the engine is started. It is necessary to add the engine oil.
- g. Then stop the engine.



(1) Engine oil filter cartridge

3. Attach the under cover.

IMPORTANT :

- Always check the engine oil level after having exchanged the filter.

3. Checking the radiator hoses and the clamps

Check the water hoses for proper connection.



WARNING

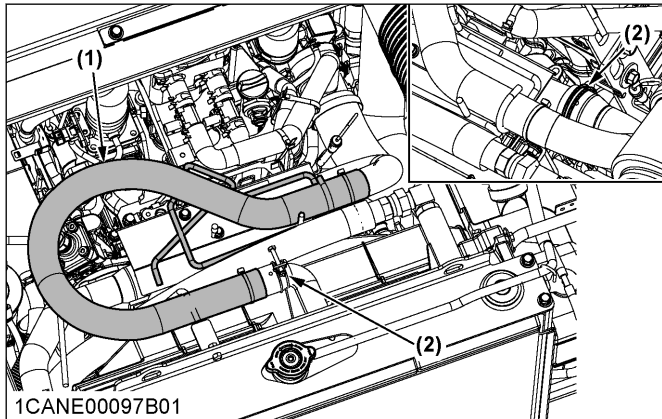
To avoid personal injury or death:

- Wait long enough for the radiator coolant to cool down.

Carry out the check of the radiator hoses and the clamps of every 250 hours or every 6 months, whichever comes first.

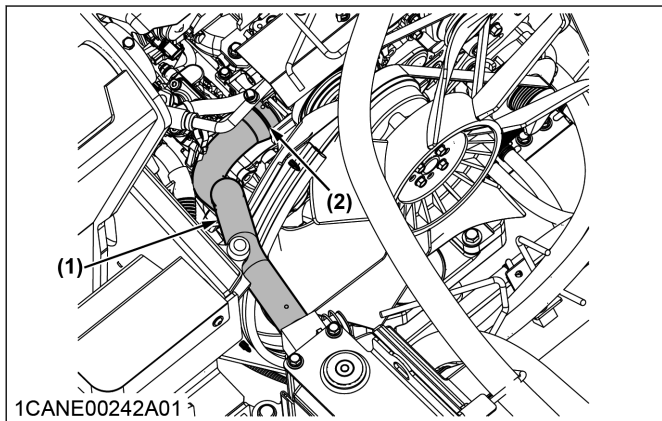
1. Open the radiator.
2. If the hose clamps become loose or water leaks, tighten the hose clamps properly.

3. If the radiator hoses become swollen, aged, or cracked, replace the radiator hoses and re-tighten the hose clamps properly.



(1) Radiator hose

(2) Hose clamps

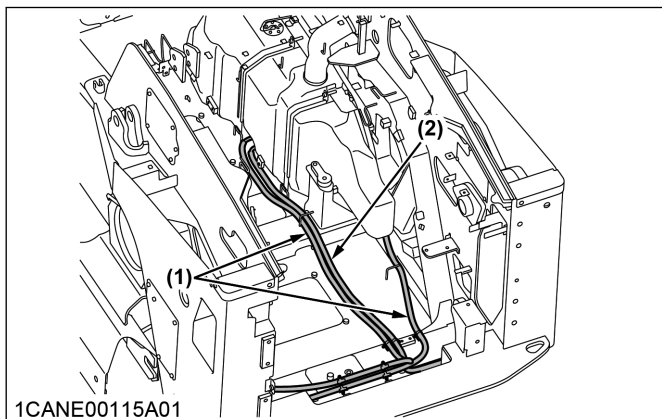


(1) Radiator hose

(2) Hose clamps

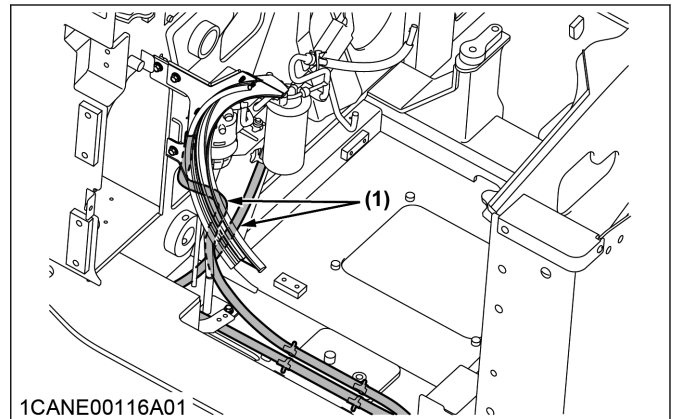
4. Checking the fuel line and the intake air line

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

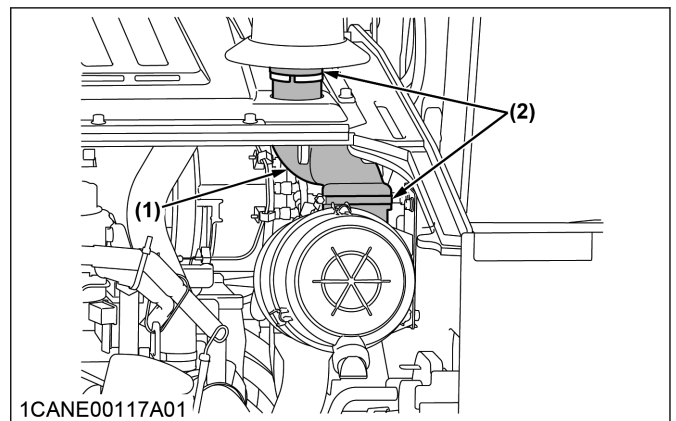


(1) Fuel hoses

(2) Fuel drain hose

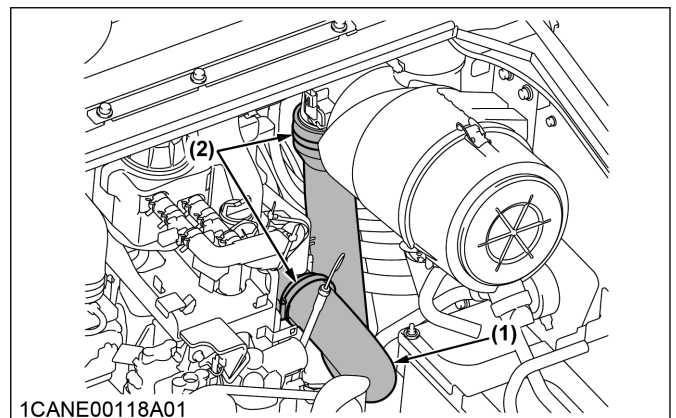


(1) Fuel hoses



(1) Hose

(2) Hose clamps



(1) Hose

(2) Hose clamps

5. Checking and adjusting the fan belt tension

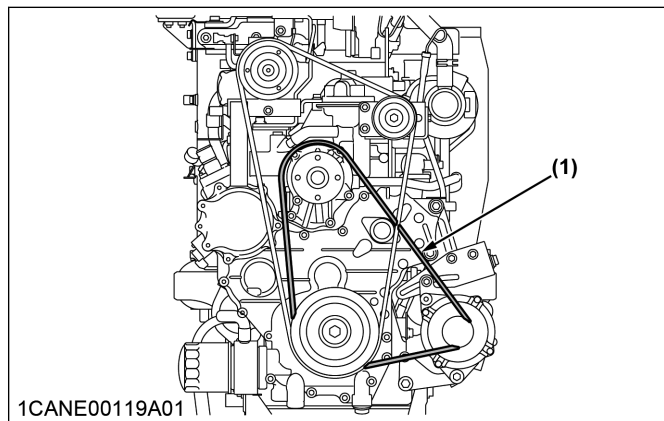
! WARNING

To avoid personal injury or death:

- First stop the engine.
- After servicing, always replace the belt cover in its original position.

IMPORTANT :

- If the engine is run with a loose fan belt, the belt could slip and cause insufficient battery charging. Check fan belt tension regularly.
- If the fan belt breaks or jumps off, the indicator light for battery charge will light up. Stop the engine immediately.



(1) Fan belt

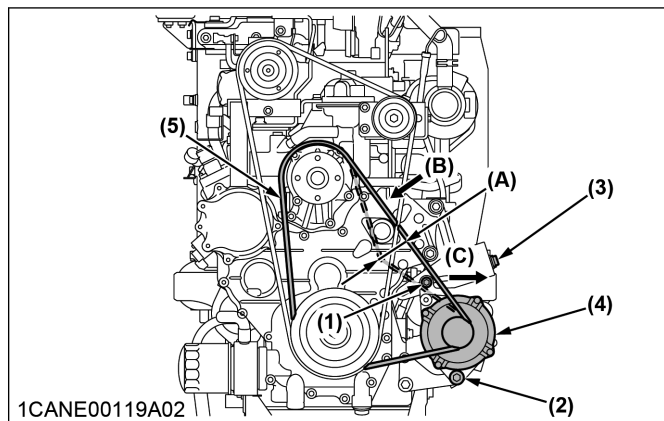
1. Press the fan belt (5) down in the middle, with the following force.

Pressing force (B)	Approx. 50 N to 60 N
--------------------	----------------------

The belt tension is correct if it deflects the following length.

Belt deflection (A)	About 4.0 mm to 5.0 mm
---------------------	------------------------

2. If the belt tension is not correct, loosen bolt (1), (2), and (3) and shift the alternator (4) in the direction shown by the arrow (C) in the following figure.



- | | |
|-------------------|---------------------|
| (1) Nut | (A) Belt deflection |
| (2) Bolt | (B) Pressing force |
| (3) Adjuster bolt | (C) Shift |
| (4) Alternator | |
| (5) Fan belt | |

3. After adjustment of the fan belt tension, tighten all the bolts.
4. Replace the fan belt if worn out, cracked, or torn.

5.1 Checking and adjusting the air-conditioner belt tension

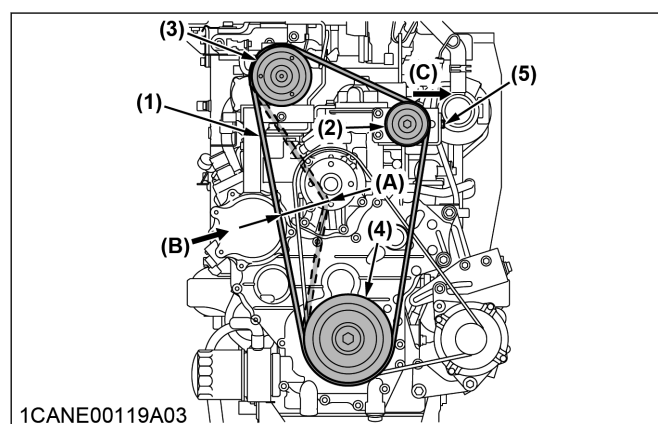
1. Press the air-conditioner belt down in the middle, with the following force.

Pressing force	Approx. 98.0 N (10 kgf)
----------------	-------------------------

The belt tension is correct if it deflects the following length.

Belt deflection (A)	About 11 mm to 12 mm
---------------------	----------------------

2. If the belt tension is not correct, loosen bolt of the tension pulley and shift the tension pulley in the direction shown by the arrow (C) in the following figure.



- | | |
|--------------------------------|---------------------|
| (1) Air-conditioner belt | (A) Belt deflection |
| (2) Tension pulley | (B) Press |
| (3) Air-conditioner compressor | (C) Shift |
| (4) Pulley | |
| (5) Bolt | |

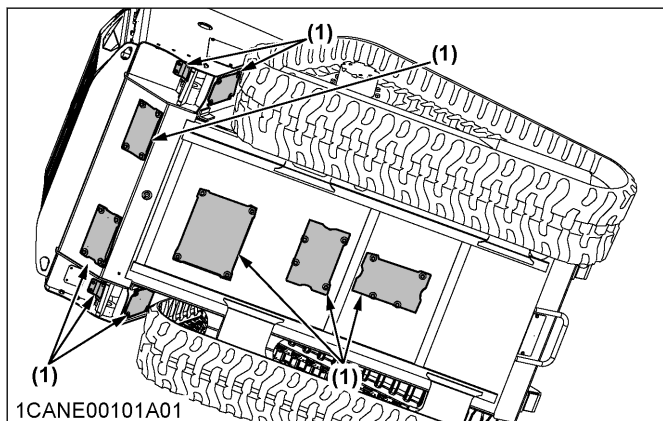
3. Replace the air-conditioner belt if worn out, cracked, or torn.

6. Cleaning inside of the main frame

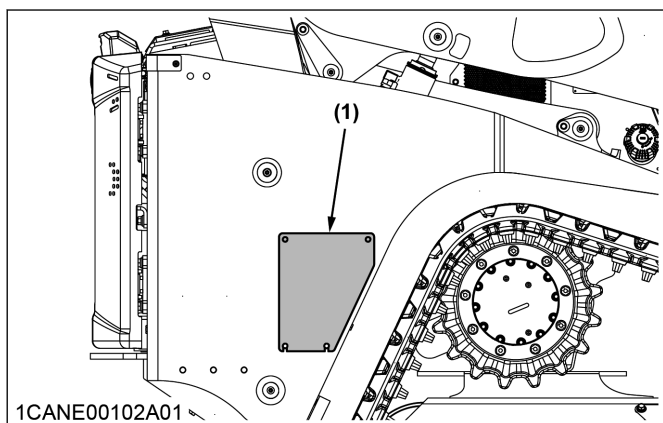
If mud, leaves, or any debris are accumulated inside of the main frame, it may cause damage on parts of the main frame.

1. Open the plates of the bottom and side of the main frame.
(See Discharging mud from the main frame on page 183, and Checking the inside of the arm cylinder mast on page 197 for detail procedure)
2. Remove mud, leaves, and any debris from the inside of the main frame.

3. After removing mud, leaves, and any debris, close the plates of the bottom of the main frame.



(1) Bottom plates

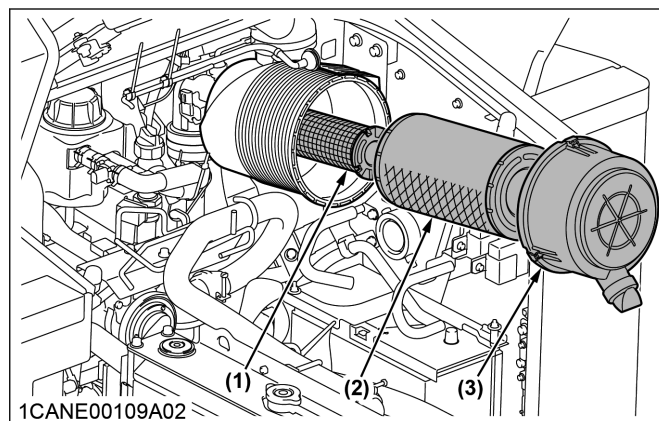


(1) Side plate

7. Replacing the air cleaner element

IMPORTANT :

- Shorten the replacement period if the machine is used in dusty or sandy areas.
 - Replace the air cleaner element regularly or foreign materials will accumulate, which will shorten the DPF filter cleaning interval (6000 hours or service as required).
 - Use KUBOTA genuine inner and outer element.
 - Do not blow air to clean the case inside. It allows dust come into the inner element.
 - Clean up the case inside with clean wet cloth. After cleaning, wipe it dry with clean dry cloth.
1. Open the rear door.
 2. Remove the dust-cover.
 3. Remove and replace the outer element and the inner element with new them.
When reassembling, install the dust-cover so that its top-indicating-mark (arrow) faces up-wards.



(1) Inner element
(2) Outer element

(3) Dust-cover

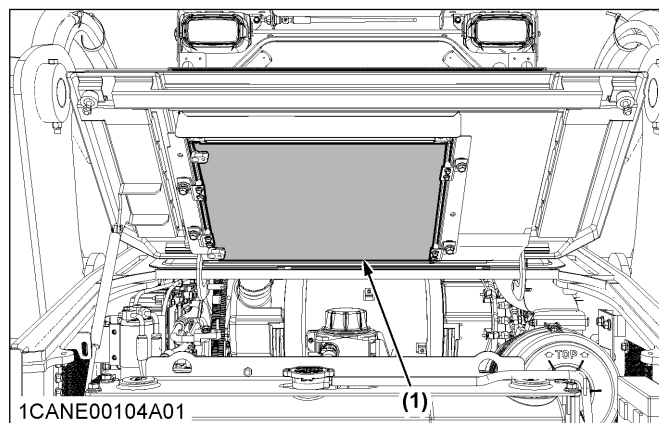
8. Checking the air-conditioner condenser

! WARNING

To avoid personal injury or death:

- Stop the engine.
- Allow the engine and radiator to cool down completely before attempting maintenance on the radiator or oil cooler. A hot radiator can cause severe burns and/or injury.

1. Check the air-conditioner condenser to be sure it is clean from debris.



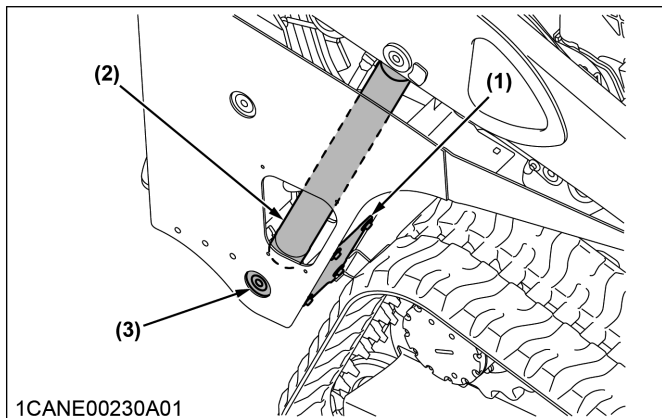
(1) Air-conditioner condenser

NOTE :

- Air flows from the outside to the inside, so debris would accumulate on the outside. If necessary, remove the outside cover to help clean the air-conditioner condenser.

9. Cleaning the inside of the arm cylinder mast

1. Open the plate near the bottom of the arm cylinder on the main frame.
(See Checking the inside of the arm cylinder mast on page 197)
2. When the mast is filled with dust or mud up to arm cylinder boss, clean inside the mast.



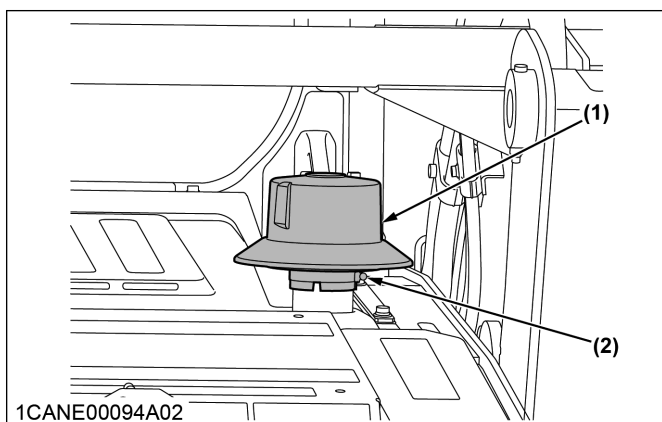
(1) Plate
(2) Arm cylinder mast
(3) Arm cylinder boss

10. Checking the intercooler

IMPORTANT :

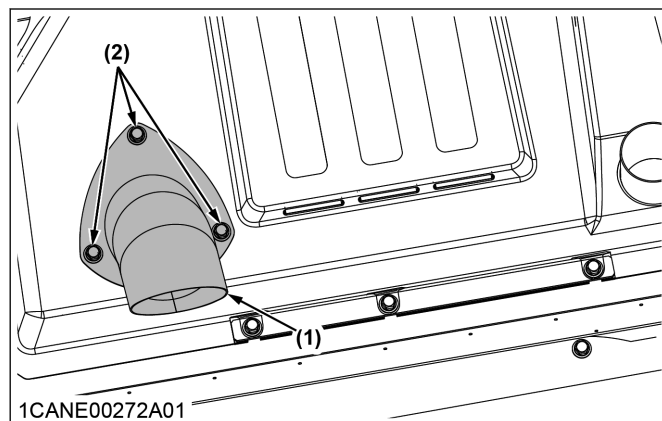
- When cleaning the top surface of the intercooler, do not allow combustible materials to accumulate on top of the engine.
- When assembling the intercooler cover, place a plate between the cover and the bolts.
- Check the top surface of the intercooler more frequently than the specified maintenance intervals in dusty work conditions.

1. Loosen the clamp and remove the pre-cleaner.



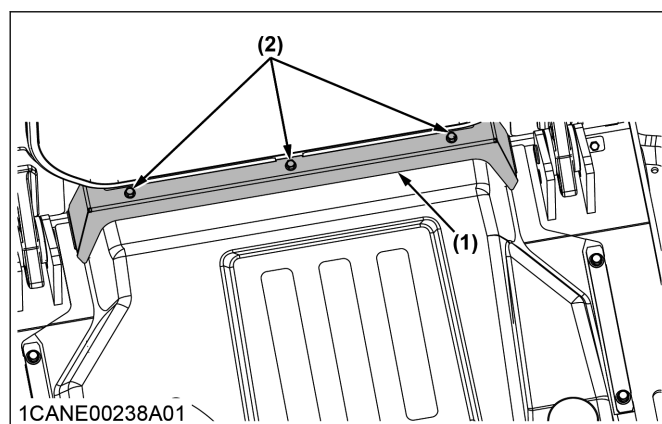
(1) Pre-cleaner
(2) Clamp

2. Remove the DPF muffler cover.



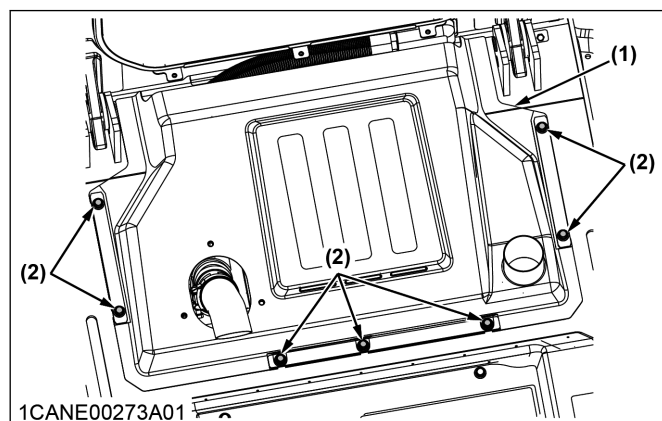
(1) DPF muffler cover
(2) Bolts

3. Remove the cover behind the CAB.



(1) Cover
(2) Bolts

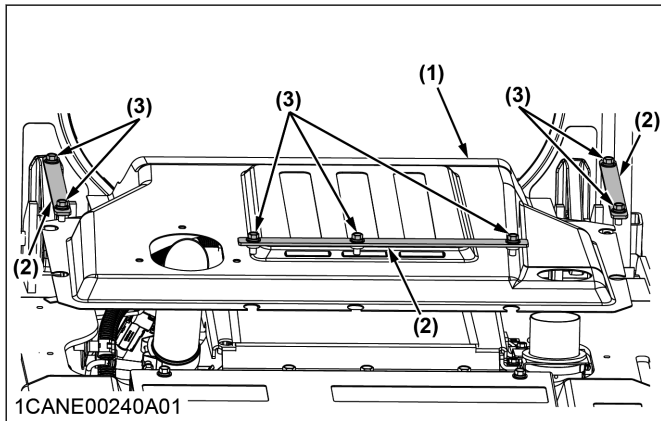
4. Remove the intercooler cover.



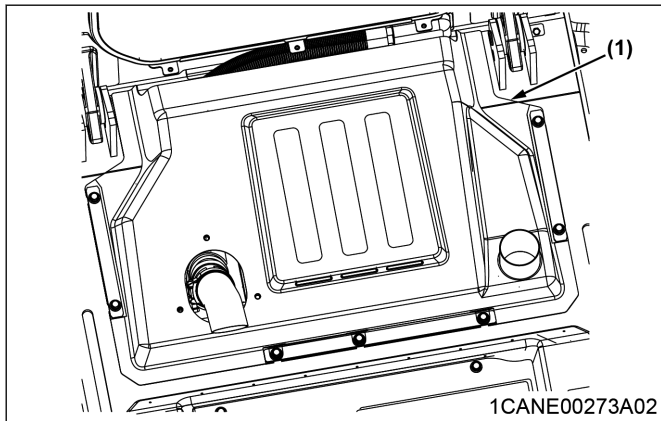
(1) Intercooler cover
(2) Bolts

5. Check that the top surface of the intercooler is not clogged with dust.
If clogged, clean it.

6. Attach the intercooler cover as following illustration.



(1) Intercooler cover
(2) Plates
(3) Bolts



(1) Intercooler cover

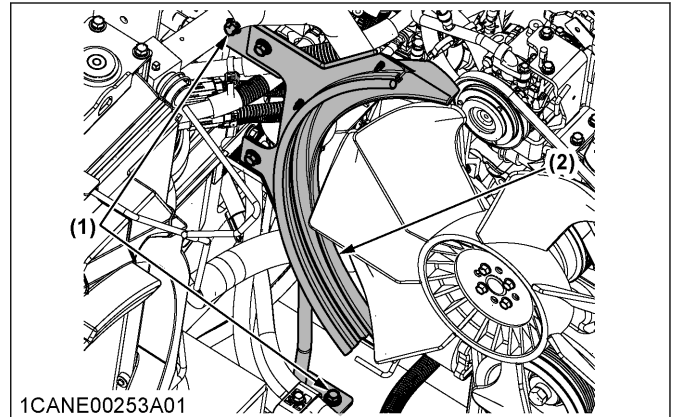
7. Install the cover behind the CAB, the DPF muffler cover, and the pre-cleaner.

EVERY 500 SERVICE HOURS

Carry out all 50, 100, and 250 hour servicing at the same time.

1. Replacing the water separator filter element

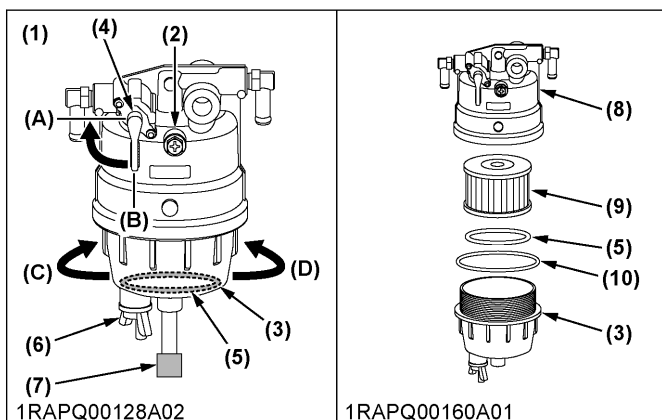
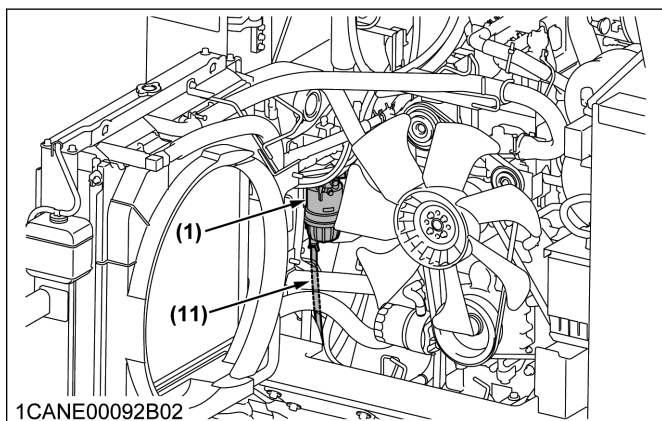
1. Loosen the bolts, and remove the stay.



(1) Bolts
(2) Stay

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

6. Set the shutoff-valve to the open position.



- (1) Water separator
- (2) Screw
- (3) Cup
- (4) Shutoff-valve
- (5) Float
- (6) Drain plug
- (7) Connector of water level sensor

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

IMPORTANT :

- In reattaching the water separator, be careful to keep off dust and dirt.
 - Purge the fuel system before getting the machine restarted.
- (See Purging of the fuel system on page 217)

2. Cleaning the fuel pump filter

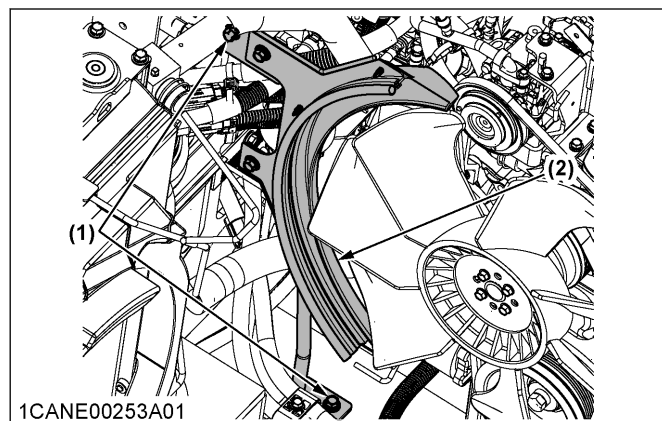


WARNING

To avoid personal injury or death:

- Keep fire away.

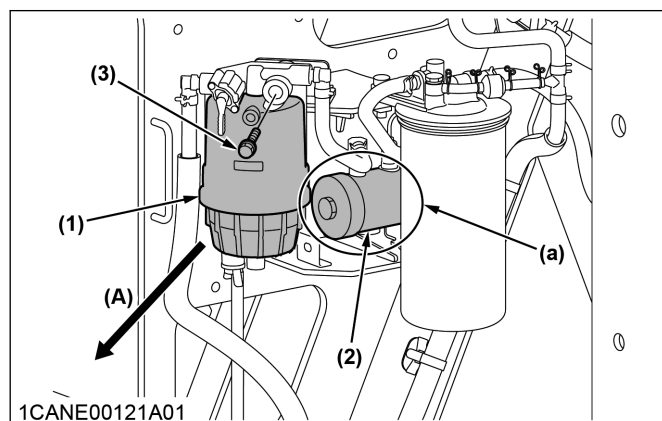
1. Loosen the bolts, and remove the stay.



- (1) Bolts
- (2) Stay

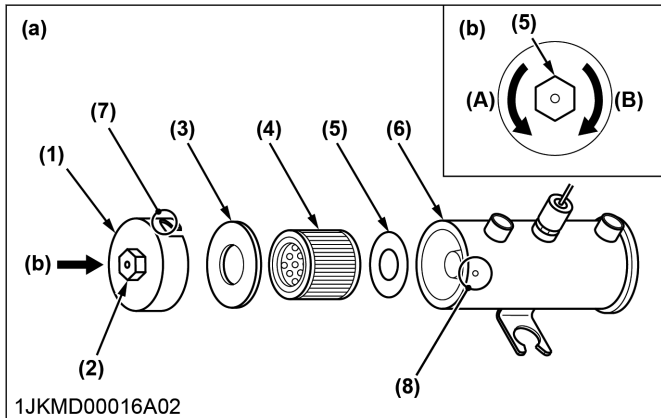
2. Set the shutoff-valve of the water separator to the close position.
(See Replacing the water separator filter element on page 204)

3. Remove the bolt of the water separator and ensure accessibility to the fuel pump.



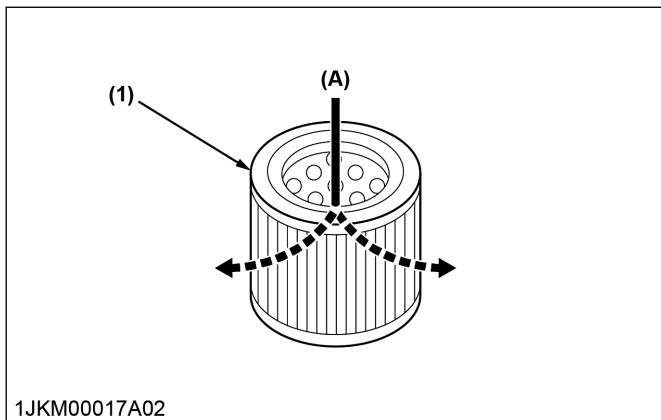
- (1) Water separator
- (2) Fuel pump
- (3) Bolt
- (A) Ensuring accessibility to the pump

4. Remove the nut of the cover and the cover from the fuel pump body.



- | | |
|---------------|-------------|
| (1) Cover | (A) Loosen |
| (2) Nut | (B) Tighten |
| (3) Gasket | |
| (4) Filter | |
| (5) Gasket | |
| (6) Pump body | |
| (7) Slot end | |
| (8) Pin | |

5. Remove the filter and clean it with fuel from the inside to the outside as shown in the following figure.
In removing the filter, do not remove the gasket in order to prevent damage of gasket.



- | | |
|------------|---|
| (1) Filter | (A) Cleaning with fuel from the inside to the outside |
|------------|---|

6. Reassemble the filter and cover, tighten the nut of the cover until the end of the slots contact the pins.
7. Attach the bolt of the water separator.

Tightening torque of the bolt of the water separator	48.1 N·m to 55.9 N·m (4.9 kgf·m to 5.7 kgf·m)
--	--

8. Set the shutoff-valve of the water separator to the open position.
(See Replacing the water separator filter element on page 204)

IMPORTANT :

- In reassembling the fuel pump filter and cover, be careful to keep off dust and dirt.

- Purge the fuel system before getting the machine restarted.
(See Purging of the fuel system on page 217)

3. Replacing the fuel filter cartridge



WARNING

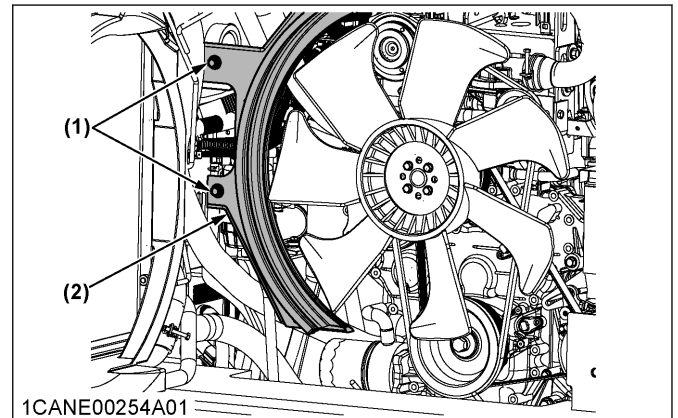
To avoid personal injury or death:

- Keep fire away.

IMPORTANT :

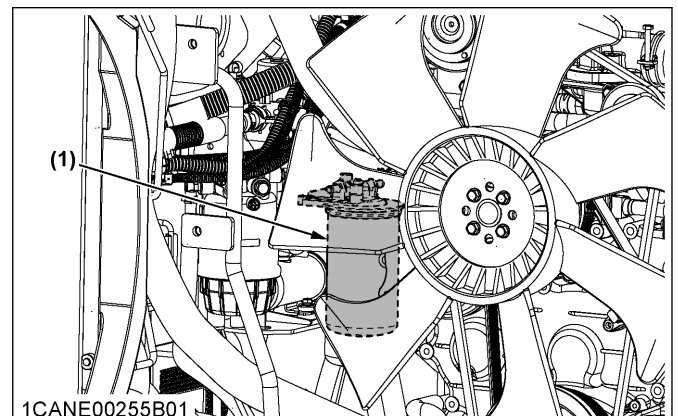
- If you do not replace the fuel-filter-cartridge regularly, the cleaning efficiency of the DPF (3000 to 6000 hours or service as required) will be reduced and the DPF longevity will be shorter than expected.

1. Open the radiator.
2. Loosen the bolts, and remove the stay.



- | | |
|-----------|----------|
| (1) Bolts | (2) Stay |
|-----------|----------|

3. Remove the fuel filter cartridge with the filter wrench.
4. Apply a small amount of fuel on the gasket of the replacement filter and tighten the filter by hand.



- | |
|---------------------------|
| (1) Fuel filter cartridge |
|---------------------------|

IMPORTANT :

- After exchange of the filter, purge the fuel system of air.

4. Cleaning the fuel breather pipe

! WARNING

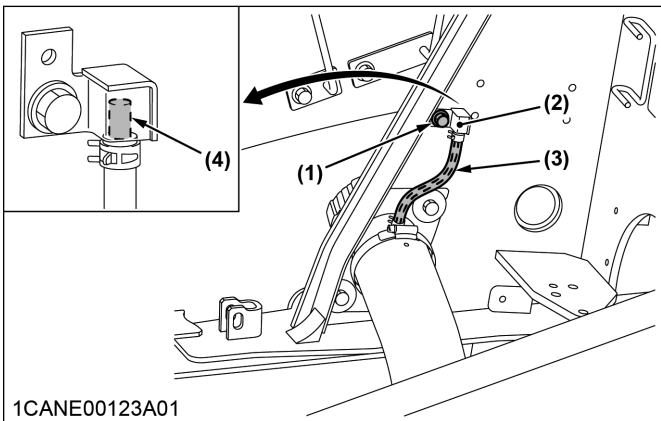
To avoid personal injury or death:

- Keep fire away.

IMPORTANT :

- If dust or dirt is stuck in the fuel breather pipe, the fuel tank possibly getting deformed.
- Clean more frequently if used under dusty conditions.

1. Tilt the cab.
2. Remove the bolt, the fuel breather pipe, and the fuel hose.
3. Using compressed air, a brush or a similar tool, remove dust and dirt from the fuel breather pipe, the pipe end area, and the fuel hose.
4. Reinstall these parts.



- (1) Bolt (3) Fuel hose
(2) Fuel breather pipe (4) Pipe end area

(1) Bolt	Tightening torque	48.1 N·m to 55.9 N·m (4.9 kgf·m to 5.7 kgf·m)
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5. Changing the travel motor gear oil

! WARNING

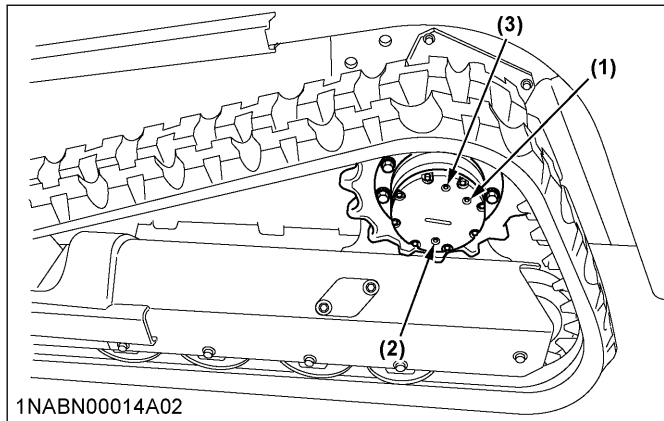
To avoid personal injury or death:

- Lower the lift arms to the ground, and stop the engine before undertaking the gear oil change of the travel motor.

First change of the gear oil of the travel motor is required at 250 service hours.

1. Rotate the track so that the drain plug of the travel motor is in the bottom position.

2. Remove the drain plug to let the gear oil run out.
3. Screw in and tighten the drain plug again.
4. Fill the travel motor with the gear oil through the oil-filler-port.
Fill the gear oil until it overflows out of the oil inspection port.
Use prescribed gear oil SAE 90.
5. After changing the travel motor gear oil, tighten the plugs with following torque.



- (1) Oil inspection port (3) Oil filler port
(2) Drain plug

(2) Drain plug	Tightening torque	22.0 N·m to 32.0 N·m (2.2 kgf·m to 3.3 kgf·m)
----------------	-------------------	--

Gear oil volume	Approx. 1.6 L
-----------------	---------------

IMPORTANT :

- Wrap the plugs with silicone tape.

6. Replacing the return filter

First replacement of the return filter is required at 250 service hours.

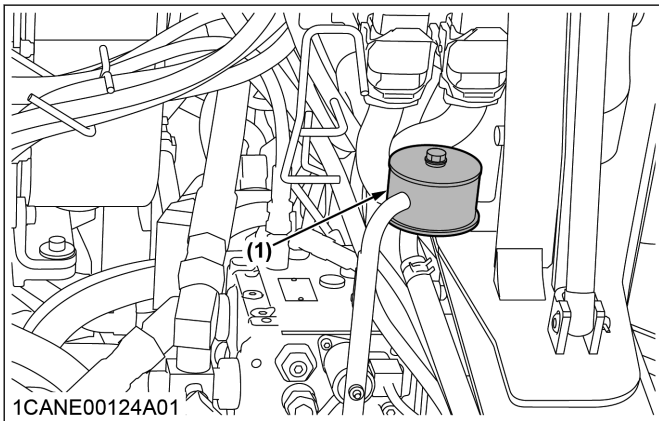
1. Replace the return filter according to Changing the hydraulic oil including replacing the suction filter and the return filter in the hydraulic tank on page 208.

7. Replacing the breather filter

The breather filter for the hydraulic tank is located above the hydraulic tank.

1. Raise the cab.
(See Tilting up the cab on page 181 for detail)
2. Open the cap of the filter cover.
3. Remove the breather filter and replace with the new one.

4. Tighten the cap of the filter cover.

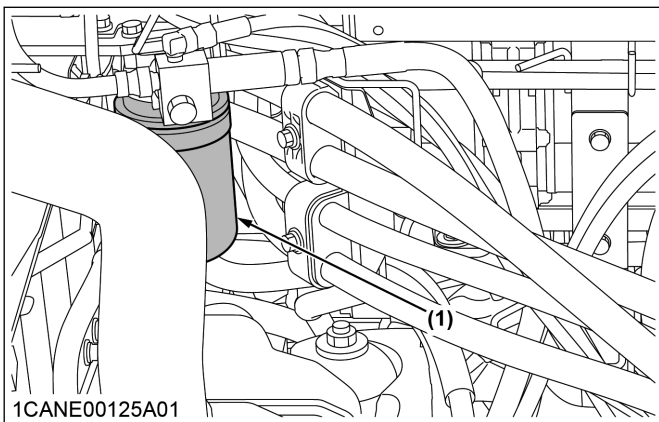


(1) Breather filter

8. Replacing the hydraulic oil filter

First replacement of the hydraulic-oil-filter is required at 50 service hours.

1. Raise the cab.
(See Tilting up the cab on page 181 for detail)
2. Remove the hydraulic-oil-filter with the wrench and replace with the new one.
3. Oil the O-ring of the new hydraulic filter cartridge lightly. Then tighten the hydraulic filter cartridge.



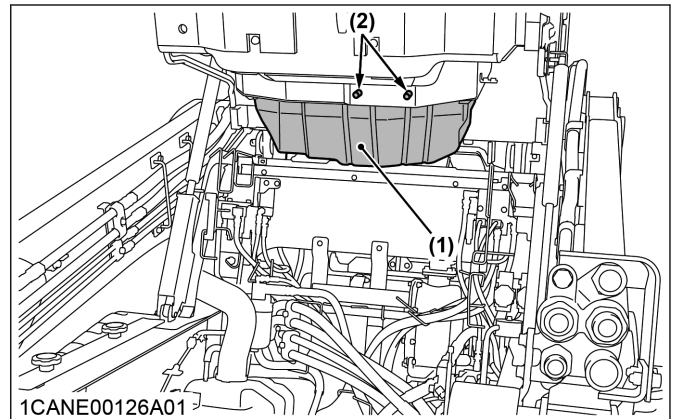
(1) Hydraulic oil filter

9. Cleaning the front window roller

Consult your local KUBOTA dealer for cleaning the front window roller.

10. Checking the air-conditioner drain

1. Check the air-conditioner unit cover to see if its drain hose end is clogged with dust and other foreign matters.



(1) Air-conditioner unit cover (2) Air-conditioner drain

EVERY 1000 SERVICE HOURS

Carry out all 50, 100, 200, 250, and 500 hour servicing at the same time.

1. Changing the hydraulic oil including replacing the suction filter and the return filter in the hydraulic tank



WARNING

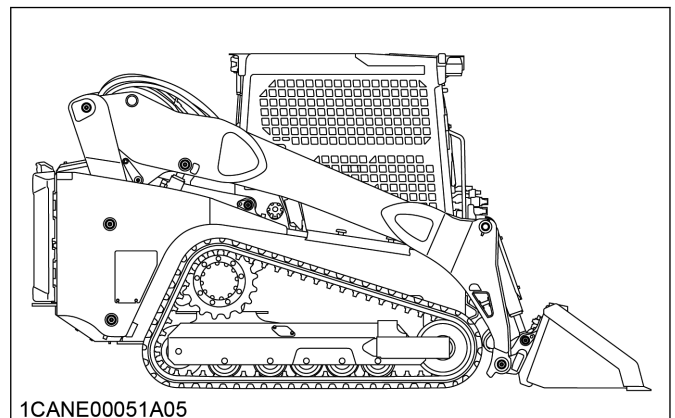
To avoid personal injury or death:

- Wait long enough for the hydraulic oil to cool down. Then change the hydraulic oil.

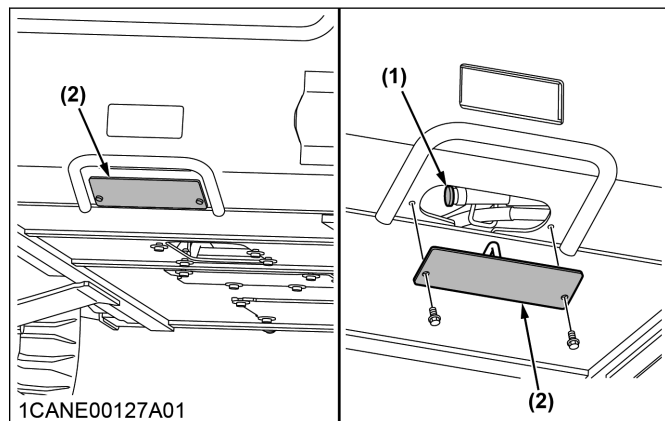
IMPORTANT :

- Before filling oil, wipe away all sand and dust from around the oil port. Use an identical type of hydraulic fluid.
- The machine has been filled with hydraulic fluid before delivery. See **RECOMMENDED OILS** on page 247 section. Do not mix different oils.

1. Park the machine on a firm, flat, and level surface.
2. Lower the lift arms to the ground, and stop the engine.

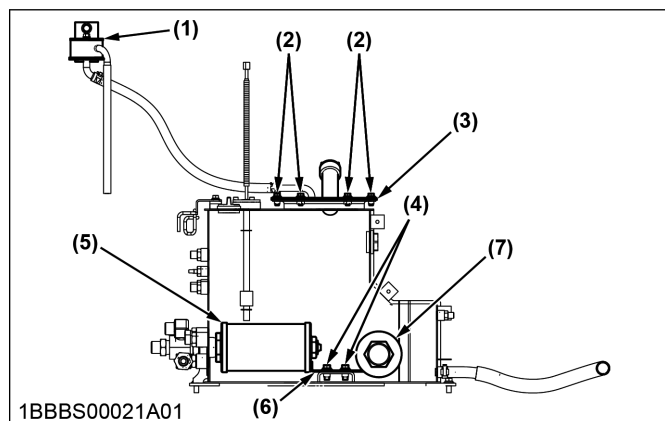


3. Remove the cover with drain plug in front of the machine, and drain the hydraulic oil.



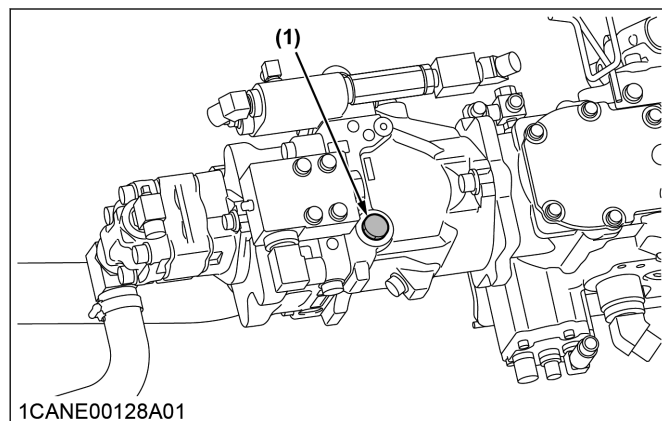
(1) Drain plug (2) Cover

4. Loosen the bolt, and remove the tank cover.
5. Remove the suction filter and replace with new one.
6. Loosen the set bolt first. Then remove the return filter and replace with new one.
7. Install the hydraulic cover.
8. Retighten the drain plug.



(1) Breather filter (2) Bolt (3) Cover (4) Set bolt (5) Return filter (6) Filter stopper (7) Suction filter

9. Fill the hydraulic oil through the oil-filling-plug opening on the top side of the tank pipe.
10. Remove the plug off the top of the LS pump to pour oil into it.
Make sure the oil level is as specified, close the pump top and tighten up the plug. Damage to the LS pump is possible if this step is not completed correctly.



(1) Plug

11. Let the engine run, and operate the lift arm and the bucket.
12. Then lower the lift arms slowly to the ground, and stop the engine.
13. Fill the hydraulic oil again up to the center of the gauge.

Hydraulic oil volumes	Hydraulic tank	40.2 L
	Whole oil volumes	70.1 L

14. Tighten the oil-filling-plug.

2. Hydraulic oil check with the hydraulic hammers

Changing the hydraulic oil after 1000 operating hours in the operator's manual is based on normal work. The following inspection measures are valid when using the hydraulic hammers.

- Changing and filling up of the hydraulic oil
 - Change the hydraulic oil more often when using the hydraulic hammers because the machine is subject to harder conditions than normal work.
 - Use only the recommended hydraulic oils that are mentioned in the operator's manual when changing or filling with the hydraulic oil.
 - When adding the hydraulic oil, do not mix oils of different makes
- Changing the return filter and the hydraulic oil
 - Change the return filter more often because of contamination resulting from the frequent assembly and disassembly of the hoses.
 - Use the correct replacement filter.
 - Change oil according to operating hours.

		Hydraulic oil	Return filter	Suction filter
Normal work		every 1000 Hrs.	every 500 Hrs. (250 Hrs. after first operation)	every 1000 Hrs.
Hammer work portion	20 %	every 800 Hrs.	every 300 Hrs.	
	40 %	every 400 Hrs.		
	60 %	every 300 Hrs.	every 100 Hrs.	
	more	every 200 Hrs.		

3. Adjusting the engine valve clearance

Contact your local KUBOTA dealer for adjusting the engine valve clearance.

4. Replacing the front window roller

Consult your local KUBOTA dealer for replacing the front window roller.

EVERY 1500 SERVICE HOURS

Carry out all 50, 100, 250, and 500 hour servicing at the same time.

1. Checking the injector tip

Contact your local KUBOTA dealer for checking the injector tip.

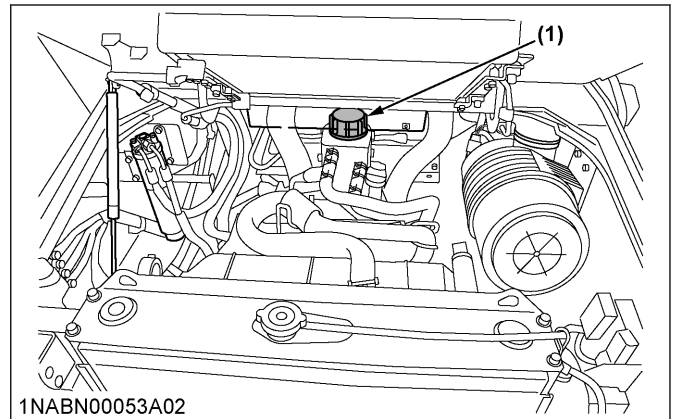
2. Replacing the CCV filter

WARNING

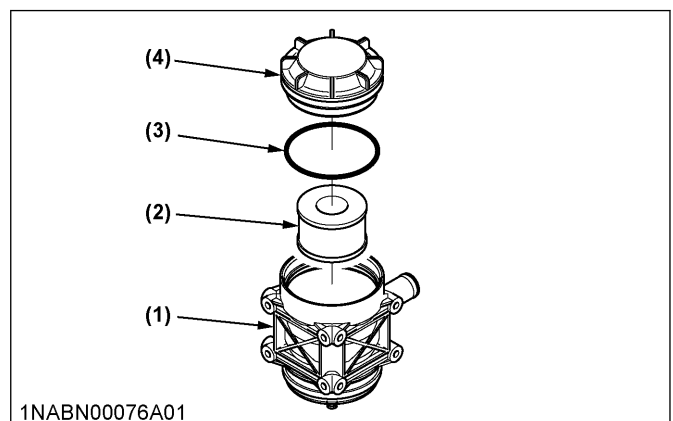
To avoid personal injury or death:

- Stop the engine before replacing the CCV filter.

1. Remove the cover, and remove the CCV filter.
2. Wipe off the oil and the carbon in the case with a clean rag.
3. Fit a new CCV filter and new gasket.
4. Tighten the cover until a cover comes in contact with body.



(1) Oil separator



(1) Body

(2) CCV filter

(3) Gasket

(4) Cover

3. Checking the PCV (positive crankcase ventilation) valve

Contact your local KUBOTA dealer for checking the PCV valve.

4. Checking the EGR cooler

Contact your local KUBOTA dealer for checking the EGR cooler.

5. Checking the DEF (AdBlue) injector tip

Contact your local KUBOTA Dealer for checking the DEF (AdBlue) injector tip.

6. Checking the DEF (AdBlue) hoses

1. Visually check for cracks, DEF (AdBlue) leak and anything else unusual. Check to see if the lock bolts and nuts are tight.

EVERY 2000 SERVICE HOURS

Carry out all 50, 100, 200, 250, 500, and 1000 hour servicing at the same time.

1. Checking the alternator and the starter motor

Contact your local KUBOTA dealer for checking the alternator and the starter motor.

EVERY 3000 SERVICE HOURS

Carry out all 50, 100, 200, 250, 500, 1000, and 1500 hour servicing at the same time.

1. Checking the EGR system

Contact your local KUBOTA dealer for checking the EGR system.

2. Checking the turbocharger

Contact your local KUBOTA dealer for checking the turbocharger.

3. Replacing the DEF (AdBlue) pump filter

WARNING

To avoid personal injury or death:

- Dispose of discharged/used DEF (AdBlue) properly in accordance with local regulations.

1. Stop the engine.
2. Wait at least 25 minutes for the supply module to deactivate.
3. Place a pan below the supply module.
4. Loosen the cover and remove the filter and equalizing element at the same time.
5. Install a new filter and equalizing element in place.
6. Reattach the cover back into position.

DEF (AdBlue) filter cover tightening torque	5.5 N·m to 6.5 N·m
---	--------------------

IMPORTANT :

- The DEF (AdBlue) filter serves to keep DEF (AdBlue) clean. When replacing it with new one, use KUBOTA genuine filter or its equivalent for best performance.
- The SCR system keeps on running for 25 minutes even after stopping the engine. If an inspection or repair is needed, wait at least 25 minutes.

- Discharged/used DEF (AdBlue) from lines during service cannot be reused or SCR system malfunction may result.

4. Checking the DEF (AdBlue) injector

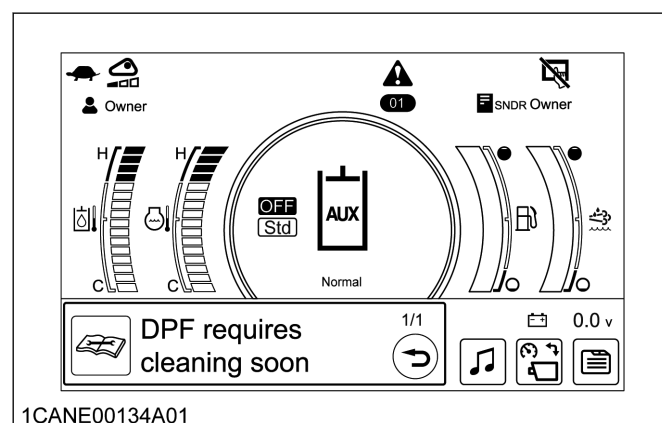
Contact your local KUBOTA Dealer for checking the DEF (AdBlue) injector.

EVERY 3000 TO 6000 SERVICE HOURS

1. Cleaning the diesel particulate filter (DPF)

The longer the DPF operates, the more ash (burnt residue) is collected in the filter. Too much ash build-up adversely affects the DPF performance.

When the DPF cleaning time draws near, the message "DPF requires cleaning soon" appears on the display. When this message appears or every 6000 hrs, contact your local Kubota dealer to clean the DPF.



IMPORTANT :

- To clean up the DPF, a specific machine is required. Do not attempt to clean it in any other way, such as disassembling, shaking and heating as toxic chemicals may be present inside of the DPF.
- Regardless of the service hours, clean the DPF if the message "DPF requires cleaning soon" appears on the display.

EVERY 8000 SERVICE HOURS

Carry out all 50, 250, 500, 1000, and 2000 hour servicing at the same time.

1. Replacing the DEF (AdBlue) tank filter

Contact your local KUBOTA dealer for replacing the DEF (AdBlue) tank filter.

EVERY 3 SERVICE MONTHS

1. Checking the DEF (AdBlue) quality

IMPORTANT :

- If the DEF (AdBlue) emits a strong ammonia odor, the quality of the fluid may have deteriorated. To check the quality of the DEF (AdBlue), check the odor of the DEF (AdBlue) in the DEF (AdBlue) tank once every 3 months.
- If the DEF (AdBlue) in the DEF (AdBlue) tank emits a strong ammonia odor, drain all DEF (AdBlue) from the DEF (AdBlue) tank into a container.

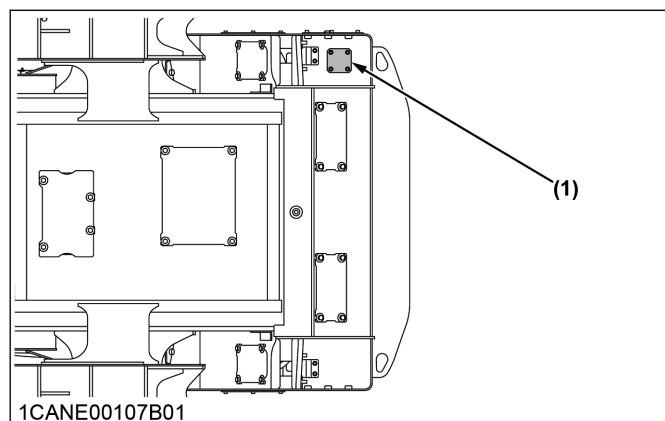
Details regarding how to drain the DEF (AdBlue) can be found in a different section.

(See Draining DEF (AdBlue) on page 136)

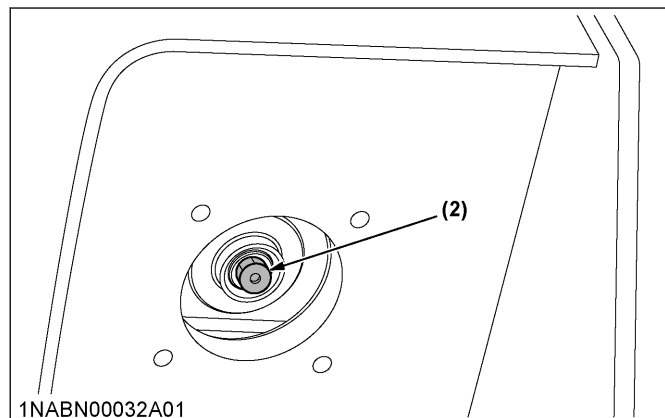
After draining the DEF (AdBlue), flush the inside of the DEF (AdBlue) tank with distilled water. Then refill the DEF (AdBlue) tank with new or high-quality DEF (AdBlue).

- Do not use a power tool when reinstalling the drain plug. Overtightening the drain plug may cause damage.

See Storing DEF (AdBlue) in the DEF (AdBlue) tank on page 137 for details.



(1) Frame cover



(1) Drain plug

Drain plug tightening torque

4.0 N·m to 6.0 N·m

ANNUAL SERVICING

1. Checking the air-conditioner pipes and hoses



WARNING

To avoid personal injury or death:

- Do not touch the air-conditioner hoses or the heater with your hand. You may get burned.

1. Check to see that all lines and hose clamps are tight and not damaged.
2. If hoses and clamps are found worn or damaged, replace or repair them at once.
Contact your local KUBOTA dealer for checking the air-conditioner pipes and hoses.

2. Checking the exhaust manifold for cracks, gas leakage, and mounting screw

Contact 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

Contact your local KUBOTA dealer for checking the intake air line for air leaks.

4. Checking the boost sensor

Contact your local KUBOTA dealer for checking the boost sensor.

5. Checking the condition of the diesel-particulate-filter (DPF) muffler

Contact your local KUBOTA dealer for checking the condition of the DPF muffler.

6. Checking the diesel-particulate-filter (DPF) differential pressure sensor and piping for gas leak

Contact your local KUBOTA dealer for checking the DPF differential pressure sensor and the DPF piping for gas leak.

7. Checking the diesel-particulate-filter (DPF) exhaust gas temperature sensor

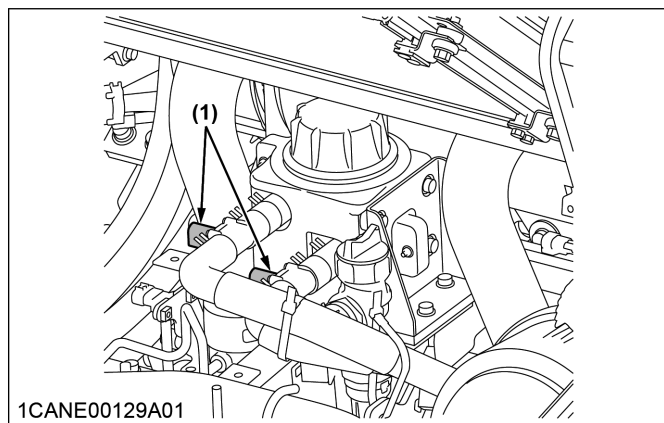
Contact your local KUBOTA dealer for checking the DPF exhaust gas temperature sensor.

8. Checking the EGR piping for gas leak

Contact your local KUBOTA dealer for checking the EGR piping for gas leak.

9. Checking the antifrost heater for oil separator (CCV heater)

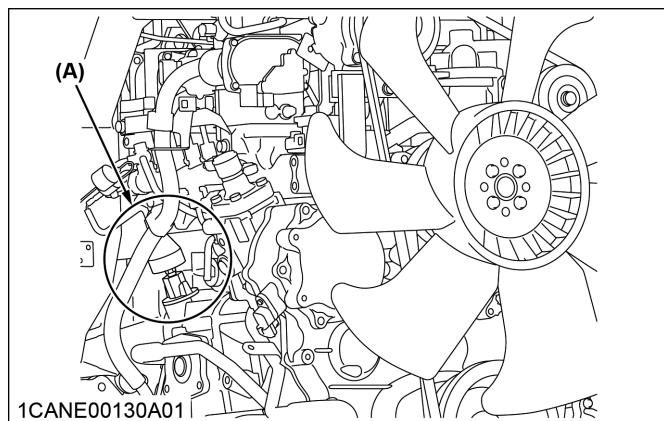
Contact your local KUBOTA dealer for checking the antifrost heater for oil separator (CCV heater).



(1) CCV heater

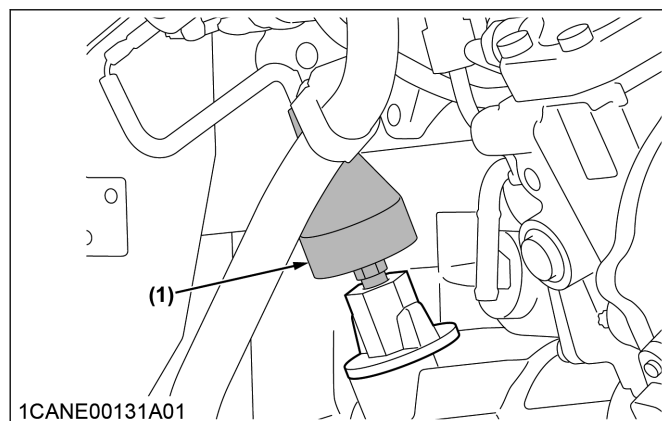
10. Checking the CCV internal pressure switch

Consult your local KUBOTA dealer for checking the CCV internal pressure switch.



(A) Fig [A]

Fig [A]



(1) CCV internal pressure switch

11. Checking the relief valve

Contact your local KUBOTA dealer for checking the relief valve.

BIENNIAL SERVICING

1. Changing the radiator coolant



WARNING

To avoid personal injury or death:

- When using the antifreeze, use protective clothing such as rubber gloves, because antifreeze contains poison.
- If you have swallowed the antifreeze, seek medical attention at once.
- When the antifreeze comes in contact with the skin or clothing, wash it off immediately.
- Do not mix different types of antifreeze. The mixture can produce a chemical reaction causing harmful substances or vapors.
- Antifreeze is extremely flammable and explosive under certain conditions. Keep fire and children away from the antifreeze.
- When draining fluids from the engine, collect fluids with a some container underneath the engine body.
- Do not pour waste onto the grounds, down a drain, or into any water source.
- Follow the relevant environmental-protection-regulations when disposing of the antifreeze.
- Antifreeze if swallowed is poisonous to people, animals, and birds.

1. Park the machine on a firm, flat, and level surface.
2. Lower the lift arms to the ground.
3. Stop the engine and wait until the engine has cooled down completely.
4. Open the radiator and the oil cooler backward.

- 5. Open the drain plug on the bottom of the radiator and drain coolant completely. if a recovery tank is equipped, disconnect the line from the tank floor and then open the drain shutoff-valve.
 - 6. To clean, rinse the radiator with water.
 - 7. Close the drain plug and fill the radiator and the recovery tank with coolant fluid.
 - 8. Let the engine idle for about 5 minutes.
 - 9. Stop the engine.
 - 10. Check the coolant level of recovery tank and add the coolant if necessary.
- The machine has been shipped filled with 50% antifreeze solution.

of the engine can result due to coolant fluid loss.

2. Replacing the coolant rubber piping

Contact your local Kubota dealer for replacing the coolant rubber piping.

3. Replacing the air-conditioner pipes and hoses

**WARNING**

To avoid personal injury or death:

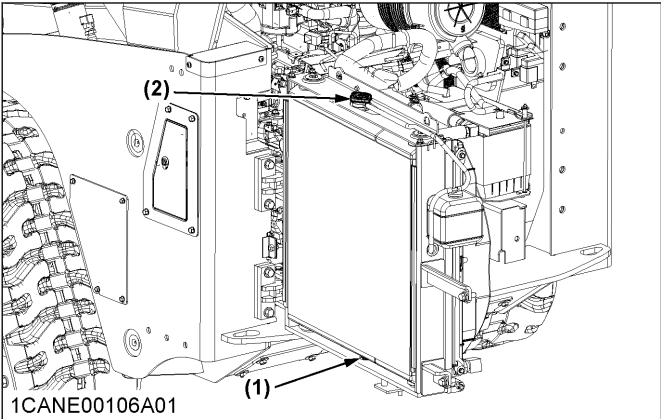
- Do not touch the water hoses or the heater with your hand. You may get burned.

Replace air-conditioner pipes and hoses every 2 years.

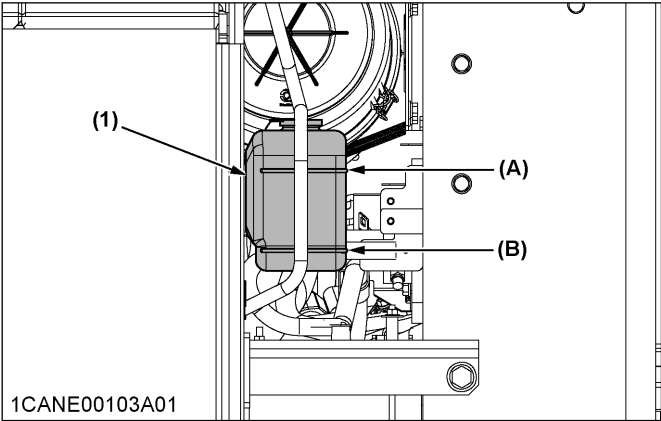
- 1. If the hoses or pipes of the air-conditioner are swollen, hard or cracked, replace them.
Contact your local KUBOTA dealer for replacing the pipes and hoses of the air-conditioner.

4. Replacing the EGR cooler hose

Contact your local KUBOTA dealer for replacing the EGR-cooler-hose.



(1) Drain plug (2) Radiator cap



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

Cooling water	Radiator	14.5 L
	Recovery tank	1 L

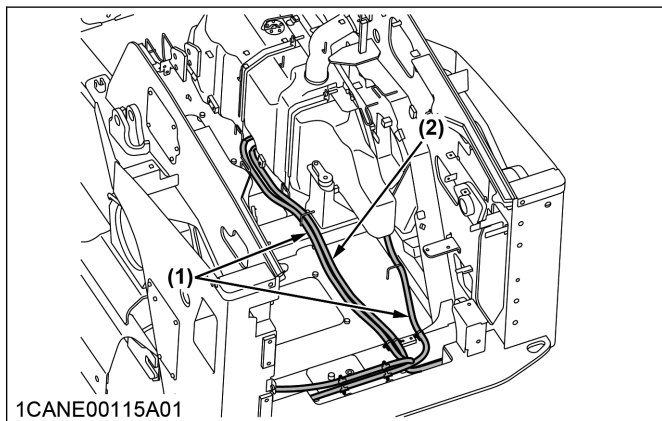
IMPORTANT :

- Do not operate the engine without coolant.
- To fill the radiator system and the recovery tank, use fresh water and antifreeze fluid.
- When the antifreeze is mixed with water, the antifreeze mixing ratio must be less than 50%.
- Tighten the radiator cap properly. If the cap is loosely or not properly fitted, overheating

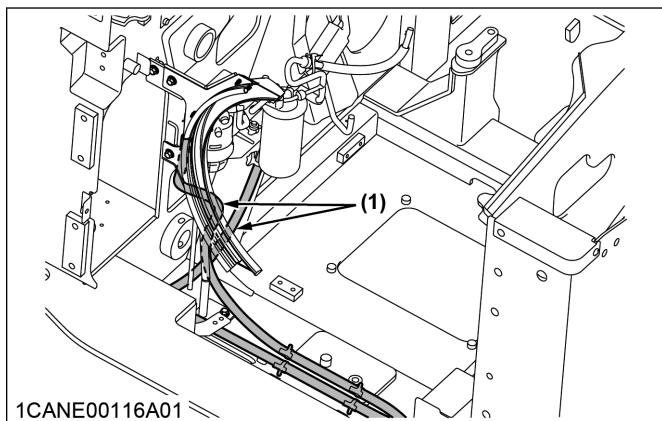
BIENNIAL OR EVERY 4000 HOURS SERVICING

1. Replacing the fuel hoses

1. Replace the hoses and clamps according to Checking the fuel line and the intake air line on page 200.



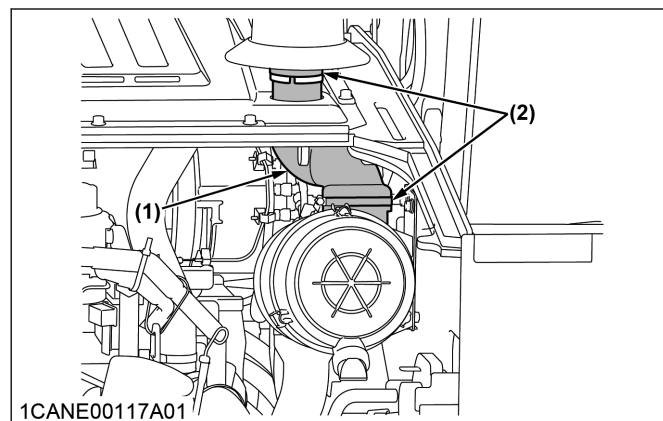
(1) Fuel hoses (2) Fuel drain hose



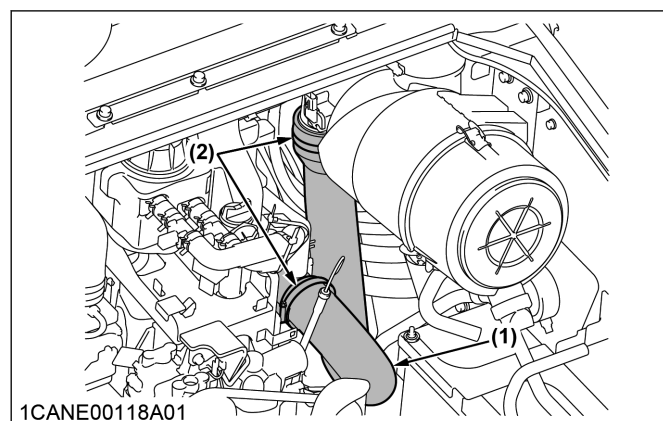
(1) Fuel hoses

2. Replacing the intake air line

1. Replace the hose, pipes, and clamps according to Checking the fuel line and the intake air line on page 200.



(1) Hose (2) Hose clamps



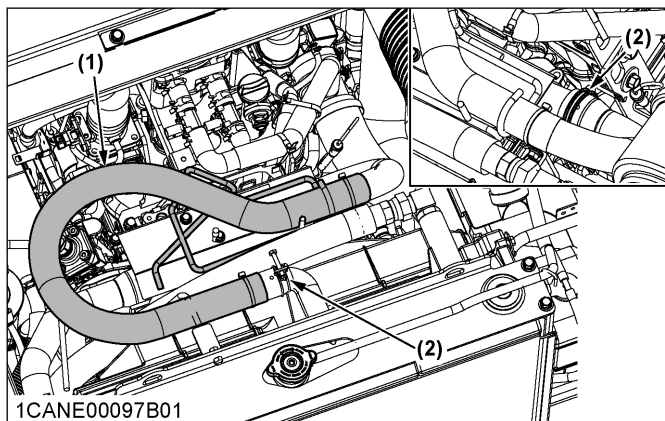
(1) Hose (2) Hose clamps

3. Replacing the radiator hoses

IMPORTANT :

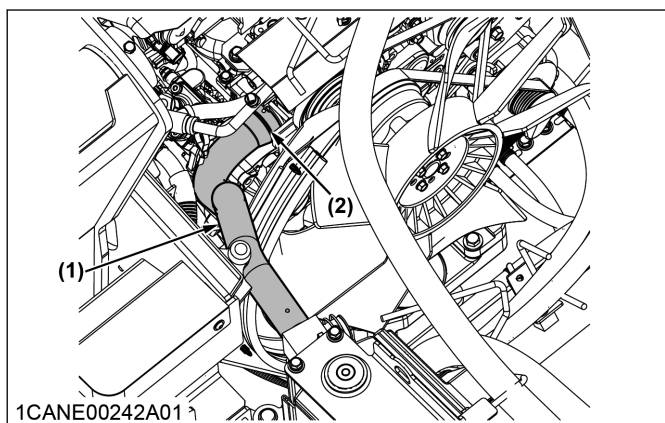
- Replace the radiator hoses and the hose clamps every 2 years. If the hoses are swollen, hard, or cracked, you must replace them earlier than specified (earlier than 2 years).

1. Replace the radiator hoses according to the following figure.



(1) Radiator hose

(2) Hose clamps



(1) Radiator hose

(2) Hose clamps

4. Replacing the hydraulic hoses

Contact your local KUBOTA dealer for replacing the hydraulic hoses.

5. Replacing the CCV rubber piping

Contact your local KUBOTA dealer for replacing the CCV-rubber-piping.

6. Replacing the diesel-particulate-filter (DPF) differential pressure sensor rubber piping (front and back)

Contact your local KUBOTA dealer for the DPF-differential-pressure-sensor-rubber-piping (front and back).

7. Replacing the suction pipe downstream the AFS (air-flow-sensor)

Contact your local KUBOTA dealer for replacing the suction pipe downstream the AFS.

8. Replacing the suction hoses upstream and downstream the turbocharger

Contact your local KUBOTA dealer for replacing the suction hoses upstream and downstream the turbocharger.

9. Replacing the boost sensor pressure rubber piping

Contact your local KUBOTA dealer for replacing the boost-sensor-pressure-rubber-piping.

SERVICING AS REQUIRED

1. Checking the amount of refrigerant gas



WARNING

To avoid personal injury or death:

- Liquid contact with eyes or skin may cause frostbite.
- In the event of a leakage, wear safety goggles. Escaping refrigerant can cause severe injuries to eyes.
- In contact with a flame, R134a refrigerant emits a toxic gas.
- Do not disconnect any part of the refrigeration circuit of the air-conditioning system. Contact your local KUBOTA dealer for assistance and service of refrigerant.

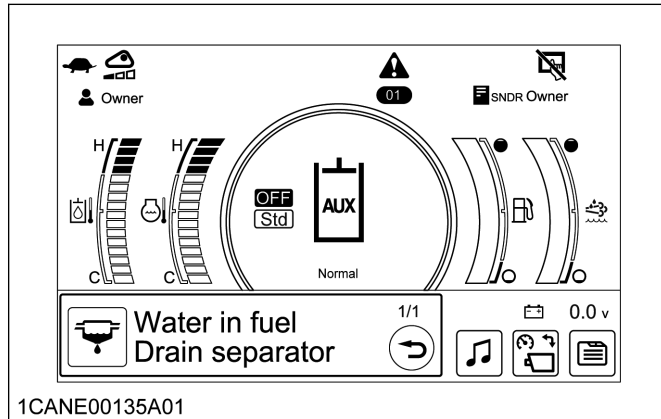
If the air-conditioner performance is reduced, check the following points 1.-2.

1. Air-conditioner condenser is clogged.
2. Air-conditioner belt is loosened.

If there is nothing unusual with the above points, a shortage of refrigerant is possible. Too short refrigerant may cause a poor performance of the air-conditioner. Contact your local KUBOTA dealer for servicing and replenishment.

2. Draining the water separator in case warning against water of the fuel filter

1. If the error message of the water separator appears on the instrument panel, immediately drain the water separator.
(See Draining the water separator on page 189)

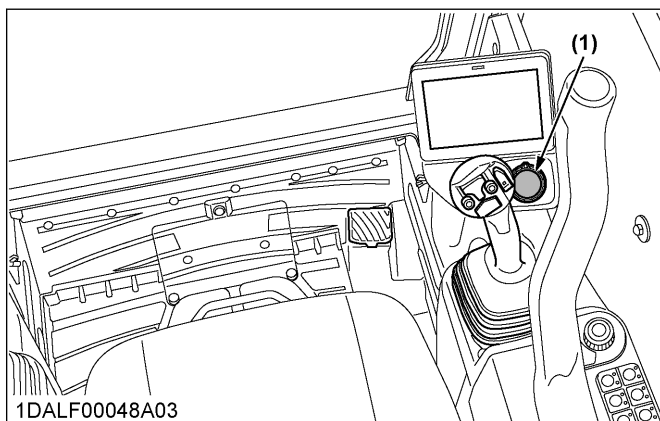


IMPORTANT :

- If you do not drain the water separator immediately after the error message appears, the engine may be seriously damaged.
- Without the water separator drained, the cleaning efficiency of the DPF (6000 hours or service as required) will be reduced and the DPF longevity will be shorter than expected.

3. Purging of the fuel system

1. Fill up the machine with fuel.
2. Press the start switch when the machine is off.
The fuel system will automatically be purged of air within 1 minute.



(1) Start switch

IMPORTANT :

- If the purging was insufficient, the engine dies after starting. In this case repeat step 2. again.

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.

TRACK

ADJUSTING THE TRACKS

IMPORTANT :

- Make sure that no obstacles such as stones are caught in the track. Remove obstacles such as stones before adjusting the track tension.

1. Adjust the track tension properly.

- To loosen the tracks



WARNING

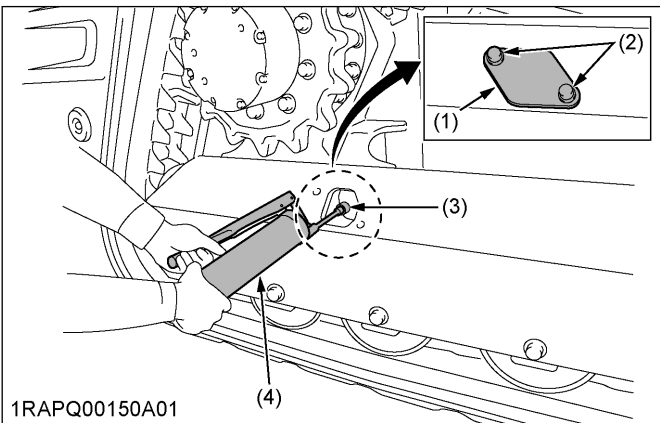
To avoid personal injury or death:

- Do not loosen the grease fitting completely or too quickly. Otherwise grease under high pressure in the tension cylinder could squirt out.
- Do not work under the machine.

- a. Loosen the bolts, and remove the cover.
- b. Using a socket wrench, loosen the grease fitting a few turns.

- To tension the tracks

- a. Loosen the bolt, and remove the cover.
- b. Apply grease into the grease fitting.



- (1) Cover
- (2) Bolt
- (3) Grease fitting
- (4) Grease gun

2. Check the track tension.



WARNING

To avoid personal injury or death:

- When lifting the machine itself with an attachment, place the jack stands under the main frame to prevent the machine from turning over.

- a. Put the machine on the jack stand.

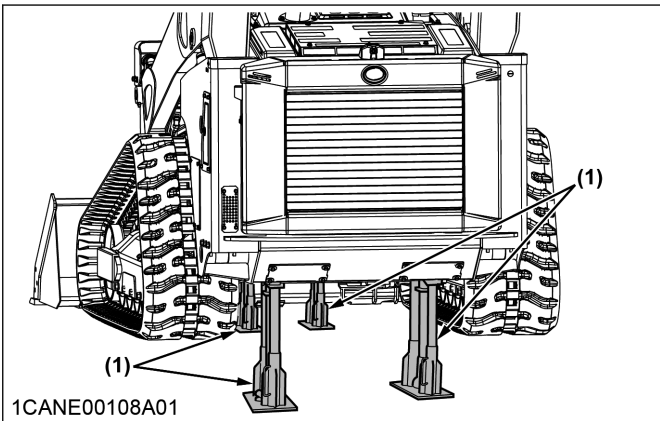


DANGER

To avoid personal injury or death:

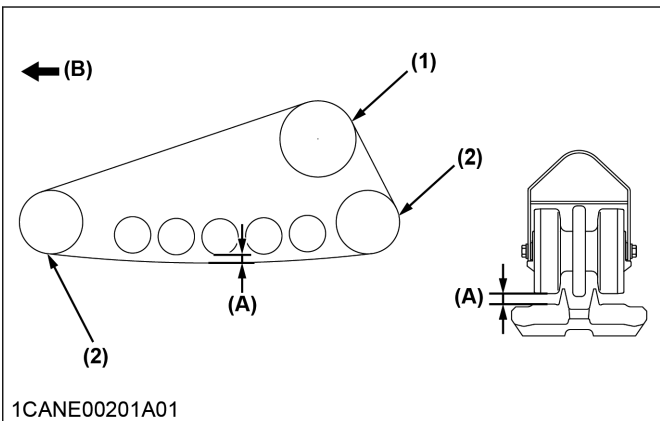
- Do not work under the machine when putting the machine on the jack stand.
- For your safety, do not rely on hydraulically supported devices. They may leak down and suddenly drop or be accidentally lowered.

- b. Lift the track from the ground as shown in the following figure.



- (1) Jack stand

- c. The track tension is correct if the distance of clearance between the outer end of the track roller and the track interior surface (A) corresponds to the dimension specified in the following table.



- (1) Drive sprocket
- (2) Idler

- (A) Clearance between outer end of track roller and track interior surface
- (B) Front

Clearance between outer end of track roller and track interior surface (A)	20 mm to 30 mm
--	----------------

IMPORTANT :

- If the tracks are too tight, wear is increased.
- If the tracks are too loose, the track pads may collide with the sprocket and wear is increased.

The track may dislocate or come off.

- If the track tension is high due to sticking mud, remove mud from the track.

3. After adjustment is completed, tighten the grease fitting using the socket wrench.

You must keep the tightening torque as follows.

Tightening torque	Between 98 N·m to 108 N·m
-------------------	---------------------------

IMPORTANT :

If the seam of the track is positioned incorrectly, the tracks will be tensioned too loosely, and a further readjustment will be necessary.

1. Rotate the track after adjustment 1 to 2 times to check the tension.
2. Additionally follow the following points when adjusting rubber tracks.
 - Check track tension 50 hours after initial use and readjust if necessary.
 - Check and adjust thereafter every 50 service hours.

IMPORTANT :

- Clean the track after every use.

FUSE

FUSES

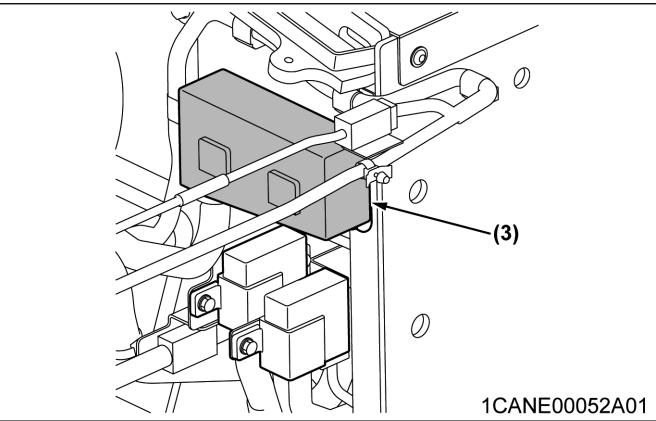
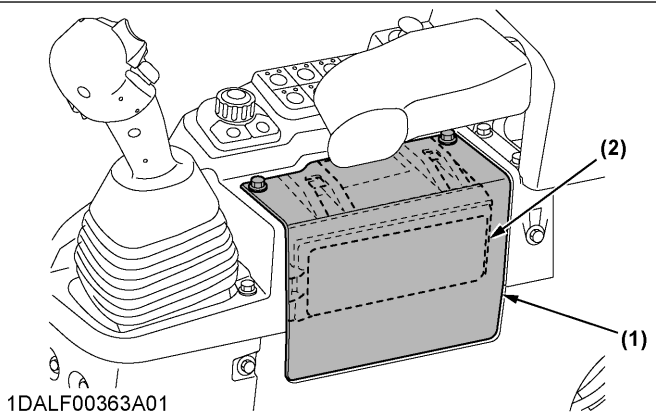
⚠ WARNING

To avoid personal injury or death:

- When changing fuse, stop the engine and turn off the machine.

1. Replacing the fuse

1. Detach the cover, and remove the cover of the fuse box.
2. Replace the burnt out fuse with a fuse of the same capacity.



(1) Cover
(2) Fuse and relay box A
(3) Fuse and relay box B

2. Fuse capacities and circuits

[A]												
14	15	16	17	18	19	20	21	22	23	24	25	26
1	2	3	4	5	6	7	8	9	10	11	12	13

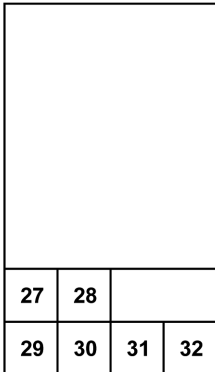
1RAPQ00152A04

[A] Fuse and relay box A

No.	Protected circuit	Capacity
1	Back buzzer	5 A
2	Switch (ACC)	5 A
3	Fuel pump	5 A
4	AUX electrical power	15 A
5	Beacon	10 A
6	Wiper/Washer	15 A
7	Arm harness	10 A
8	Attachment - 2	20 A
9	Attachment - 1	-
10	Seat (Air-sus)/Seat heater	20 A
11	Electric outlet	15 A
12	Control elements	5 A
13	Starter/Air heater	5 A
14	Room light	5 A
15	Front working light	15 A
16	Rear working light	10 A
17	Starter SW/ACC	5 A
18	Horn	5 A
19	-	-
20	Meter (+B)	5 A
21	KOBD ACE (+B)	5 A
22	ECU Main (+B)	10 A
23	Blower motor	25 A
24	Compressor clutch	10 A
25	AC controller	5 A
26	ECU (Main power)	30 A

NOTE :

- The fuse of No.9 is not set at the factory. When using the attachments-1, contact your Kubota dealer.

[B]			
			
27	28		
29	30	31	32

1CANE00044A01

[B] Fuse and relay box B

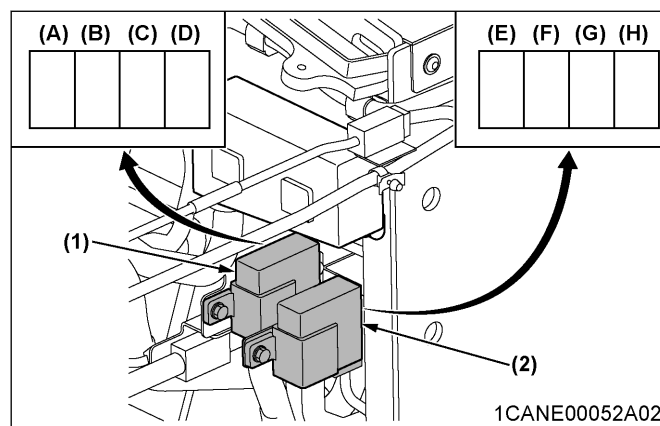
No.	Protected circuit	Capacity
27	Engine Elements	5 A
28	EGR	10 A
29	CCV heater	20 A
30	Switch (Sensor)	10 A
31	ACU heater	20 A
32	ACU	20 A

3. Slow blow fuse

Slow-blow-fuse protects the electrical circuits.

If the slow-blow-fuse is blown, check the electrical circuits for trouble and then replace with a new compatible slow-blow-fuse.

(See Replacing the bolted slow blow fuse on page 221)



(1) Slow blow fuse box A

(2) Slow blow fuse box B

Slow blow fuse box A

No.	Protected circuit	Capacity
(A)	Main	60 A
(B)	Closed CAB	50 A
(C)	FAN	20 A
(D)	ACU	40 A

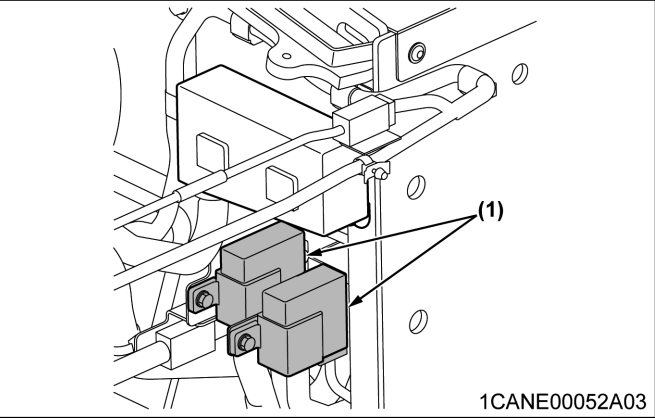
Slow blow fuse box B

No.	Protected circuit	Capacity
(E)	Heater	100 A
(F)	Alternator	120 A
(G)	Engine	30 A
(H)	-	-

4. Replacing the bolted slow blow fuse

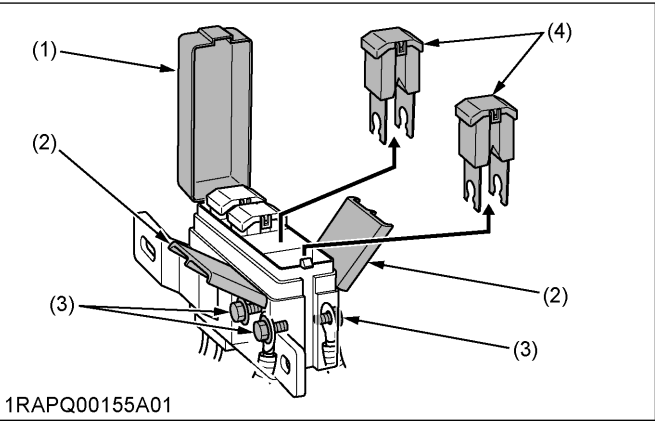
- Disconnect the negative cord of the battery.

2. Remove the slow-blow-fuse-case.



(1) Slow blow fuse case

3. Open the slow-blow-fuse-case-cap and the cover, and then remove the bolts and draw out the bolted-slow-blow-fuse.



(1) Slow blow fuse case cap (4) Bolted slow blow fuse
(2) Cover
(3) Bolt

Tightening torque	M5 bolt	2.94 N·m to 3.92 N·m (0.30 kgf·m to 0.40 kgf·m)
	M6 bolt	4.90 N·m to 5.88 N·m (0.50 kgf·m to 0.60 kgf·m)

TROUBLESHOOTING

TROUBLESHOOTING OF THE ENGINE AND OTHER SYSTEMS

If the machine does not perform as expected, or if 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.
		Air or water in the fuel system	- Remove the water from the fuel tank. - Check the fuel-pipe-joint-bolts and nuts for looseness. - Purging of the fuel system as the fuel filter and the supply pump. See Purging of the fuel system on page 217.
		Fuse is blown out.	Check the fuse and replace it with a same-capacity one as required.
		Oil viscosity is too high the engine runs sluggishly in winter.	Use the engine block heater (option).
		Battery is almost dead causing insufficient compression.	Recharge the battery.
		Low DEF (AdBlue) level	Add DEF (AdBlue) to the tank.
	Insufficient engine power	Low fuel level	Check the fuel and add it if necessary.
		Clogged air cleaner	Clean the air-cleaner-element.
		Low DEF (AdBlue) level	Add DEF (AdBlue) to the tank.
	Engine suddenly stops.	Low fuel level	- Check the fuel and add it if necessary. - Purge the fuel system.
		Low DEF (AdBlue) level	Add DEF (AdBlue) to the tank.
	Abnormal exhaust gas color	Use of poor fuel	Use the prescribed fuel.
		Too much engine oil	Drain engine oil to prescribed level.
	Water temperature in red zone (Overheating)	Flawed seal of the water pump	Replace the seal of the water pump.
		Worn or torn fan belt	Adjust or replace the fan belt.
		Thermostat is flawed.	Replace the thermostat.
		Coolant level too low	Fill the coolant-recovery tank with the coolant to prescribed level.
		Radiator grill or fins are clogged.	Clean the radiator grill or fins.
		Coolant is contaminated with rust from the cylinder head or crankcase.	Replace coolant fluid and add anti-rust.
		Flawed radiator cap (Evaporation)	Replace the radiator cap.
		Corroded coolant pipes	Contact your local Kubota dealer.
		Continuous operation under full load	Reduce the load.
		Cylinder-head-gasket is damaged (Coolant loss).	Replace the cylinder-head-gasket.
		Engine oil level too low	Fill the engine with the engine oil to prescribed level.
		Maladjustment of the fuel injection	Readjust the fuel injection in ignition timing.
		Use of poor fuel	Use the prescribed fuel.
Hydraulic System	Lift arms, bucket, or travel motor power is too low.	Hydraulic oil level too low	Add the hydraulic oil to the prescribed level.
		Leakages of the hoses and / or the joints	Contact your local Kubota dealer.
		Clogged oil filter	Replace the oil filter.

(Continued)

TROUBLESHOOTING

Trouble		Cause	Countermeasure
Hydraulic System	Lift arms, bucket, or travel motor can not move.	Armrest is in the raised position.	• Lower the armrests.
		Operator is not in the operator's seat.	• Sit in the operator's seat.
		Hydraulic-unlock-switch is not pressed.	• Press the hydraulic-unlock-switch.
Drive System	Deviation of drive direction	Blocked through the stones	• Remove the stones.
		Track too loose or too tight	• Adjust the track accordingly.
Electric system	 mark appears in the instrument panel.	Electric system is malfunctioning.	• Check the message of NAVIGATION SCREENS on page 225 and contact your local dealer.

LIST OF SCREEN

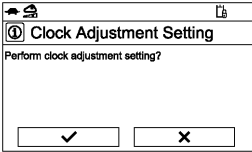
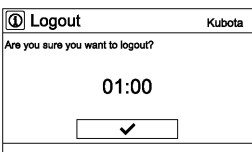
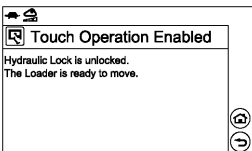
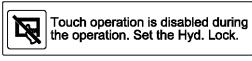
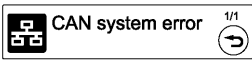
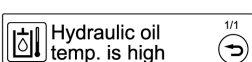
NAVIGATION SCREENS

If an error occurs in the machine, one of the following messages appears on the display.

In case of trouble, immediately contact your local Kubota dealer for inspection and repair.

To view detailed information, rotate and press the jog dial, or touch the error message (does not apply to numbers 1 through 4).

Notify your local Kubota dealer of this information.

No.	Message	Problem of failure (details)	Machine behavior (provisional measure)	Correction
1	 1DALF00230A01	Clock needs to be set (due to factors such as battery disconnection, etc.).	Select “✓” to set the clock.	-
2	 1DALF00142B01	The machine is in the user login retention period immediately after turning it off. If turning on the machine during the login retention period, the password request is not executed.	[Only when logging out immediately] Select “✓”	-
3	 1DALF00231A01	Touch operation is possible even when the hydraulic lock is released. (Normally, touch operation is not possible when the hydraulic lock is released)	-	-
4	 1DALF00232A01	Touch operation is not possible due to hydraulic lock release.	Touch operation is not possible.	Move the armrests to the raised position to lock out the hydraulic and electric system.
5	 1DALF00233A01	CAN communication system may have a problem. Some of the display readings or some of the switches may malfunction.	The engine may start and the machine may move. However do not try any operations. Must move the machine to a safe place.	Contact your local dealer.
6	 1DALF00234A01	Fuel level is low.	-	Check the fuel and add it if necessary.
7	 1DALF00396A01	Hydraulic oil temperature is higher than usual.	Operate with the load a little lessened. Stop the engine and check the level of the hydraulic oil, and check for a hydraulic oil leak. Ensure the cooling package is clear of any debris.	If the error still appears, contact your local dealer.

(Continued)

LIST OF SCREEN

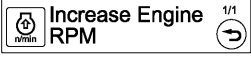
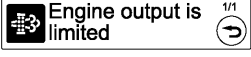
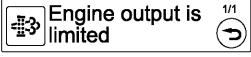
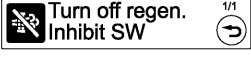
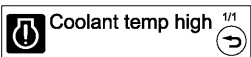
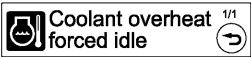
No.	Message	Problem of failure (details)	Machine behavior (provisional measure)	Correction
8	 Hyd oil overheat Forced idle  1DALF00236A01	Hydraulic oil temperature is too high. The engine RPM will be reduced automatically for cooling.	Stop the engine and check the level of the hydraulic oil, and check for a hydraulic oil leak. Ensure the cooling package is clear of any debris.	If the error still appears, contact your local dealer.
9	 Hyd. temp. sensor err.  1DALF00237A01	Hydraulic Oil Temperature Sensor may have a problem.	Hydraulic Oil Temperature cannot be monitored and will not be able to detect an overheat.	Contact your local dealer.
10	 Fuel Lvl. sensor err.  1DALF00423A01	Fuel Level Sensor may have a problem.	Fuel level will not be available on the display. The other functions of the machine are still operative.	Contact your local dealer.
11	 Accelerator dial err.  1DALF00239A01	The Accelerator Dial Sensor may have a problem.	The machine will operate at idle RPM.	Move the machine to a safe place and contact your local dealer.
12	 Accelerator pedal err.  1DALF00240A01	The Accelerator Pedal Sensor may have a problem.	The machine will operate at idle RPM.	Move the machine to a safe place and contact your local dealer.
13	 2-Speed Sys. Error  1DALF00241A01	Open Circuit detected on the 2-Speed Solenoid circuit.	The machine can be ran in low speed, but not in High Speed. The other functions of the machine are still operative.	Contact your local dealer.
14		Short Circuit detected on the 2-Speed Solenoid circuit.	The machine can be ran in low speed, but not in High Speed. The other functions of the machine are still operative.	Contact your local dealer.
15	 Parking Brake Sys. Error  1DALF00243A01	Open Circuit detected on the Parking Brake Release Solenoid circuit.	The engine may run, but the machine may not move.	Contact your local dealer.
16		Short Circuit detected on the Parking Brake Release Solenoid circuit.	The engine may run, but the machine may not move.	Contact your local dealer.
17	 Float Sys. Error  1DALF00245A01	Open Circuit detected on the Float Solenoid circuit.	Float cannot be activated. The other functions of the machine are still operative.	Contact your local dealer.
18		Short Circuit detected on the Float Solenoid circuit.	Float cannot be activated. The other functions of the machine are still operative.	Contact your local dealer.
19	 Hydraulic Lock Sys. Error  1DALF00247A01	Open Circuit detected on the Hydraulic Lock Release Solenoid circuit.	The front attachments may not work, but the machine can still move.	Check your surroundings and move the machine to a safe place. Contact your local dealer.
20		Short Circuit detected on the Hydraulic Lock Release Solenoid circuit.	The front attachments may not work, but the machine can still move.	Check your surroundings and move the machine to a safe place. Contact your local dealer.
21	 Hydraulic Hitch Sys. Error  1DALF00251A01	Open Circuit detected on the Hydraulic Hitch Solenoid circuit.	Hydraulic Hitch will not work. The other functions of the machine are still operative.	Contact your local dealer.
22		Short Circuit detected on the Hydraulic Hitch Solenoid circuit.	Hydraulic Hitch will not work. The other functions of the machine are still operative.	Contact your local dealer.

(Continued)

No.	Message	Problem of failure (details)	Machine behavior (provisional measure)	Correction
23	 AUX Knob error ^{1/1} 1DALF00253A01	AUX Knob may have a problem.	AUX System does not work. The other functions of the machine are still operative.	Contact your local dealer.
24	 Right AUX Solenoid Error ^{1/1} 1DALF00254A01	Open Circuit detected on the Right AUX Solenoid circuit.	AUX System will not work. The other functions of the machine are still operative.	Contact your local dealer.
25	 Left AUX Solenoid Error ^{1/1} 1DALF00255A01	Open Circuit detected on the Left AUX Solenoid circuit.	AUX System will not work. The other functions of the machine are still operative.	Contact your local dealer.
26	 Anti-stall sys. Error ^{1/1} 1DALF00256A01	Anti-Stall solenoid may have a problem.	The machine will not move.	Contact your local dealer.
27	 Overvoltage ^{1/1} 1DALF00257A01	The supply voltage of the battery is too high. Wrong battery may be installed. When the engine is restarted and running without error, the problem is resolved.	The majority of systems fail. Immediately stop using the connected devices and disconnect the current battery.	When the engine is restarted and running with no-error, it means there is no problem. If the error is still detected, stop using the machine and contact your local dealer.
28	 5V External 5V sys. err.(short) ^{1/1} 1DALF00258A01	Sensor of 5 V Power Supply may be shorted.	Sensor of 5 V Power Supply may be shorted. The majority of the system may be inoperative. The engine may be able to start and the machine may be able to move, but do not work the machine.	Move the machine to a safe place and contact your local dealer.
29	 Self Leveling Sys. Error ^{1/1} 1DALF00259A01	Open circuit detected on the Self-Leveling solenoid circuit.	The Self-Leveling System may not work. The other functions of the machine are still operative.	Contact your local dealer.
30		Short circuit detected on the Self-Leveling solenoid circuit.	The Self-Leveling System may not work. The other functions of the machine are still operative.	Contact your local dealer.
31	 Ride Control Sys. Error ^{1/1} 1CANE00202A01	Open circuit detected on the Ride Control solenoid circuit.	The Ride Control System may not work. The other functions of the machine are still operative.	Contact your local dealer.
32		Short circuit detected on the Ride Control solenoid circuit.	The Ride Control System may not work. The other functions of the machine are still operative.	Contact your local dealer.
33	 Travel pressure error ^{1/1} 1DALF00265A01	Open circuit detected on main travel pressure sensor.	Both machine operation and traveling are possible, but machine performance may be reduced.	Contact your local dealer.
34		Short circuit detected on main travel pressure sensor.	Both machine operation and traveling are possible, but machine performance may be reduced.	Contact your local dealer.
35		Data error detected on main travel pressure sensor.	Both machine operation and traveling are possible, but machine performance may be reduced.	Contact your local dealer.
36	 Travel pilot pressure err. ^{1/1} 1DALF00267A01	Open circuit detected on travel pilot pressure sensor.	Both machine operation and traveling are possible, but machine performance may be reduced. In addition, the back-up alarm and the buzzer of the travel alarm function may not sound.	Contact your local dealer.

(Continued)

LIST OF SCREEN

No.	Message	Problem of failure (details)	Machine behavior (provisional measure)	Correction
37	 Travel pilot pressure err.  1DALF00267A01	Short circuit detected on travel pilot pressure sensor.	Both machine operation and traveling are possible, but machine performance may be reduced. In addition, the back-up alarm and the buzzer of the travel alarm function may not sound.	Contact your local dealer.
38	 Increase Engine RPM  1DALF00269A01	DPF regeneration is required.	For low engine rpm, the machine cannot start DPF regeneration.	Increase the Engine RPM to start diesel-particulate-filter (DPF) regeneration. If the error still appears, contact your local dealer.
39	 Engine output is limited  1DALF00270A01	DPF Regeneration is required immediately.	For low engine rpm, the machine cannot start DPF regeneration. Engine Output is limited to prevent Engine Failure.	Increase the Engine RPM to start diesel-particulate-filter (DPF) regeneration. If the error still appears, contact your local dealer.
40	 Engine output is limited  1DALF00271A01	DPF Regeneration is in progress.	The exhaust gas temperature rises. Engine Output is limited to prevent Engine Failure.	-
41	 DPF Repair Required  1DALF00393A01	The machine can not start DPF regeneration.	DPF must be repaired.	Contact your local dealer.
42	 DPF needs replacing  1DALF00273A01	The machine can not start DPF regeneration.	DPF must be replaced.	Contact your local dealer.
43	 Turn off regen. Inhibit SW  1DALF00274A01	DPF Regeneration is required.	DPF Regeneration is required, but unable to start regeneration because the inhibited switch is activated.	Move the machine to a safe place and make sure that the DPF inhibit switch lamp is "OFF." Increase the Engine RPM to start DPF Regeneration. If the error still appears, contact your local dealer.
44	 Turn off regen. Inhibit SW  1DALF00275A01	DPF Regeneration is required immediately but the inhibit button is engaged.	DPF Regeneration is required, but unable to start regeneration because the inhibited switch is activated. If the machine is kept with Hydraulic Lock engaged, the engine will stop automatically. The engine output is limited.	Move the machine to a safe place and turn off the DPF inhibit switch to begin DPF regeneration. If the error still appears, contact your local dealer.
45	 Coolant temp high  1DALF00277A01	Engine Coolant Temperature is elevated.	-	Stop the Engine and check for debris in the cooling package. If the error still appears, contact your local dealer.
46	 Coolant overheat forced idle  1DALF00278A01	Engine Coolant Temperature is extremely high and engine is overheated.	Engine RPM will be decreased to allow the engine to cool down. Do not stop the Engine.	After the cool down is completed, check the cooling package. If this error still appears, contact your local dealer.
47	 Engine Oil Pressure Low  1DALF00279A01	The engine lubricating system oil pressure is too low.	The engine may get burnt out. Stop the Engine and check the Engine Oil Level.	If this error still appears, discontinue machine use and contact your local dealer.

(Continued)

No.	Message	Problem of failure (details)	Machine behavior (provisional measure)	Correction
48	 Charging sys. err. ^{1/1}  1DALF00280A01	The Charging System may have a problem. The battery is not charging.	The machine works until the battery goes dead.	Stop the Engine and check the engine belts and alternator performance.
49	 Water in fuel Drain separator ^{1/1}  1DALF00281A01	Water may be mixed with fuel. There is a risk of serious Engine Damage.	Stop the Engine, check the Fuel Filter and drain any water from the water separator.	If this error still appears, contact your local dealer.
50	 Eng. Preheating ^{1/1}  1DALF00282A01	The Engine is Preheating. (Glow)	-	The Engine is Preheating. Wait until this message disappears, and then start the Engine.
51	 Warming up: limited max. rpm ^{1/1}  1DALF00397A01	Hydraulic oil temperature is too low.	While the hydraulic system is warming up, engine speed will be limited.	-
52	 Periodic Maintenance Due ^{1/1}  1DALF00141B01	Periodic Maintenance is due. This message appears 10 hours before the periodic check interval. Please check the Periodic Check Screen to see the required maintenance. (See MAINTENANCE INTERVALS on page 176)	Start the engine as usual.	Contact your local dealer for supplies or to schedule maintenance. After replacement, this message will disappear once you reset the time of the relevant part from the Periodic Check Screen.
53	 Periodic check notification ^{1/1}  1DALF00285A01	Periodic Maintenance is passed due. Please check the Periodic Check Screen to see the required maintenance. (See MAINTENANCE INTERVALS on page 176)	The engine can still start, but immediately ask your local Kubota dealer for replacement.	Contact your local dealer for supplies or to schedule maintenance. After replacement, this message will disappear once you reset the time of the relevant part from the Periodic Check Screen.
54	 DPF requires cleaning soon ^{1/1}  1DALF00286A01	DPF cleaning is required soon.	Operate the machine as usual.	Contact your local dealer to have the DPF cleaned.
55	 DPF replacement required ^{1/1}  1DALF00287A01	DPF reaching end of usable life, consider cleaning soon.	The engine can still start, but you must immediately contact your local Kubota dealer for cleaning.	Contact your local dealer for cleaning options.
56	 Setup required ^{1/1}  1DALF00288A01	Machine Setup is required.	Functions may not work properly.	Complete the machine setup.
57	 Engine Stop Switch is Engaged ^{1/1}  1DALF00289A01	The emergency engine stop button is pulled up.	The engine cannot be started when the engine stop switch is engaged.	Disengage the engine stop switch before starting engine.
58	 Ride Control Disabled ^{1/1}  1CANE00203A01	Ride control cannot be turned on while float is engaged.	Ride control cannot be turned on.	Turn off float mode.

(Continued)

LIST OF SCREEN

No.	Message	Problem of failure (details)	Machine behavior (provisional measure)	Correction
59	 AUX Disabled  1/1 1DALF00291A01	AUX cannot be turned on while AUX knob is pushed.	AUX cannot be turned on.	Return the AUX knob to the neutral position.
60	 User Function Restricted  1/1 1DALF00292A01	User restricted function was executed.	User restricted function cannot be executed.	To use the relevant function, release the function restrictions. (See Setting the restriction of the touch operation on page 82)
61	 High-Flow AUX Disabled  1/1 1CANE00223A01	AUX High-Flow mode was turned on when the AUX High-Flow mode cannot be turned on. • AUX High-Flow mode is on when the hydraulic oil temperature is low	AUX High-Flow mode cannot be turned on.	Clear the condition that prevents the AUX High-Flow mode from being turned on.
62	 DPF regen in progress  1/1 1DALF00296A01	For the process of DPF regeneration, the exhaust gas temperature rises.	Normal operation is possible.	-
63	 Forced Shutdown to protect DPF  1/1 1DALF00299A01	To protect the DPF, the engine stopped automatically.	The engine stopped automatically.	Start switch OFF position and restart the engine. Move the machine to a safe place immediately and rev up the engine rpm to start the DPF regeneration.
64	 Air filter is clogged  1/1 1DALF00300A01	Air filter is clogged. It may cause the serious damage on the Engine.	-	Clean the air filter element.
65	 Decel Pedal SW Operation Disabled  1/1 1CANE00204A01	The decelerator pedal function cannot be changed while the foot accelerator is being operated.	The decelerator pedal function cannot be changed.	Stop operating the foot accelerator.
66	 Engine turbo protection  1/1 1DALF00301A01	The coolant temperature is too low.	During engine warm up, the engine RPM will be limited.	-
67	 Hyd. Lock Release disabled  1/1 1DALF00302A01	Attempted to release the hydraulic lock in the condition where the hydraulic lock cannot be released.	The hydraulic lock cannot be released.	Fully sit down in seat then lower both the armrests.
68	 Annual check notification  1/1 1DALF00303A01	The annual maintenance is required this month.	-	Contact your local dealer and perform the necessary Maintenance.
69	 Float Disabled  1/1 1DALF00304A01	Float switch was turned in the condition where the float mode cannot be turned on. • Float mode is on when the hydraulic oil temperature is too low	Float mode cannot be turned on.	Release the hydraulic lock and warm up the engine
70	 Engine power limited  1/1 1CANE00211A01	The SCR System may have a problem.	The Engine Output is limited.	Contact your local dealer.

(Continued)

No.	Message	Problem of failure (details)	Machine behavior (provisional measure)	Correction
71	 Engine power limited  1CANE00212A01	The SCR System may have a problem.	The Engine Output is limited.	Contact your local dealer.
72	 Low Hydraulic Oil Level  1CANE00213A01	Hydraulic Oil Level is low.	-	Check the Hydraulic Oil and add it if necessary.
73	 Hyd. oil sensor Error  1CANE00214A01	Open circuit detected on hydraulic oil sensor.	Oil level will not be available on the display. The other functions of the machine are still operative.	Contact your local dealer.
74		Short circuit detected on hydraulic oil sensor.	Oil level will not be available on the display. The other functions of the machine are still operative.	Contact your local dealer.
75	 Inhibit engine start  1DALF00305A01	The engine cannot be started because it has been disabled by KubotaNOW.	The engine cannot be started.	The machine owner can re-enable the engine to start by using myKubota app. Once it has been re-enabled, please cycle the ignition key off and on then wait for 30 seconds before attempting to start. If this message still appears, contact your local dealer.
76	 AUX Bypass Solenoid Error  1CANE00215A01	Open circuit detected on the AUX Bypass Solenoid circuit.	AUX System may not work. The other functions of the machine are still operative.	Contact your local dealer.
77		Short Circuit detected on the AUX Bypass Solenoid circuit.	AUX System may not work. The other functions of the machine are still operative.	Contact your local dealer.
78	 CCV system freezing  1DALF00306A01	The engine has run for a certain period of time with high crank-case pressure.	If you continue running the engine while this message appears, the engine performance will be limited.	Stop the engine and immediately contact your local dealer.
79	 Accessory power Relay error  1DALF00364A01	Accessory power relay is experiencing trouble. In low ambient temperature, the relay may be frozen.	The engine does not start.	Turn on and off several times. If this message still appears, immediately contact your local dealer
80	 2-speed Disabled  1DALF00365A01	Two speed travel operation is disabled until the hydraulic oil temperature increases to operating temperature.	Two speed travel operation is disabled.	Continue to operate the machine to allow it to warm up.
81	 AUX pressure error  1CANE00216A01	Open circuit detected on AUX pressure sensor.	AUX pressure does not appear on the display. The other functions of the machine are still operative.	Contact your local dealer.
82		Short circuit detected on AUX pressure sensor.	AUX pressure does not appear on the display. The other functions of the machine are still operative.	Contact your local dealer.
83	 Arm pilot pressure err.  1CANE00217A01	Arm pilot pressure switch may have a problem.	Float operation may not work. Other features of the machine will continue to work.	Contact your local dealer.

(Continued)

LIST OF SCREEN

No.	Message	Problem of failure (details)	Machine behavior (provisional measure)	Correction
84	 Bucket pilot pressure err.  1/1 1CANE00218A01	Bucket pilot pressure switch may have a problem.	-	Contact your local dealer.
85	 Engine system error  1/1 1DALF00307A01	An error occurred in the engine system.	See ENGINE SYSTEM ERROR on page 237.	See ENGINE SYSTEM ERROR on page 237.
86	 Critical emission failure  1/1 1DALF00308A01	An error occurred in the exhaust system.	The engine output may be limited.	Contact your local dealer.
87	 DPF must be regenerated  1/1 1DALF00388A01	DPF Regeneration is required immediately.	The Engine Output is limited to prevent the Engine Failures.	-
88	 DPF Repair Required  1/1 1DALF00389A01	DPF Regeneration is required immediately and must be performed by your local dealer.	The Engine Output is limited to prevent the Engine Failures.	Contact your local dealer.
89	 DPF needs replacement  1/1 1DALF00390A01	DPF must be replaced.	Regeneration can no longer be performed.	Contact your local dealer.
90	 Coolant temp. is high  1/1 1DALF00391A01	The Coolant Temperature seems to be high.	-	Stop the Engine and check whether the Grill or Radiator is clogged.
91	 ACU CAN err.  1/1 1CANE00205A01	CAN Communication System may have a problem. Some of the display readings or some of the switches may malfunction.	-	Contact your local dealer.
92	 Low DEF (AdBlue) Level  1/1 1CANE00206A01	DEF (AdBlue) Tank Level is low.	-	Check the DEF (AdBlue) and add it if necessary.
93	 Abnormal DEF (AdBlue) quality  1/1 1CANE00207A01	There are concerns about the Quality of DEF (AdBlue).	If the DEF (AdBlue) emits a strong Ammonia odor, the Quality of DEF (AdBlue) may have degraded.	See ENGINE SYSTEM ERROR on page 237.
94	 Thawing DEF (AdBlue)  1/1 1CANE00208A01	The frozen DEF (AdBlue) is being thawed.	During thawing, the Engine Output may be limited to protect the SCR system.	Please warm up enough.
95	 DEF (AdBlue) warning  1/1 1CANE00209A01	DEF (AdBlue) Tank Level is low, or there are concerns about the Quality of DEF (AdBlue).	-	-
96	 DEF (AdBlue) warning  1/1 1CANE00210A01	An error occurred in the SCR system.	See ENGINE SYSTEM ERROR on page 237.	See ENGINE SYSTEM ERROR on page 237.

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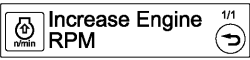
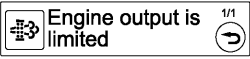
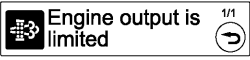
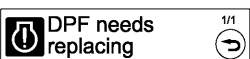
No.	Message	Problem of failure (details)	Machine behavior (provisional measure)	Correction
97	 Cooling Timer Active 05:00 1CANE00221A01	Cooling timer is in operation.	The machine will automatically shut-down after cooling is completed.	Please wait until engine stops automatically.
98	Always visually check surroundings for safety.  1CANE00222A01	-	-	Always visually check surroundings for safety.

AUTOMATIC DIESEL PARTICULATE FILTER (DPF) REGENERATION

Automatic regeneration is a normal maintenance activity that a machine performs automatically.

The diesel particulate filter (DPF) serves to trap particulate matters (PM) that are contained in exhaust gases and to automatically burn (DPF-regenerate) these matters. During the regeneration, buzzer sounds and warning lamp blinks and display shows messages.

The following is an explanation and required operator action.

Warning lamp	Display	Meaning	Required operator action
 Blinking (yellow)	 1DALF00296A01	Auto regeneration starts. Continue operating the machine.	Operate the machine until the warning lamp stops blinking. Make sure that no people, animals, plants and flammable materials are within the immediate working area.
 Blinking (yellow)	 1DALF00269A01	When the message "Increase Engine RPM" appears on the display, increase Engine RPM until the message disappears.	Increase Engine RPM until the engine rev up indicator goes out. Auto regeneration starts. Operate the machine until the warning lamp stops blinking. Make sure that no people, animals, plants and flammable materials are within the immediate working area. (Refer to No. 38 in Navigation list of screens section)
 Blinking (yellow)	 1DALF00271A01	DPF Regeneration is in progress. Engine Output is limited to prevent Engine Failure.	Keep Engine RPM elevated until regeneration process is complete. Make sure that no people, animals, plants and flammable materials are within the immediate working area.
 Blinking (red)	 1DALF00270A01	DPF Regeneration is required immediately. Engine Output is limited to prevent Engine Failure. When the hydraulic system is locked, the engine will stop after 60 seconds in order to protect DPF. When the hydraulic system is unlocked, the engine will not stop while the engine output is limited.	Increase the Engine RPM until the engine rev up indicator goes out. Auto regeneration starts. Make sure that no people, animals, plants and flammable materials are within the immediate working area. (Refer to No. 39 in Navigation list of screens section) If the error still appears, contact your local dealer.
 Blinking (red)	 1DALF00299A02	To protect the DPF, the engine stopped automatically.	Restart the engine and raise its speed until the machine starts DPF regeneration. Unless the auto regeneration starts, contact your local Kubota dealer.
 Blinking (red)	 1DALF00393A02	DPF must be repaired. To protect the DPF, the engine output is limited. When the hydraulic system is locked, the engine will stop after 60 seconds in order to protect DPF. When the hydraulic system is unlocked, the engine will not stop while the engine output is limited.	Immediately contact your local Kubota dealer. (Refer to No. 41 in Navigation list of screens section)
 Blinking (red)	 1DALF00273A01	Exchange the DPF. To protect the DPF, the engine output is limited.	Immediately contact your local Kubota dealer. (Refer to No. 42 in Navigation list of screens section)

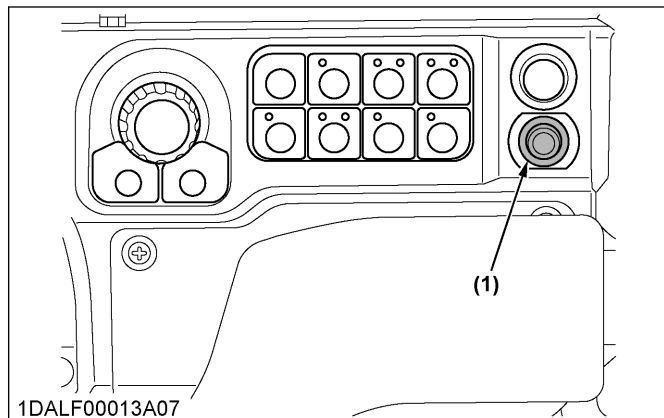
NOTE :

- Stopping the engine or pressing the inhibit switch during the automatic regeneration cycle stops the automatic regeneration process.
After restarting the engine, automatic regeneration starts.

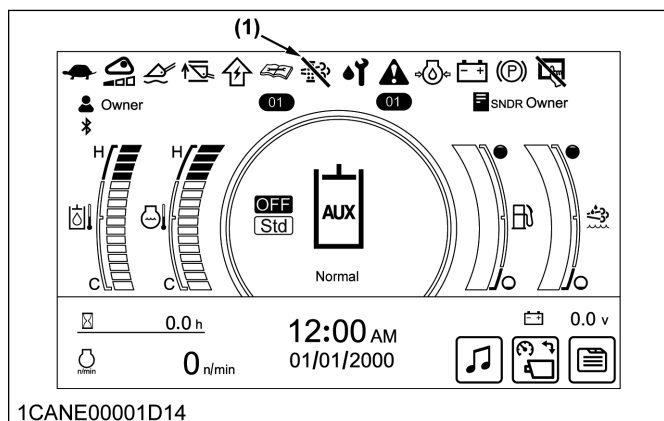
LOCKING AND RELEASING THE DIESEL PARTICULATE FILTER (DPF) REGENERATION

1. Press the inhibit switch (1).

The automatic DPF regeneration is locked and the inhibit lamp on the display lights up.



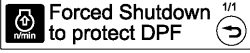
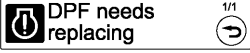
(1) Inhibit switch



(1) Inhibit lamp

LIST OF SCREEN

2. Take the appropriate action based on the following table.

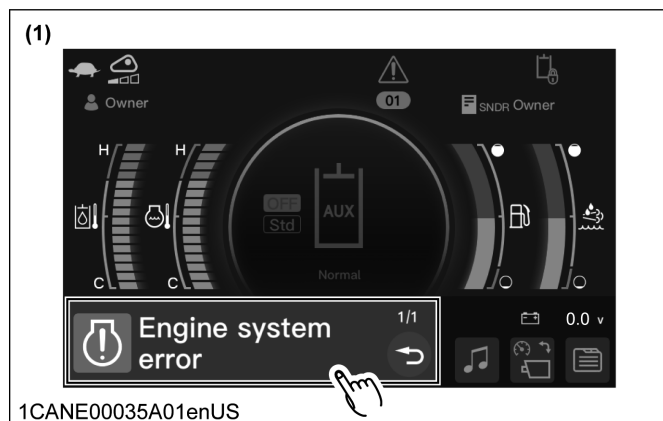
Inhibit lamp	Warning lamp	Display	Meaning	Required operator action
 Lights up (yellow)	 Unlit	—	- Auto regeneration process is locked. - The state is before requirement of regeneration. - When inhibit switch turns into blinking, it requires regeneration.	Operate the machine as usual.
 Blinking (yellow)	 Blinking (yellow)	 1DALF00274A01	- Auto regeneration process is locked. - Operator needs preparation of DPF regeneration.	- Move the machine to a safe place and turn off the DPF inhibit switch. - Increase the Engine RPM until the machine starts DPF regeneration. - Make sure that no people, animals, plants and flammable materials are within the immediate working area. (Refer to No. 43 in Navigation list of screens section)
 Blinking (yellow)	 Blinking (red)	 1DALF00275A01  1DALF00299A02	- Auto regeneration process is locked. - Operator needs to prepare for DPF regeneration immediately. - To protect the DPF, engine output is limited. When the hydraulic system is locked, the engine will stop after 60 seconds in order to protect DPF. - When the hydraulic system is unlocked, the engine will not stop while the engine output is limited.	- Move the machine to a safe place and turn off the DPF inhibit switch. - Increase the Engine RPM until the machine starts DPF regeneration. - Make sure that no people, animals, plants and flammable materials are within the immediate working area. (Refer to No. 44 and 63 in Navigation list of screens section)
 Blinking (yellow)	 Blinking (red)	 1DALF00407A01  1DALF00299A02	- DPF must be repaired. - To protect the DPF, engine output is limited. - When the hydraulic system is locked, the engine will stop after 60 seconds in order to protect DPF. - When the hydraulic system is unlocked, the engine will not stop while the engine output is limited.	Immediately contact your local Kubota dealer. (Refer to No. 41 and 63 in Navigation list of screens section)
 Blinking (yellow)	 Blinking (red)	 1DALF00273A01	- DPF must be exchanged. - To protect the DPF, engine output is limited.	Immediately contact your local Kubota dealer. (Refer to No. 42 in Navigation list of screens section)

ENGINE SYSTEM ERROR

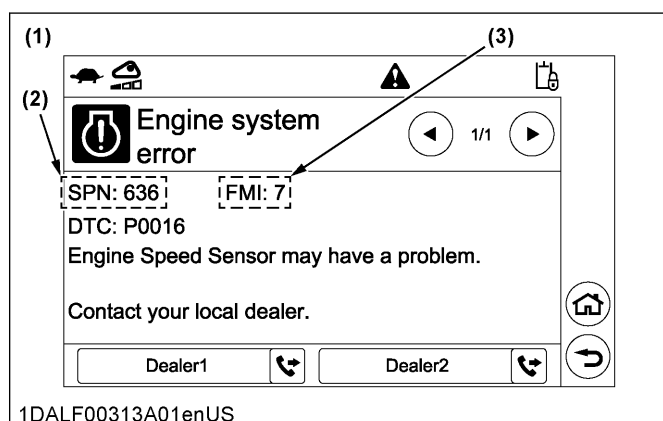
Engine system errors are managed by codes called SPN and FMI.

SPN and FMI are listed at the top of the error details screen, so look for the error in the engine error list table based on the above 2 codes. (See Engine error list on page 237)

If “Engine system error”, “DEF (AdBlue) warning”, “Low DEF (AdBlue) Level”, or “Abnormal DEF (AdBlue) quality” pops up as shown in the following screen, touch the pop-up or select using the jog dial to display the error detail screen in the following screen.



(1) Home screen



(1) Error details screen

(2) SPN

(3) FMI

1. Engine error list

◎ : Sure to happen

○ : May happen

SPN	FMI	Problem of failure	Engine performance			Provisional measure and correction
			Acceleration limited	Engine output limited	Engine stopped	
636	7	Engine Speed Sensor System	-	-	-	Immediately contact your local dealer.
636	8		○	○		
636	2					
723	8		-	-		
723	2					

(Continued)

SPN	FMI	Problem of failure	Engine performance			Provisional measure and correction
			Acceler- ation limited	Engine out- put limited	Engine stopped	
190	0	Engine Speed Sensor System	○	○	-	Immediately contact your local dealer.
157	4	Engine Fuel/Rail Pressure Sensor System	◎	◎	◎	Immediately contact your local dealer.
157	3					
1347	4	Engine Suction Control Valve (SCV) System	◎	◎	-	Immediately contact your local dealer.
1347	3					
172	4	Engine Intake Temperature Sensor System	-	-	-	Immediately contact your local dealer.
172	3					
110	4	Engine Coolant Temperature Sensor System	◎	◎	-	Immediately contact your local dealer.
110	3					
174	4	Engine Fuel Temperature Sensor System	-	-	-	Immediately contact your local dealer.
174	3					
523535	0	Engine Injector System	◎	◎	○	Immediately contact your local dealer.
651	3					
653	3					
654	3					
652	3					
523525	1					
523523	2					
523523	4					
523524	4					
523523	3					
523524	3					
523524	2					
102	4	Engine Intake Pressure Sensor System	-	○	-	Immediately contact your local dealer.
102	3					
168	4	Battery Voltage System	◎	◎	○	Immediately contact your local dealer.
168	3					
3509	4	Sensor Voltage System	◎	◎	○	Immediately contact your local dealer.
3509	3					
3510	4					
3510	3					
1485	2	Main Relay System	-	-	-	Immediately contact your local dealer.
108	4	Engine Atmospheric Pressure Sensor System	-	○	-	Immediately contact your local dealer.
108	3					
523572	4	Engine EGR Valve System	-	◎	-	Immediately contact your local dealer.
523574	3					
523574	4					
523575	7					
523576	2					
523577	2					
523578	2					

(Continued)

SPN	FMI	Problem of failure	Engine performance			Provisional measure and correction
			Accelera- tion limited	Engine out- put limited	Engine stopped	
110	0	Engine overheat warning and Emission level caution	-	⊙	-	For correction, see Coolant temperature gauge on page 37. If the message "Engine system error" still appears, immediately contact your local dealer.
523538	2	Engine ECU System	○	○	○	Immediately contact your local dealer.
523538	7					
628	2					
1077	2					
523527	2					
523543	2					
523604	2	Engine Communication System	○	○	-	Immediately contact your local dealer.
523547	2					
523548	2					
523591	2					
523592	2					
523580	2	Engine Intake Throttle	-	-	-	Immediately contact your local dealer.
523582	3					
523582	4					
3251	3	Engine Differential Pressure Sensor System	-	-	-	Immediately contact your local dealer.
3251	4					
4765	3	Engine Exhaust Gas Temperature Sensor (DOC Inlet side)	-	-	-	Immediately contact your local dealer.
4765	4					
3242	3	Engine Exhaust Gas Temperature Sensor (DOC Outlet side)	-	-	-	Immediately contact your local dealer.
3242	4					
3246	3	The Engine Exhaust Gas Temperature Sensor (DPF Outlet side)	-	-	-	Immediately contact your local dealer.
3246	4					
523599	0	All of Engine Exhaust Gas Temperature Sensor	-	-	-	Immediately contact your local dealer.
3252	0	DOC Reaction System	⊙	⊙	-	Immediately contact your local dealer.
523590	16	DPF Regeneration has timed out.	-	-	-	Immediately contact your local dealer.
523589	17	The Coolant Temperature is too low to perform the DPF Regeneration.	-	-	-	Immediately contact your local dealer.
523602	0	Frequency of DPF Regeneration is too much.	-	⊙	-	Immediately contact your local dealer.
633	7	Engine Fuel System (Pressure Limit Valve)	⊙	⊙	-	Immediately contact your local dealer.
157	0	Engine Fuel System (Rail Pressure)	⊙	⊙	-	Immediately contact your local dealer.
1239	1	Engine Fuel System (Fuel Leakage)	⊙	⊙	-	Immediately contact your local dealer.
1347	7	Engine Fuel System (SCV)	⊙	⊙	-	Immediately contact your local dealer.
523539	2	Engine Fuel System (Supply Pump)	⊙	⊙	-	Immediately contact your local dealer.
523540	2					

(Continued)

SPN	FMI	Problem of failure	Engine performance			Provisional measure and correction
			Acceleration limited	Engine output limited	Engine stopped	
132	15	Engine Air Intake System (Insufficient Boost Pressure)	⊙	⊙	-	Immediately contact your local dealer.
4765	0	The Engine Exhaust Gas Temperature is too high (DOC Inlet side).	-	-	⊙	Check the fuel level and see if the fuel filter is clogged. Check to see if any air-intake hose is disconnected and if the air-cleaner-element is clogged. If the message "Engine system error" still appears, immediately contact your local dealer.
3242	0	The Engine Exhaust Gas Temperature is too high (DOC Outlet side).	-	-	⊙	Check the fuel level and see if the fuel filter is clogged. Check to see if any air-intake hose is disconnected and if the air-cleaner-element is clogged. If the message "Engine system error" still appears, immediately contact your local dealer.
3246	0	The Engine Exhaust Gas Temperature is too high (DPF Outlet side).	-	-	⊙	Check the fuel level and see if the fuel filter is clogged. Check to see if any air-intake hose is disconnected and if the air-cleaner-element is clogged. If the message "Engine system error" still appears, immediately contact your local dealer.
523601	0	Engine Starter Relay may have a problem.	-	-	⊙	The starter is limited for its activation in response to any other error
172	0	Engine Intake Air Temperature is too high.	-	-	-	Immediately contact your local dealer.
523700	13	Engine System	-	-	-	Immediately contact your local dealer.
523600	0	Engine System	-	-	-	Immediately contact your local dealer.
411	4	Engine Differential Pressure Sensor System	-	○	○	Immediately contact your local dealer. This error is determined after the engine is warmed up.
411	3					
523634	2	Engine ECU System	-	○	-	Immediately contact your local dealer.
523635	2					
523636	2					
168	1	Battery Voltage System	-	-	⊙	Immediately contact your local dealer.
523544	3	Engine Air Heater System	-	-	-	Immediately contact your local dealer.
523544	4					
100	1	The Engine Oil Pressure is too low.	-	-	⊙	Immediately contact your local dealer.
132	3	Engine Air Mass Flow Sensor	-	○	-	Immediately contact your local dealer.
132	4					
171	3					
171	4					
3936	7	Engine PM Removal System	-	-	-	Immediately contact your local dealer.
3936	2					

ACU

SPN	FMI	Problem of failure	Engine performance			Provisional measure and correction
			Accelera- tion limited	Engine out- put limited	Engine stopped	
4334	4	DEF (AdBlue) Pressure sensor error: Out-of-Range Low	⊙	⊙	-	Immediately contact your local dealer.
4334	3	DEF (AdBlue) Pressure sensor error: Out-of-Range High				Immediately contact your local dealer.
4334	17	DEF (AdBlue) Pressure sensor error: Offset Low				Immediately contact your local dealer.
4334	15	DEF (AdBlue) Pressure sensor error: Offset High				Immediately contact your local dealer.
3031	2	DEF (AdBlue) Tank Temperature sensor error	-	-	-	Immediately contact your local dealer.
3031	4	DEF (AdBlue) Tank Temperature sensor error: Out-of-Range Low				Immediately contact your local dealer.
3031	3	DEF (AdBlue) Tank Temperature sensor error: Out-of-Range High				Immediately contact your local dealer.
1761	11	DEF (AdBlue) Tank Level sensor error	⊙	⊙	-	Immediately contact your local dealer.
1761	17	DEF (AdBlue) Tank Level: Low	⊙	⊙	-	Immediately contact your local dealer.
1761	18	DEF (AdBlue) Tank Level: Empty				Immediately contact your local dealer.
1761	1	DEF (AdBlue) Tank Level: Leakage	⊙	⊙	-	Immediately contact your local dealer.
4360	4	SCR Temperature sensor error: Out-of-Range Low	⊙	⊙	-	Immediately contact your local dealer.
4360	3	SCR Temperature sensor error: Out-of-Range High				Immediately contact your local dealer.
4360	15	SCR Temperature sensor error: Stuck High				Immediately contact your local dealer.
4360	2	SCR Temperature sensor error: Rationality				Immediately contact your local dealer.
523604	2	CAN1 Bus off	-	-	-	Immediately contact your local dealer.
523547	2	CAN2 Bus off	⊙	⊙	-	Immediately contact your local dealer.
523616	2	No communication with Tank sensor				Immediately contact your local dealer.
523617	2	No communication with Pre-NOx sensor				Immediately contact your local dealer.
523618	2	No communication with Post-NOx sensor				Immediately contact your local dealer.
523619	2	No communication with Engine ECU				Immediately contact your local dealer.
190	2	Invalid Engine Speed Data				Immediately contact your local dealer.
4765	2	Invalid DOC Inlet Temperature (T0) Data	⊙	⊙	-	Immediately contact your local dealer.
183	2	Invalid Engine Fuel Rate Data				Immediately contact your local dealer.
523631	2	Invalid Intake MAF data per Cylinder				Immediately contact your local dealer.
3361	5	DEF (AdBlue) Injector short to ground or open circuit or short to +B	⊙	⊙	-	Immediately contact your local dealer.
4354	4	Suction Tube Heater short to ground	-	-	-	Immediately contact your local dealer.

(Continued)

SPN	FMI	Problem of failure	Engine performance			Provisional measure and correction
			Accelera- tion limited	Engine out- put limited	Engine stopped	
4354	3	Suction Tube Heater short to +B	-	-	-	Immediately contact your local dealer.
4354	5	Suction Tube Heater open circuit				Immediately contact your local dealer.
4354	2	Suction Tube Heater coil short circuit				Immediately contact your local dealer.
4356	4	Delivery Tube Heater short to ground	-	-	-	Immediately contact your local dealer.
4356	3	Delivery Tube Heater short to +B				Immediately contact your local dealer.
4356	5	Delivery Tube Heater open circuit				Immediately contact your local dealer.
4356	2	Delivery Tube Heater coil short circuit				Immediately contact your local dealer.
4357	4	Return Tube Heater short to ground	-	-	-	Immediately contact your local dealer.
4357	3	Return Tube Heater short to +B				Immediately contact your local dealer.
4357	5	Return Tube Heater open circuit				Immediately contact your local dealer.
4357	2	Return Tube Heater coil short circuit				Immediately contact your local dealer.
4355	4	DEF (AdBlue) Pump Heater short to ground	-	-	-	Immediately contact your local dealer.
4355	3	DEF (AdBlue) Pump Heater short to +B				Immediately contact your local dealer.
4355	5	DEF (AdBlue) Pump Heater open circuit				Immediately contact your local dealer.
4355	2	DEF (AdBlue) Pump Heater coil short circuit				Immediately contact your local dealer.
4353	4	Heater Relay short to ground or open circuit	-	-	-	Immediately contact your local dealer.
4353	3	Heater Relay short to +B				Immediately contact your local dealer.
3363	4	Coolant Valve for Tank Heater short to ground	-	-	-	Immediately contact your local dealer.
3363	5	Coolant Valve for Tank Heater open circuit				Immediately contact your local dealer.
3363	3	Coolant Valve for Tank Heater short to +B				Immediately contact your local dealer.
5435	4	DEF (AdBlue) Pump short to ground or open circuit	○	◎	-	Immediately contact your local dealer.
5435	3	DEF (AdBlue) Pump short to +B				Immediately contact your local dealer.
5435	12	DEF (AdBlue) Pump Motor uncontrollable				Immediately contact your local dealer.
5435	1	DEF (AdBlue) Pump failed to prime (circulate)				Immediately contact your local dealer.
4364	1	Low Conversion Efficiency	◎	◎	-	Immediately contact your local dealer.
4350	15	DEF (AdBlue) Consumption High				Immediately contact your local dealer.
3516	11	DEF (AdBlue) Tank Quality sensor error	◎	◎	-	Immediately contact your local dealer.
3516	18	DEF (AdBlue) Tank Quality: Low	◎	◎	-	Immediately contact your local dealer.
3516	16	DEF (AdBlue) Tank Quality: High				Immediately contact your local dealer.
3516	12	DEF (AdBlue) Tank Quality: Incorrect sensor reading				Immediately contact your local dealer.

(Continued)

SPN	FMI	Problem of failure	Engine performance			Provisional measure and correction
			Accelera- tion limited	Engine out- put limited	Engine stopped	
3516	2	Diesel in DEF (AdBlue) Tank	⊙	⊙	-	Immediately contact your local dealer.
3216	12	Pre NOx sensor error	⊙	⊙	-	Immediately contact your local dealer.
3223	12	Pre NOx sensor Heater error				Immediately contact your local dealer.
3216	1	Pre NOx sensor error: Tampering				Immediately contact your local dealer.
3226	12	Post NOx sensor error	⊙	⊙	-	Immediately contact your local dealer.
3233	12	Post NOx sensor Heater error				Immediately contact your local dealer.
3226	1	Pre NOx sensor error: Tampering				Immediately contact your local dealer.
4334	16	DEF (AdBlue) Dosing Pressure error: High	⊙	⊙	-	Immediately contact your local dealer.
4334	18	DEF (AdBlue) Dosing Pressure error: Low				Immediately contact your local dealer.
3509	4	Sensor supply voltage: Low	⊙	⊙	-	Immediately contact your local dealer.
3509	3	Sensor supply voltage: Low				Immediately contact your local dealer.
168	4	Battery voltage: Low	⊙	⊙	-	Immediately contact your local dealer.
168	3	Battery voltage: High				Immediately contact your local dealer.
628	2	ACU FLASH ROM error	⊙	⊙	-	Immediately contact your local dealer.
523701	13	EEPROM check sum error (DST1)	-	-	-	Immediately contact your local dealer.
523702	13	EEPROM check sum error (DST2)	-	-	-	Immediately contact your local dealer.
523632	2	EGR system error	⊙	⊙	-	Immediately contact your local dealer.
3361	7	DEF (AdBlue) Injector QR Data Fault: No QR Data	-	-	-	Immediately contact your local dealer.
3361	2	DEF (AdBlue) Injector QR Data Fault: Invalid QR Data				Immediately contact your local dealer.

COLD WEATHER

PREPARATION FOR OPERATION OF THE MACHINE IN COLD WEATHER

- Replace the engine oil and hydraulic oil with those of viscosity suitable for cold weather.
- In cold weather, the battery power drops, and the battery fluid may freeze if the battery is not sufficiently charged. To prevent the battery fluid from freezing, keep the battery charged at least 80 % or more of its capacity after operation of the machine.

To ease next start of the machine, it is recommended to keep the battery stored in closed or heated rooms.

- Add antifreeze to coolant in the radiator and coolant-recovery tank, if the ambient temperature is expected to drop as follows.

Ambient temperature	below 0 °C
---------------------	------------

Mixing ratio of water and antifreeze depends on the expected ambient temperature.

When mixing, stir antifreeze up well, and then fill it into the radiator.

Mixing ratio between water and antifreeze

Ambient temperature	°C	-5	-10	-15	-20	-25	-30	-35
Antifreeze	%	30	30	30	35	40	45	50
Water	%	70	70	70	65	60	55	50

IMPORTANT :

- Use permanent antifreeze or long-life coolant.
- Drain the coolant completely and clean the inside of the radiator, then fill with the water and antifreeze mixture.
- The antifreeze acts as an anti-corrosive, it is not necessary to add an additive to the water and antifreeze mixture.
- See Checking the coolant level on page 184 for radiator fill volumes.
- See STARTING THE ENGINE UNDER COLD CONDITIONS on page 146.

STORING THE MACHINE AFTER COMPLETION OF WORK IN COLD WEATHER

1. Clean the machine thoroughly after work, and wipe dry.

Otherwise mud and earth on the tracks could freeze if the ambient temperature drops as follows. Operation of the machine is then not possible.

Ambient temperature	below 0 °C
---------------------	------------

2. Store the machine in a dry place. If you can not store the machine in a dry place, store it on wooden planks or on mats.

If the machine is kept on damp or muddy ground, the tracks could freeze overnight. Operation of the machine is then not possible. Furthermore the reduction gear may be damaged.

3. Additionally, rub the piston rods of the hydraulic cylinders to dry them.

Otherwise severe damage could occur to the piston rods of the hydraulic cylinders if dirty water seeps through the seals.

LONG STORAGE



WARNING

To avoid personal injury or death:

- Do not clean the machine with the engine running.
- To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building or any areas without proper ventilation.
- Bring the machine on a firm, flat, and level surface. Lower the lift arms on the ground.

STORING THE MACHINE FOR A LONG PERIOD OF TIME

If the machine will be stored for a long period of time, follow the following procedures.

1. Clean the whole machine thoroughly and in all cases store it indoors.
If you have to keep the machine outdoors, follow the following procedure.
 - a. Lay out wooden planks on even ground.
 - b. Place the machine on the planks.
 - c. Cover the machine completely.
2. Change the oil and grease the machine.
3. Heavily grease the visible section of the cylinder rods.
4. Remove the battery and store it indoors.
5. Drain all DEF (AdBlue) from the DEF (AdBlue) tank into a container.
Do not use a power tool when reinstalling the drain plug.
Overtightening the drain plug may cause damage.
(See Draining DEF (AdBlue) on page 136)
6. If it is expected that the ambient temperature will drop as follows, add the antifreeze or drain coolant completely.

Ambient temperature	below 0 °C
---------------------	------------

IMPORTANT :

- Wash the machine after stopping the engine.
If you wash the machine while running the engine, splashing water gets into the air cleaner through its intake and cause engine damage.
Carefully, wash and do not splash water over the air cleaner while the engine is running.

OPERATING THE MACHINE AFTER STORING FOR A LONG PERIOD OF TIME

Follow the following procedures when operating the machine storing for a long period of time.

1. Wipe off the grease from the hydraulic cylinder rods.
2. Turn on the engine, and operate the attachments and the drive mechanisms under no load in order to circulate the hydraulic oil.
3. Add new or high-quality DEF (AdBlue) to the DEF (AdBlue) tank.
(See Adding DEF (AdBlue) on page 135)

If the machine is stored for longer than 1 month, perform steps 1. and 2. once every month.

1. Periodic replacement of important component parts

To ensure safety in operation, inspect and service the machine at regular intervals. For added safety, ask your KUBOTA dealer to replace the following important component parts.

The following important component parts are prone to degradation in material or subject to wear and tear with time. It is difficult to judge how much they have been affected at regular inspection. It is therefore necessary to replace the following component parts with new ones, whether wear is visible or not after a specified time of use.

If any parts are found worn even before the specified use, repair or replace them in the same way as other parts.

If any of the hose clamps is found deformed or cracked, also replace the hose clamp.

For the hydraulic hoses other than the ones to be replaced periodically, inspect them for the following points. If needed, tighten them up or replace them.

When replacing the hydraulic hoses, change their O rings and sealings with new ones.

For replacement of the important parts, contact your KUBOTA dealer.

NOTE :

- At the following periodic inspections, check the fuel hoses and hydraulic hoses as well.

Inspection Interval	Check points
Daily Checks	Oil leak at the fuel and hydraulic hose connections and points
Every month	Oil leak at the fuel and hydraulic hose connections and points Damages at the fuel and the hydraulic hose (cracks, chafing)
Every year	Oil leak at the fuel and hydraulic hose connections and points Interference, deformation, degradation, twist, and other damages (cracks, chafing) of the fuel and hydraulic hoses

List of important component parts

No.	Component parts	Period
1	Fuel hoses	Every 2 years or 4000 hours
2	Hydraulic hoses	
3	Radiator hoses	
4	CCV rubber piping	
5	DPF differential pressure sensor rubber piping (front and back)	
6	Suction pipe downstream the AFS (air-flow-sensor)	
7	Suction hoses upstream and downstream the turbocharger	
8	Boost sensor pressure rubber piping	
9	Intake air line	

To prevent serious damage to the hydraulic system, use only a KUBOTA genuine hydraulic hose.

IMPORTANT :

- When the biennial operating hours are below 4000 hours, change the important component parts every 2 years.

RECOMMENDED OILS

RECOMMENDED OILS, GREASES, AND FUELS

IMPORTANT :

- At the time of shipment, Idemitsu Daphne Super Hydro 46ST is used for the hydraulic oil.
- Use the engine oil API service classification CJ-4 or CK-4.
- Use SAE 90 (API, GL-4, GL-5) as the drive-unit-oil for all seasons.

	Application	Viscosity	Shell	ExxonMobil	MIL-Standard
Engine oil	In winter or by low temperatures	SAE 10W	Shell Rotella T10W Shell Rimula 10W		MIL-L-2104C MIL-L-2104D
		SAE 20W	Shell Rotella T20W-2 Shell Rimula 20W-2		
	In summer or by high ambient temperatures	SAE 30	Shell Rotella T30 Shell Rimula 30		
		SAE 40	Shell Rotella T40 Shell Rimula 40		
		SAE 50	Shell Rimula 50		
	All-Season engine oil	Multi-purpose	Shell Rotella T15W-40		
Gear oil	In winter or by low temperatures	SAE 75		Mobilube HD Plus 80W-90	MIL-L-2105C
			Shell Oil S8643		
	In summer or by high ambient temperatures	SAE 80			MIL-L-2105C
			Shell Spirax HD80W		
		SAE 90			MIL-L-2105
			Shell Spirax HD90		MIL-L-2105C
	All-Season gear oil	SAE 140			MIL-L-2105C
			Shell Spirax HD140		
	All-Season gear oil	Multi-purpose	Shell Spirax HD80W Shell Spirax HD85W		MIL-L-2105C
Hydraulic oil		ISO 46		Mobil DTE 10 Excel 46	
Grease			Shell Alvania EP2	Mobilux EP2	
Fuel			Light oil No. 2-D (ASTM D975)		
Fuel under 5 °C			Light oil No. 1-D (ASTM D975)		

NOTE :

- **Engine oil**
 - Use the engine oil of suitable American-petroleum-institute (API) service classification and with proper SAE Engine oil standards according to the ambient temperatures.

Above 25 °C	SAE 30 or SAE 10W-30, SAE 15W-40
0 °C to 25 °C	SAE 20 or SAE 10W-30, SAE 15W-40
Below 0 °C	SAE 10W or SAE 10W-30

- See the following table for the suitable API classification engine oil and the fuel.

Fuel used	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

RECOMMENDED OILS

- **Fuel**
 - Use the ultra low sulfur diesel fuel only for these engines.

Ultra low sulfur diesel fuel	Below 0.0015 % (15 ppm)
------------------------------	-------------------------

- Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for the following temperatures or elevations.

Temperatures	Below -20 °C
Elevations	Above 1500 m

- Diesel fuels that are specified to EN 590 or ASTM D975 are recommended.
- No. 2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service (SAE J313 JUN87).
- 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 or service as required) will be reduced and the DPF longevity will be shorter than expected.
- Filters must trap fuel and lubricant sulfate additives (Zn, Pb, Na, K, Ca, Mg, Cu, Ba, P, etc.) as ash during combustion.

You must control the fuel carefully to prevent the additives being mixed into fuel such as the fuel tank anti-oxidants, the water remover, and the antifreeze.

BIODIESEL FUEL (BDF)

B0-B5 Biodiesel fuels (BDF): mixed diesel fuels containing 5 % 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. BDF concentration must not exceed 5 % by volume (B5 blend). Greater concentrations increase the likelihood of corrosion and failure of the aluminum, zinc, rubber, and plastic parts of the fuel system.
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. Straight vegetable oil is not allowed in any blended fuel.
3. Kubota strongly recommends that B5 blend be purchased from a BQ-9000 accredited producer or certified marketer.
Kubota discourages local blending of BDF, because it is difficult to meet the quality requirements explained above.

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 5 % (i.e. greater than B5). 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:

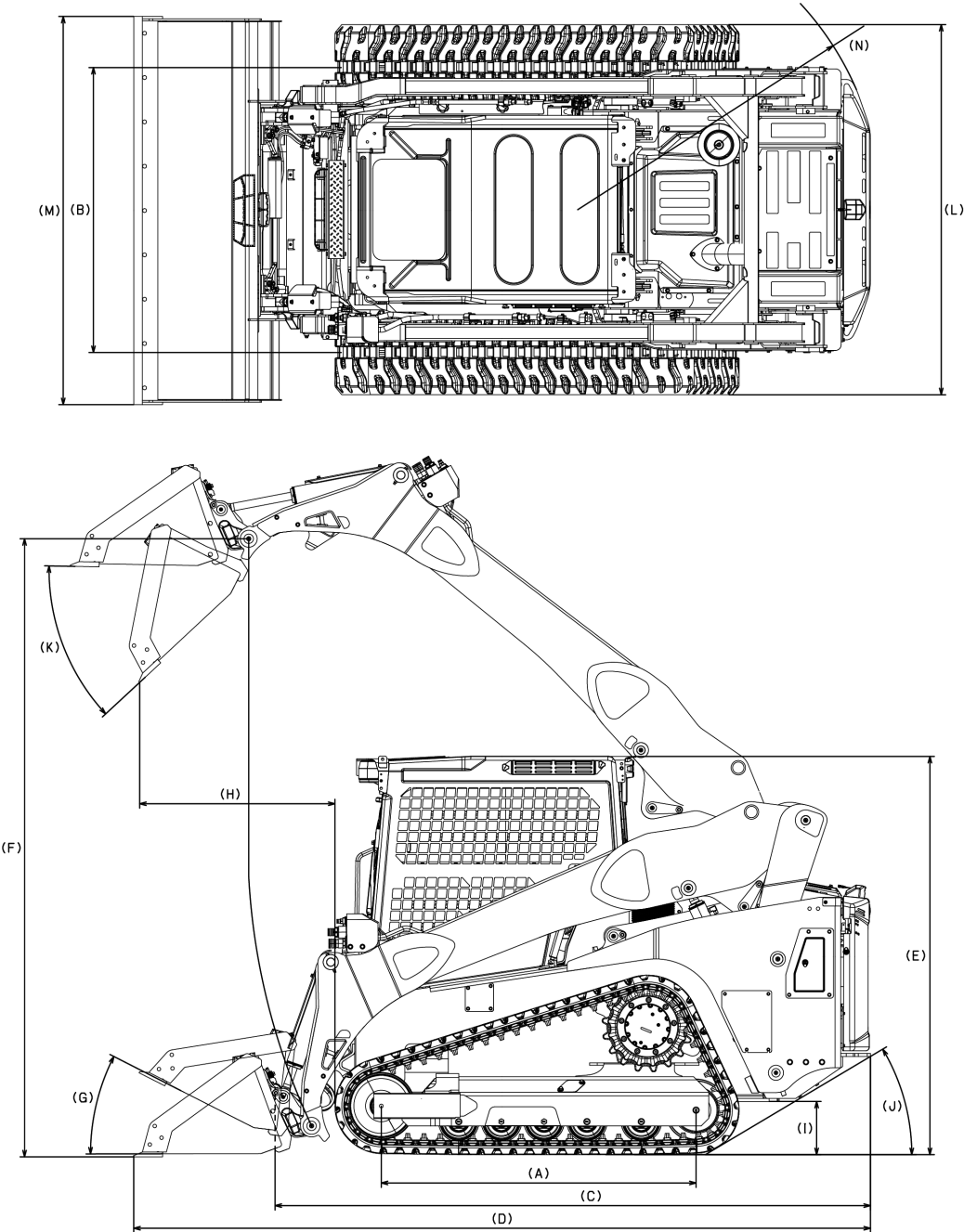
1. Avoid spilling BDF onto painted surfaces as this may damage the finish.
If fuel is spilled immediately wipe clean and flush with soapy water to avoid permanent damage.
2. When using BDF, you are advised to maintain a full tank of fuel, especially overnight and during short term storage, to reduce 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.
3. Follow the oil change intervals recommended by referring to the MAINTENANCE INTERVALS on page 176 section.
Extended oil change intervals may result in premature wear or engine damage.

Long term storage:

1. BDF easily deteriorates due to oxygen, water, heat and foreign substances. Do not store longer than 3 months.
2. 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.

APPENDICES

MAIN DIMENSIONS OF THE MACHINE



1CANE00138A02

Model		SVL97-3
A	Length of track on ground	1667 mm
B	Track gauge	1512 mm
C	Length w/o bucket	3141 mm
D	Length w/bucket on ground	3901 mm
E	Height to top of cab	2112 mm
F	Bucket hinge pin height at max. lift	3264 mm
G	Rollback angle at carry position	28 degree
H	Reach at max. lift and dump	1034 mm
I	Ground clearance	278 mm
J	Departure angle	30.6 degree
K	Max. dump angle	43 degree
L	Vehicle width	1962 mm
M	Width with bucket	2057 mm
N	Turning radius from center-machine rear	1618 mm

NOTE :

- **Dimensions are based on the machine with Kubota standard bucket.**

Bucket size	2032 mm No teeth, side cutter nor bolt-on cutting edge
-------------	--

- **Dimensions are based on the machine with Kubota standard rubber track.**

Track width	450 mm
-------------	--------

- **Specifications are subject to change without notice.**

SOFTWARE INFORMATION

- This product includes “*Open Source Software*” (OSS). The OSS license and source code is available at the following URL: <https://www.kubota.com/products/opensource/index.html>
- You must comply with the terms and conditions of each license.
- If you purchase this product, you may obtain, copy, modify and distribute the applicable source code under the OSS licenses.

Disclaimer

This product includes “*Open Source Software*”, which is provided “*as is*” and Kubota shall not be liable for any damages arising out of this software and its use or the inability to use it.

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