OPERATOR'S MANUAL

KUBOTA FRONT MOWER

MODEL F3710

1FDKL00001A01

READ AND SAVE THIS MANUAL

Kubota

ABBREVIATION LIST

Abbreviations	Definitions
2WD	2-wheel drive
4WD	4-wheel drive
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
fpm	Feet per minute
Hi-Lo	High speed-Low speed
HST	Hydrostatic Transmission
m/s	Meters per second
PTO	Power take-off
RH/LH	Right-hand and left-hand sides are determined by facing in the direction of forward travel
F and R	Front and rear sides are determined by facing in the direction of forward travel
ROPS	Roll-over protective structures
rpm	Revolutions per minute
r/s	Revolutions per second
SAE	Society of Automotive Engineers
SUPER UDT	KUBOTA Original Transmission hydraulic fluid

California Proposition 65

⚠ WARNING ⚠

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

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

UNIVERSAL SYMBOLS

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


Safety alert symbol


Diesel fuel


Fuel - level

Engine-rotational speed


Hourmeter / elapsed operating hours


Engine coolant - temperature


Brake


Parking brake


Battery charging condition


Engine oil - pressure


Water separator


Engine - warning

Engine - STOP


Engine - RUN


Diesel heater

Emission control

Engine - rotational speed

Engine - rpm increase


Regeneration


Regeneration INHIBIT


Regeneration (switch)

PARKED regeneration


Starter control


Power take-off control-OFF position (disengaged)


Power take-off control-ON position (engaged)


Differential lock


Position control-RAISED position


Position control-LOWERED position


Remote cylinder-RETRACT


Remote cylinder-EXTEND


Steering wheel-tilt control


Work light OFF


Work light ON


FAST


SLOW


Read Operator's Manual


Machine-FORWARD movement-overhead view of machine


Machine-REARWARD movement-overhead view of machine


Engine speed control

NEUTRAL


FULL TIME 4WD


DUAL-ACTING OVERRUNNING 4WD


Master system warning

FOREWORD

You are now the proud owner of a KUBOTA FRONT MOWER. This machine is a product of KUBOTA's quality engineering and manufacturing. It is made of excellent materials and under a rigid quality control system. It will give you long, satisfactory service. To obtain the best use of your machine, please read this manual carefully. It will help you become familiar with the operation of the machine and contains many helpful hints about machine maintenance. It is KUBOTA's policy to utilize, as quickly as possible, every advance in our research. The immediate use of new techniques in the manufacturing of products may cause some small parts of this manual to become outdated. KUBOTA distributors and dealers will have the most up-to-date information. Please do not hesitate to consult them.

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.

CONTENTS

SAFE OPERATION

Careful operation is your best insurance against an accident.
Read and understand this section carefully before operating the machine. All operators, no matter how much experience they may have had, must read and understand this and other related manuals before operating the machine or any implement attached to it. It is the owner's obligation to instruct all operators in safe operation.
This mowing machine is capable of amputating hands, feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.
In addition to the design and configuration of equipment, hazard control and accident prevention are dependent on the awareness, concern, and prudence of personnel involved in the operation, transport, maintenance of the equipment.

BEFORE OPERATING THE MACHINE

Know your equipment and its limitations. Read, understand and follow all instructions in this manual before attempting to start and operate the machine.

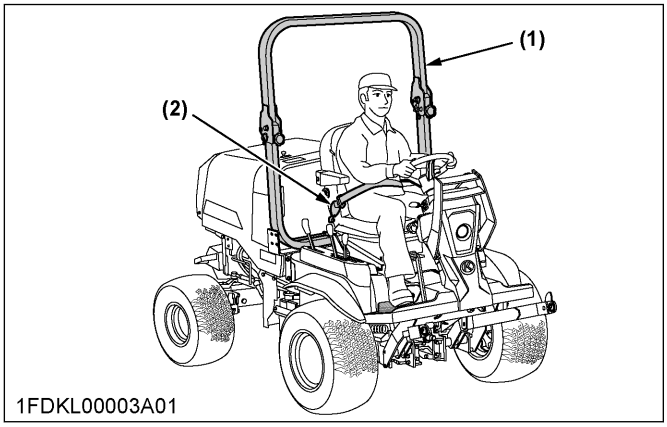
1. General

- Pay special attention to the safety labels on the machine and mower.
- Do not wear loose, torn, or bulky clothing. The clothing may catch on moving parts or controls, leading to the risk of an accident. Wear and use any additional personal protective equipment such as safety boots or shoes, eye and hearing protection, gloves, dust mask, as appropriate or required.
- Do not wear radio or music headphones while operating the machine.
  Safe operation requires your full attention.
- Carefully check the vicinity before operating the machine or any implement attached to it. Clear the work area of objects (wires, rocks) that might be picked up and thrown. Check for overhead clearance which may interfere with a ROPS.
- Do not operate the machine or any attachments while under the influence of alcohol, medication, controlled substances or when fatigued.
- Check brakes and other mechanical parts for correct adjustment and wear. Replace worn or damaged parts promptly. Check the tightness of all nuts and bolts regularly.
  (See MAINTENANCE on page 52.)
- Keep the machine and attachments in good operating condition and keep safety devices in place and in proper working condition.
- Do not modify the machine. Modifications may affect the function of the machine, which may result in personal injury.
- Keep all shields and guards in place. Replace all missing or damaged items for your safety.
- Do not allow any bystanders around or near machine during operation.
  Be sure the area is clear of other people before mowing.
  Stop machine if anyone enters the area.
- Before allowing other people to use your machine, explain proper operation to them and have them read this manual before operation.
- Do not allow passengers or non-qualified operators on the machine at any time. Operate the machine from the seat only.
- Keep your machine clean. Accumulations of dirt, grease, and trash can contribute to fires and lead to personal injury.
- Use only implements approved by Kubota. Use proper ballast on the front or rear of the machine to reduce the risk of upsets. Follow the safe operating procedures specified in the manuals of the equipment.

2. ROPS

- Kubota recommends the use of a roll-over protective structure (ROPS) and seat belt in almost all applications. This combination will reduce the risk of serious injury or death, should the machine be upset.
- The machine is equipped with a foldable ROPS, which may be temporarily folded down only when absolutely necessary for areas with height constraints.
  There is no operator protection provided by the ROPS in the folded position. For operator safety you must set the ROPS in the upright and locked position and securely fasten the seat belt for all other operations.
- If the ROPS is loosened or removed for any reason, make sure that all parts are reinstalled correctly before operating the machine.
- Never modify or repair a ROPS because welding, bending, drilling, grinding, or cutting may weaken the structure.

- If any structural member of the ROPS is damaged, replace the entire structure at your local Kubota Dealer. Any alterations to a ROPS must be approved by the manufacturer.
- Check the area to be mowed and never fold down a foldable ROPS in areas where there are slopes, drop-offs or water.
- Check carefully for overhead clearances (such as branches, doorways and electrical wires) before driving under any objects and avoid contacting them.
- Keep the ROPS in safe operating condition by periodically and thoroughly inspecting for damage and keeping all mounting fasteners tight.
- Always use the seat belt when the ROPS is upright. Do not use the seat belt if the ROPS is down. Check the seat belt regularly and replace if frayed or damaged.



(1) ROPS
(2) Seat belt

OPERATING THE MACHINE

1. Before starting the machine

- Never start the engine or operate levers from anywhere other than the seated position.
- Before starting the engine, make sure that all levers and speed control pedal are in their *"NEUTRAL"* positions, that the parking brake is engaged, and that the power take-off (PTO) is disengaged.
- Fasten the seat belt if the ROPS is upright.
- Do not start the engine while tilting the deck.
- Do not start the engine by shorting across starter terminals or by by-passing the safety start switch. The machine may start and move if normal starting circuitry is bypassed.
- Do not operate or idle engine in a poorly ventilated area. Exhaust gas contains poisonous carbon monoxide, a colorless and odorless gas.
- Do not start the engine when the front or rear tires are not on the ground.
- Check before each use that the operator presence control (OPC) system is functioning correctly. Test the safety systems. (See Checking the engine start system on page 62 and Checking the OPC system on page 63.) Do not operate unless they are functioning correctly.
- Check all fluids before starting.

2. Operating the machine

- Watch where you are going at all times. Watch for and avoid obstacles. Be alert near trees and other obstructions.
- To avoid roll over, slow down when turning on uneven terrain.
- Park the machine on a firm and level surface. Before getting off, disengage the PTO, lower all implements, place all control levers in their *"NEUTRAL"* positions, apply parking brake, turn off the engine and remove the key.
- Do not drive at high speeds or turn the machine when the differential is locked.
- Know what is behind you before backing up. Look to the rear before and while backing up. Do not mow while in reverse unless absolutely necessary and make sure the area immediately behind you is clear of obstructions or holes and small children. Use extra caution when the machine is equipped with the grass catcher. Your view to the rear is restricted.
- When working in groups, always let others know what you are doing ahead of time.
- Do not drive the machine on streets or highways. Watch for traffic when you cross roads or operate near roads.
- When using any attachments, never direct discharge material toward bystanders. Do not allow anyone near the attachments while in operation.
  Do not mow when bystanders are present in the mowing area.
- To reduce fire hazards, keep the engine exhaust area free of debris such as grass or leaves.
- Be sure rotating blades and engine are stopped and the key is removed before placing hands or feet near blades and cleaning blockages or unclogging chute.
- Shut the engine off and wait for all movement to stop before unclogging chute of the grass catcher. (if equipped)
- Always inspect the mower and grass catcher (if equipped) after striking any foreign object. This will insure that all mower and grass catcher parts are safe and secure and not damaged.
  Repair or replace any damaged parts before restarting.
- Operate during daylight or in bright artificial light.
- Do not operate the mower without either the grass container or the guard in place.
- Disengage the PTO before crossing a surface other than grass.

- Do not operate where machine could tip or slip. Do not operate near ditches, holes, embankments, or other terrain which may collapse under the machine's weight. The risk of machine roll-over is increased when the ground is loose or wet.
- If the machine starts to vibrate abnormally, disengage the PTO, stop the engine and remove the key. Then check the machine immediately.
- Do not operate the machine when there is a possibility of lightning. Even if the machine is equipped with a cabin, the operator is not protected from lightning.
- Do not use the tie down point to tow a trailer.

3. Operating on slopes

Slopes are a major factor related to loss-of-control and roll-over accidents, which can result in severe injury or death. All slopes require extra caution.
If you cannot back up the slope or if you feel uneasy on it, do not mow it. The control of a ride-on machine sliding on a slope will not be regained by the application of the brake.

Do

- Slowly mow up and down slopes, not across, to avoid machine roll-over. Stay off hills and slopes too steep for safe operation.
- Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction.
- Avoid starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly straight down the slope.
- If the machine stops going uphill, disengage PTO and back slowly down.
- Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent roll-over or loss of control.
- Use special caution when changing direction on slopes.
- Shift high-low gear shift lever to the low position when mowing or operating on slopes.
- Remove obstacles such as rocks, tree limbs.
- Stay alert for holes in the terrain and other hidden hazards. Keep away from drop-offs. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Follow Kubota's recommendations for wheel weights or counterweights to improve stability.
- The weight of grass in the grass container may increase the possibility of roll-over. (if equipped)

Do not

- Do not turn on slopes unless necessary and then turn slowly and gradually downhill, if possible.
- Do not use the machine on slopes of more than 15°.
- Do not mow near drop-offs, ditches, or embankments. The machine could suddenly turn over if a wheel falls over the edge of a cliff or ditch, or if an edge caves in.
- Do not mow on wet grass. Reduced traction could cause sliding.
- Do not try to stabilize the machine by putting your foot on the ground.
- Do not stop or start suddenly when going uphill or downhill.
- Never *"freewheel"*. Do not let the machine travel downhill with HST pedal at *"NEUTRAL"* position.
- Do not use the trailer and the towing implement.
- Do not lift the grass container on a slope. (if equipped)

4. Safety for children

Tragic accidents can occur if the operator is not aware of the presence of children. Children are attracted to the machine and mowing activity.

- Never assume that children will remain where you last saw them.
- Keep children out of the mowing area and under the watchful care of another responsible adult.
- Be alert and turn the machine off if children enter the area.
- Before and when backing, look behind and down for small children.
- Never carry children. They may fall off and be seriously injured or interfere with safe machine operation.
- Never allow children to operate the machine, even under adult supervision. Local regulation can restrict the age of the operator.
- Use extra care when approaching blind corners, shrubs, trees, or other obstructions that might hide children from sight.

5. Operators, age 60 years and older

Data indicates that operators, age 60 years and older, are involved in a large percentage of machine-related injuries. These operators must evaluate their ability to operate the machine safely enough to protect themselves and others from serious injury.

6. Stopping the machine

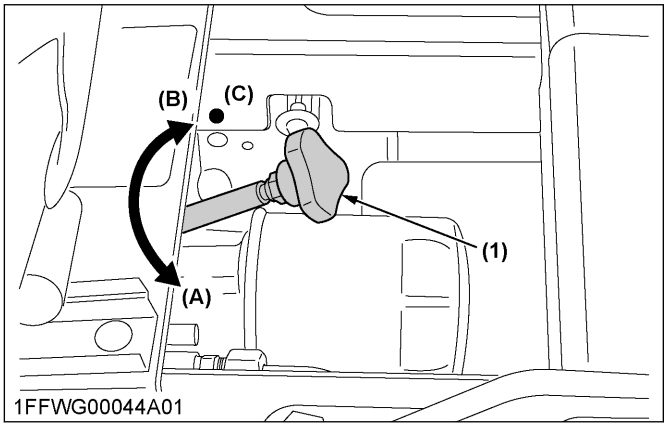
- Make sure that the machine and all attachments have come to a complete stop before getting off.
- Before getting off, disengage the PTO, lower all implements, place all control levers in their *"NEUTRAL"* positions, apply parking brake, turn off the engine and remove the key.
- Do not park the machine on a steep incline. Park on a flat level surface.

7. Using the PTO

- Before installing or using PTO-driven equipment, read the manufacturer's manual and review the safety labels attached to the equipment.
- Wait until all moving components have completely stopped before connecting, disconnecting, adjusting, cleaning, or servicing any PTO-driven equipment.
- Use the PTO with Kubota approved attachments. The speed of the PTO: 2545 min^{-1} (rpm) at engine revolution 3000 min^{-1} (rpm)

8. Using the lift link

- Use lift link only with authorized attachments designed for lift link usage.
- When using a lift link mounted attachment, install the adequate counter ballast weight specified in the attachment's manual.
- When moving the machine a long distance, set the implement lowering control in the *"LOCK"* position to hold the implement in the *"RAISED"* position.
- Do not turn the knob quickly.



(1) Lift link lowering speed control knob
(A) "FAST"
(B) "SLOW"
(C) "LOCK"

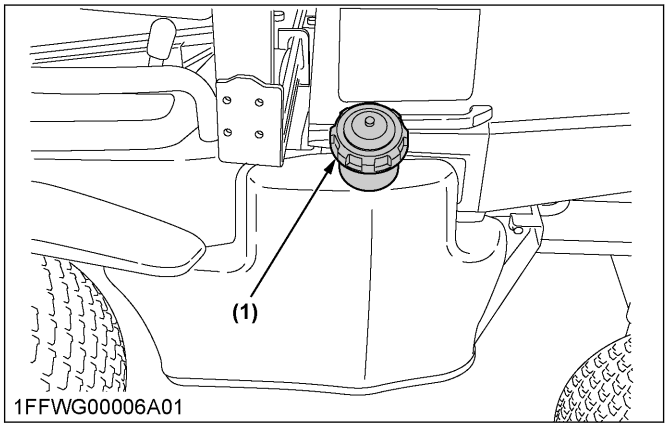
TRANSPORTING THE MACHINE

- Disengage power to attachment(s) when transporting or not in use.
- Do not tow this machine. Use a suitable truck or trailer when transporting on public roads.
- It is recommended that this machine not be driven on public roads.
- Use extra care when loading or unloading the machine into a trailer or truck.
- Keep attachment(s) low when transporting.
- Move very slowly when attachment is removed.

SERVICING AND STORAGE

1. Servicing the machine

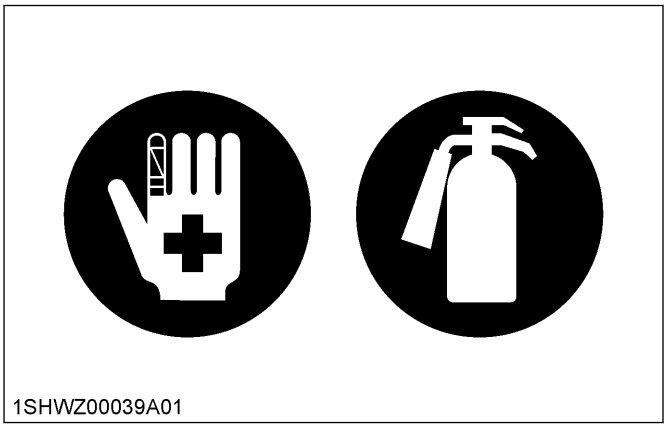
- Before servicing the machine, park the machine on a firm, level surface, set the parking brake, stop the engine and remove the key.
- Allow the machine to cool off before servicing the engine, muffler.
- Always stop the engine before refueling. Avoid spills and overfilling. If fuel is spilled, do not attempt to start the engine and avoid creating any source of ignition until fuel vapors have dissipated.



(1) Fuel tank cap

- Use extra care when handling diesel fuels.
  1. Use only an approved container.
  2. Do not remove the fuel cap or refuel with the engine running. Allow the engine to cool before refueling. Do not smoke while refueling or when standing near fuel.
  3. Do not refuel the machine indoors and always clean up spilled fuel or oil.
  4. Do not store the machine or fuel container inside where there is an open flame, such as in a water heater.
- Do not change the engine governor setting or overspeed the engine.
- Never run a machine inside a closed area.
- Mower blades are sharp and can cut your hands. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.
- Keep nuts and bolts, especially blade attachment bolts, tight and keep equipment in good condition.
- Do not smoke when working around the battery. Keep all sparks and flames away from battery. The battery presents an explosion hazard because it gives off hydrogen and oxygen especially when recharging.
- Before *"JUMP STARTING"* a dead battery, read and follow all of the instructions to help protect the alternator from damage due to extreme load changes. (See JUMP STARTING on page 36.)

Batteries contain sulfuric acid and produce explosive gases. Follow the instructions below to prevent personal injury.
  – Wear eye and skin protection.
  – Keep sparks and flame away.
  – Always have adequate ventilation while charging or using the battery.
- Keep first aid kit and fire extinguisher available at all times.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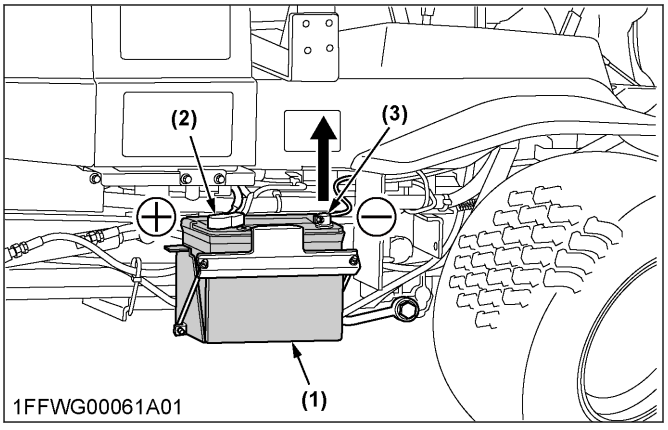
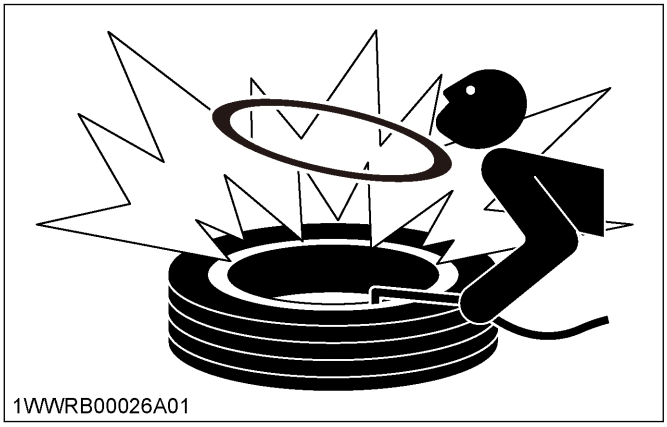
- Disconnect the battery's negative (-) cable before working on or near electric components.
- Do not use or charge the refillable type battery if the fluid level is below the **[LOWER]** (lower limit level) mark. Otherwise, the battery component parts may prematurely deteriorate, which may shorten the battery's service life or cause an explosion. Check the fluid level regularly and add distilled water as required so that the fluid level is between the **[UPPER]** and **[LOWER]** levels.
- To avoid an accidental short circuit, always disconnect the battery's negative (-) cable first and connect it last.



(1) Battery
(2) Positive cable (+)
(3) Negative cable (-)

- Do not remove the radiator cap while coolant is hot. When cool, slowly rotate cap to the first stop and allow sufficient time for excess pressure to escape before removing the cap completely. If the machine has a coolant recovery tank, add coolant there instead of the radiator.
- Provide adequate support when changing wheels.
- Make sure that wheel nuts have been tightened to the specified torque.
- Do not attempt to mount a tire on a rim. This should be done by a qualified person with the proper equipment.
- Always maintain the correct tire inflation pressure. Do not inflate tires above the recommended pressure shown in the Operator's Manual.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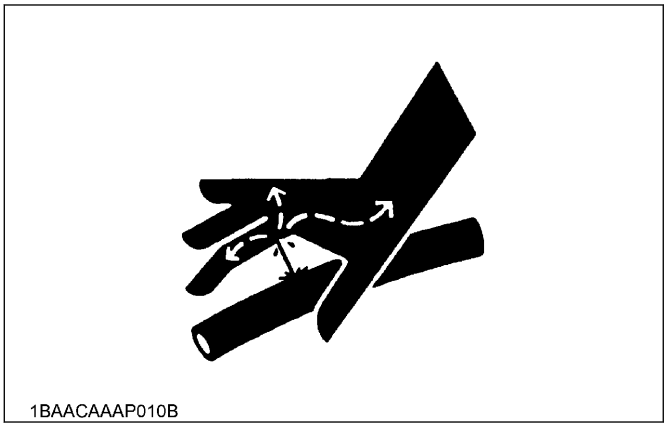
- Escaping hydraulic fluid under pressure has sufficient force to penetrate the skin causing serious personal injury. Before disconnecting lines, relieve all pressure. Before applying pressure to the system, make sure all connections are tight and that lines, pipes, and hoses are not damaged.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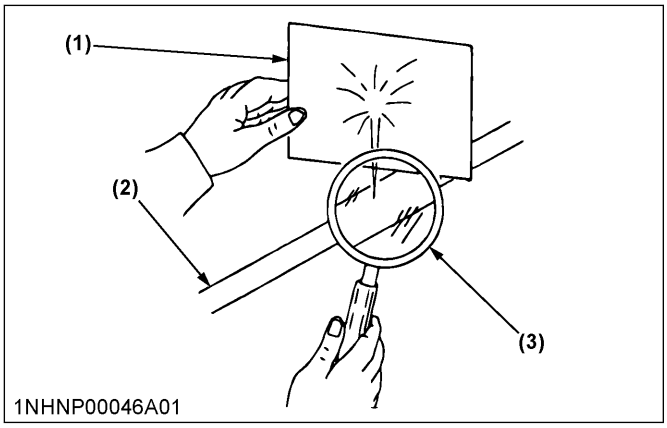
- Fluid escaping from pinholes may be invisible. Use a piece of cardboard or wood to search for suspected leaks: do not use hands. Use proper personal protective equipment.
  If you get injured by escaping fluid, seek emergency medical attention immediately. Serious infection or reaction will result if proper medical treatment is not administered immediately. This fluid can produce gangrene or severe allergic reaction.



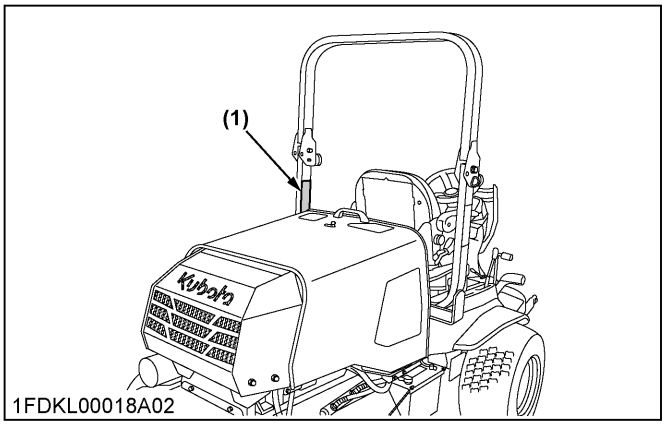
(1) Cardboard
(2) Hydraulic line
(3) Magnifying glass

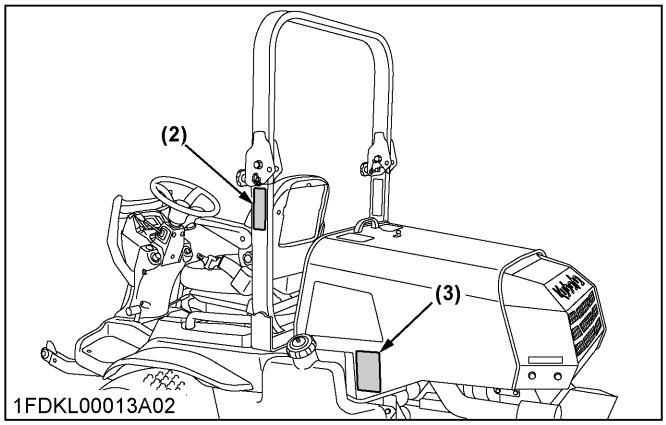
- Do not make adjustments or repairs with the engine running.
- Keep machine free of grass, leaves, or other debris build-up.
- Waste products such as used oil, fuel, hydraulic fluid, and batteries, can harm the environment, people, pets and wildlife. Please dispose of all waste products properly.
- Consult your local recycling center or Kubota Dealer to learn how to recycle or get rid of waste products.
- During diesel particulate filter (hereinafter called DPF) regenerating operations, exhaust gases and exhaust filter components reach temperatures hot enough to burn people, or ignite or melt common materials.
- While regenerating, keep the machine away from people, animals or structures which may be susceptible to harm or damage from hot exhaust gases.

2. Storage

- Keep the machine and supply of fuel in locked storage and remove the key to prevent children or others from playing or tampering with them.
- Do not store the machine in an area that may ignite fuel vapor. Allow the engine to cool before storing.
- To avoid the danger of exhaust fume poisoning, do not operate the engine indoors without adequate ventilation.
- To reduce fire hazards, clean the machine thoroughly before storage. Dry grass and leaves around the engine and muffler may ignite.

SAFETY LABELS





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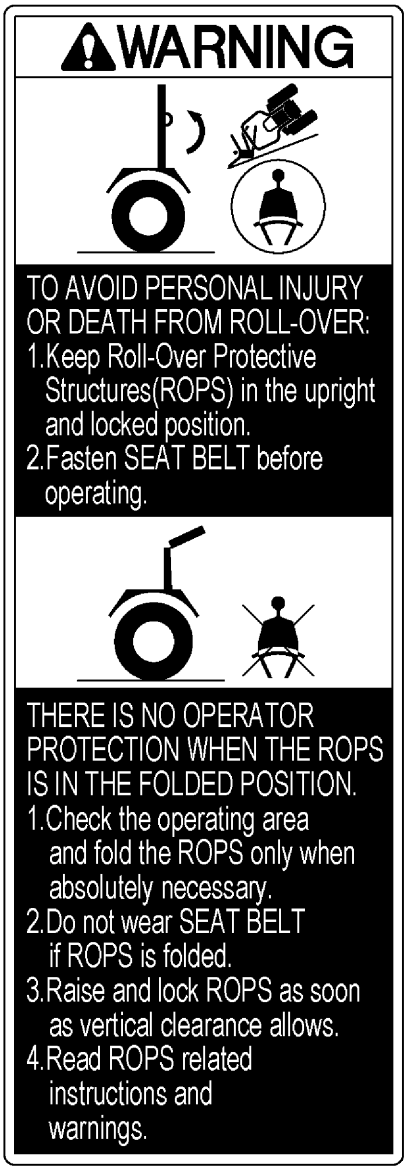

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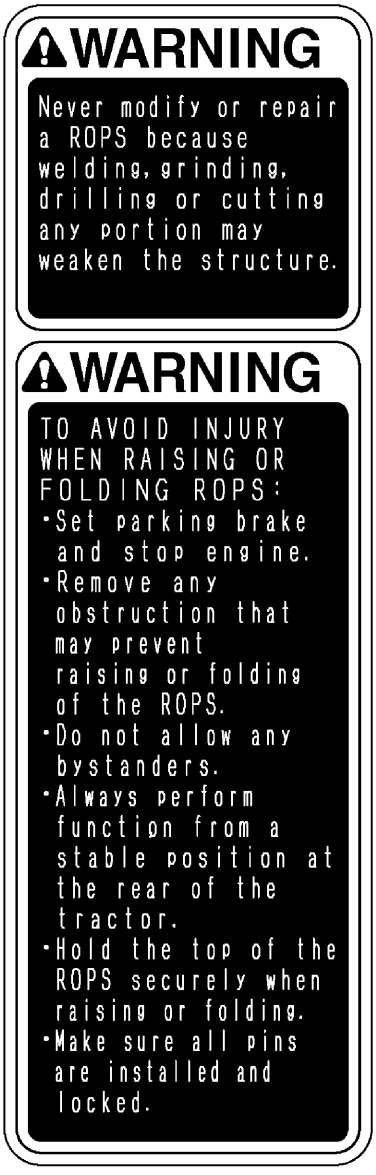

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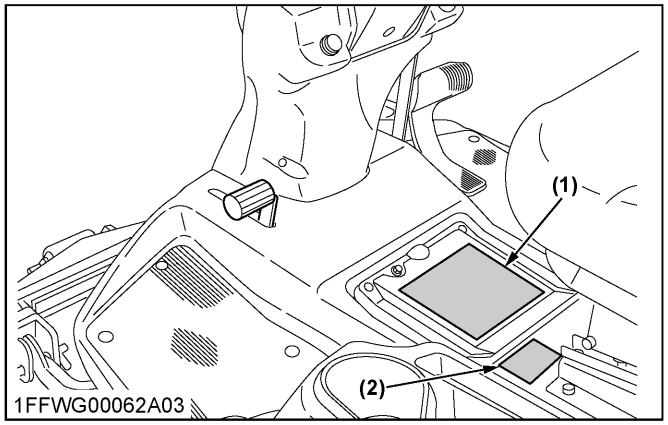

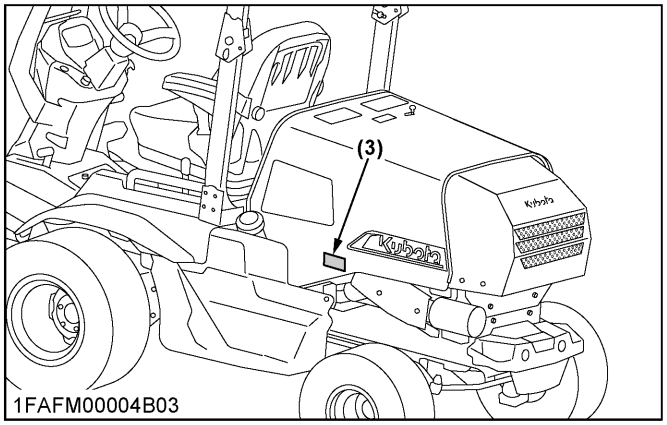

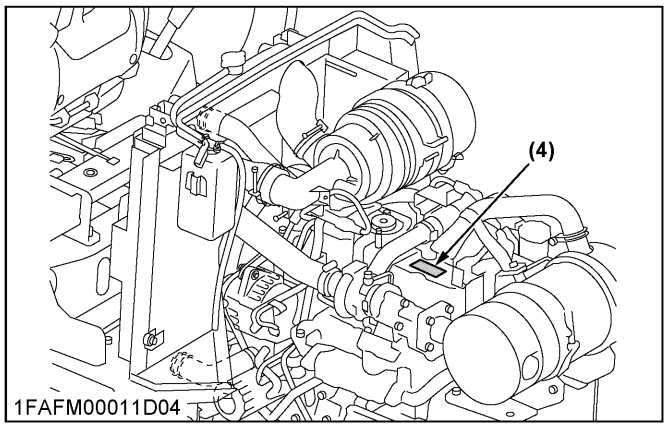

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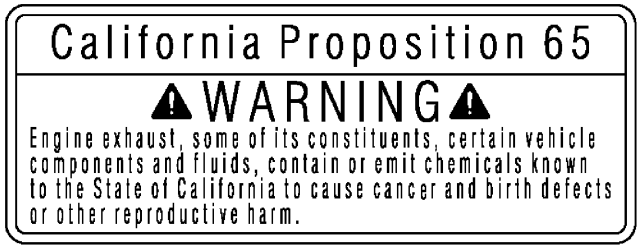

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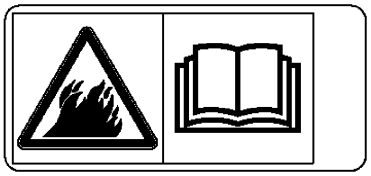
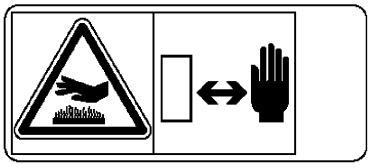


TO AVOID FIRE HAZARD:
Before operating the machine,clean inside of the hood and around the mower belt. Especially, dry grass and leaves around the exhaust manifold, the muffler or around the mower belt may ignite.
After using, air-blowing and pressure-washing, make sure there is nothing flammable around the exhaust manifold, the muffler or around the mower belt. Grass, twigs, dirt or chaff in the hood may cause fire.

(4) Part No. K3721-4726-1 (Engine)
Do not touch hot surface like the engine or exhaust.



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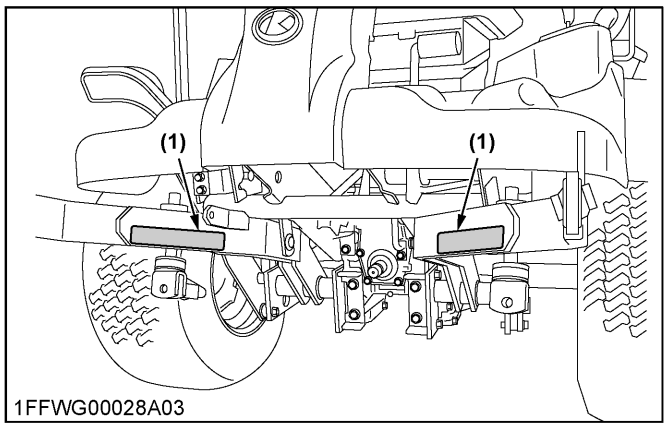
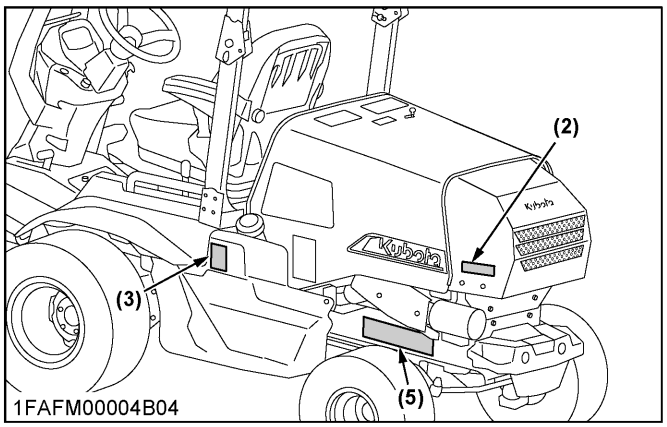
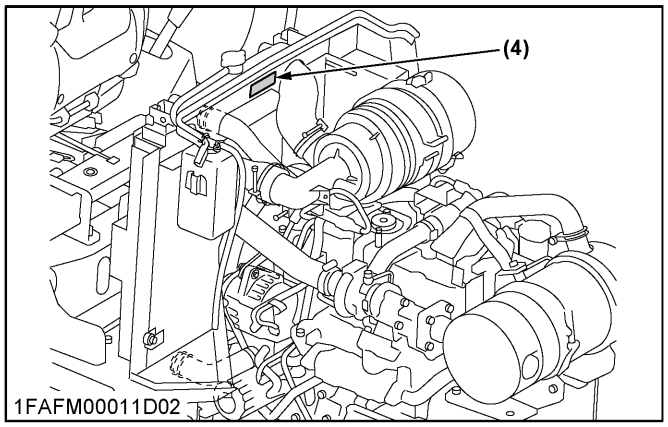
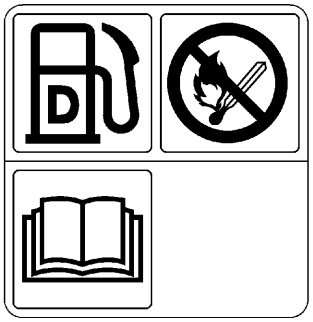




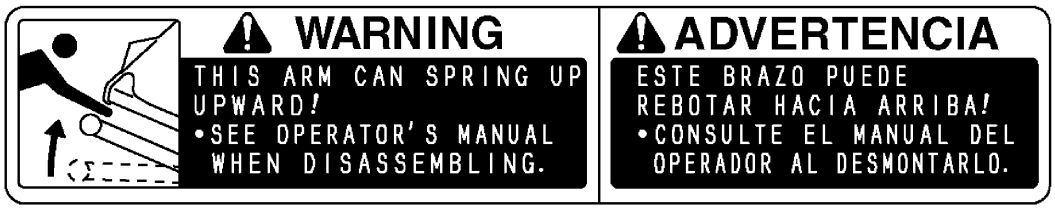


(3) Part No. K3721-4741-1

Diesel fuel only | No fire



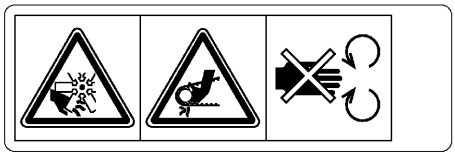
(1) Part No. K3615-4723-1



(2) Part No. K3724-4728-1

(4) Part No. K3724-4758-1

Stay clear of engine fan and fan belt.



(5) Part No. K3724-4765-1

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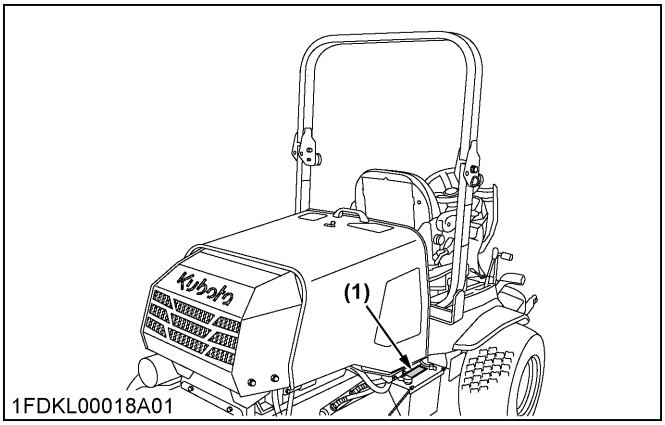


(1) Part No. TD060-3011-3

TO AVOID INJURY FROM BATTERY GASES AND ACIDS

(A) • Keep away from cigarettes, flames or sparks.

(B) • Always shield eyes and face from battery.

(C) • Keep out of reach of children.

(D) • Poison causes severe burns.
• Contains sulfuric acid.

(E) • Read and understand Operator's Manual.

(F) • Danger explosive gases.

(A) (B) (C) (D) (E) (F)

CARE OF SAFETY LABELS

- Keep safety labels clean and free from obstructing material.
- Clean safety labels with soap and water, and dry with a soft cloth.
- Replace damaged or missing safety labels with new labels from your local Kubota Dealer.
- If a component with safety label(s) attached is replaced with a new part, make sure new label(s) is (are) attached in the same location(s) as the replaced component.
- Attach new safety labels by applying on a clean dry surface and pressing any bubbles to the outside edge.

SERVICING OF MACHINE

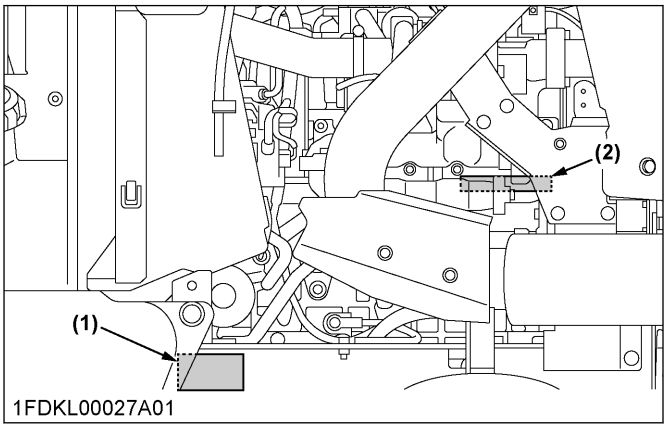
DEALER SERVICE

After reading this manual thoroughly, you will find that you can do some of the regular maintenance yourself. Your dealer has knowledge of your new machine and has the desire to help you get the best performance and the most value from it.
However, when in need of parts or major service, consult your local Kubota Dealer. When in need of parts, be prepared to give your dealer the product identification number (PIN), and the ROPS, engine serial numbers.
Locate the PIN and serial numbers now, and record them in the space provided.

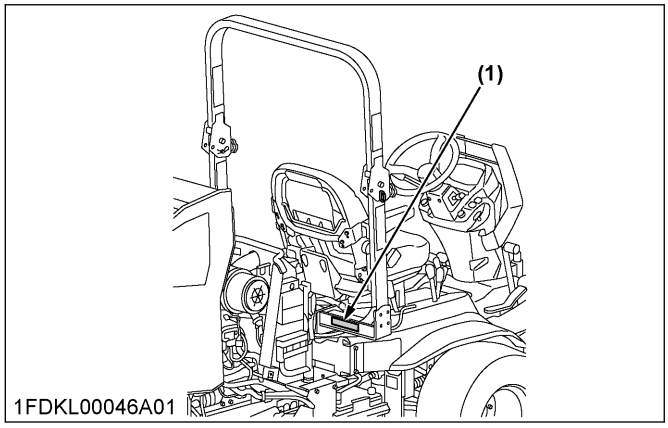
Date of purchase	
Name of dealer	

Machine type	
PIN	

	Type	Serial number
ROPS		
Engine		
Mower		



(1) Product identification number
(2) Engine serial number



(1) ROPS serial number

WARRANTY

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 machine has not been handled according to the instructions given in the Operator's Manual, even if it is within the warranty period.

SCRAPPING THE MACHINE

To put the machine out of service, correctly follow the local rules and regulations of the country or territory where you scrap it. If you have questions, consult your local Kubota Dealer.

SPECIFICATIONS

SPECIFICATION TABLE

	Model			F3710
Engine	Model			V1505-CR-TE5-FM2
	Engine gross power (SAE)*1		kW (HP)	27.5 (36.9)
	Type			Direct injection. Vertical water - cooled, 4 cycle diesel
	Number of cylinders			4
	Bore and stroke		mm (in.)	78 × 78.4 (3.07 × 3.08)
	Total displacement		cm^3 (cu.in.)	1498 (91.41)
	Maximum revolution*2		min^{-1} (rpm)	2720
	Rated revolution		min^{-1} (rpm)	2500
	Low idling revolution		min^{-1} (rpm)	1300 to 1400
	CO_2 emission*3 (NRSC*4)		g/kWh	804.1
	Fuel			Diesel fuel No.1 (below -10 ℃ (14 ℉)) Diesel fuel No.2
	Starter			Electric starter with battery, preheat, 12 V, 1.4 kW
	Lubrication			Forced lubrication by gear pump
	Cooling			Liquid with pressurized radiator
	Battery			12 V, RC: 133 min, CCA: 582 A
Capacities	Fuel tank		L (U.S.gals.)	61 (16)
	Engine crankcase (with filter)*5		L (U.S.qts.)	4.7 (4.9)
	Engine coolant		L (U.S.qts.)	4.0 (4.3)
	Recovery tank		L (U.S.qts.)	0.6 (0.7)
	Transmission case		L (U.S.qts.)	14 (14)
	Rear axle differential case		L (U.S.qts.)	1.5 (1.5)
	Rear axle gear case		L (U.S.qts.)	0.5 (0.5)
Dimensions	Overall length		mm (in.)	2530 (99.60)
	Overall width		mm (in.)	1370 (53.94)
	Overall height	Without ROPS	mm (in.)	1350 (53.15)
		With ROPS	mm (in.)	1985 (78.14)
	Wheelbase		mm (in.)	1350 (53.15)
	Min. ground clearance		mm (in.)	185 (7.29)
	Tread	Front	mm (in.)	1063 (41.85)
		Rear	mm (in.)	1020 (40.15)
Weight (without fuel, without mower deck)			kg (lbs.)	849 (33.5)
Traveling system	Tires	Front		24 × 12 - 12 (4PR) Turf
		Rear		18 × 9.5 - 8 (6PR) Turf
	Traveling speeds*6	Forward	Low	0 to 9 km/h (0 to 5.6 mph)
			High	0 to 20 km/h (0 to 12 mph)
		Reverse	Low	0 to 4.8 km/h (0 to 3.0 mph)
			High	0 to 11 km/h (0 to 6.8 mph)

(Continued)

	Model			F3710
Traveling system	Steering			Power, hydrostatic
	Transmission			Main - hydrostatic transmission. High-low gear shift (2 forward, 2 reverse)
	Brake			Wet disk type
	Min. turning radius		mm (in.)	≦ 750 (29.5) (inside of front tire)
	Differential	Front		Bevel gear
		Rear		Bevel gear
	4WD system			Dual - acting overrunning 4WD
PTO	Revolution*6			1 speed (2583 min^{-1} (rpm))
	Drive system			Shaft drive. Kubota 10 tooth involute spline (2583 min^{-1} (rpm))
	Clutch type			Wet multi plates
	PTO brake			Wet single plate

(Specifications and design subject to change without notice)

*1 Manufacture's estimate

*2 Measured with the engine only.

*3 SAE J1995. The engine output value indicated on the EPA exhaust gas label is the ISO 8178 net value without a cooling fan. ・F3710: 27.1 kW

*4 Non-road steady-state test cycle

*5 Oil amount when the oil level is at the center of the oil level gauge

*6 At engine revolution 2500 min^{-1} (rpm).

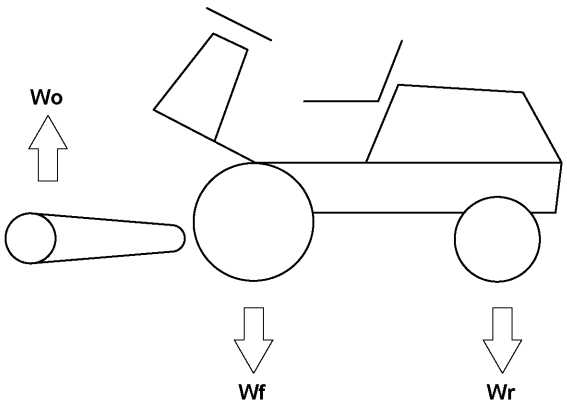
IMPLEMENT LIMITATIONS

The Kubota Machine has been thoroughly tested for proper performance with implements sold or approved by Kubota.
Use with implements below may result in malfunctions or failures of the machine, damage to other property and injury to the operator or others.

- Implements which exceed the maximum loading weight listed below, or
- Implements which are not recommended for use with the Kubota Machine

Any malfunctions or failures of the machine resulting from use with improper implements are not covered by the warranty.

Model	Maximum loading weight		Lift link end maximum loading weight Wo	Maximum total weight
	Front axle Wf	Rear axle Wr		
F3710	900 kg (1980 lbs.)	600 kg (1330 lbs.)	260 kg (574 lbs.)	1500 kg (3306 lbs.)



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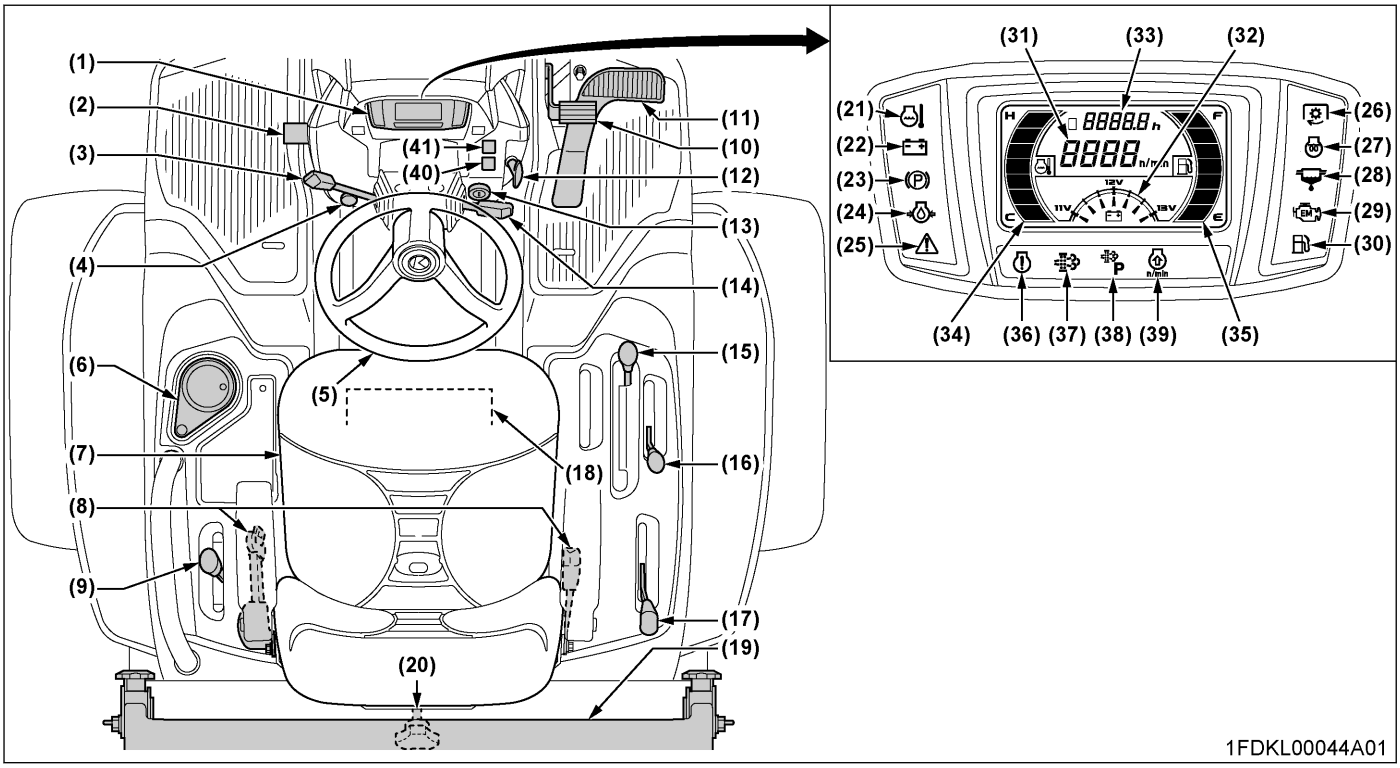
INSTRUMENT PANEL AND CONTROLS

INSTRUMENT PANEL, SWITCHES AND HAND CONTROLS



Illustrated contents

MOWER MOUNTING

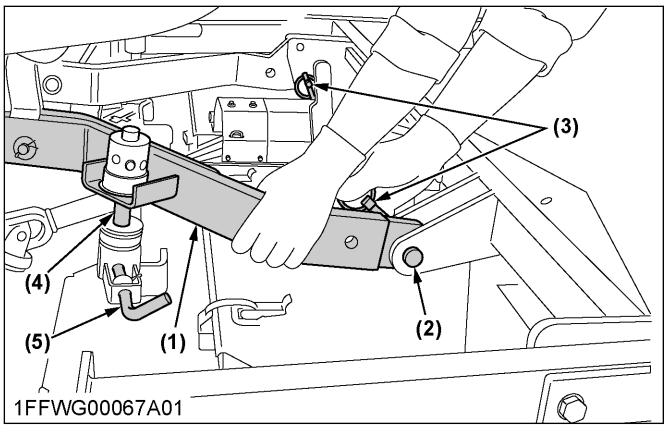
MOUNTING THE MOWER

⚠ WARNING

To avoid serious injury or death:

- **Before mounting the mower deck, read and understand the use of the lift link lowering speed control knob.**
  (See Lift link lowering speed control knob on page 42.)
- **Place the PTO lever in the *"DISENGAGE"* position.**
- **Place the high-low gear shift lever in the *"NEUTRAL"* position.**
- **The mower links (left hand, right hand) are spring-loaded. Have an assistant hold the arm in position when mounting the mower deck.**

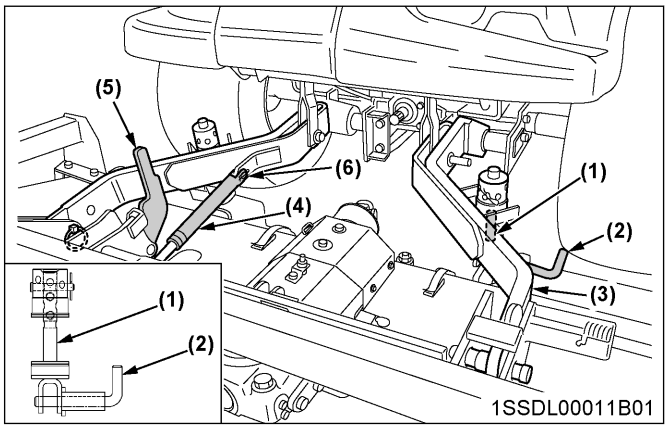
1. Move the mower deck under the mower links and place the hydraulic lift lever in the *"DOWN"* position.
2. Attach the front end of the mower links to the mower deck with clevis pins and set pins.



(1) Mower link
(2) Set pin
(3) Clevis pin
(4) Lift rod
(5) Lock pin

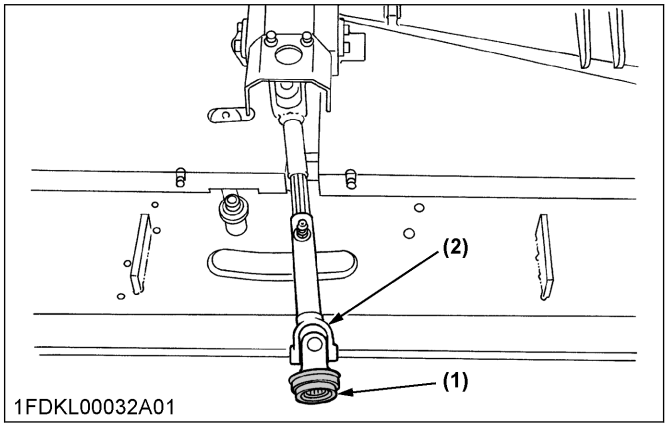
3. Start the engine, raise the mower deck, lock the lift link lowering speed control knob and shut off the engine.
4. Install the lift rods to the mower deck with lock pins and lower the mower deck on the ground.
5. **RCK72P-F39**, **RCK72R-F36**
   Attach the gas spring to the mower link with the clevis pin and the rue ring cotter.

   NOTE :
   - **When operating the mower, make sure the tilt lever is unlocked.**
   - **For tilting up the mower, see TILTING UP THE MOWER on page 23.**



(1) Lift rod
(2) Lock pin
(3) Mower link
(4) Gas spring
(5) Tilt lever ("UNLOCKED" position)
(6) Rue ring cotter

6. Pull back the coupler of the universal joint.
   Push the universal joint onto the PTO shaft until the coupler locks.
   Slide the universal joint backward and forward to check that the universal joint is locked securely.



(1) Coupler
(2) Universal joint

IMPORTANT :

- **Finally pull the universal joint to see if it is locked tight in position.**

After mounting the mower deck, adjust the lift link lowering speed.
(See INSTRUMENT PANEL, SWITCHES AND HAND CONTROLS on page 21.)

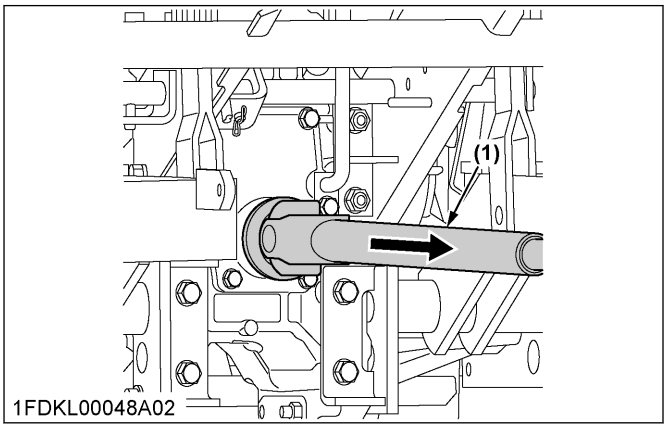
DISMOUNTING THE MOWER DECK

⚠ WARNING

To avoid serious injury or death:

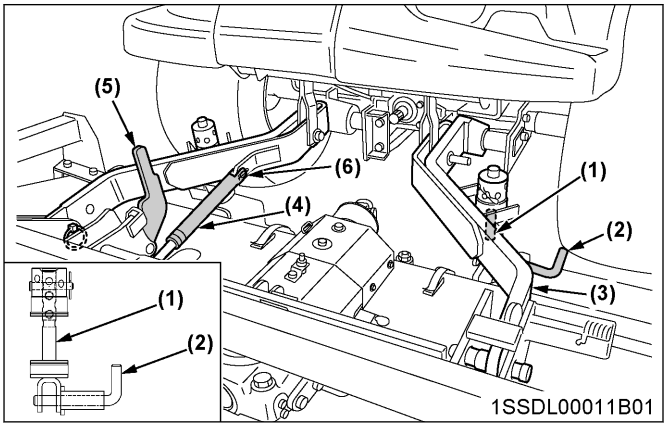
- **The mower links (left hand, right hand) are spring-loaded. Have an assistant hold the arm in position when mounting the mower deck.**
- **Before dismounting the mower deck, read and understand the use of the lift link lowering speed control knob.**
  (See Lift link lowering speed control knob on page 42.)

1. Place the PTO lever in the *"DISENGAGE"* position.
2. Place the high-low gear shift lever in the *"NEUTRAL"* position.
3. Disconnect the universal joint from the machine.



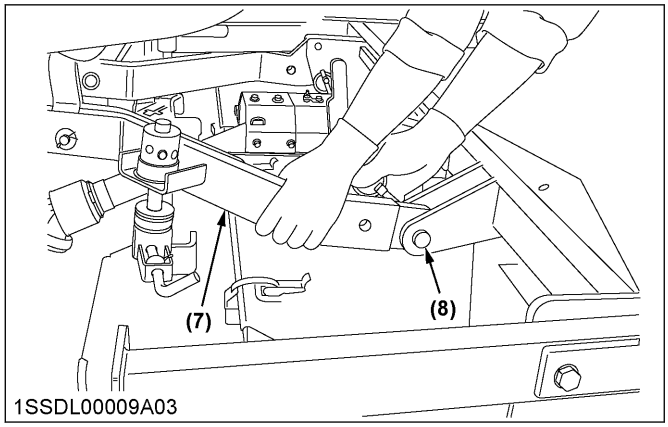
(1) Universal joint

4. Start the engine and raise the mower deck fully.
5. Stop the engine, pull the pins (2) of the lift rods (1) and lock them in the open position.



(1) Lift rod
(2) Lock pin
(3) Mower link
(4) Gas spring
(5) Tilt lever ("UNLOCKED" position)
(6) Rue ring cotter

6. Start the engine and down the mower deck fully, and stop the engine.
   RCK72P-F39, **RCK72R-F36**
   a. Remove the clevis pin and the rue ring cotter (6), and disconnect the gas spring (4) from the mower link arm (7).
7. Remove the set pin (8), and disconnect the mower lift arms (7) from mower deck.



(7) Mower lift arm
(8) Set pin

TILTING UP THE MOWER

⚠ WARNING

To avoid serious injury or death:

- **Do not start the engine while tilting the mower deck.**
- **Tilt the mower on a level surface and the parking brake *"ON"*.**
- **Place the PTO lever in the *"DISENGAGE"* position.**
- **Place the high-low gear shift lever in the *"NEUTRAL"* position.**

1. How to tilt up

For detailed procedure, refer to the mower Operator's Manual.

2. How to mount another implement

For detailed procedure, refer to the implement Instruction Manual.

PRE-OPERATION CHECK

DAILY CHECK

Check the condition of the machine daily before starting.

⚠ WARNING

To avoid serious injury or death:

- **Check and service the machine on a level surface with the engine shut off and the parking brake *"ON"* and implement lowered to the ground.**

Items to check

- Walk around inspection
- Check engine oil level
- Check transmission oil level
- Check coolant level
- Clean air conditioner condenser screen
- Clean grill and radiator screen
- Check air cleaner evacuator valve
  (When used in a dusty place)
- Check brake pedal
- Check indicators, gauges and meter
- Check lights
- Check wire harness
- Check seat belt
- Check movable parts
- Refuel
  (See DAILY CHECK on page 57.)
- Care of safety labels
  (See SAFETY LABELS on page 11.)

OPERATING THE ENGINE

⚠ WARNING
To avoid serious injury or death:
- **Read and understand the safe operation section.**
- **Read and understand the safety labels located on the machine.**
- **To avoid the danger of exhaust fume poisoning, do not operate the engine indoors without proper ventilation.**
- **Never start the engine while standing on the ground. Start the engine only from the operator's seat.**
- **Make it a rule to set all shift levers to the *"NEUTRAL"* positions and to place the PTO lever in *"OFF"* position before starting the engine.**

Details regarding safe operation can be found in a different section.
(See SAFE OPERATION on page 5.)

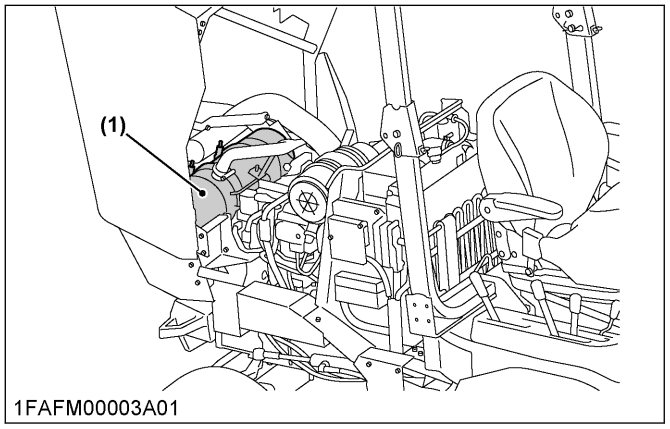
IMPORTANT :
- **Do not use starting fluid or ether.**
- **To protect the battery and the starter, make sure that the starter is not continuously turned for more than 10 seconds.**
- **Operate, use and maintain the engine, including the emission control system, in accordance with the instructions provided to the end users, so that the engine's emission performance is kept within the requirements applicable to the engine's category.**
- **Do not tamper with or misuse the engine emission control system, including deactivating or not maintaining an exhaust gas recirculation (EGR) system or a reagent dosing system.**
- **When a warning lamp lights up, the engine is experiencing a trouble, which may also cause problems with the emission control system. Take prompt action and rectify any incorrect operation, use, or maintenance of the emissions control system in accordance with the rectification measures. (See ENGINE TROUBLESHOOTING on page 81.)**

EXHAUST AFTERTREATMENT DEVICES

⚠ WARNING
To avoid serious injury or death:
- **During diesel particulate filter (DPF) regenerating operations, exhaust gases and exhaust filter components reach temperatures hot enough to burn people, or ignite or melt common materials.**
- **Keep machine away from people, animals or structures which may be susceptible to harm or damage from hot exhaust gases.**
- **During regeneration, white exhaust gases may be visible. Do not allow regeneration in a non ventilated garage or confined area.**
- **During regeneration, do not leave the machine.**

1. Diesel particulate filter (DPF) muffler

Diesel engine emissions contain hydrocarbons, carbon monoxide and other toxic gases. The diesel particulate filter (hereinafter called DPF) serve to reduce these substances to harmless carbon dioxide and water.
To meet the emission regulations in your country, the DPF is installed on your machine.
It is imperative for the machine owner and operator to handle the DPF in a safe and environmentally responsible manner.



(1) Diesel particulate filter (DPF)

2. Handling points

When a specific amount of particulate matter (PM) has accumulated in the DPF muffler, it is necessary to refresh the DPF muffler by burning the PM inside it.
This burning off work is called *"Regeneration"*.
To extend operating time to reach this regeneration, and to avoid DPF muffler trouble, observe the following points.

Fuel
Use ultra-low sulfur fuel (S15).

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

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

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

Prohibition of unnecessary idling operation
Generally, the lower the engine speed, the lower the exhaust gas temperature is, so the PM contained in exhaust gas will not be burned, and begins to accumulate. Therefore, do not idle unnecessarily.

Regeneration
When there is *"Regeneration"* instruction sign by lamp or buzzer, immediately perform the required procedure for regeneration.

IMPORTANT :
- **Interrupting the regeneration cycle or continuing operation while ignoring the warning signs may cause DPF and engine damage.**

3. DPF regeneration process

DPF regeneration process can be performed by choosing *"Auto regeneration"* or *"Regeneration inhibit"* mode according to your job conditions.
For jobs not affected by hot gases emitted during regeneration, *"Auto regeneration"* is advisable.

3.1 Auto regeneration mode

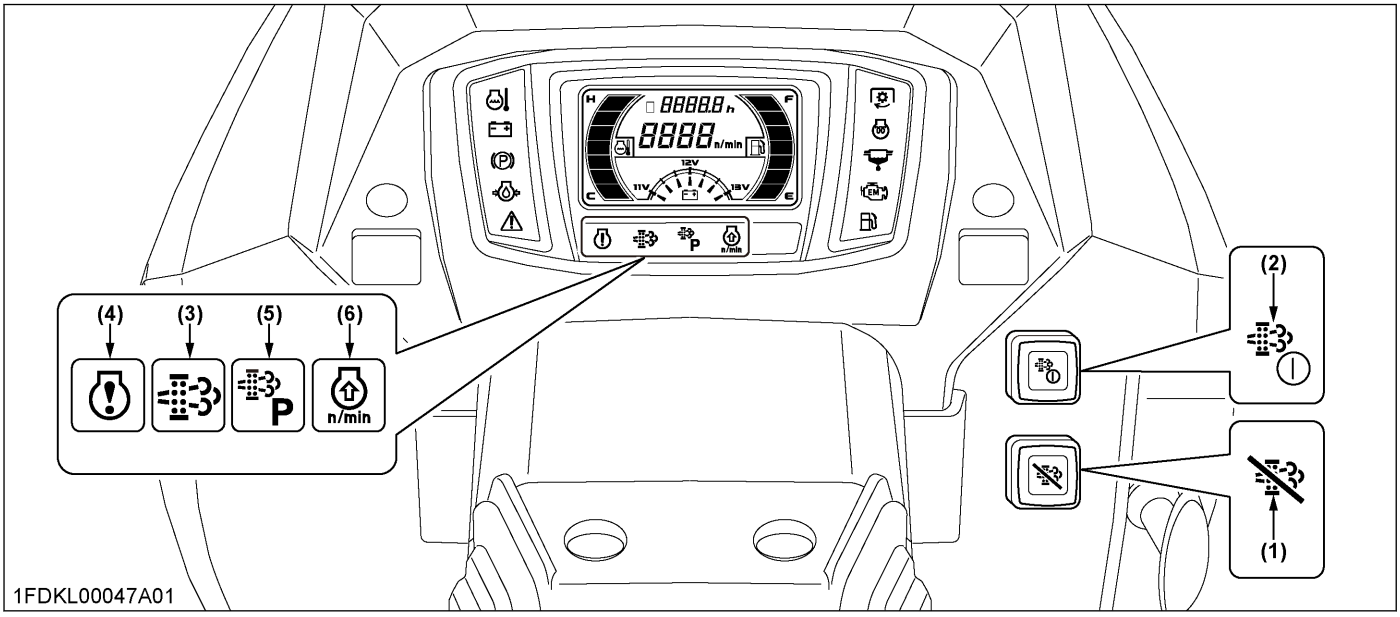
When starting the engine (switch operation is unnecessary), the *"Auto regeneration"* mode is automatically activated.
With the auto regeneration mode on, when a specific amount of PM has accumulated, and the regeneration conditions are satisfied, the DPF will automatically regenerate whether the machine is in motion or parked.
(See Tips on diesel particulate filter (DPF) regeneration on page 33.)
In this way, work efficiency is improved. For more details, read the *"Auto regeneration"* section of this manual.
(See Operating procedure for auto regeneration mode on page 27.)

3.2 Regeneration inhibit mode

After starting the engine, if the *"DPF inhibit switch"* is pressed to turn on the switch lamp, the *"Regeneration inhibit"* mode will be activated.
With *"Regeneration inhibit"* mode on, the PM which has accumulated inside the DPF will not be burned, unless the operator performs the regeneration work manually.
The *"Regeneration inhibit"* mode is effective for work in poorly ventilated workspaces.
For more details, read the regeneration prohibition section of this manual.
(See Operating procedure for regeneration inhibit mode on page 30.)

NOTE :
- **When the engine is stopped, the *"Auto regeneration"* mode will be activated again.**

4. Operating procedure for auto regeneration mode



(1) DPF inhibit switch
(2) Parked regeneration switch
(3) Regeneration indicator
(4) Engine warning indicator
(5) Parked regeneration indicator
(6) Engine rpm increase indicator

4.1 Regeneration operating procedure

1. Start the engine.

   Make sure that the DPF inhibit switch lamp is *"OFF"*.

   Switch lamp *"OFF"*: Auto regeneration mode activated.
   Switch lamp *"ON"*: Regeneration inhibit mode activated.

   NOTE :
   - **When the engine is started, the *"Auto regeneration"* mode is automatically activated.**
   - ***"Regeneration inhibit"* mode is activated when the DPF inhibit switch is pushed after the engine is started.**

2. When the regeneration indicator starts flashing.

   A specific amount of PM has built up in the DPF.
   Continue to operate the machine, and the regeneration process will begin automatically; make sure the working place is in a safe area as DPF and exhaust temperature will rise.

3. When the engine rpm increase indicator starts flashing:

   Keep on working and increase the engine rpm until the indicator turns *"OFF"*.

NOTE :
- **Even if the auto regeneration mode is selected, DPF regeneration may not begin because system requirements have not been satisfied.**
- **The engine rpm increase indicator is used as a guide to satisfy the regeneration conditions. If the engine load is too heavy, the engine rpm increase indicator may continue to flash, even though regeneration system conditions are satisfied and regeneration may begin automatically.**
  (See Tips on diesel particulate filter (DPF) regeneration on page 33.)

4.2 PM warning level and required procedures

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

IMPORTANT :

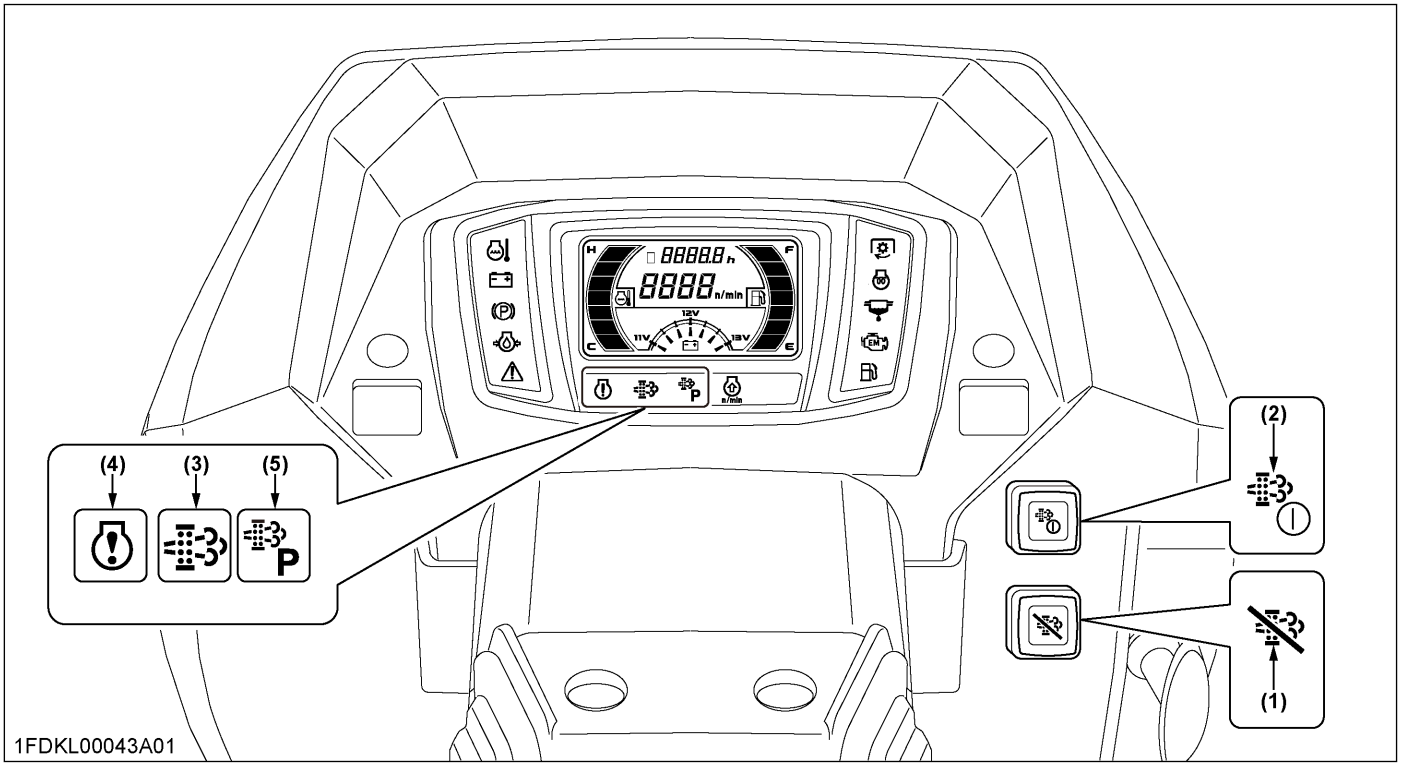
- **Once the regeneration level has been reached, immediately perform the required procedure for regeneration.**
  Interrupting the regeneration cycle or continuing operation while ignoring the warning signs may cause DPF and engine damage.

Auto mode		
DPF system status		**Required procedure**
PM warning level: 1 Buzzer: Not sounding	 The regeneration indicator starts flashing.	A specific amount of PM has accumulated in the DPF muffler. Continue to work the machine to raise the DPF temperature.
	 The rpm increase indicator starts flashing.	Continue the work and increase the engine rpm until the indicator turns *"OFF"*.
	 The parked regeneration indicator starts flashing.	The parked regeneration can also be started. (See Operating procedure for parked regeneration on page 32.)
	 The regeneration indicator will stop flashing and remain *"ON"* constantly.	The regeneration cycle begins and continues until the cycle is complete, and then the indicator will turn *"OFF"*.
PM warning level: 2-1 Buzzer: Sounding every 5 seconds	If the regeneration cycle was interrupted or conditions are not satisfied for regeneration then DPF system is now in Level 2.	
	 The regeneration indicator starts flashing.	Start the regeneration, referring to PM warning level: 1 above.
PM warning level: 2-2 Buzzer: Sounding every 3 seconds	 The rpm increase indicator starts flashing.	
	 The parked regeneration indicator starts flashing.	
	 The regeneration indicator will stop flashing and remain *"ON"* constantly.	The regeneration cycle begins and continues until the cycle is complete, and then the indicator will turn *"OFF"*.

<table>
<tr><th colspan="3">Auto mode</th></tr>
<tr><th colspan="2">DPF system status</th><th>Required procedure</th></tr>
<tr><td rowspan="2">PM warning level: 3
Buzzer: Sounding every 1 second
Engine output: 50 %</td><td colspan="2">If the regeneration fails in the warning level 2:</td></tr>
<tr><td> 
  </td><td>The engine warning indicator starts flashing.

The parked regeneration indicator starts flashing.</td><td>Immediately discontinue working the machine and begin the parked regeneration cycle process.
(See Operating procedure for parked regeneration on page 32.)
At this PM warning level, the auto regeneration mode does not function.
If the machine is operated further, the regeneration cycle will be disabled.</td></tr>
<tr><td rowspan="2">PM warning level: 4
Buzzer: Sounding every 1 second
Engine output: 50 %</td><td colspan="2">If the parked regeneration is interrupted or the machine is continuously operated in the warning level 3:</td></tr>
<tr><td>  </td><td>The engine warning indicator remains constantly “ON”.</td><td>Immediately move the machine to a safe place, park it there and turn the engine “OFF”.
Contact your local Kubota Dealer.
• At this level, do not continue to operate the machine; otherwise, damage will result to the DPF and engine.</td></tr>
</table>

5. Operating procedure for regeneration inhibit mode



(1) DPF inhibit switch
(2) Parked regeneration switch
(3) Regeneration indicator
(4) Engine warning indicator
(5) Parked regeneration indicator

5.1 Regeneration operating procedure

1. Start the engine.
2. Press the DPF inhibit switch  , and the switch lamp illuminates.

   Switch lamp *"ON"*: Regeneration inhibit mode selected.
   Switch lamp *"OFF"*: Auto regeneration mode selected.
3. When the parked regeneration indicator  starts flashing:

   A specific amount of PM has accumulated in the DPF muffler.
   Move the tractor to a safe place and activate the DPF muffler.
   (See Operating procedure for parked regeneration on page 32.)

5.2 PM warning level and required procedures

In the regeneration inhibit mode, the buzzer starts sounding and the indicator display changes in response to the PM level in order to prompt the operator to perform the required procedure listed in the following table.

IMPORTANT :

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

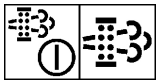
<table>
<tr><th colspan="3">Regeneration inhibit mode</th></tr>
<tr><th colspan="2">DPF system status</th><th>Required procedure</th></tr>
<tr><td rowspan="2">PM warning level: 1
Buzzer: Not sounding</td><td> 
  </td><td>The regeneration indicator starts flashing.
The parked regeneration indicator starts flashing.</td><td>A specific level of PM has built up in the DPF muffler.
Continue with the operation as it is.</td></tr>
<tr><td>  </td><td colspan="2">At PM warning levels range from 1 to 2-2, it is also possible to change DPF inhibit switch to auto regeneration mode, then perform the regeneration.</td></tr>
<tr><td>PM warning level: 2-1
Buzzer: Sounding every 5 seconds

PM warning level: 2-2
Buzzer: Sounding every 3 seconds</td><td> 
  </td><td>The regeneration indicator starts flashing.
The parked regeneration indicator starts flashing.</td><td>Move the machine to a safe area, then begin the parked regeneration cycle process.
(See Operating procedure for parked regeneration on page 32.)</td></tr>
<tr><td rowspan="2">PM warning level: 3
Buzzer: Sounding every 1 second
Engine output: 50 %</td><td colspan="3">If the parked regeneration cycle is interrupted or the machine is continuously operated in the PM warning level 2:</td></tr>
<tr><td> 
  </td><td>The engine warning indicator starts flashing.
The parked regeneration indicator starts flashing.</td><td>Immediately stop working the machine, move the machine to a safe area, then begin the parked regeneration cycle process.
(See Operating procedure for parked regeneration on page 32.)
If the machine is operated further and the operator ignores the warning signs, then regeneration will be disabled.</td></tr>
<tr><td rowspan="2">PM warning level: 4
Buzzer: Sounding every 1 second
Engine output: 50 %</td><td colspan="3">If the regeneration cycle is interrupted or the machine is continuously operated ignoring the warning signs, in the PM warning level 3:</td></tr>
<tr><td>  </td><td>The engine warning indicator remains constantly “ON”.</td><td>Immediately move the machine to a safe place, park it there and turn the engine “OFF”.
Contact your local Kubota Dealer.
• At this level, do not continue to operate the machine; otherwise, damage may result to the DPF and engine.</td></tr>
</table>

IMPORTANT :

- **When the regeneration interval becomes shorter, parked regeneration will be required as followed.**
  1. **If it takes shorter than 4 hours or so for the regeneration indicator to go out and light up again.**
  2. **Parked regeneration indicator starts flashing.**
     Buzzer: Sounding every 5 seconds.
  3. **Immediately discontinue working the machine and begin the parked regeneration cycle process (See Operating procedure for parked regeneration on page 32.)**

6. Operating procedure for parked regeneration

1. Park the machine in a safe area away from buildings, people, and animals.
2. Apply the parking brake.
3. Set the speed control pedal to the *"NEUTRAL"* position.
4. Set the PTO clutch lever to the *"DISENGAGED"* position.
5. Lower the implement to the ground.
6. Turn steering wheel so front wheels are in the straight ahead position.
7. Return the engine rpm to the idle speed.
8. Press the DPF inhibit switch  , and the switch lamp turns *"OFF"*.
9. When the regeneration conditions are satisfied (step 2 to 4 and 6, 7), the parked regeneration switch lamp  starts flashing.
10. Press the parked regeneration switch  to start the regeneration cycle.
    The switch lamp will stop flashing and remain *"ON"* constantly during the cycle.
11. The engine rpm will automatically rise, and the regeneration process will begin.
12. Both indicators  stay *"ON"* while regenerating the DPF.
    They turn *"OFF"* when the cycle is complete.
13. After the lamp turns *"OFF"*, normal machine work may resume.
    When driving in *"Regeneration inhibit"* mode, press the DPF inhibit switch to turn on the switch lamp.

NOTE :

- **During the regeneration cycle, do not touch the above levers and pedal (in steps 2, 3, 4), nor change the engine rpm other than for an emergency stop. Otherwise, the regeneration will be interrupted.**
- **Never leave the machine when the parked regeneration process is activated.**
- **If the parked regeneration cycle is interrupted, the engine rpm is fixed at the idling level for about 30 seconds. For this period, keep the hand throttle lever and speed control pedal at the idle position. Do not move them. They will function again in 30 seconds.**

7. Tips on diesel particulate filter (DPF) regeneration

NOTE :

- **Avoid prolonged idling if possible.**

The higher in speed or load the engine operates, the higher the exhaust temperature rises. As a result, particulate matter (PM) inside the DPF is consumed and the regeneration process is required less frequently over time.
The lower in speed or load the engine operates, the lower the exhaust temperature. Accordingly, less particulate matter (PM) inside the DPF is consumed and more accumulation of PM will occur, which requires frequent regeneration. Therefore, avoid prolonged idling if possible.

- **Necessary conditions for *"Regeneration"***
  If even one condition is deviated, after starting regeneration, the regeneration will be interrupted.
  – The engine coolant temperature.
  – The DPF temperature.
  – The engine speed is 1600 rpm or higher (depending on the environment).
- Usually, it takes 15 to 20 minutes to complete the regeneration cycle.
  Actual regeneration time may depend on ambient temperature, exhaust temperature and engine speed.
- It is recommended to do the regenerating while the engine is warm and high revolution.
- Do not unnecessarily start and interrupt the regeneration process. Otherwise, a small amount of fuel becomes mixed with the engine oil, which degrades the oil quality.
- While the DPF is being regenerated, the engine air flow rate is automatically limited to keep up the exhaust temperature. Because of this, the engine may sound differently, but this is normal for this engine.
- Just after the regeneration has ended, the DPF muffler remains hot. It is advisable to keep the engine running for about 5 minutes to allow cooling of the exhaust components.

STARTING THE ENGINE

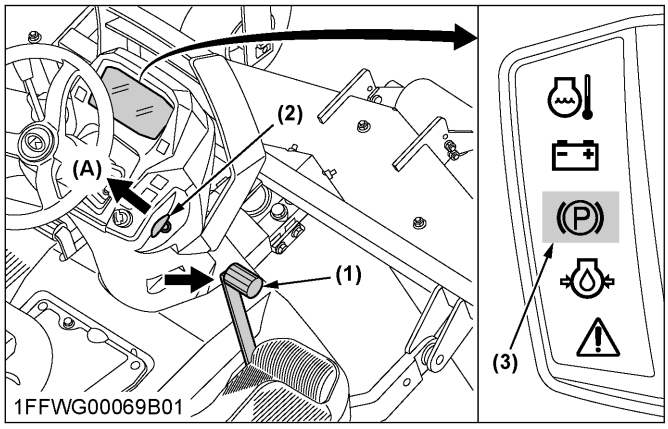
IMPORTANT :

- **Do not turn the key switch to the *"START"* position while the engine is running.**
- **Do not operate the machine under full load until it is sufficiently warmed.**
- **Do not use starting fluid or ether.**
- **When the ambient temperature is less than -15 ℃ (5 ℉), remove the battery from the machine and store it somewhere warm until the next operation.**

1. Sit on the operator's seat.
2. Apply the parking brake.

   To apply the parking brake:
   a. Depress the brake pedal firmly and hold in position. Pull and hold the parking brake lever.
   b. Then release the brake pedal.

   To release the parking brake:
   Depress the brake pedal and release slowly.

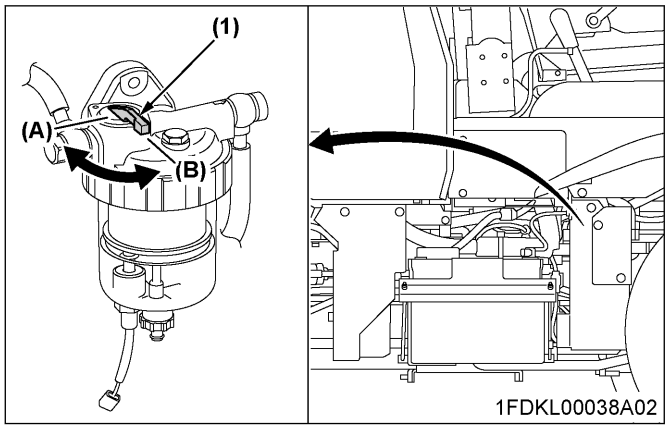


(1) Brake pedal
(2) Parking brake lever
(3) Parking brake warning indicator
(A) "PARKING"

NOTE :

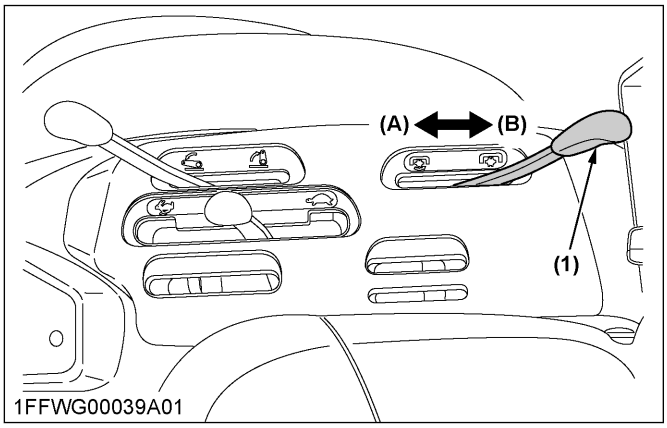
- **It is recommended that the operator practice engaging and disengaging the parking brake on a flat surface without the engine running before operating the machine for the first time.**

3. Make sure the fuel shutoff-valve is in the *"OPEN"* position.



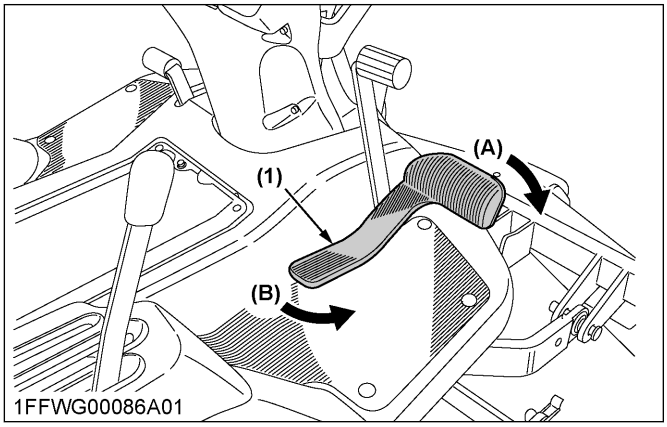
(1) Fuel shutoff-valve
(A) "OPEN"
(B) "CLOSE"

4. Make sure that the PTO lever is in the *"DISENGAGED"* position.



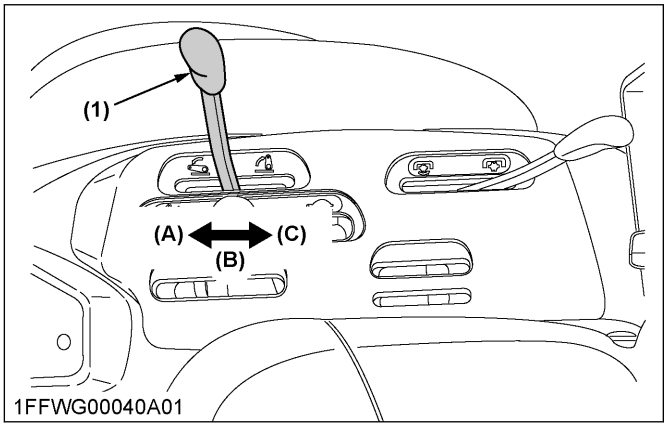
(1) PTO lever
(A) "ENGAGED"
(B) "DISENGAGED"

5. Make sure that the speed control pedal is in the *"NEUTRAL"* position.



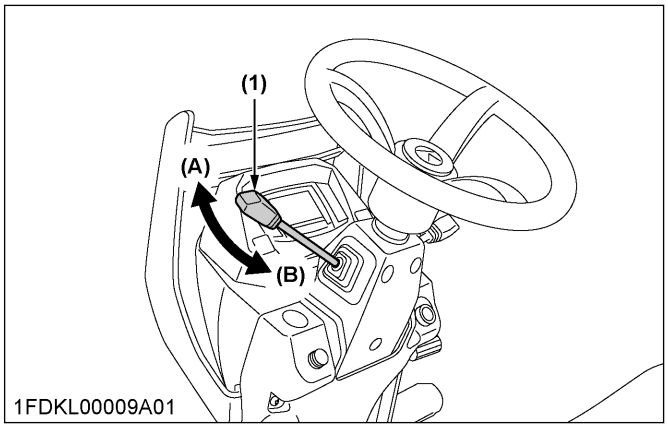
(1) Speed control pedal
(A) "FORWARD"
(B) "REVERSE"

6. Make sure that the hydraulic lift lever is in the *"NEUTRAL"* position.



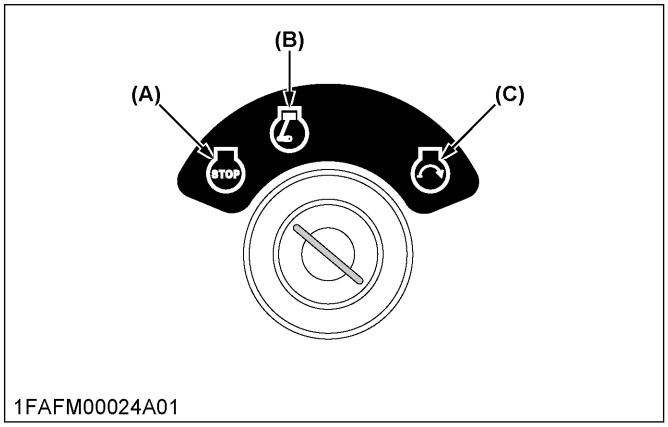
(1) Hydraulic lift lever
(A) "DOWN"
(B) "NEUTRAL"
(C) "UP"

7. Set the throttle lever 1/2 way forward.

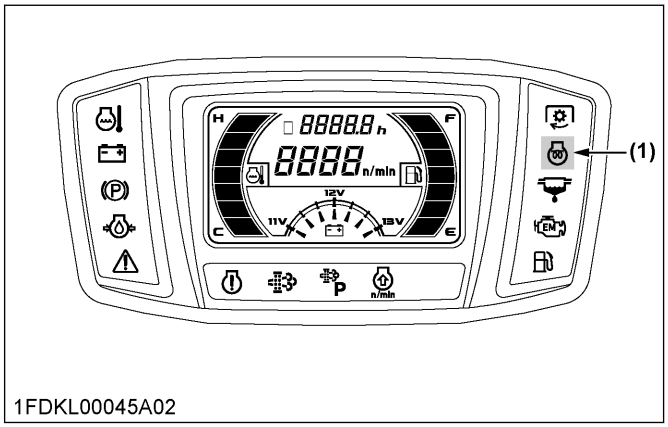


(1) Throttle lever
(A) "FAST"
(B) "SLOW"

8. Insert the key into the key switch and turn clockwise 1 notch.
   Make sure the Easy Checker™ lights are *"ON"*.
   Hold the key until the heater indicator turns off.



(A) "OFF" (Engine - Stop)
(B) "ON" (Engine - Run)
(C) "START" (Engine - Start)



(1) Heater indicator

9. Turn the key switch to the *"START"* position and release the key to the *"ON"* position when the engine starts.

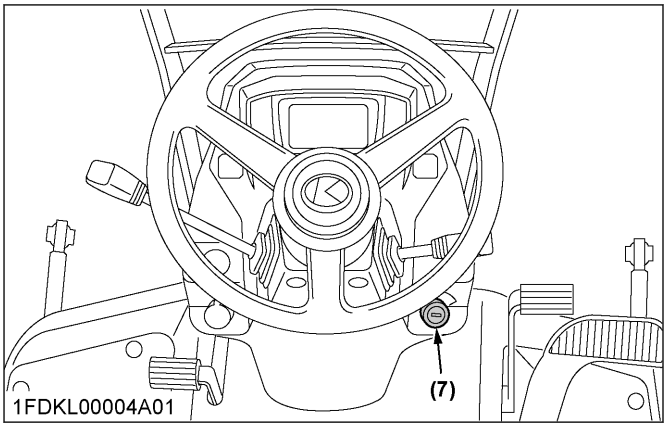
   IMPORTANT :
   - **Because of the safety devices, the engine may not be started except when the PTO clutch is disengaged, the brake pedal is fully depressed and the operator sits in the seat.**

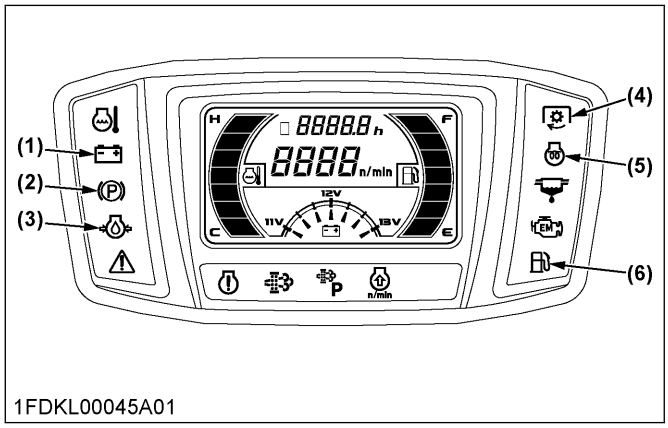
10. Check to see that all the lamps on the Easy Checker™ are *"OFF"*. If the lamp is still on, immediately stop the engine and determine the cause.
11. Warm up the engine by running at medium speed.

1. Checking the Easy Checker™ indicators

IMPORTANT :
- **Daily checks with the Easy Checker™ only, are not sufficient. Never fail to conduct daily checks carefully by referring to Daily Check. (See DAILY CHECK on page 57.)**

1. When the key is turned *"ON"*, indicators (1) (3) come on. If trouble should occur at any location while the engine is running, the indicator corresponding to problem will turn *"ON"*.



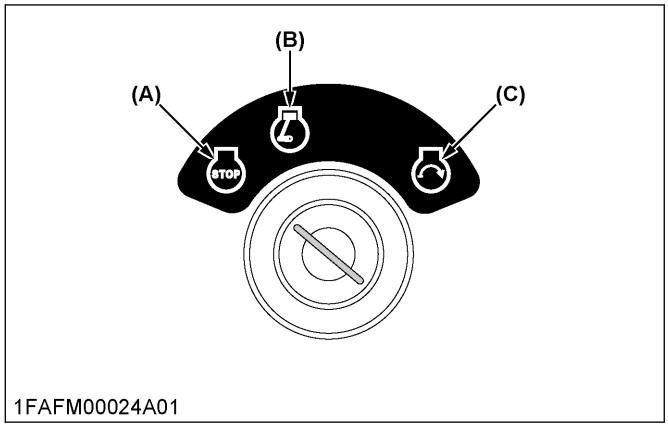


(1) Electrical charge warning indicator
(2) Parking brake warning indicator
(3) Engine oil pressure warning indicator
(4) PTO clutch indicator
(5) Heater indicator
(6) Fuel level indicator
(7) Key switch

2. If the ambient temperature is below 0 ℃ (32 ℉) and the engine is very cold, turn the key to *"ON"* position, the heater indicator turns on.
3. The PTO clutch indicator (4) comes on while PTO lever is engaged *"ON"* and goes off when disengaged.
4. If the fuel level indicator (6) lights up, when fuel level is very low, therefore add fuel and the light will turn *"OFF"*.
5. If the parking brake warning indicator (2) does not illuminate, make sure the parking brake is set.

   NOTE :
   - **Some of the Easy Checker™ lamps may illuminate or start flashing depending on the positions of the levers and switches.**

2. Key switch



(A) "OFF" (Engine - Stop)
(B) "ON" (Engine - Run)
(C) "START" (Engine - Start)

3. Cold weather starting

- When the ambient temperature is below -5 ℃ (23 ℉) and the engine is very cold. (If the engine fails to start after 10 seconds, turn off the key for 30 seconds.), then repeat steps 8 and 9.
- To protect the battery and the starter, make sure not to turn the starter continuously for more than 10 seconds.

4. Block heater (option)

A block heater is available as an option from your local dealer. It will assist you in starting your machine when the ambient temperature is below -15 ℃ (5 ℉).

STOPPING THE ENGINE

1. After slowing the engine to idle.
   Wait 3 to 5 minutes for engine to cool down and then turn off the key switch to the *"OFF"* position.
2. Remove the key.

WARMING UP THE ENGINE

⚠ WARNING

To avoid serious injury or death:

- **Apply the parking brake during warm-up.**

For 5 minutes after the engine start-up, allow the engine to warm up without applying any load. This is to allow oil to reach every part of the engine. If load is applied to the engine without this warm-up period, problems such as seizure, breakage or premature wear may develop.

1. Warm-up and transmission oil in the low temperature range

Hydraulic oil serves as transmission oil and power steering fluid. In cold weather conditions, the oil may be cold with increased viscosity. This can cause delayed oil circulation or abnormally low hydraulic pressure for some time after engine start-up. This, in turn, results in trouble in the hydraulic system or damage to the hydraulic clutch.
To prevent this from happening, warm up the engine at about 50 % of rated rpm according to the following table.

Ambient temperature	Warm-up time requirement
Higher than 0 ℃ (32 ℉)	Approximately 5 minutes
-10 to 0 ℃ (14 to 32 ℉)	5 to 10 minutes
-20 to -10 ℃ (-4 to 14 ℉)	10 to 15 minutes
Below -20 ℃ (-4 ℉)	More than 15 minutes

IMPORTANT :

- **Do not operate unless the engine is well warmed up. If operation is attempted while the engine is still cold, the hydraulic mechanism will not function properly and its service life will be shortened.**
- **If noises are heard after the hydraulic control lever has been activated and the implement is lifting, the hydraulic mechanism is not adjusted properly. Unless corrected, the unit will be damaged. Contact your local Kubota Dealer for adjustment.**

JUMP STARTING

⚠ WARNING

To avoid serious injury or death:

- **Keep cigarettes, sparks, and flames away from the battery.**
- **If the machine battery is frozen, do not jump start the engine.**
- **Do not connect the other end of the negative (-) jumper cable to the negative (-) terminal of the machine battery.**

IMPORTANT :

- **This machine has a 12 volt negative (-) ground starting system.**
- **Use only same voltage for jump starting.**
- **Use of a higher voltage source on the machine could result in severe damage to the machine electrical system.**
  Use only a matching voltage source when *"jump starting"* a low or dead battery.

When jump starting the engine, observe the following instructions to start the engine safely.

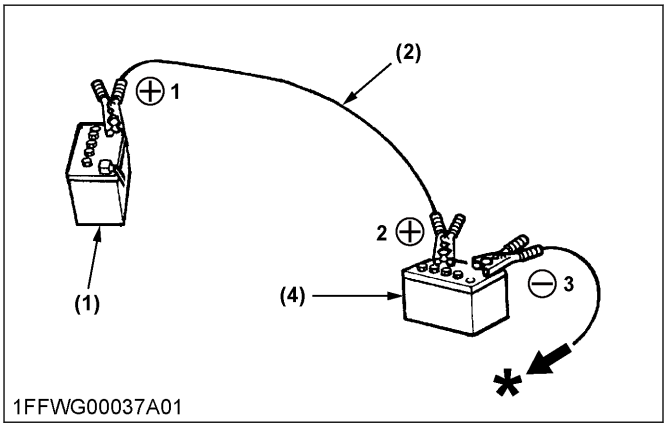
1. Bring a helper vehicle with a battery of the same voltage as the disabled machine within easy cable reach.

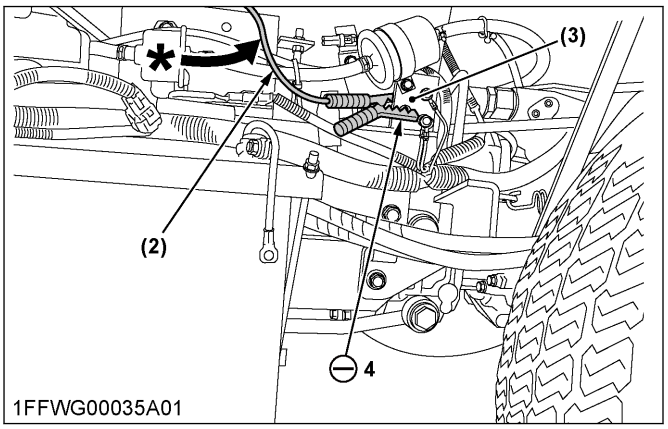
   IMPORTANT :
   - **The vehicles must not touch.**

2. Apply the parking brakes of both vehicles and put the shift levers in the *"NEUTRAL"* position. Shut the engine off.
3. Put on safety goggles and rubber gloves.

4. Ensure that vent caps are securely in place (if equipped).
5. Attach the red clamp to the positive (red, (+) or positive) terminal of the dead battery and clamp the other end of the same cable to the positive (red, (+) or positive) terminal of the helper battery.
6. Clamp the other cable to the negative (black, (-) or negative) terminal of the helper battery.
7. Clamp the other end to the engine block or the frame of the disabled machine as far from the dead battery as possible.
8. Start the helper vehicle and let its engine run for a few moments. Start the disabled machine.
9. Disconnect the jumper cables in the exact reverse order of attachment (steps 7, 6, and 5).

Connect cables in numerical order.
Disconnect in reverse order after use.





(1) Dead battery
(2) Jumper cables
(3) Frame
(4) Helper battery

OPERATING THE MACHINE

⚠ WARNING

To avoid serious injury or death:

- **Do not allow anyone other than the driver to ride on the machine.**
- **Do not drive the machine close to the edges of ditches or banks which may collapse under the weight of the machine, especially when the ground is loose or wet.**
- **Slow down before turning.**
- **To avoid roll-over accidents, mow up and down slopes, not across. Avoid sudden starts and stops on slopes. Slow down and use extra caution when changing direction on a slope. Do not use the machine on a steep incline.**
  Park the machine on a firm and level surface.
- **Watch where you are going at all times. Watch for and avoid obstacles. Be alert at curbs, near trees, and other obstructions and hidden hazards.**
- **Do not drive the machine on streets or highways. Watch for traffic when you cross roads or operate near roads.**
- **Look to the rear before and when backing. Make sure the area immediately behind you is clear of obstructions or holes, and small children. Use extra caution when a machine is equipped with grass catcher.**

OPERATING A NEW MACHINE

How a new machine is operated and maintained will determine the operating life of the machine.
A new machine just off the factory production line has been tested, but the various parts are not accustomed to each other, so care should be taken to operate the machine for the first 50 hours at a slower speed and avoid excessive work or operation until the various parts become *"broken-in"*. The manner in which the machine is handled during the *"breaking-in"* period greatly affects the life of your machine.
Therefore, to obtain the maximum performance and the longest operating life of the machine, it is very important to properly break-in your machine. In handling a new machine, the following precautions should be observed.

1. Changing lubricating oil for new machine

The lubricating oil is especially important in the case of a new machine. The various parts are not *"broken-in"* and are not accustomed to each other. Small metal grit may develop during the operation of the machine and this may wear out or damage the parts. Therefore, care should be taken to change the lubricating oil a little earlier than it would ordinarily be required.
Details regarding normal service intervals can be found in a different section.
(See SERVICE INTERVALS on page 52.)

2. Engine break-in

After the first 50 hours of operation, change the engine oil and filter.
(See EVERY 200 HOURS on page 69.)

3. Machine break-in

After the first 50 hours of operation, change the oil filter.
After the first 400 hours of operation, change the transmission fluid.
(See EVERY 400 HOURS on page 70.)

OPERATING THE FOLDABLE ROPS

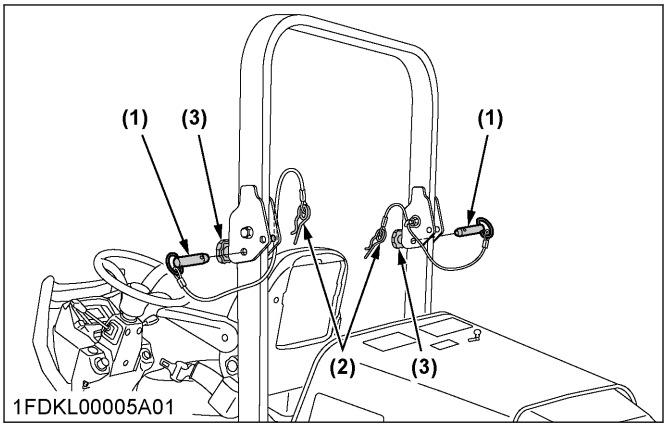
⚠ WARNING

To avoid serious injury or death:

- **Always use the seat belt when the ROPS is installed.**
- **Do not use the seat belt if a foldable ROPS is down or if there is no ROPS.**
- **When raising or folding the ROPS, apply parking brake, stop the engine and remove the key.**
  Always perform function from a stable position to the rear of the machine.
- **Fold the ROPS down only when absolutely necessary and fold it up and lock it again as soon as possible.**
- **Before proceeding to fold the ROPS, check for any possible interference with installed implements and attachments.**
  If interference occurs, contact your Kubota Dealer.

1. Folding the ROPS

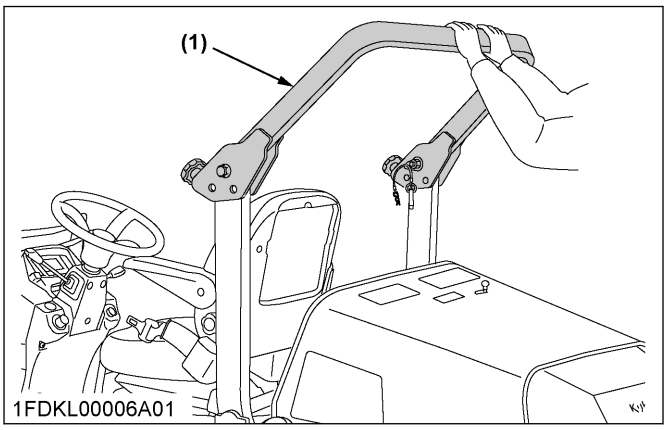
1. Loosen the knob bolts 1 to 2 turns.
2. Remove both lock pins.



(1) Lock pin
(2) Snap pin
(3) Knob bolt

3. Fold the ROPS.

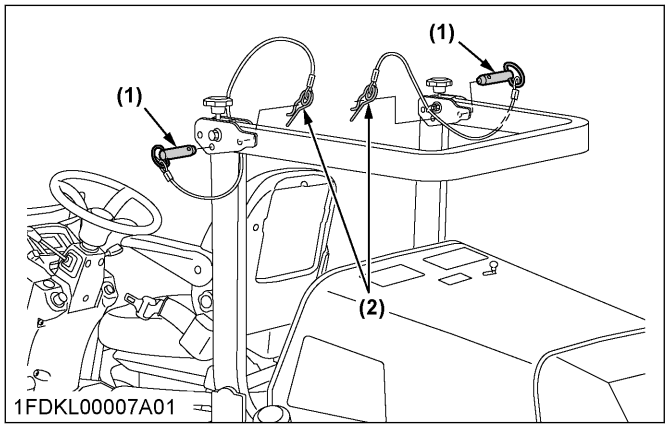
⚠ WARNING
To avoid serious injury or death:
- **Hold the ROPS tightly with both hands and fold the ROPS slowly and carefully.**



(1) ROPS

4. Align the lock pin holes and insert both lock pins and secure them with the snap pins.

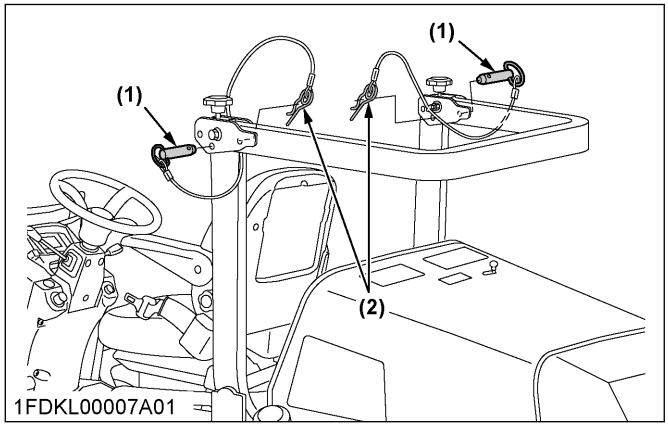
⚠ WARNING
To avoid serious injury or death:
- **Make sure that both lock pins are properly installed and secured with the snap pins.**
- **Do not use your fingers to align the holes.**



(1) Lock pin
(2) Snap pin

2. Raising the ROPS to the upright position

1. Remove both snap pins and lock pins.



(1) Lock pin
(2) Snap pin

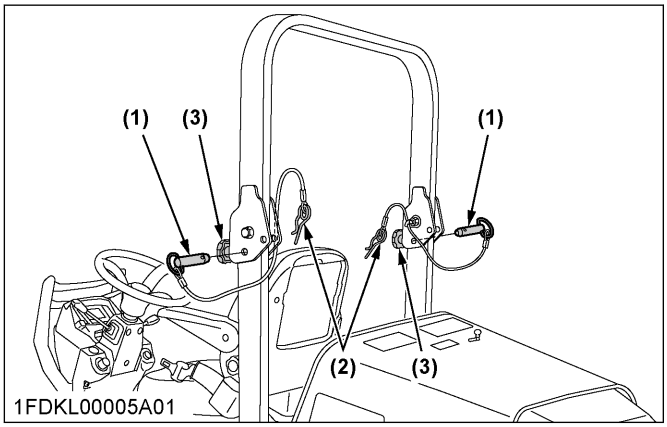
2. Raise the ROPS to the upright position.

⚠ WARNING
To avoid serious injury or death:
- **Hold the ROPS tightly with both hands and raise the ROPS slowly and carefully.**
- **Do not use your fingers to align the holes.**

3. Align the lock pin holes, insert both lock pins and secure them with the snap pins.

4. Tighten the knob bolts slightly.

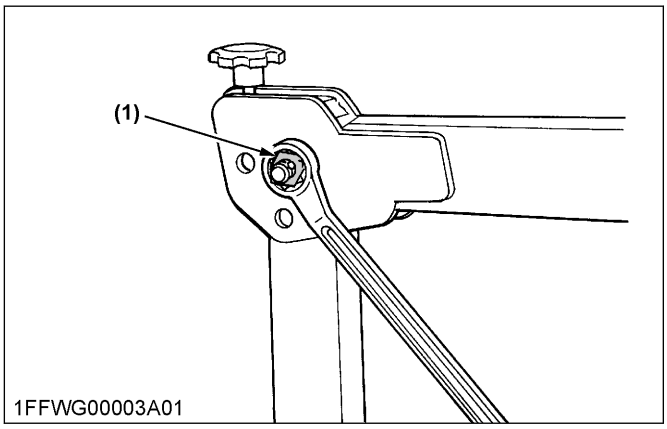
⚠ WARNING
To avoid serious injury or death:
- **Make sure that both lock pins are properly installed as soon as the ROPS is in the upright position and secured with the snap pins.**



(1) Lock pin
(2) Snap pin
(3) Knob bolt

3. Adjusting the foldable ROPS

1. Adjust the free fall of the ROPS upper frame regularly.
2. If you feel less friction when folding the ROPS, tighten the nut (1) until you feel the right friction when moving it.



(1) Nut

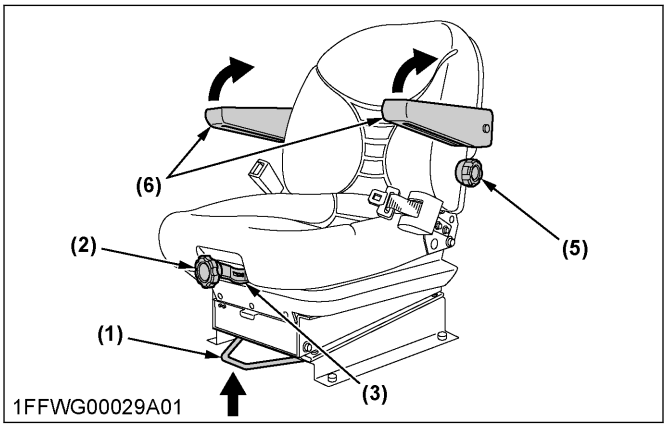
OPERATION OF THE MACHINE

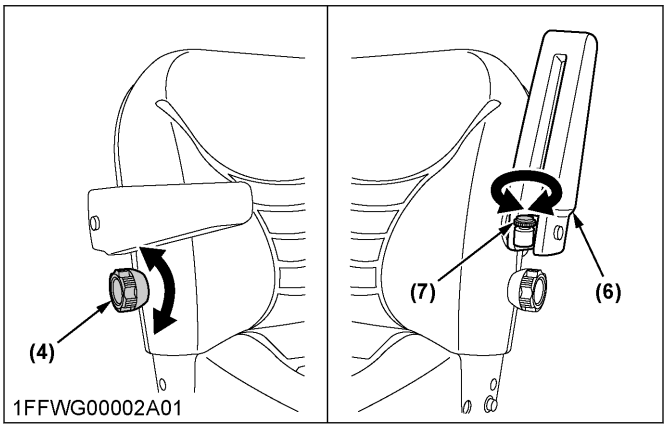
⚠ WARNING
To avoid serious injury or death:
- **Read and understand the safe operation section.**
- **Read and understand the safety labels located on the machine.**
- **To avoid the danger of exhaust fume poisoning, do not operate the engine indoors without proper ventilation.**
- **Never start the engine while standing on the ground. Start the engine only from the operator's seat.**
- **Make it a rule to set all shift levers to the *"NEUTRAL"* positions and to place the PTO lever in *"OFF"* position before starting the engine.**

1. Adjust the operator's position and apply the seat belt.
   - Operator's seat on page 40
   - Glove box on page 41
   - Steering wheel tilt lever on page 41
   - Power steering on page 41
   - Seat belt on page 42
2. Select light switch positions.
   - Work light switch on page 42
3. Start the engine.
   - OPERATING THE ENGINE on page 25
4. Raise the implement.
   - Lift link lowering speed control knob on page 42
   - Hydraulic lift lever on page 43
5. Select the travel speed.
   - High-low gear shift lever on page 43
   - 4WD lock lever on page 43
   - PTO lever on page 44
6. Accelerate the engine.
   - Throttle lever on page 44
7. Unlock the parking brake.
   - Parking brake on page 44
8. Depress the speed control pedal.
   - Speed control pedal on page 44
   - Differential lock pedal on page 45

1. Operator's seat

⚠ WARNING
To avoid serious injury or death:
- **Make adjustments to the seat only while the machine is stopped.**
- **Make sure that the seat is completely secured after each adjustment.**
- **Do not allow anyone other than the driver to ride on the machine.**





(1) Travel adjust lever
(2) Suspension adjust knob
(3) Indicator of suspension
(4) Backrest tilt adjust knob
(5) Lumbar support adjust knob
(6) Armrest
(7) Armrest angle adjust knob

Travel adjustment

⚠ WARNING

To avoid serious injury or death:

- **Use extra caution when unlocking the travel adjust lever because the seat might slide forward by itself.**

Unlock the travel adjust lever and slide the seat backward or forward, as required. The seat will lock in position when the lever is released.

Suspension adjustment
Turn the suspension adjust knob to achieve the optimum suspension setting.

Lumbar support adjustment
Turn the lumbar support adjust knob to the desired position.

Backrest tilt adjustment
Turn the backrest tilt adjust knob to the desired angle.

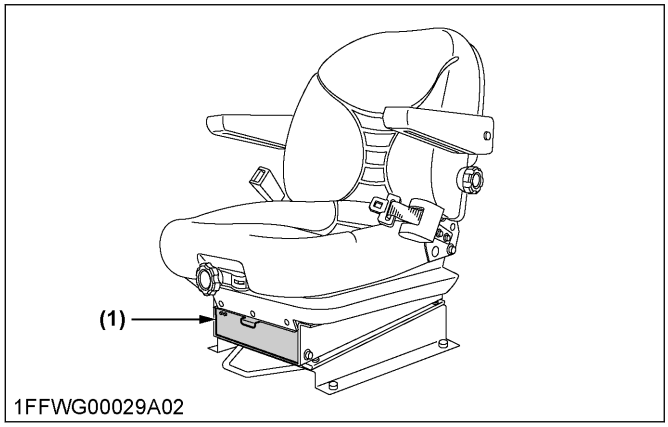
Armrest
Armrest may be set at upright position if desired.

Armrest angle adjustment
Turn the armrest angle adjust knob to the desired angle.

IMPORTANT :

- **After adjusting the operator's seat, check to see that the seat is properly locked.**

2. Glove box

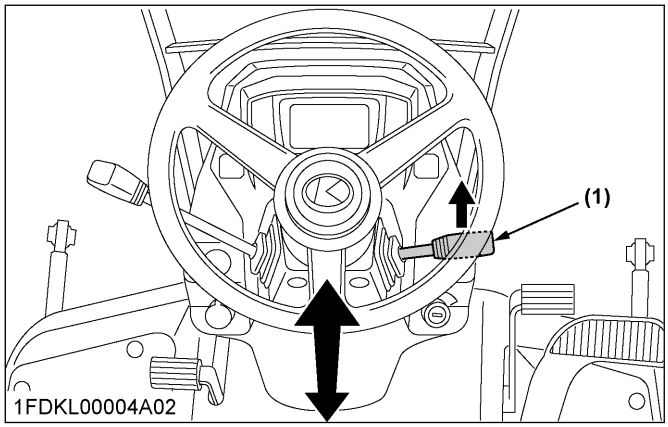


(1) Glove box

3. Steering wheel tilt lever

The steering wheel can be adjusted to a desired tilt angle from the choice of 4 settings.

1. Pull the steering wheel tilt lever upward to release the lock.



(1) Steering wheel tilt lever

4. Power steering

1. Power steering is activated only while the engine is running. Slow engine speeds make the steering a little heavier. While the engine is stopped, the machine functions in the same manner as machines without power steering.

2. When the steering wheel is turned all the way to the stop, the relief valve is activated. Do not hold the steering wheel in this position for a long period of time.
3. Avoid turning the steering wheel while the machine is stopped, or tires may wear out sooner.
4. The power steering mechanism makes the steering easier. Be careful when driving on a road at high speeds.

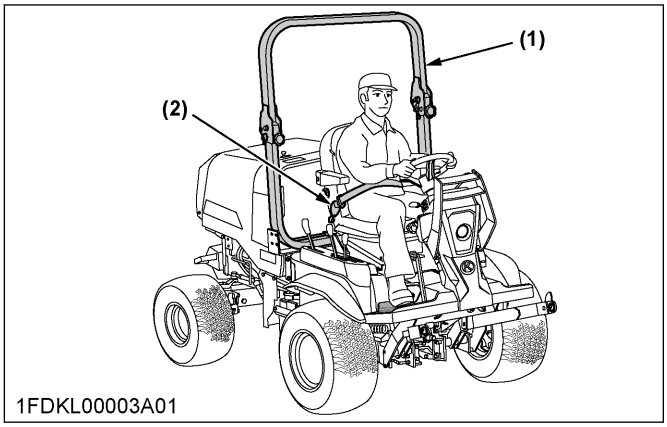
5. Seat belt

⚠ WARNING

To avoid serious injury or death:

- **Always use the seat belt when the ROPS is installed.**
- **Do not use the seat belt if a foldable ROPS is down or if there is no ROPS.**

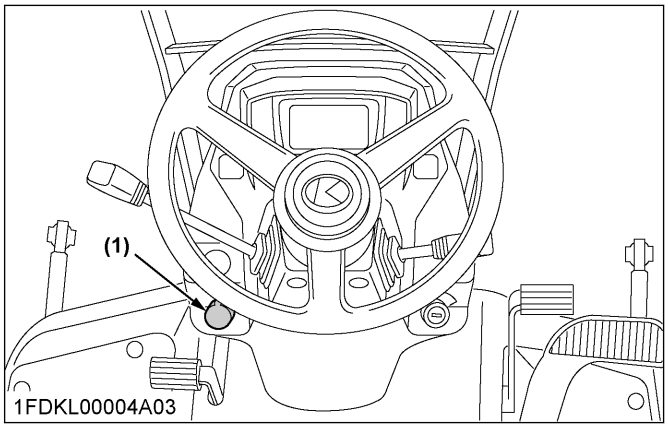
Adjust the seat belt for proper fit and connect to the buckle. The seat belt is an auto-locking retractable type.



(1) ROPS
(2) Seat belt

6. Work light switch

To light the work light, push the light switch.
To turn off the work light, push the light switch again.



(1) Light switch

7. Lift link lowering speed control knob

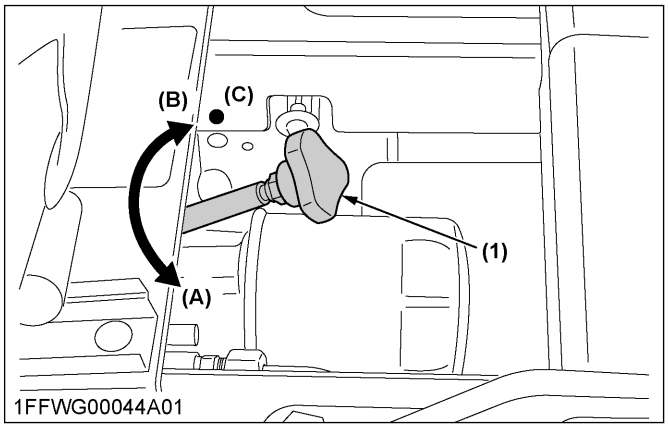
⚠ WARNING

To avoid serious injury or death:

- **Fast lowering speed may cause damage or injury. Lowering speed of the implement should be adjusted to 2 or more seconds.**
- **Before adjustment, never check near or under the implement.**
- **Turn the knob slowly and carefully to avoid sudden fall of the implement.**

The lowering speed of the lift link can be controlled by adjusting the lift link lowering speed control knob.

- To make the lowering speed *"FAST"*, turn counterclockwise slowly.
- To make the lowering speed *"SLOW"*, turn clockwise.
- To lock the lowering speed, turn clockwise to the end.



(1) Lift link lowering speed control knob
(A) "FAST"
(B) "SLOW"
(C) "LOCK"

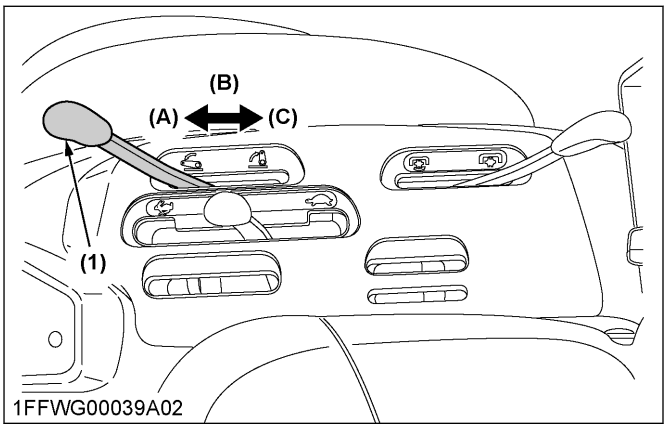
7.1 How to adjust the lowering speed

1. Park the machine on a level surface and apply the parking brake.

2. Move the PTO lever in the *"DISENGAGE"* position.
3. Move the high-low gear shift lever in the *"NEUTRAL"* position.
4. Start the engine and raise the implement fully.
5. Turn the lift link lowering speed knob clockwise to the *"LOCK"* position.
6. Stop the engine and move the hydraulic lift lever in the *"DOWN"* position.
7. Turn the knob counterclockwise slowly to adjust the lowering speed.

8. Hydraulic lift lever

The hydraulic lift lever is used to raise and lower the implement used with the machine (mower).
To lower the implement, push the lever forward.
To raise it, pull the lever backward.



(1) Hydraulic lift lever
(A) "LOWER"
(B) "NEUTRAL"
(C) "RAISE"

IMPORTANT :
- **Do not operate until the engine is warmed up. If operation is attempted when the engine is still cold, the hydraulic system may be damaged.**
- **Do not operate at slow engine rpm. Move the throttle lever above 1/2.**
- **If noises are heard when implement is lifting after the hydraulic lift lever has been activated, the hydraulic mechanism is not adjusted properly. Contact your local Kubota Dealer for adjustment.**

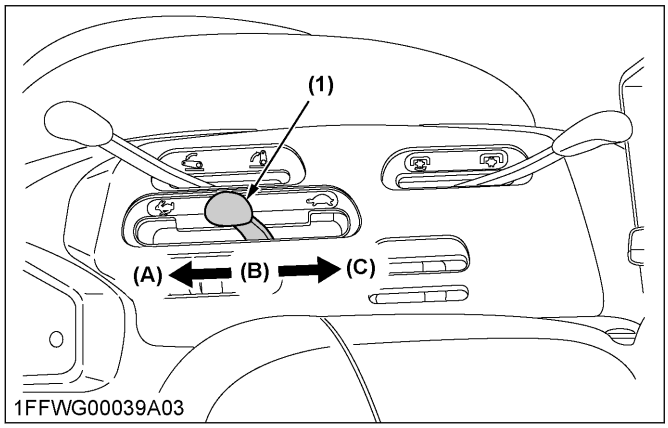
9. High-low gear shift lever

⚠ WARNING
To avoid serious injury or death:
- **Shift high-low gear shift lever to the *"SLOW"* position before mowing or operating on slopes.**

High-low gear shift lever moves in the form of an *"I"* in 3 stages, *"SLOW"*, *"NEUTRAL"* and *"FAST"*.

By using the speed control pedal and high-low gear shift lever, additional speeds can be obtained.

IMPORTANT :
- **To shift high-low gear shift lever, stop the machine before attempting to proceed with speed change.**



(1) High-low gear shift lever
(A) "FAST"
(B) "NEUTRAL"
(C) "SLOW"

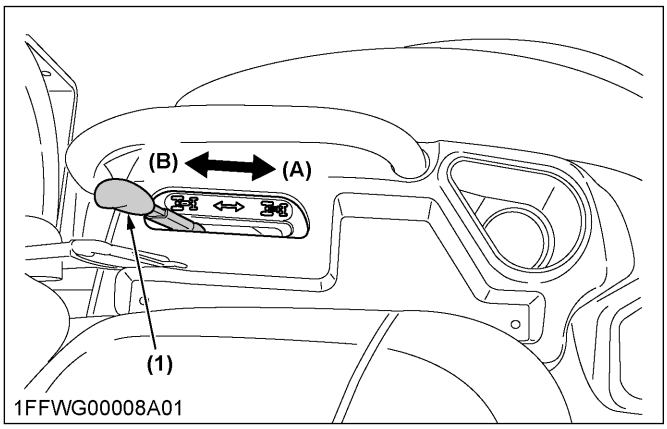
10. 4WD lock lever

⚠ WARNING
To avoid serious injury or death:
- **Do not change the 4WD lock lever to the *"DUAL- ACTING OVERRUNNING 4WD"* position on slopes. Set it *"FULL TIME 4WD"* position on slopes. Do not change the 4WD lock lever to the *"FULL TIME 4WD"* position when turning or transporting.**

"FULL TIME 4WD" - This position provides 4WD mechanically in any kind of the ground condition.
"DUAL-ACTING OVERRUNNING 4WD" - This position provides 4WD automatically only when the ground speed is different between front and rear wheels (forward and backward).

IMPORTANT :
- **Do not steer the rear wheel sharply when the 4WD lock lever is in the *"FULL TIME 4WD"* position.**

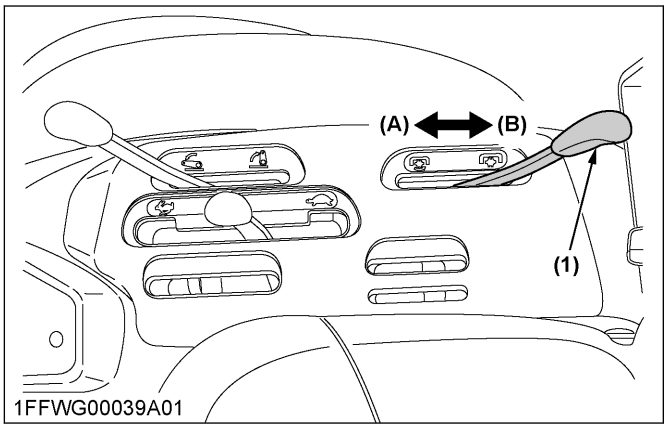
1. Change the lever to the *"DUAL-ACTING OVERRUNNING 4WD"* position so that you can turn smoothly without damaging the lawn.



(1) 4WD lock lever
(A) "FULL TIME 4WD"
(B) "DUAL-ACTING OVERRUNNING 4WD"

11. PTO lever

To drive the PTO, move the PTO lever to the *"ENGAGED"* position.



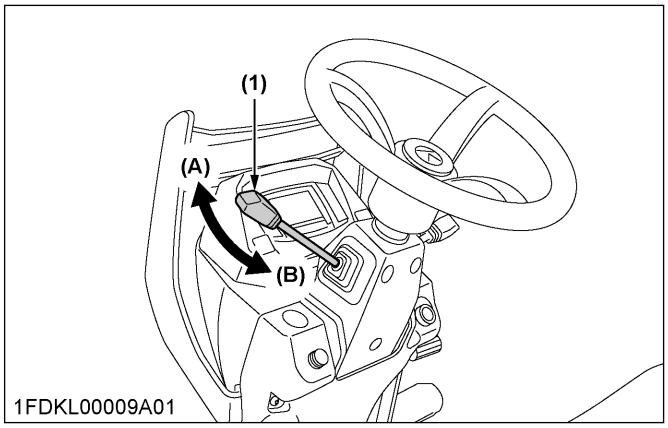
(1) PTO lever
(A) "ENGAGED"
(B) "DISENGAGED"

1. If you get off the seat while the PTO is running, the engine will stop automatically (seat safety control).
2. Before starting the engine, pull the PTO lever to the *"DISENGAGE"* position. If it is at the *"ENGAGED"* position, the engine will not start.

NOTE :
- **These safety features are built-in.**

12. Throttle lever

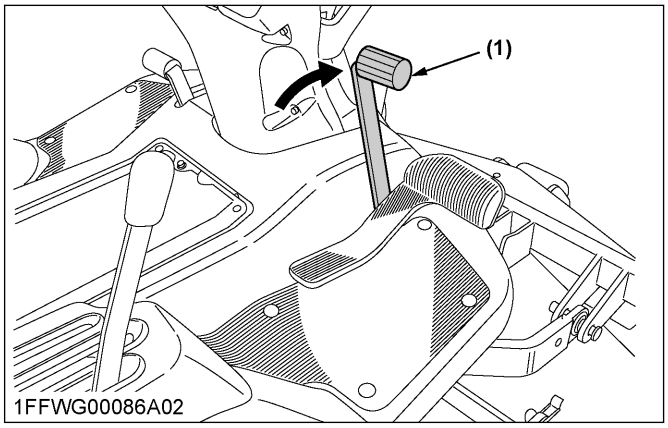
- To decrease the engine speed, pull the throttle lever backward.
- To increase the engine speed, pull the throttle lever forward.



(1) Throttle lever
(A) "FAST"
(B) "SLOW"

13. Parking brake

1. To release the parking brake, depress the brake pedal again.



(1) Brake pedal

14. Speed control pedal

⚠ WARNING
To avoid serious injury or death:
- **Do not operate if the machine moves on a level ground with foot off speed control pedal.**

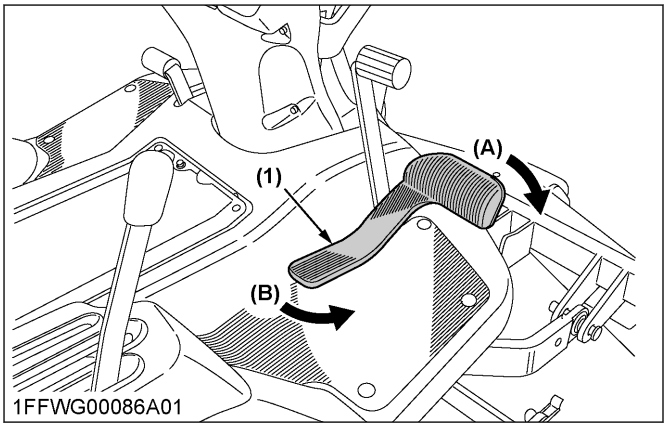
"FORWARD"
Depress the speed control pedal with the toe of your right foot to move forward.

"REVERSE"
Depress the speed control pedal with the heel of your right foot to move in reverse.

Depress the speed control pedal a little and you can drive slowly.
To increase travel-speed, depress the speed control pedal more until the desired speed is reached.

NOTE :

- **When the parking brake is applied, the speed control pedal is locked in the *"NEUTRAL"* position.**



(1) Speed control pedal *(A) "FORWARD"* *(B) "REVERSE"*

15. Differential lock pedal

⚠ WARNING

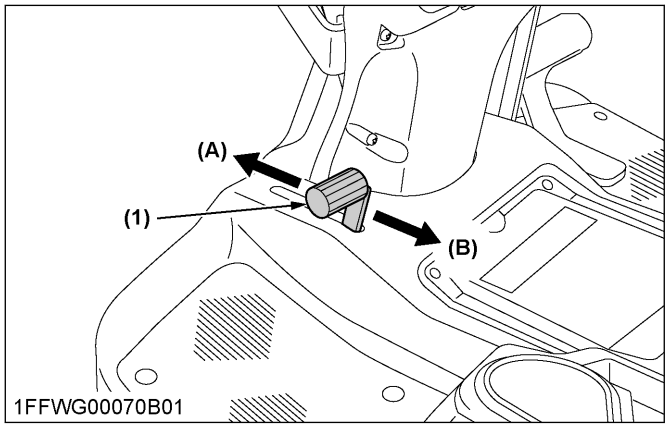
To avoid serious injury or death:

- **Do not drive at high speed or turn the machine when the differential is locked. Release the lock before making such a turn.**

If one of the front wheels should slip, step on the differential lock pedal. Then both wheels will turn together, reducing slippage.
The differential lock is applied only when the pedal is being depressed.

IMPORTANT :

- **If the differential lock will not release when the pedal is released, alternately step the speed control pedal forward and backward slightly.**
- **Do not apply the differential lock pedal when traveling at high speed, or damage to the transmission may result.**



(1) Differential lock pedal *(A) "ENGAGE"* *(B) "DISENGAGE"*

STOPPING THE MACHINE

1. Release the speed control pedal and depress the brake pedal to stop the machine.
2. Slow the engine down.
3. Shift PTO lever to the *"DISENGAGE"* position.
4. Lower all attachments, and place all control levers in their *"NEUTRAL"* positions.
5. Apply the parking brake, turn off the engine and remove the key from the switch.

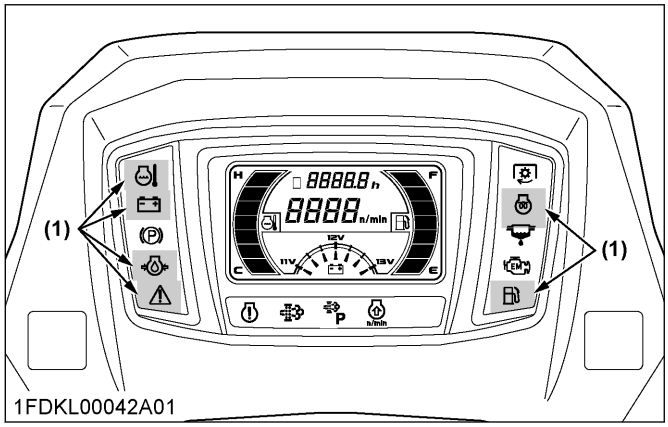
CHECK DURING DRIVING

IMPORTANT :
Immediately stop the engine if:

- **The engine suddenly slows down or accelerates.**
- **Unusual noises suddenly occur.**
- **Exhaust fumes suddenly become discolored.**

While driving, make the following checks to see that all the parts are functioning normally:

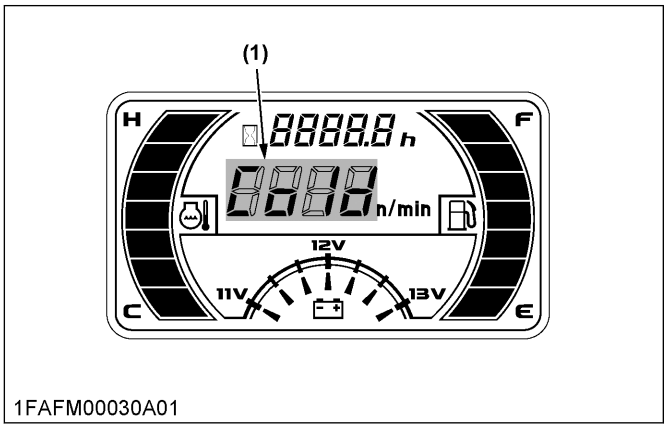
- Easy Checker™ on page 46



(1) Easy Checker™

1. Engine low temperature regulation

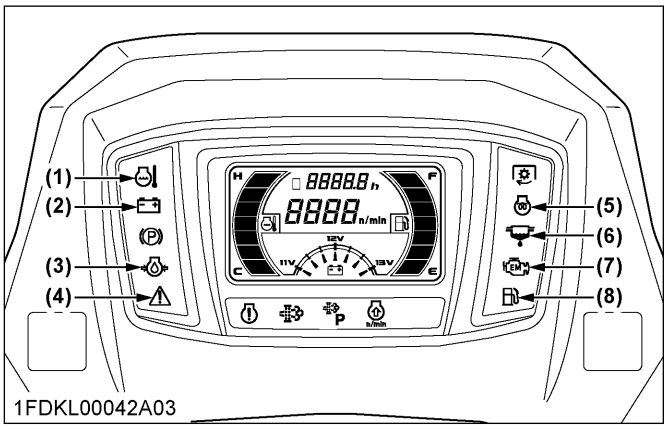
In order to prevent engine damage due to rapid acceleration, if starting the engine when the coolant temperature is approximately 0 ℃ (32 ℉) or below, the engine rpm will be kept at approximately 1600 for up to 1 minute. The operator will be informed by *"Cold"* on display, flash of engine revolution speed, and intermittent buzzer. The regulation time varies in response to the coolant temperature.
During regulation, perform the warm-up operation without using the accelerator. (See WARMING UP THE ENGINE on page 36.) After regulation, the engine rpm can be gradually increased. When regulation has been completely released, the indicator will go off, and the buzzer will stop.



(1) Cold

2. Easy Checker™

If the warning indicators of the Easy Checker™ come on during operation, immediately stop the engine, and find the cause as shown as follows.
Never operate the machine while Easy Checker™ indicator is on.



(1) Engine overheat warning indicator
If the water temperature gauge reads an unusual level and the warning indicator in the Easy Checker™ comes on, the engine may be overheated. Check the machine. See TROUBLESHOOTING on page 81.

(2) Electrical charge warning indicator
If the alternator is not charging the battery, the warning indicator in the Easy Checker™ will come on.
If this should happen during operation, check the electrical charging system or consult your local Kubota Dealer.

(3) Engine oil pressure warning indicator
If the oil pressure in the engine goes below the prescribed level, the warning indicator in the Easy Checker™ will come on.
If this should happen during operation, and it does not go off when the engine is accelerated to more than 1000 rpm, check the level of engine oil.
(See Checking the engine oil level on page 58.)

(4) Master system warning indicator
If trouble should occur at the control parts, the indicator flashes as a warning. If the trouble is not corrected by restarting the machine, consult your local Kubota Dealer.

(5) Heater warning indicator
When using the heater, the heater indicator turns on.

(6) Water separator indicator
If water or impurities collect in the water separator, the indicator on the Easy Checker™ will light up. If this should happen during operation, drain the water from the water separator as soon as possible.
(See Checking water separator on page 59.)

(7) Emission warning indicator
If this indicator lights up, take steps to lower the water temperature. This helps keep the emission clean.

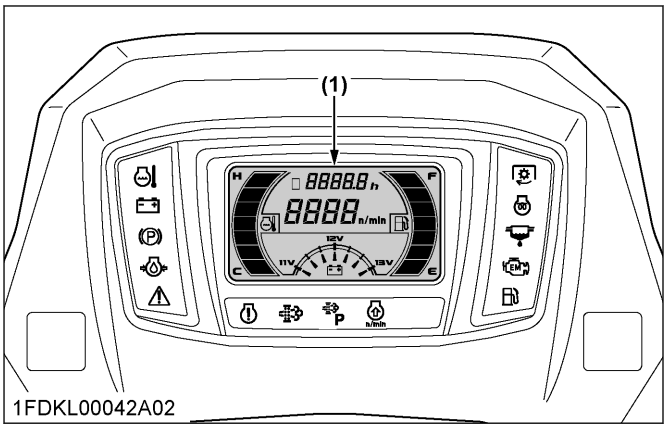
(8) Fuel level warning indicator
If the fuel in the tank goes below the prescribed level, the warning indicator in the Easy Checker™ will come on.
If this should happen during operation, refuel as soon as possible.
(See Checking the amount of fuel and refueling on page 58.)

IMPORTANT :

- **When the fuel warning indicator lights up, refuel the tank as soon as possible. If the machine runs out of fuel and stalls, the engine and its components may be damaged.**

NOTE :
- **For checking and servicing of your machine, consult your local Kubota Dealer for instructions.**

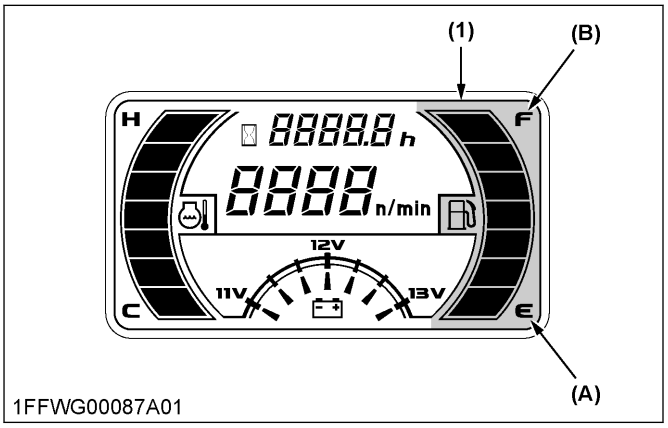
LCD MONITOR



(1) LCD monitor

1. Fuel gauge

When the key switch is on, the fuel gauge indicates the fuel level.
Be careful not to empty the fuel tank. Otherwise air may enter the fuel system.
Should this happen, the system should be bled.
(See Bleeding fuel system on page 78.)

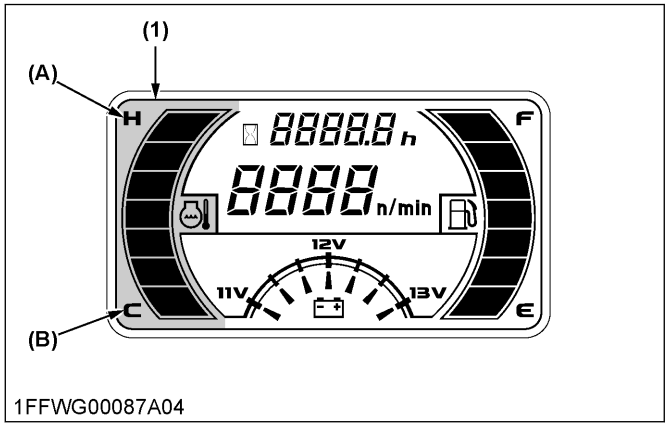


(1) Fuel gauge
(A) "EMPTY"
(B) "FULL"

2. Coolant temperature gauge

⚠ WARNING
To avoid serious injury or death:
- **Do not remove radiator cap until coolant temperature is well below its boiling point. Then loosen the cap slightly to relieve any pressure before removing the cap completely.**

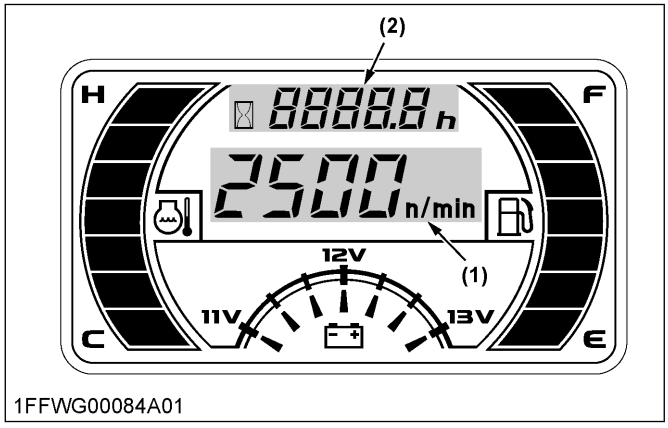
1. With the key switch **[ON]**, this gauge indicates the temperature of the coolant. **[C]** for cold and **[H]** for hot.
2. If the indicator reaches the **[H]** position (red zone), engine coolant is overheated. Check the machine. See TROUBLESHOOTING on page 81.



(1) Coolant temperature gauge
(A) "HOT"
(B) "COLD"

3. Hourmeter and tachometer

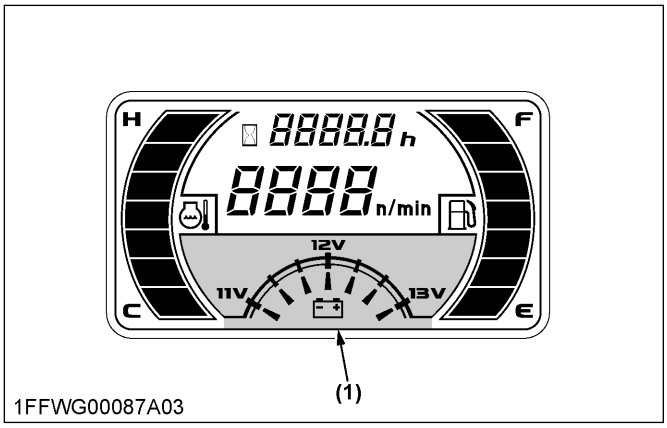
This meter gives readings for engine speed and the hours the machine has been operated.
1. The tachometer indicates the engine speed.
2. The hourmeter indicates in 5 digits the hours the machine has been used; the last digit indicates 1/10 of an hour.



(1) Engine revolution (with an error of ± 1 %)
(2) Hours used

4. Battery voltage meter

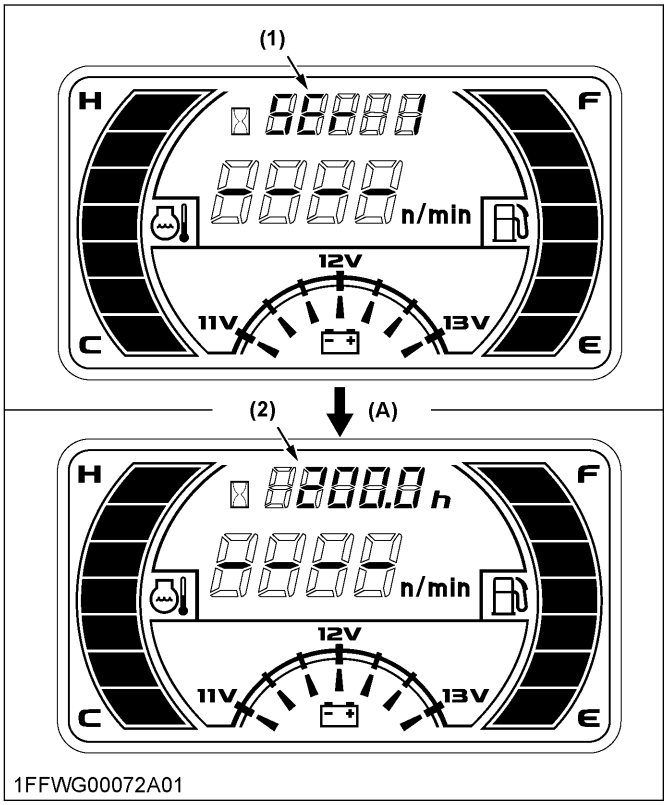
This meter gives readings for the battery voltage.
Specification: Battery voltage ≧ 12.0 V
If the battery voltage is below 12.0 V, charge the battery.



(1) Battery voltage meter

5. Service code display

If hour meter will be 50±5 hr, 200±5 hr, 400±5 hr, 600±5 hr, 800±5 hr, 1000±5 hr..., the liquid crystal display will show the service code ("SEr 1" or "SEr 2") whenever the key is turned *"ON"*. It will show the code for the first 10 seconds that the key is *"ON"*.
For example, if you turn the key *"ON"* and the operated time is 200.0 hours, it will show "SEr 1" for 10 seconds. After 10 seconds, "200.0h" will show.
See SERVICE INTERVALS on page 52.



(1) Service code
(2) Hours used
(A) At 10 seconds after the service code has displayed.

5.1 Resetting

1. Check meter (service reset) fuse is installed. (See fuse no. 1 on page 77.)
2. Check the service code ("SEr 1" or "SEr 2") is shown for the first 10 seconds that the key is *"ON"*.
3. When remove meter (service reset) fuse and put it back where it came from, the liquid crystal display will show the blinking service code ("SEr 1" or "SEr 2").
4. After 15 seconds of blinking, the liquid crystal display will show "SICLr". If the liquid crystal display shows hour meter, service reset is failed, and start from the beginning.

6. Overheat alarm

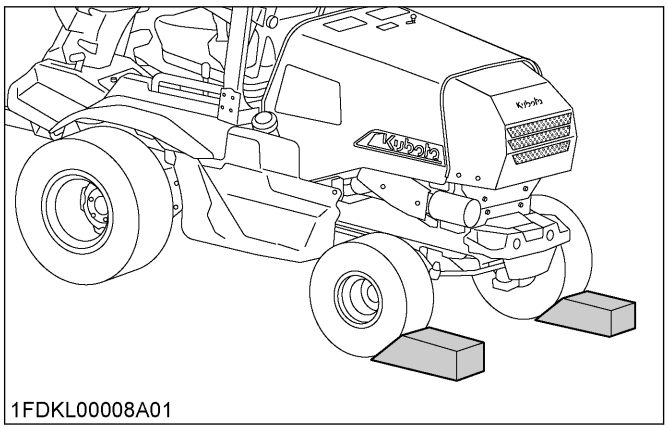
If the temperature of the coolant rises to overheat temperature, the overheat alarm whistles.
Check the machine. See TROUBLESHOOTING on page 81.

PARKING THE MACHINE

⚠ WARNING
To avoid serious injury or death:
Before leaving the operator's position:
- **Apply the parking brake.**
- **Lower all implements to the ground.**
- **Shut off the engine.**
- **Remove the key.**

1. When parking, set the parking brake.

   To apply the parking brake:
   Depress the brake pedal firmly and hold it in position. Pull and hold parking brake lever, and release the brake pedal.
2. Before getting off the machine, disengage the PTO, lower all implements to the ground, place all control levers in their *"NEUTRAL"* positions, set the parking brake, stop the engine and remove the key.
3. If it is necessary to park on an incline, chock the wheels to prevent accidental rolling of the machine.

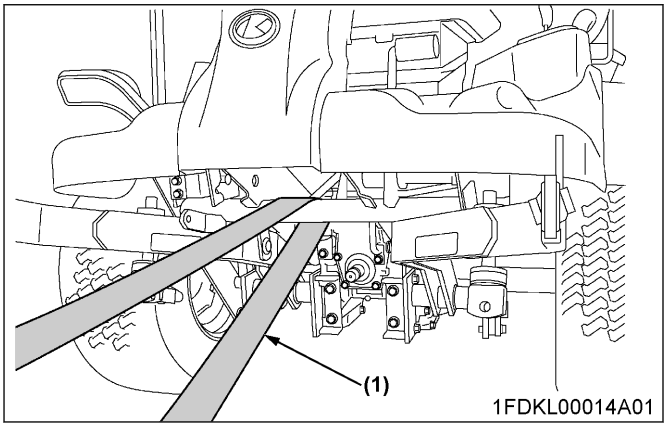


(1) Chock

TRANSPORTING THE MACHINE

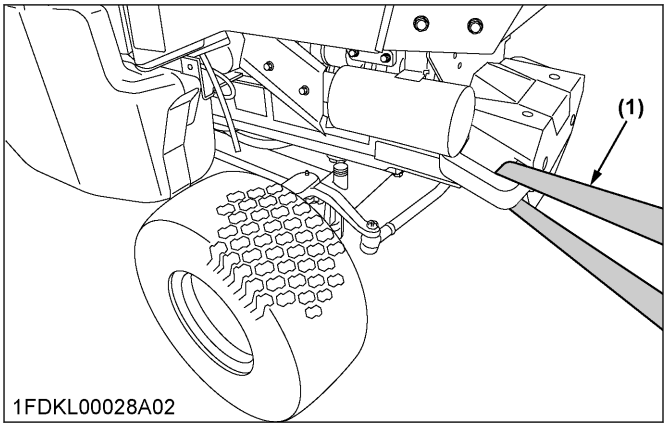
1. Do not tow this machine a long distance, or damage to the transmission may result.
2. Transport the machine on a trailer.
   - Do not tow this machine using the tie down points.
   - To prevent the hood from opening by wind while in transit, it is necessary to either load the machine backward or use a suitable tie down for the hood.
   - Apply the parking brake and lift down the mower deck to the lowest position.
   - Remove the key.
   - Secure the portions of the machine, which are shown in the following figure, by using heavy duty straps.

Front tie down point



(1) Heavy-duty strap

Rear tie down point



(1) Heavy-duty strap

3. Follow all federal and local regulations for securement.

TIRES, WHEELS, AND BALLAST

TIRES

⚠ WARNING

To avoid serious injury or death:

- **Do not attempt to mount a tire on a rim. This should be done by a qualified person with the proper equipment.**
- **Always maintain the correct tire pressure. Do not inflate tires above the recommended pressure shown in the Operator's Manual.**
- **Never operate the machine with a loose rim, wheel, or axle.**
- **Whenever bolts are loosened, retighten to the specified torque.**
- **Check all the bolts frequently and keep them tightened.**

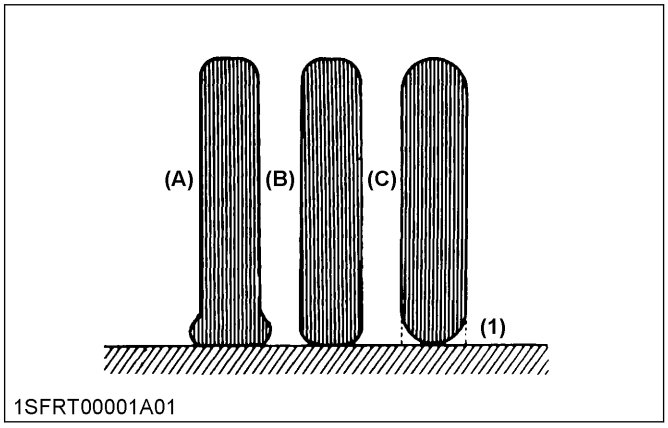
IMPORTANT :

- **Do not use tires other than those approved by Kubota.**

1. Inflation pressure

Even though the inflation pressure is factory-set to the prescribed level, it naturally drops slowly in the course of time. Therefore, check it everyday and inflate as necessary.

	Tire sizes	Recommended inflation maximum pressure
Front	24 × 12 - 12, 4PR	140 kPa (1.4 kgf/cm^2, 20 psi)
Rear	18 × 9.5 - 8, 6PR	250 kPa (2.5 kgf/cm^2, 36 psi)



(1) Ground

(A) "INSUFFICIENT"
(B) "NORMAL"
(C) "EXCESSIVE"

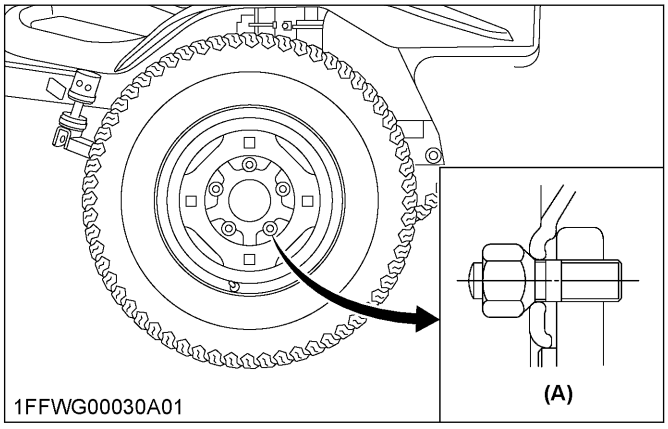
WHEELS

IMPORTANT :

- **Follow the same checking procedure when the machine is first used.**

1. Front wheels (drive wheels)

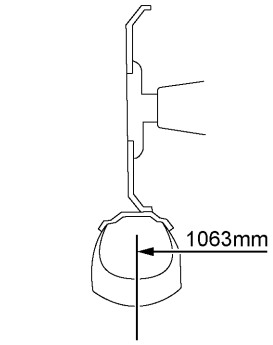
Front



(A) 48.1 to 55.9 N·m
(4.9 to 5.7 kgf·m)
(35.5 to 41.2 lbf·ft)

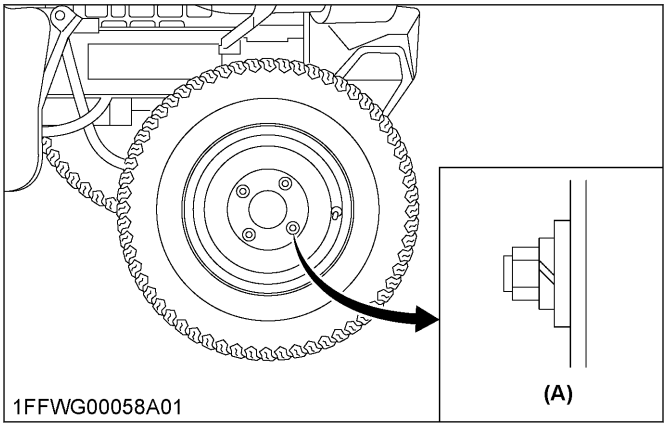
Wheels with beveled or tapered holes:
Use the tapered side of the lug nut.

Tread

24 × 12 - 12, 4PR
 1FFWG00024A01

2. Rear wheels (steering wheels)

Rear (4WD)



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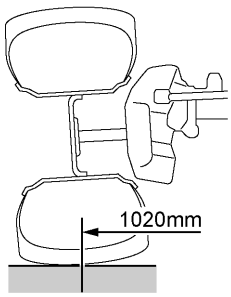
(A) 69.0 to 73.0 N·m
(7.0 to 7.4 kgf·m)
(50.9 to 53.8 lbf·ft)

Tread

18 × 9.5 - 8, 6PR
 1FFWG00025A01

BALLAST

⚠ WARNING

To avoid serious injury or death:

- **Additional ballast will be needed for operating heavy attachments. When the attachment is raised, drive slowly over the rough ground, regardless of how much ballast is used.**

Heavy front mounted attachments tend to lift rear wheels. The attachment's manual shows how much rear ballast is required for your application. Rear ballast is available from your local Kubota Dealer.

1. Add ballast to the rear end if needed for stability.
2. Add enough ballast to maintain steering control and to prevent tipover.

MAINTENANCE

SERVICE INTERVALS

The following servicing tasks should be carried out on the machine at the stated running-time intervals.

Items		Indication hour meter (Hr)													Ref. page	
		50	100	150	200	250	300	350	400	450	500	550	600	After since		
Engine start system	Check	●	●	●	●	●	●	●	●	●	●	●	●	every 50Hr	62	
OPC system	Check	●	●	●	●	●	●	●	●	●	●	●	●	every 50Hr	63	
Universal joint	Greasing	●	●	●	●	●	●	●	●	●	●	●	●	every 50Hr	63	
Wheel bolt torque	Check	●	●	●	●	●	●	●	●	●	●	●	●	every 50Hr	65	
Seat adjuster	Oiling	●	●	●	●	●	●	●	●	●	●	●	●	every 50Hr	64	
Battery condition	Check		●		●		●		●		●		●	every 100Hr	65	*1
Air cleaner element	Clean		●		●		●		●		●		●	every 100Hr	66	*2
	Replace													every 1000Hr or every year	73	*3
Fan belt	Adjust		●		●		●		●		●		●	every 100Hr	68	*K
Brake pedal	Adjust		●		●		●		●		●		●	every 100Hr	67	
Engine oil	Change	◎			●				●				●	every 200Hr	69	*4
Engine oil filter	Replace	◎			●				●				●	every 200Hr	69	*4
Transmission oil filter	Replace	◎			●				●				●	every 200Hr	70	*4
Transmission fluid	Change								●					every 400Hr	70	
Transmission strainer	Clean								●					every 400Hr	71	
Rear axle differential case fluid	Change								●					every 400Hr	71	
Rear axle gear case (RH and LH) fluid	Change								●					every 400Hr	72	
Rear axle pivot	Adjust								●					every 400Hr	72	
Water separator	Replace								●					every 400Hr	72	
Fuel filter	Replace								●					every 400Hr	73	
Engine valve clearance	Adjust													every 800Hr	73	*K
Fuel injection nozzle (injection pressure)	Check													every 1500Hr	73	*K
EGR cooler	Check													every 1500Hr	73	*K
Radiator	Clean													every 2000Hr or 2 years	73	*5
Coolant	Change													every 2000Hr or 2 years	73	*5
Turbo charger	Check													every 3000Hr	75	*K
Fuel injection pump	Check													every 3000Hr	75	*K
EGR system	Check													every 3000Hr	75	*K
Supply pump	Check													every 3000Hr	75	*K
DPF muffler	Clean													every 3000Hr	75	*K
Radiator hose and clamp	Check													every year	75	*6
	Replace													every 4 years	77	*K

(Continued)

Items		Indication hour meter (Hr)												Ref. page	
		50	100	150	200	250	300	350	400	450	500	550	600	After since	
Hydraulic hose	Check													every year	75	*6
	Replace													every 4 years	76	*K
Fuel line	Check													every year	76	*6
	Replace													every 4 years	76	*K
Intake air line	Check													every year	76	*6
	Replace													every 4 years	77	
Differential pressure sensor hose	Replace													every 4 years	77	*K
Engine breather hose	Check													every year	76	*6
	Replace													every 4 years	77	*K
Exhaust manifold	Check													every year	76	*K
Fuel system	Bleed													Service as required	78	
Fuse	Replace														77	
Light bulb	Replace														78	
Lift spring	Adjust														78	
Parking brake, floor cover pivot, hood pivot, hood lock pivot	Oiling														79	

*1 When the battery is used for less than 100 hours per year, check the battery condition by reading the indicator annually.

*2 Air cleaner should be cleaned more often in dusty conditions than in normal conditions.

*3 Every 1000 hours or every year whichever comes faster.

*4 The initial 50 hours should not be a replacement (changing) cycle.

*5 Every 2000 hours or every 2 years whichever comes faster.

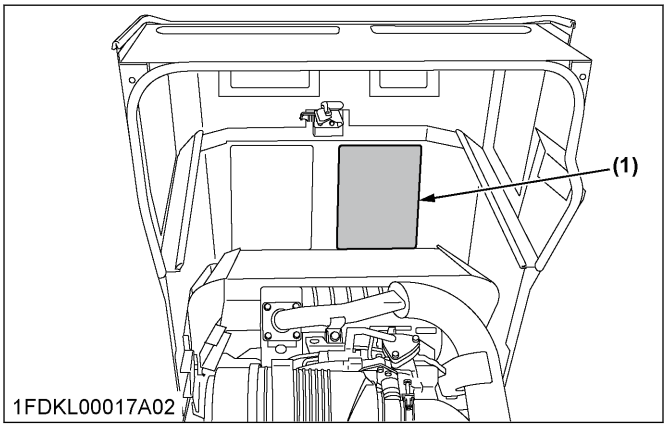
*6 Replace if any deterioration (crack, hardening, scar, or deformation) or damage occurred.

*K Consult your local Kubota Dealer for this service.

IMPORTANT :

- **The jobs indicated by ◎ must be done initially.**

1. Periodic service chart label



This label is for your quick reference. The label shows the recommended services from daily to every 4 years, including fluid capacities, tire pressure. For details, refer to Operator's Manual. See the following page.

(1) Part No. K3722-4761-4

PERIODIC SERVICE CHART

INTERVAL		RECOMMENDED SERVICE (See Operator's Manual in details.)	
DAILY	CHECK	1. Tire pressure, wear or damage. 2. Oil and water leakage from machine and mower. 3. Engine oil, transmission fluid, recovery tank coolant, fuel level and water separator (F391/F3710). 4. Damage to machine body, tightness of all bolts, nuts and pins, etc. 5. Mower blades and belt for wear or damage. 6. Brake pedal, parking brake lever and safety switches. 7. Color of the exhaust fumes, abnormal noise and vibrations. 8. Seat belt and ROPS.	
	CLEAN	・Radiator screen/Bonnet screen/Air cleaner primary element/Mower deck	
	GREASE	・Mower U-joint (3 places) / Spindle shaft (3 places) /Belt tension pulley and pivot	
FIRST 50 Hr. 【BREAK-IN】 (MUST BE DONE)	CHANGE	・Engine oil/ Mower Gear box oil	
	REPLACE	・Engine oil filter/ Transmission oil filter	
EVERY	50 Hr. CHECK	・Engine start system/OPC system/Mower gear box oil/Wheel bolt torque	
	50 Hr. GREASE	・Speed control pedal boss/ Lift link boss (R&L) / Differential lock pedal boss/ Universal joint/ DT drive shaft (4WD) / Knuckle arm (4WD) / /Rear axle pivot (2WD) / Seat adjuster/ Cable (Throttle) (F251/ F2690/F2890/F3690) / Front gauge wheels and gauge wheel brackets/ Front roller/Bonnet lock (F391/F3710)	
	100 Hr. ADJUST	・Fan belt☆ /Brake pedal	
	100 Hr. CHECK	・Battery condition/ Fuel filter element	
	100 Hr. CLEAN	・Air cleaner element★	
	150 Hr. CHANGE	・Mower gear box oil	
	200 Hr. CHANGE	・Engine oil	
	200 Hr. REPLACE	・Engine oil filter/Transmission oil filter	
	400 Hr. ADJUST	・Rear axle pivot	
	400 Hr. CHANGE	・Transmission fluid/Rear axle gear case fluid/Differential case fluid	
	400 Hr. CLEAN	・Transmission strainer	
	400 Hr. REPLACE	・Fuel filter element☆/Water separator (F391/F3710)	
	800 Hr. ADJUST	・Engine valve clearance☆	
	1500 Hr. CHECK	・Fuel injection nozzle injection pressure☆/EGR cooler (F391/F3710) ☆	
	3000 Hr. CHECK ☆	・Injection pump/Turbo charger (F391/F3710) /EGR system (F391/F3710) /Supply pump (F391/F3710)	
	3000 Hr. CLEAN	・DPF muffler (F391/F3710) ☆	
	1 Year CHECK	・Exhaust manifold (F391/F3710) ☆	
	1 Year CHECK ☆ ■ ●	・Radiator hose and clamp/Hydraulic hose/Fuel line/Engine breather hose Mower gear box oil seal/Intake air line	
	1 Year/1000Hr ▲ REPLACE	・Air cleaner element	
	2 Year/2000Hr ▲ FLUSH	・Cooling System	
	2 Year/2000Hr ▲ CHANGE	・Coolant	

☆:Consult your local KUBOTA Dealer for this service. ★:Required more often in dusty conditions.
■:Replace if neccesary. ●:Replace for maximun every 4 years. ▲:Whichever comes first.

Tire maximum pressure and tightening torque recommendation

Tire sizes			Inflation Pressure	Tightening torque
Front	4WD	24x12.0-12	140 kPa (20psi)	49.0 Nm (36 ft・lbs)
	2WD	23x10.5-12		
Rear	4WD	18x9.5-8	200 kPa (29psi) (F251/F391) / 250 kPa (36psi)	88.3 Nm (65 ft・lbs)
	2WD	16x6.5-8	190 kPa (28psi)	—

Approximate fluid capacities

	F251/F2690/F2890	F3690	F391/F3710	F251/F391/F2690/F2890/F3690/F3710	
Engine	3.5L (3.7qts.)	5.0L (5.3qts.)	4.7L (5.0qts.)	Differential case	1.5L (1.6qts.)
Radiator	4.6L (4.9qts.)		4.0L (4.2qts.)	Rear axle gear case	0.5L (0.53qts.)
Reserve tank	0.6L (0.63qts.)			Mower gear box	0.4L (0.42qts.)
Transmission	14L (14.8qts.)				

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LUBRICANTS, FUEL AND COOLANT

Place	Capacities	Lubricants	
Fuel	61 L	• No.2-D diesel fuel • No.1-D diesel fuel if temperature is below -10 ℃ (14 ℉)	
Coolant	4.0 L	Fresh clean water with antifreeze	
Recovery tank	0.6 L		
Engine crankcase	4.7 L *1	• Engine oil: See following *"Engine oil"*	
		Above 25 ℃ (77 ℉)	SAE30, SAE10W-30 or 15W-40
		-10 to 25 ℃ (14 to 77 ℉)	SAE20, SAE10W-30 or 15W-40
		Below -10 ℃ (14 ℉)	SAE10W-30
Transmission case	14 L	• **Kubota SUPER UDT-2** fluid *2	
Rear axle differential case	1.5 L	• **Kubota SUPER UDT-2** fluid *2 or SAE80 - SAE90 gear oil	
Rear axle gear case (RH and LH)	0.5 L		

*1 Oil amount when the oil level is at the upper level of the oil level gauge.

*2 The product name of Kubota genuine UDT fluid may be different from that in the Operator's Manual depending on countries or territories. Consult your local Kubota Dealer for further detail.

Greasing*1	No. of greasing points	Capacity	Type of grease
Speed control pedal shaft	1	Until grease overflows	• Multipurpose EP2 Grease (NLGI Grade No.2)
Lift link boss (RH and LH)	2		
Differential lock pedal boss	1		
Universal joint	3		
Rear wheel drive shaft (F and R)	2		
Knuckle arm (RH and LH)	2		
Seat adjuster	2	Moderate amount	• Oil
HST neutral shaft	1		
Cable (throttle)	1		

*1 See Lubricating all grease fittings on page 63 for details.

Fuel:

- Cetane number of 45 is minimum. Cetane number greater than 50 is preferred, especially for temperatures below -20 ℃ (-4 ℉) or elevations above 1500 m (5000 ft).
- If diesel fuel with sulfur content greater than 0.5 % (5000 ppm) sulfur content is used, reduce the service interval for engine oil and filter by 50 %.
- Never use diesel fuel with sulfur content greater than 0.05 % (500 ppm) for external EGR type engine.
- Do not use diesel fuel with sulfur content greater than 1.0 % (10000 ppm).
- Diesel fuels 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)
- If the engine is to be operated within the European Union on diesel or non-road gas-oil, a fuel with sulfur content lower than 10 mg/kg (20 mg/kg at point of final distribution), a cetane number greater than 45 and a fatty acid methyl ester (FAME) content lower than 7 % volume per volume (v/v) shall be used.

Engine oil:

- Oil used in the engine should have an American Petroleum Institute (API) service classification and proper SAE engine oil according to the ambient temperatures as shown previous.
- With the emission control now in effect, the **CF-4** and **CG-4** lubricating oils have been developed for use of a low sulfur fuel on on-road vehicle engines. When an off-road vehicle engine runs on a high-sulfur fuel, it is advisable to employ the "**CF** or better" lubricating oil with a high Total Base Number (TBN of 10 minimum).

- The oil used in the engine should have an American Petroleum Institute (API) service classification and proper SAE engine oil according to the ambient temperatures shown in the previous table.
- Refer to the following table for the suitable API classification engine oil according to the diesel particulate filter (DPF) type engines and the fuel.

Fuel used	**Engine oil classification (API classification)**
	Oil class of engines with diesel particulate filter
Ultra low sulfur fuel <0.0015 % (15 ppm)	**CJ-4** and **CK-4**

- The **CJ-4** and **CK-4** engine oil is intended for diesel particulate filter (diesel particulate filter) type.

Transmission oil:

- The oil used to lubricate the transmission is also used as hydraulic fluid. To insure proper operation of the hydraulic system and to complete lubrication of the transmission, it is important that a multi-grade transmission fluid is used in this system. We recommend the use of **Kubota UDT** or **SUPER UDT** fluid for optimum protection and performance. (Consult your local Kubota Dealer for further detail.)
  Do not mix different brands together.
- Indicated capacities of water and oil are manufacturer's estimate.

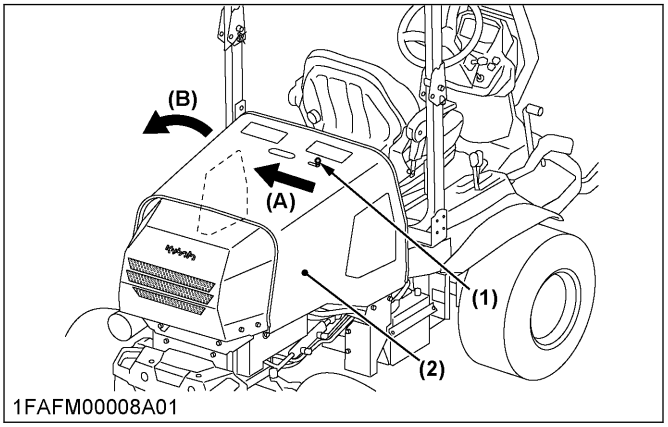
PERIODIC SERVICE

⚠ WARNING
To avoid serious injury or death:
- **Do not work under any hydraulically supported devices. They can settle, suddenly leak down, or be accidentally lowered.**
- **If necessary to work under the machine or any machine elements for servicing or adjustment, securely support them with stands or suitable blocking beforehand.**

OPENING THE HOOD AND THE FLOOR COVER

⚠ WARNING
To avoid serious injury or death from contact with moving parts:
- **Never open the hood while the engine is running.**
- **Do not touch muffler or exhaust pipes while they are hot; Severe burns could result.**

1. Hood



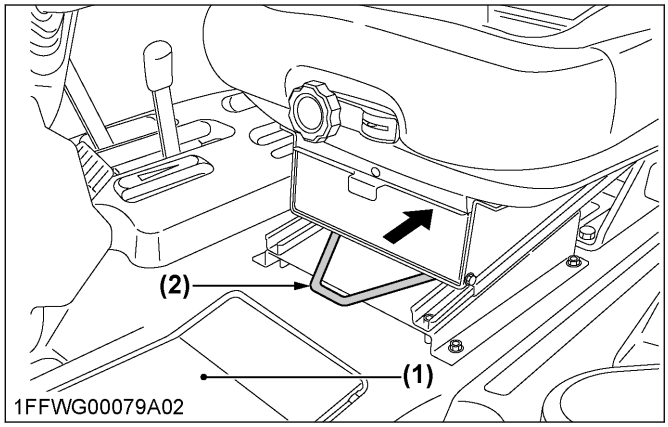
(1) Hood lock lever
(2) Hood
(A) "Pull the lever"
(B) "Open the hood"

To open:
1. Pull the lever.
2. Open the hood.

To close:
1. Close the hood.
2. Check the hood is locked.

2. Floor cover

Before opening the floor cover, make sure to move the seat to the rearmost position.



(1) Floor cover
(2) Travel adjust lever

DAILY CHECK

To prevent trouble from occurring, it is important to know the condition of the machine. Check it before starting.

⚠ WARNING
To avoid serious injury or death:
- **Check and service the machine on a level surface with the engine shut off, the key removed and the parking brake securely set.**

Walking around the machine

Check item	Ref. page
Tire pressure, wear and damage	50, 60
Oil and water leak	75, 75
Fuel level	58
Engine oil level	58
Transmission fluid level	61
Coolant level in the recovery tank	61
Damage of machine body, tightness of all bolts and nuts	65
Radiator screen Hood screen	59
Inside of the hood	60
Brake pedal	67
Air cleaner	66

While sitting in the operator's seat

Check item	Ref. page
Speed control pedal Brake pedal	67
Parking brake	68

Turning the key switch *"ON"*

Check item	Ref. page
Performance of the Easy Checker™ indicator	46

Starting the engine

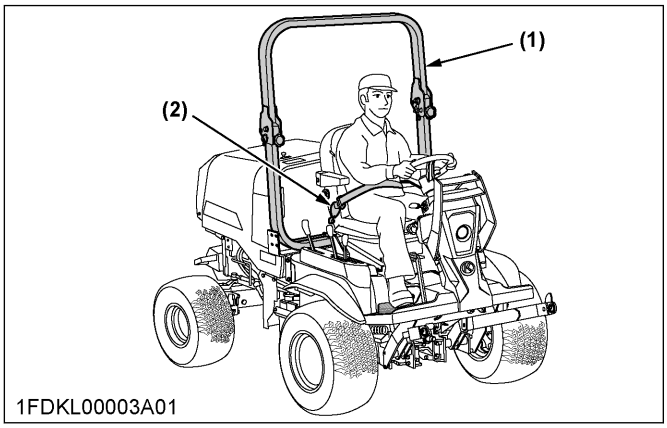
Check item	Ref. page
Color of the exhaust fumes	45
Check for abnormal noise and vibration.	45
Engine start system and OPC system. If either of these do not operate properly, contact your local Kubota Dealer immediately.	62, 63

Others

Check item	Ref. page
Check the areas where previous trouble occurred.	–

1. Checking seat belt and ROPS

1. Always check condition of the seat belt and ROPS attaching hardware before operating the machine.
2. Replace anything that is frayed or damaged.



(1) ROPS
(2) Seat belt

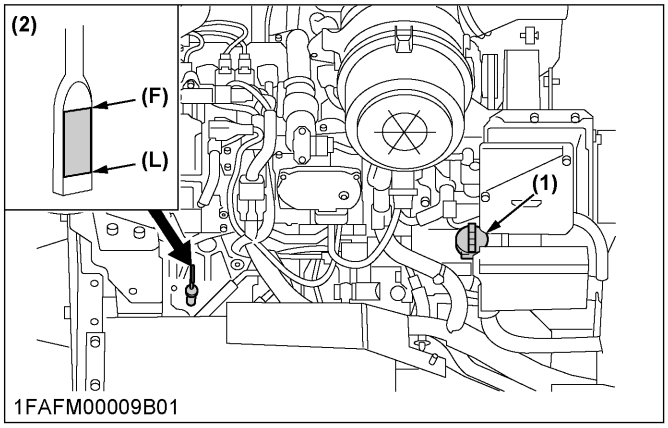
2. Checking the engine oil level

⚠ WARNING

To avoid serious injury or death:

- **Always stop the engine and remove the key before checking the oil.**

1. Check the engine oil before starting and 5 minutes or more after the engine has stopped.
2. Wipe the dipstick area clean.



(1) Engine oil port
(2) Oil level dipstick
(F) "UPPER LEVEL"
(L) "LOWER LEVEL"

3. To check the oil level, remove the dipstick, wipe it clean, replace it, and draw it out again. Check to see that the oil level is between the 2 notches.
4. Add new oil to the prescribed level at the oil port if necessary.

IMPORTANT :

- **When using a different brand or viscosity oil from the previous one, remove all of the old oil and the oil filter. Never mix 2 different types of oil.**
- **Use the proper engine oil SAE according to the ambient temperature.**
  (See LUBRICANTS, FUEL AND COOLANT on page 55.)

3. Checking the amount of fuel and refueling

⚠ WARNING

To avoid serious injury or death:

- **If the engine is running, do not fill the fuel tank. If the engine is hot, let the engine cool down several minutes before adding fuel.**
- **Do not smoke while filling the fuel tank or servicing the fuel system. Fill the fuel tank only to the bottom of the filler neck.**
- **Stay away from an open flame or other ignition source.**
- **Close the fuel tank cap after refueling.**

Fuel tank capacity	61 L (16 U.S.gals.)

IMPORTANT :

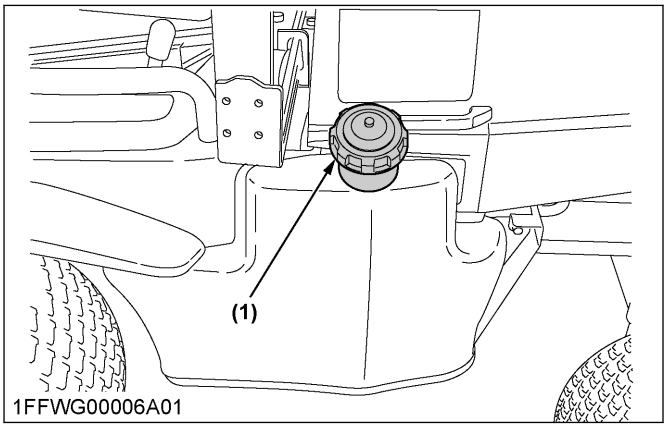
- **Use diesel fuel only.**

1. Use No.2 diesel fuel.

2. Use No.1 diesel fuel if the temperature is below -10 ℃ (14 ℉).
3. Always use a strainer when refueling to prevent fuel injection pump contamination.

IMPORTANT :

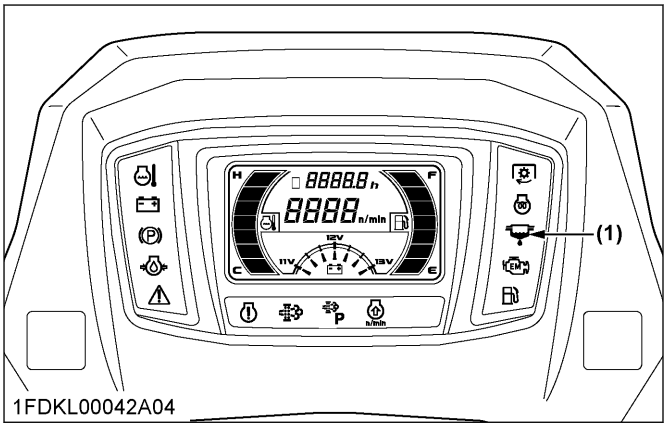
- **Do not permit dirt or trash to get into the fuel system.**
- **Be careful not to empty the fuel tank otherwise air will enter the fuel system, necessitating bleeding before next engine start.**
- **If the engine runs out of fuel and stalls, the engine components may be damaged.**
- **Be careful not to spill fuel during refueling. If a spill should occur, wipe it off at once, or it may cause a fire.**
- **To prevent condensation (water accumulation) in the fuel tank, fill the tank before parking overnight.**



(1) Fuel port

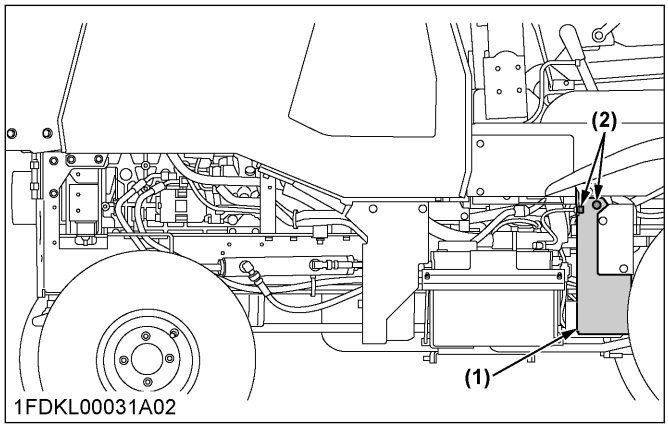
4. Checking water separator

1. When the water has collected up to the upper limit in the water separator, the water separator indicator on the instrument panel lights up and a warning buzzer sounds.



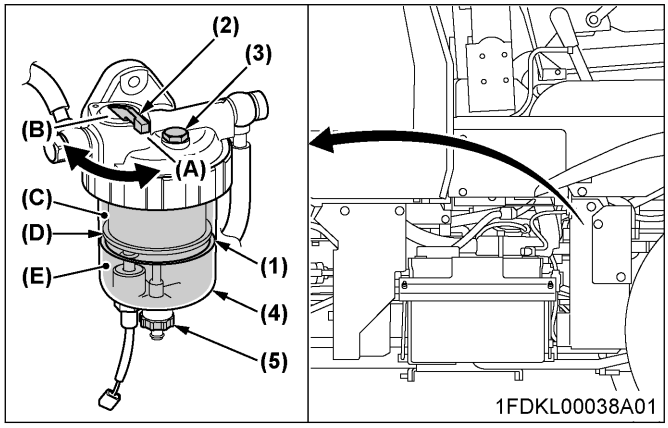
(1) Water separator indicator

2. In this case, remove the 2 bolts and the cover.



(1) Cover
(2) Bolt

3. Close the fuel shutoff-valve and loosen the air plug and drain plug by several turns.



(1) Red float
(2) Fuel shutoff-valve
(3) Air plug
(4) Cup
(5) Drain plug
(A) "OPEN"
(B) "CLOSE"
(C) "FUEL"
(D) "UPPER LIMIT"
(E) "WATER"

4. Allow the water to drain. When no more water comes out and fuel starts to flow out, retighten the air plug and drain plug.
5. Bleed the fuel system.
(See Bleeding fuel system on page 78.)

5. Checking and cleaning radiator screen and hood screen to prevent overheating

⚠ WARNING

To avoid serious injury or death:

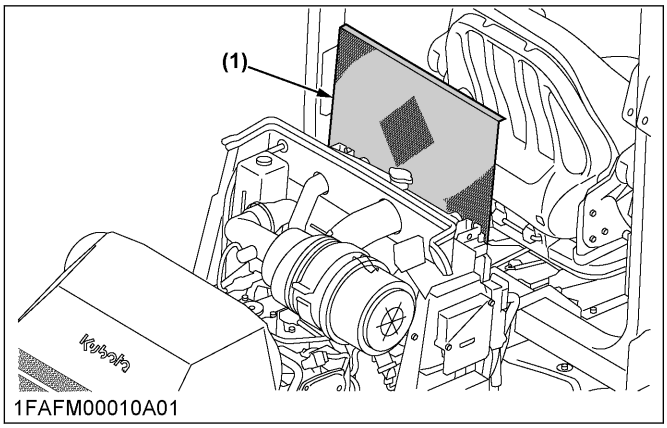
- **Stop the engine and remove the key before cleaning.**

IMPORTANT :

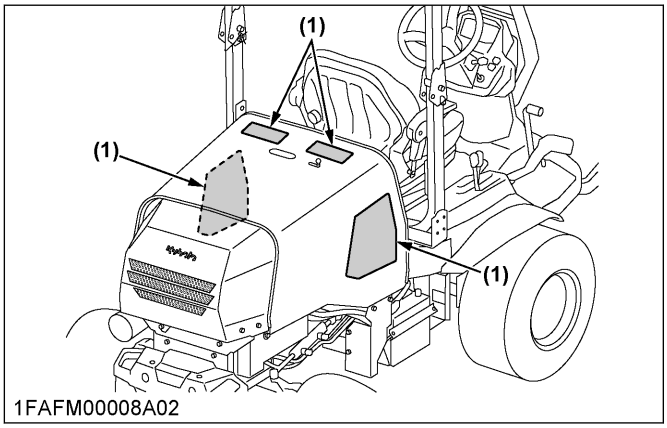
- **The air intake area must be clear of debris to prevent the engine from overheating.**

Daily or after every 5 hours of operation, check to be sure the radiator screen and the hood screen are clean. Dirt or chaff on the radiator screen or the hood screen decrease cooling performance.

1. Remove the radiator screen and the hood screen, and remove all foreign material.



(1) Radiator screen



(1) Hood screen

2. Remove the dust from between the fins and the tube.
3. Tighten the fan drive belt as necessary.
(See EVERY 100 HOURS on page 65.)
4. If the scale forms in the tube, clean with the scale inhibitor or its equivalent.
5. Each time the hood screen is covered with grass during operation, rub it off the screen with the hand. Check the radiator screen from time to time if grass accumulates.

6. Checking and cleaning inside of the hood and around the mower belt to avoid fire hazard

⚠ WARNING
To avoid serious injury or death:
- **Stop the engine and remove the key before checking and cleaning.**
- **Engine components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running, or immediately after it is turned off.**
- **Never operate the engine without heat shields or guards.**

1. Check and clean inside of the hood and around the mower belt. Especially, dry grass and leaves around the exhaust manifold, the muffler or around the mower belt may ignite.
2. After using, air-blowing and pressure-washing, make sure there is nothing flammable around the exhaust manifold, the muffler or around the mower belt. Grass, twigs, dirt or chaff in the hood may cause fire.

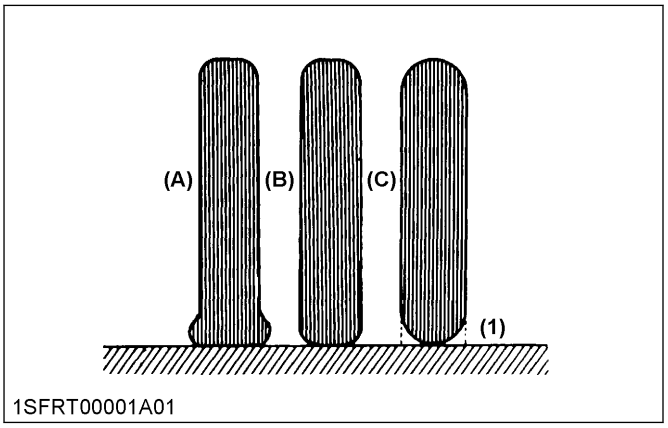
7. Checking the tire pressure

⚠ WARNING
To avoid serious injury or death:
- **Do not attempt to mount a tire on a rim. This should be done by a qualified person with the proper equipment.**
- **Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure shown in the Operator's Manual.**
- **Never operate machine with a loose rim, wheel, or axle.**
- **Whenever bolts are loosened, retighten to specified torque.**
- **Check all bolts frequently and keep them tightened.**

7.1 Inflation pressure

Even though the inflation pressure is factory-set to the prescribed level, it naturally drops slowly in the course of time. Therefore, check it everyday and inflate as necessary.

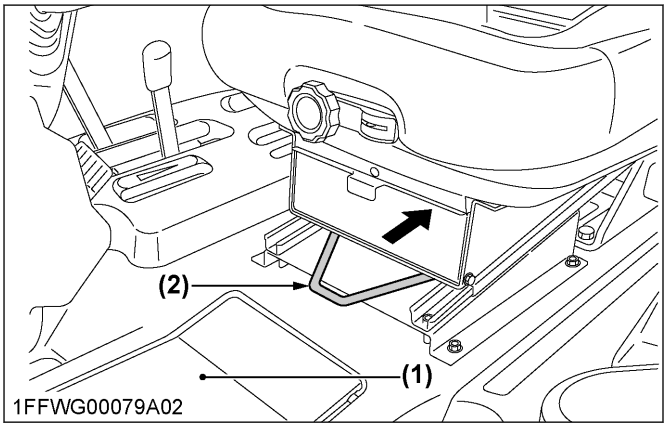
	Tire sizes	Recommended inflation maximum pressure
Front	24 × 12 - 12, 4PR	140 kPa (1.4 kgf/cm^2, 20 psi)
Rear	18 × 9.5 - 8, 6PR	250 kPa (2.5 kgf/cm^2, 36 psi)



(1) Ground
(A) "INSUFFICIENT"
(B) "NORMAL"
(C) "EXCESSIVE"

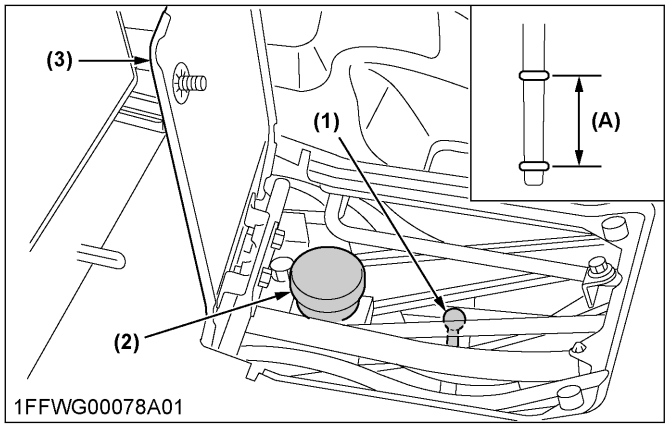
8. Checking transmission fluid level

1. Park the machine on a flat surface, lower the implement to the ground and shut off the engine and remove the key.
2. Before opening the floor cover, make sure to move the seat to the rearmost position.



(1) Floor cover
(2) Travel adjust lever

3. Open the floor cover. To check the oil level, draw out the dipstick, wipe it clean, replace it, and draw it out again. Check to see that the oil level lies between the 2 notches.
4. If the level is too low, add the new oil to the prescribed level at the oil inlet.
(See LUBRICANTS, FUEL AND COOLANT on page 55.)



(1) Oil level dipstick
(2) Oil inlet
(3) Floor cover
(A) Oil level is acceptable within this range.

IMPORTANT :
- **If oil level is low, do not run engine.**

9. Checking coolant level

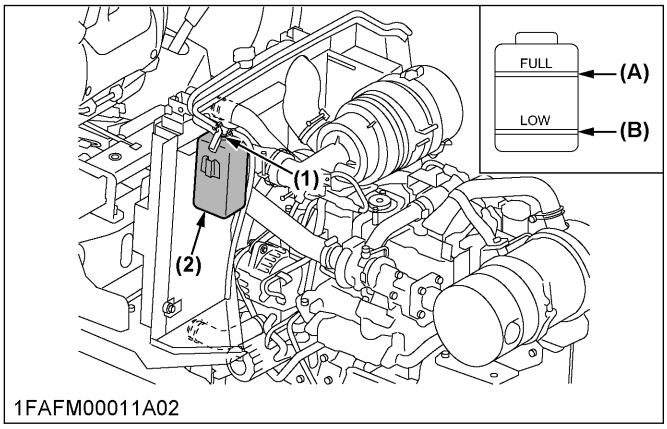
⚠ WARNING
To avoid serious injury or death:
- **Do not remove the radiator cap when the engine is hot. Loosen cap slightly, to the stop, to relieve any excess pressure before removing cap completely.**

IMPORTANT :
- **If the radiator cap has to be removed, follow the caution above and securely retighten the cap.**
- **Use clean, distilled water and antifreeze to fill the radiator and the recovery tank.**
- **If water should leak, consult your local Kubota Dealer.**

Check the coolant level daily both the radiator and the recovery tank before starting engine.

1. Remove the radiator cap and check to see that the coolant level is just below the fill port.

2. Check to see that the coolant level is between the **[FULL]** and **[LOW]** marks of recovery tank.



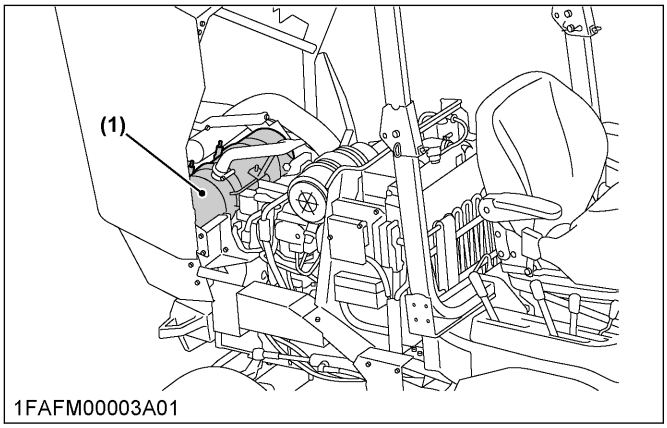
(1) Recovery tank cap *(A) **[FULL]***
(2) Recovery tank *(B) **[LOW]***

3. When the coolant level drops due to evaporation, add water only up to just below the fill port of the radiator and the full level of the recovery tank.
4. In case of leakage, add antifreeze and water in the specified mixing ratio up to the full level.
(See Flushing cooling system and changing coolant on page 73.)

10. Checking DPF muffler

⚠ WARNING
To avoid serious injury or death:
- **Before checking or cleaning the DPF muffler, stop the engine and wait long enough until it is cooled down.**

1. Check the DPF muffler and its surroundings for build-up of anything flammable. Otherwise a fire may result.



(1) DPF muffler

11. Checking movable parts

If any of the movable parts, such as levers and pedals, cannot be smoothly moved because of rust or anything sticky, do not attempt to force it into motion.
In this case, remove the rust or the sticky object, and apply oil or grease on the relevant spot. Otherwise, the machine may get damaged.

EVERY 50 HOURS

1. Checking the engine start system

The engine start system in your machine is designed to protect you while operating. Check the engine start system periodically. It is recommended to check the engine start system before daily operation.

⚠ WARNING
To avoid serious injury or death:
- **Do not allow anyone near the machine while testing.**
- **If the machine does not pass one of the following tests, do not operate the machine. Consult your local Kubota Dealer.**
- **Sit on the operator's seat for all tests except for Test1.**

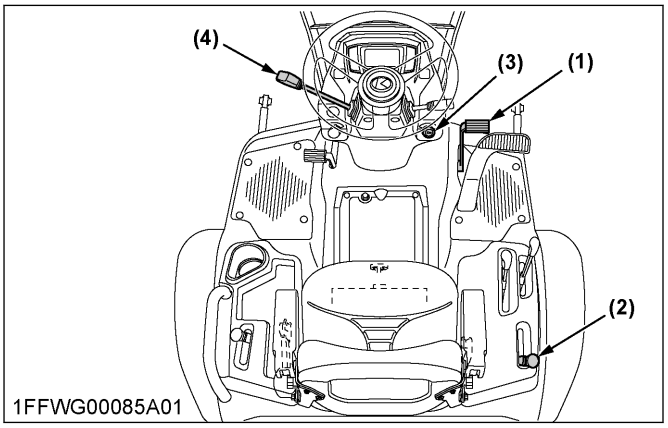
IMPORTANT :
- **Test the following before operating the machine:**

Test 1: Switch for the operator's seat
1. Do not sit on the operator's seat.
2. Depress the brake pedal fully.
3. Shift the PTO lever to the *"DISENGAGE"* position.
4. Turn the key switch to the *"START"* position.
5. The engine must not crank.

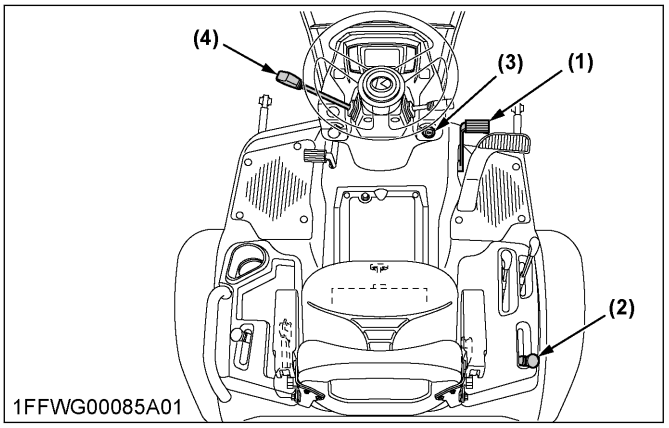
Test 2: Switch for the brake pedal
1. Sit on the operator's seat.
2. Do not depress the brake pedal.
3. Shift the PTO lever to the *"DISENGAGE"* position.
4. Turn the key switch to the *"START"* position.
5. The engine must not crank.

Test 3: Switch for the PTO lever
1. Sit on the operator's seat.
2. Depress the brake pedal fully.
3. Shift the PTO lever to the *"ENGAGE"* position.
4. Turn the key switch to the *"START"* position.
5. The engine must not crank.

Test 4: Engine safety control
1. Sit on the operator's seat.
2. Depress the brake pedal fully.
3. Turn the key switch to the *"START"* position.



(1) Brake pedal
(2) PTO lever
(3) Key switch
(4) Throttle lever



(1) Brake pedal
(2) PTO lever
(3) Key switch
(4) Throttle lever

2. Checking the OPC system

The operator presence control (OPC) system in your machine is designed to protect you while operating. Check the OPC system periodically. It is recommended to check the OPC system before daily operation.

⚠ WARNING

To avoid serious injury or death:

- **Do not allow anyone near the machine while testing.**
- **If the machine does not pass one of the following tests, do not operate the machine. Consult your local Kubota Dealer.**

IMPORTANT :

- **Test the following before operating the machine:**

Test 1

1. Start the engine.
2. Shift the PTO lever to the *"DISENGAGE"* position.
3. Release the brake pedal.
4. Stand up. (Do not get off the machine.)
5. The engine must shut off.

Test 2

1. Start the engine.
2. Shift the PTO lever to the *"ENGAGE"* position.
3. Release the brake pedal.
4. Stand up. (Do not get off the machine.)
5. The engine must shut off.

Test 3

1. Start the engine.
2. Depress the brake pedal fully and lock the parking brake.
3. Shift the PTO lever to the *"ENGAGE"* position.
4. Stand up. (Do not get off the machine.)
5. The engine must shut off.

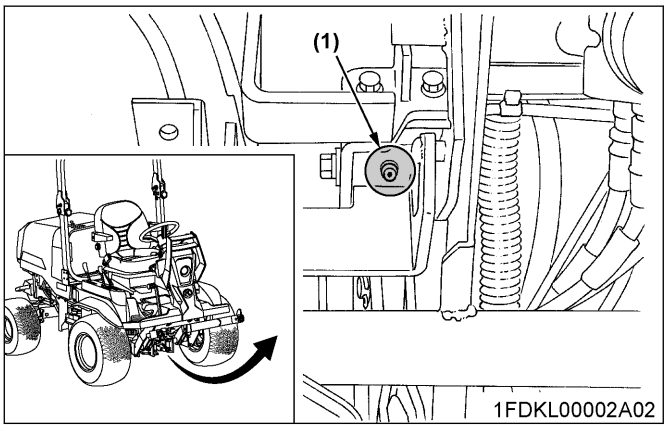
3. Lubricating all grease fittings

⚠ WARNING

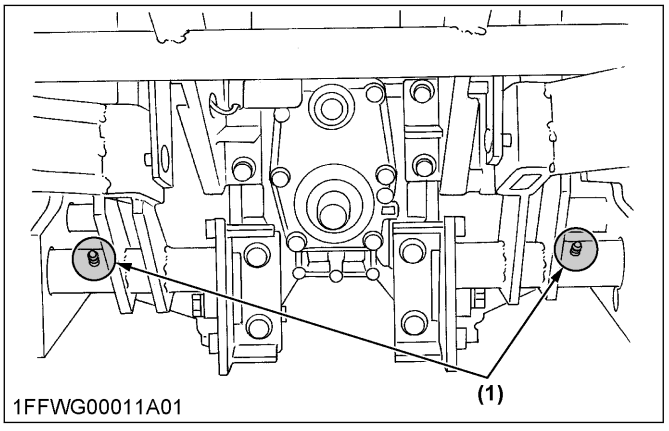
To avoid serious injury or death:

- **Stop the engine and remove the key before greasing.**

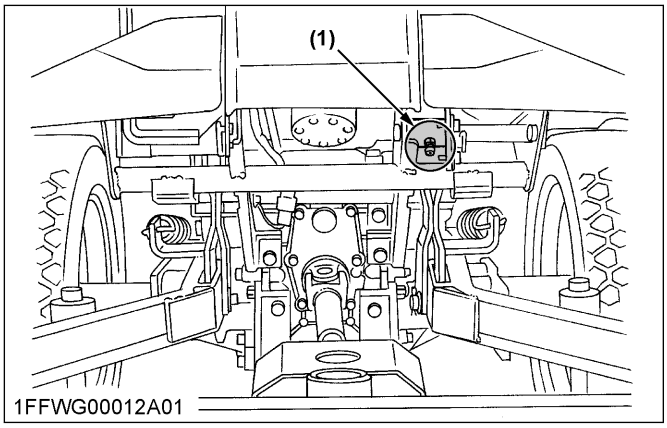
Grease the following locations.



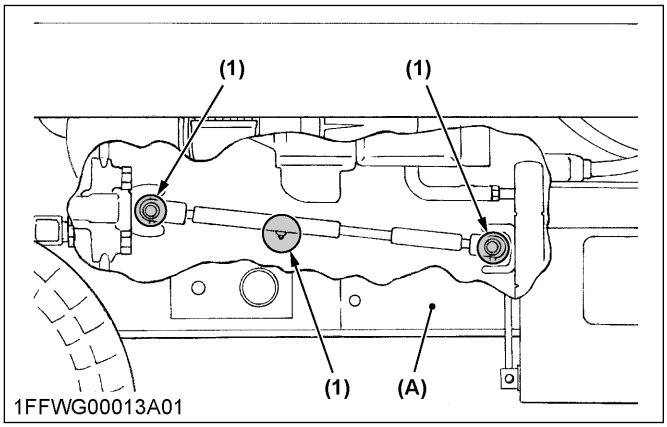
(1) Speed control pedal shaft



(1) Lift link boss (RH and LH)



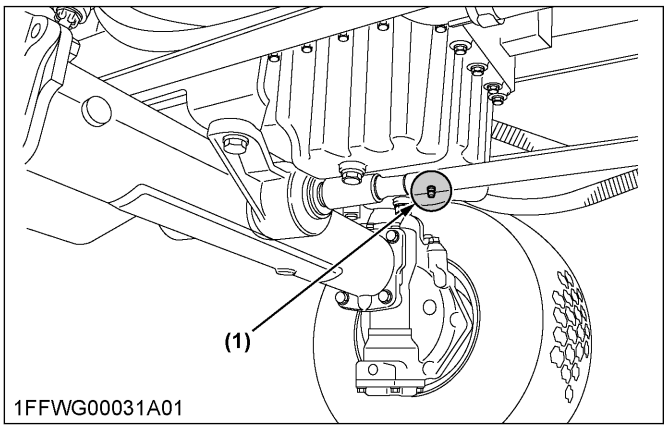
(1) Differential lock pedal boss



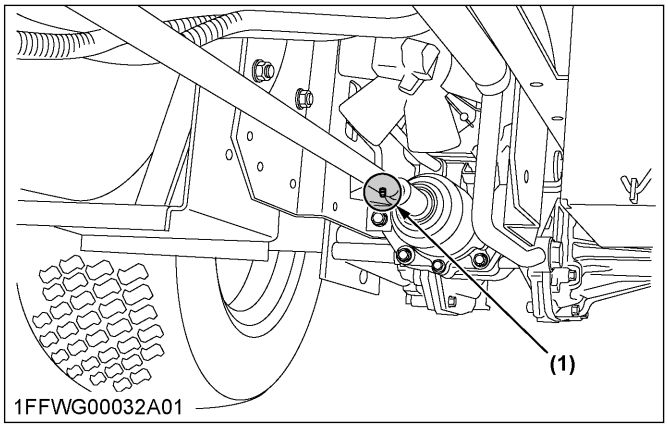
(1) Universal joint *(A) Frame*

NOTE :

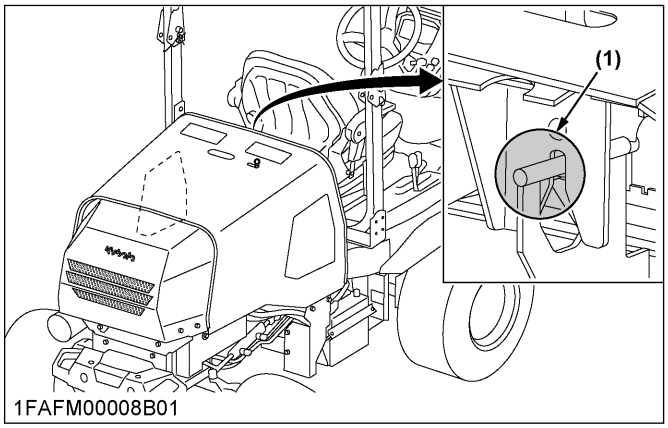
- **Apply grease to the indicated points of the universal joint that is inside of the frame.**



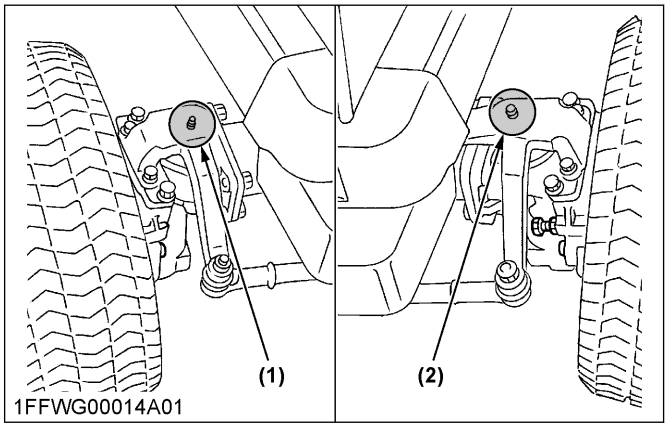
(1) Rear wheel drive shaft (4WD) (rear side)



(1) Rear wheel drive shaft (4WD) (front side)



(1) Hood lock



(1) Knuckle arm (left)
(2) Knuckle arm (right)

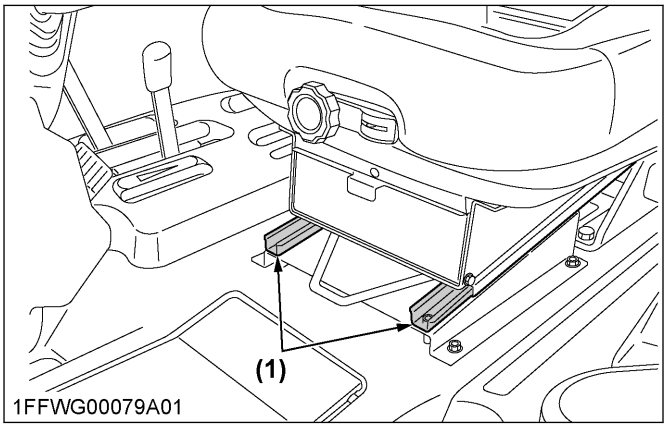
4. Oiling

⚠ WARNING

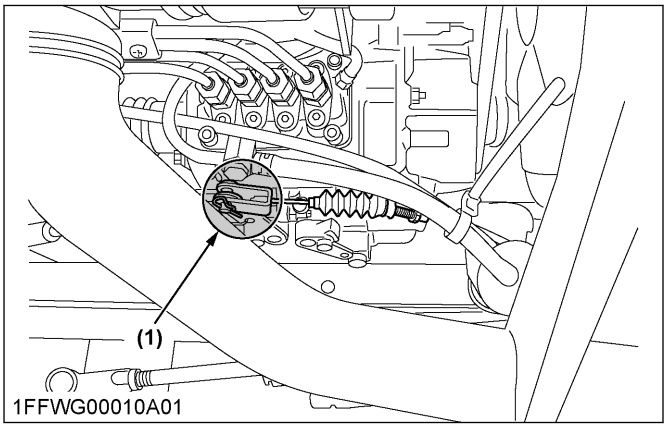
To avoid serious injury or death:

- **Stop the engine and remove the key before oiling.**

Oil the following locations.



(1) Seat adjuster



(1) Throttle cable

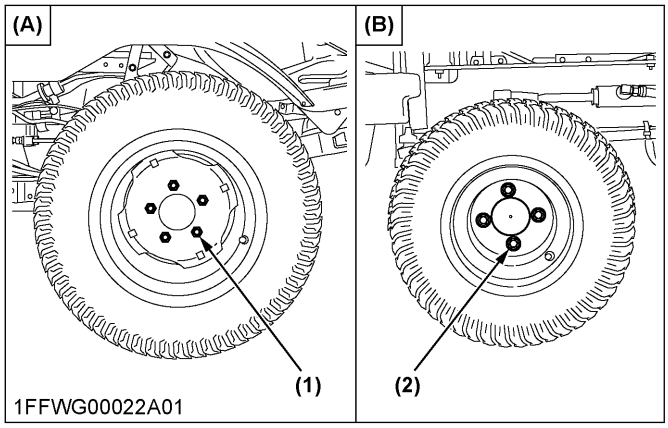
5. Checking wheel bolt torque

⚠ WARNING

To avoid serious injury or death:

- **Never operate machine with a loose rim, wheel, or axle.**
- **Any time bolts and nuts are loosened, retighten to specified torque.**
- **Check all bolts and nuts frequently and keep them tight.**

Check wheel bolts and nuts regularly especially when new. If they are loose, tighten them as follows.



(1) Nut: 48.1 to 55.9 N·m (4.9 to 5.7 kgf·m) (35.5 to 41.2 lbf·ft)
(2) Nut: 69.0 to 73.0 N·m (7.0 to 7.4 kgf·m) (50.9 to 53.8 lbf·ft)
(A) Front
(B) Rear

EVERY 100 HOURS

1. Checking the battery condition

⚠ DANGER

To avoid the possibility of battery explosion:

For the refillable type battery, follow these instructions:

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

⚠ WARNING

To avoid serious injury or death:

- **Batteries, battery posts, terminals and related accessories contain lead, lead compounds and other chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.**
- **Never remove the battery cap 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.**

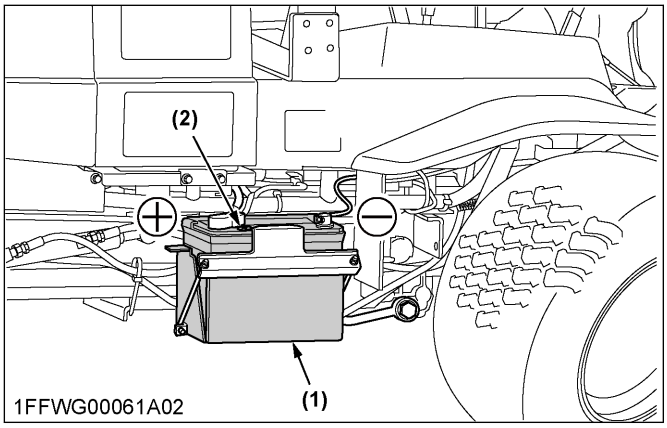
- **Keep open sparks and flames away from the battery at all times. Hydrogen gas mixed with oxygen becomes very explosive.**
- **Wear eye protection and rubber gloves when working around the battery.**

NOTE :

- **The factory-installed battery is a non-refillable type.**
  If the battery is weak, charge the battery or replace it with a new one.

IMPORTANT :

- **Mishandling the battery shortens the service life and adds to maintenance costs.**
  The original battery is maintenance free, but needs some servicing.
  If the battery is weak, the engine will be difficult to start and the lights will be dim. It is important to check the battery periodically.



(1) Battery
(2) Indicator

1.1 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.

1.2 Charging the battery

⚠ DANGER

To avoid serious 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.**

⚠ WARNING

To avoid serious injury or death:

- **When charging the battery, ensure the vent caps are securely in place (if equipped).**
- **When disconnecting the cable from the battery, start with the negative terminal first. When connecting the cable to the battery, start with the positive terminal first.**
- **Never check the battery charge by placing a metal object across the posts.**
  Use a voltmeter or hydrometer.

1. 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.
2. A boost charge is only for emergencies. It will partially charge the battery at a high rate and in a short time. When using a boost-charged battery, it is necessary to recharge the battery as early as possible. Failure to do this will shorten the battery's service life.
3. The battery is charged if the indicator display turns green from black.
4. When exchanging an old battery for a new one, use battery of equal specification shown in the following table.

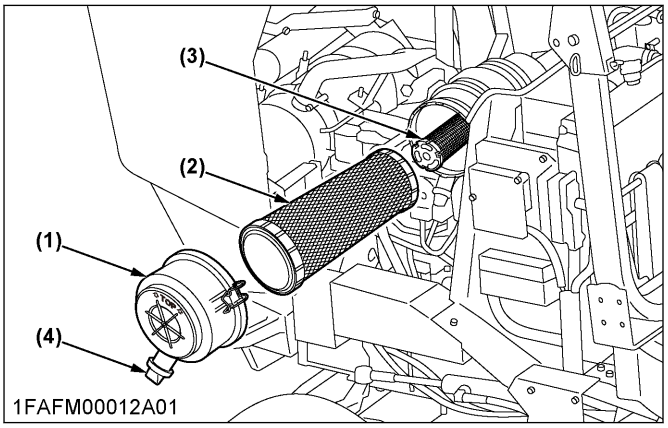
Battery type	Volts (V)	Capacity at 5 H.R (Ah)	Reserve capacity (min)	Cold cranking amps	Normal charging rate (A)
80D26R	12	55	133	582	5.5

1.3 Storing the battery

1. When storing the machine for a long period, remove the battery from machine, adjust the electrolyte to the proper level and store in a dry place out of direct sunlight.
2. The battery self-discharges while it is stored.
   Recharge it once every 3 months in hot seasons and once every 6 months in cold seasons.
3. Nut size for the battery terminals: (+)10 mm (-)10 mm

2. Cleaning air cleaner element

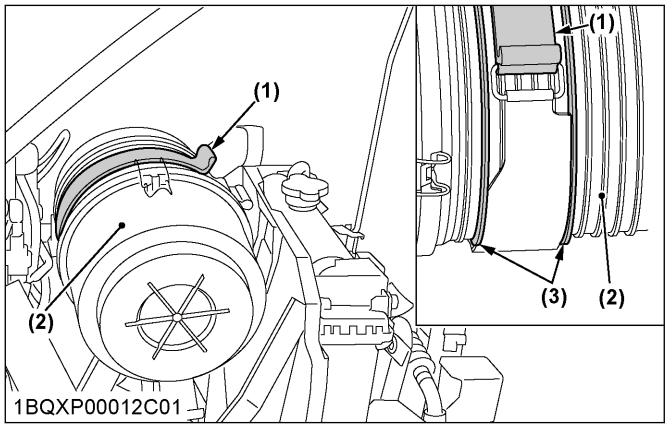
1. Remove the element.



(1) Cover
(2) Primary element
(3) Secondary element
(4) Evacuator valve

2. Clean the element:
   a. When dry dust adheres to the element, blow compressed air from the inside turning the element. Pressure of compressed air must be under 205 kPa (2.1 kgf/cm^2, 29.7 psi).
   b. When carbon or oil adheres to the element, soak the element in detergent for 15 minutes, and then wash it several times in water, rinse with clean water and dry it naturally.
   c. After element is fully dried, inspect the inside of the element with a light and check if it is damaged or not (referring to the instructions on the label attached to the case).
3. Replace the air cleaner element every 1000 hours or every year whichever comes faster.

   IMPORTANT :
   - **The air cleaner uses a dry element. Never apply oil.**
   - **Do not run the engine with the filter element removed.**
   - **Refit the dust cup with the arrow ⬆ (on the rear) upright. If the dust cup is improperly fitted, dust passes by the baffle and directly adheres to the element.**
4. Fit the 2 convex parts of air cleaner to the bracket end.



(1) Air cleaner band
(2) Body
(3) Convex part

NOTE :
- **Check to see if the evacuator valve is blocked with dust.**

Evacuator valve
Once a week under ordinary conditions or daily in a dusty place.
1. Open the evacuator valve.
2. Remove large particles of dust and dirt.

3. Checking and adjusting brake pedal

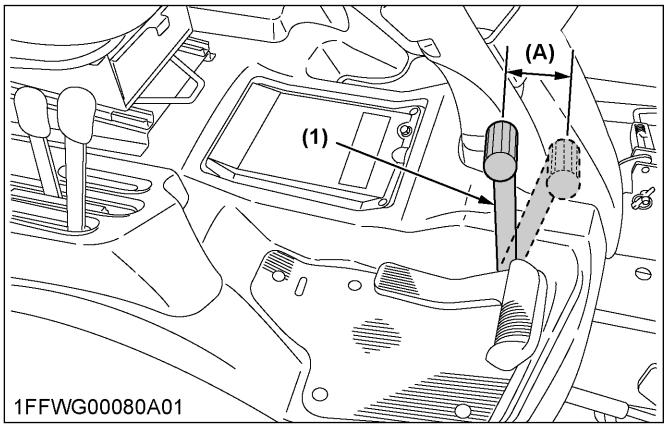
⚠ WARNING
To avoid serious injury or death:
- **Park the machine on a firm and level surface.**
- **Stop the engine and chock the wheels before checking the brake pedal.**

Proper brake pedal free travel	20 to 40 mm (0.79 to 1.5 in.) on the pedal

NOTE :
- **If the turn assist brake device is attached, adjust the brake pedal. (Refer to Instruction Manual for turn assist brake pedals.)**
- **If the speed set device is attached, remove the speed set release rod before adjusting, and replace it after adjusting. (Refer to Instruction Manual for cruise control.)**

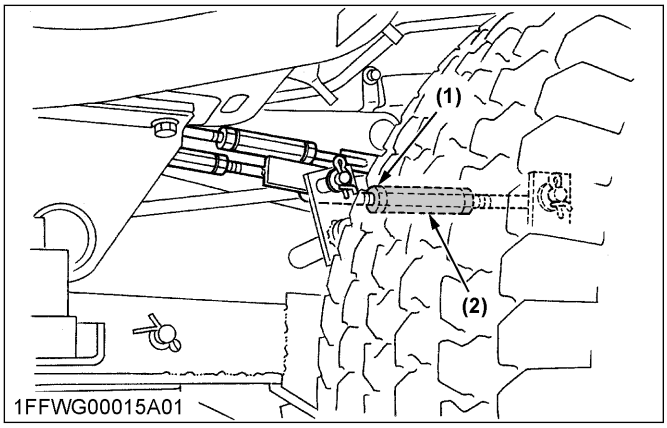
1. Release the parking brake.

2. Slightly depress the brake pedal and measure free travel at the top of pedal stroke.



(1) Brake pedal *(A) Free travel*

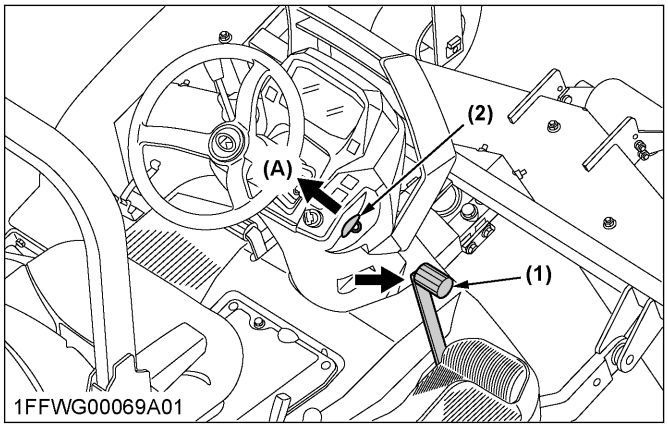
3. If adjustment is needed, loosen the lock nut and turn the turnbuckle to adjust the rod length within acceptable limits.
4. Retighten the lock nut.



(1) Lock nut
(2) Turnbuckle

4. Checking parking brake

1. Depress the brake pedal firmly and hold in position. Pull and hold the parking brake lever.



(1) Brake pedal *(A) "PARKING"*
(2) Parking brake lever

2. Then release the brake pedal.

To release the parking brake:
Depress the brake pedal and release slowly.

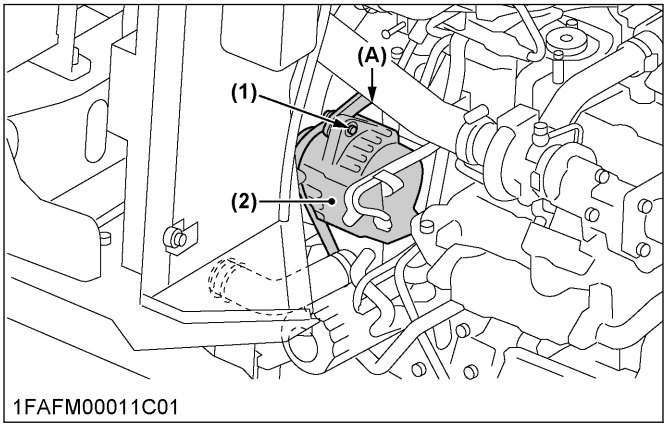
5. Checking fan drive belt tension

⚠ WARNING
To avoid serious injury or death:
- **When making adjustments, park the machine on a level surface, apply the parking brake, stop the engine and remove the key.**

1. Stop the engine and remove the key.
2. Apply moderate thumb pressure to the belt between pulleys.

Proper fan belt tension or deflection	7 to 9 mm (0.28 to 0.35 in.) when the belt is pressed with finger pressure of 100 N (10 kgf, 22 lbf) in the middle of the span.

3. If tension is incorrect, loosen the alternator mounting bolts and, using a lever placed between the alternator and the engine block, pull the alternator out until the deflection of the belt falls within the acceptable limits.



(1) Bolt
(2) Alternator
(A) Check the belt tension

4. Replace the fan belt if it is damaged.

IMPORTANT :
- **When replacing the fan drive belt, be careful not to catch it on the cap under the water pump.**

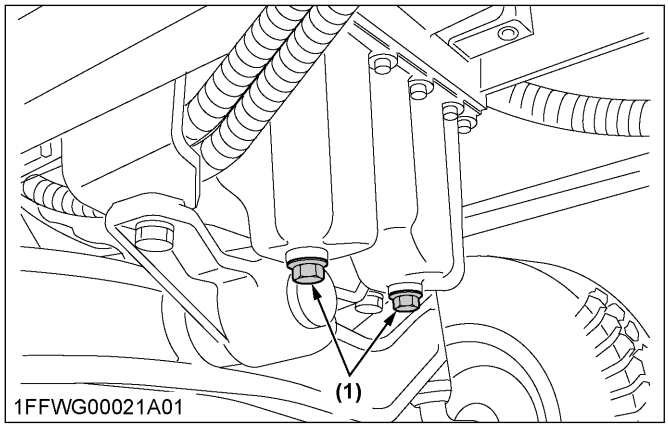
EVERY 200 HOURS

1. Changing engine oil

⚠ WARNING
To avoid serious injury or death:
- **Stop the engine and remove the key before changing the oil.**
- **Allow engine to cool down sufficiently; oil can be hot and may cause burns.**

Oil capacity with filter	4.7 L (5.0 U.S.gals.)

1. To drain the used oil, remove the drain plug at the bottom of the engine and drain the oil completely into the oil pan.
   All the used oil can be drained out easily when the engine is still warm.



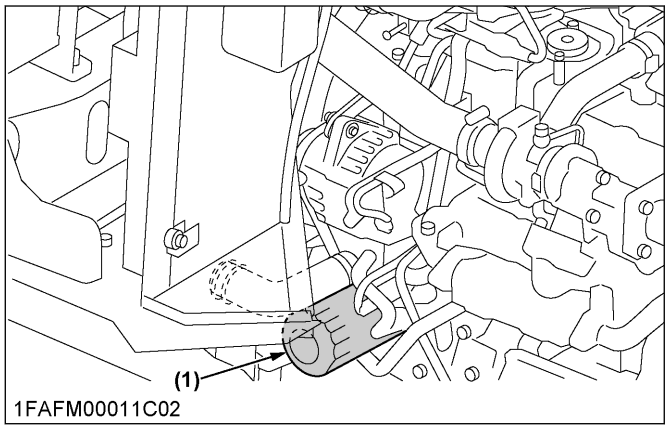
(1) Drain plug

2. After draining reinstall the drain plug.
3. Fill with the new oil up to the center on the dipstick, between the upper and lower notch.
   (See LUBRICANTS, FUEL AND COOLANT on page 55.)

2. Replacing the engine oil filter

⚠ WARNING
To avoid serious injury or death:
- **Stop the engine and remove the key before changing the oil and the oil filter.**
- **Allow the engine to cool down sufficiently. Oil can be hot and may cause burns.**

1. Remove the oil filter.



(1) Engine oil filter

2. Put a film of engine oil on the rubber seal of the new filter.
3. Tighten the filter quickly until it contacts the mounting surface.
4. Tighten the filter by hand an additional 1/2 turn only.
5. After the new filter is replaced, the engine oil normally decreases a little. Check that the engine oil does not leak through the seal and check the oil level on the dipstick.

6. Then, replenish the engine oil up to the prescribed level.

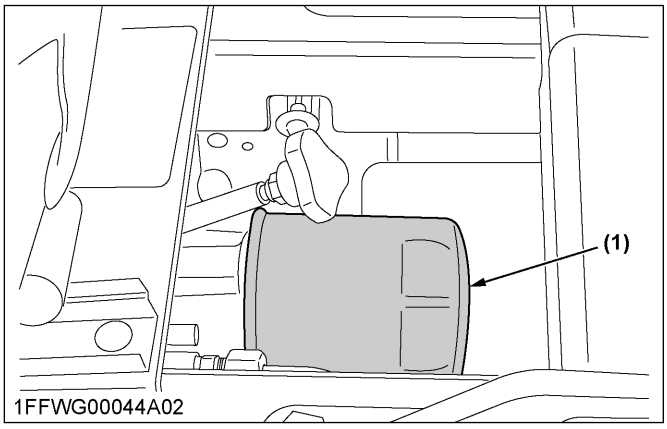
IMPORTANT :
- **To prevent serious damage to the engine, use only a genuine Kubota filter.**

3. Replacing transmission oil filter

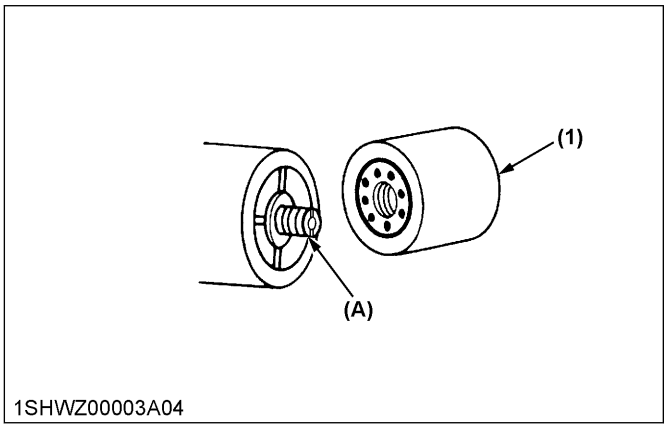
⚠ WARNING

To avoid serious injury or death:
- **Stop the engine and remove the key before changing the oil filter.**
- **Allow the transmission case to cool down sufficiently, as oil can be hot and may cause burns.**

1. The oil filter must be changed every 200 service hours.



(1) Oil filter



(1) Oil filter *(A) Screw*

2. Remove the oil filter by using the filter wrench.
3. Apply a slight coat of oil onto the gasket.
4. To install the new oil filter, screw it in by hand. Over tightening may cause deformation of the rubber gasket.
5. After the new oil filter is replaced, the transmission fluid level normally decreases a little. Add fluid if necessary.
6. Check for oil leaks around the filter gasket.

IMPORTANT :
- **To prevent serious damage to a hydraulic system, replace a highly efficient, 10 µm filter. Use only a genuine Kubota filter.**
- **When using the auxiliary hydraulics, replace the filter after initial 50 service hours of operation.**

EVERY 400 HOURS

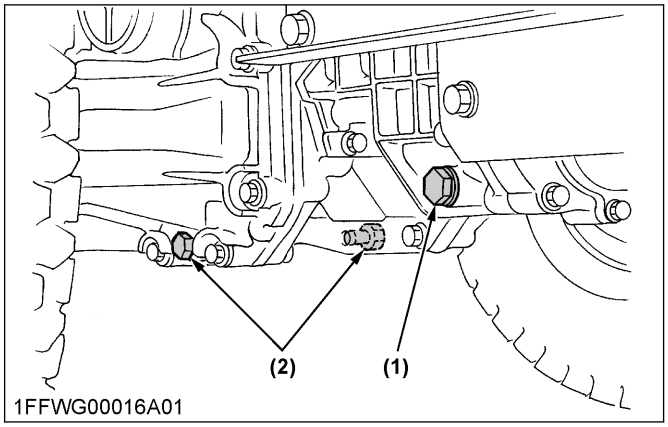
1. Changing transmission fluid

⚠ WARNING

To avoid serious injury or death:
- **Stop the engine and remove the key before changing or checking the oil.**
- **Allow the transmission case to cool down sufficiently, as oil can be hot and may cause burns.**

The fluid in the transmission case is also used for the hydrostatic drive system.

1. To drain oil, remove the drain plug at the bottom of the transmission case and drain oil completely into the oil pan.

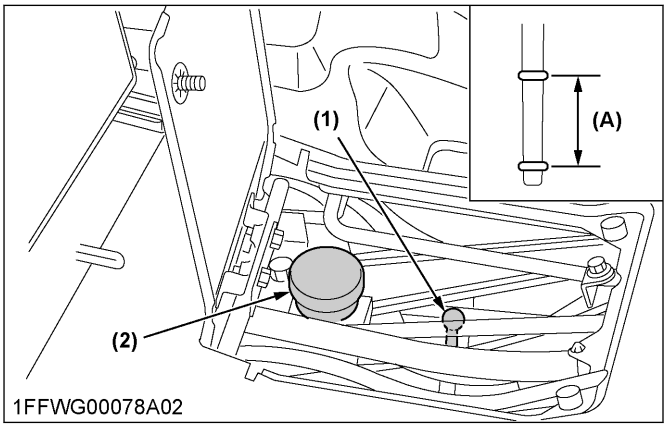


(1) Drain plug (LH)
(2) Drain plugs (both sides)

2. After draining, reinstall the drain plug.

3. Fill with the new **Kubota SUPER UDT** fluid up to the upper notch on the dipstick.
   (See LUBRICANTS, FUEL AND COOLANT on page 55.)

Oil capacity	14 L (15 U.S.qts.)



(1) Oil level dipstick
(2) Oil inlet
(A) Oil level is acceptable within this range.

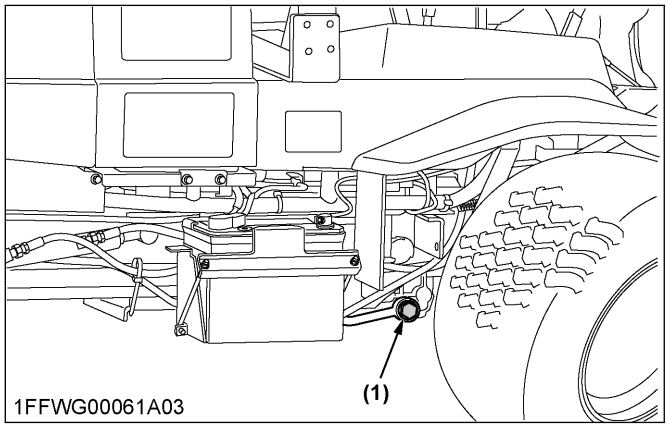
4. After running the engine for a few minutes, stop it and check the oil level again; add oil to the prescribed level.

   IMPORTANT :
   - **Do not operate the machine immediately after changing the transmission fluid.**
   - **Run the engine at medium speed for a few minutes to prevent damage to the transmission.**

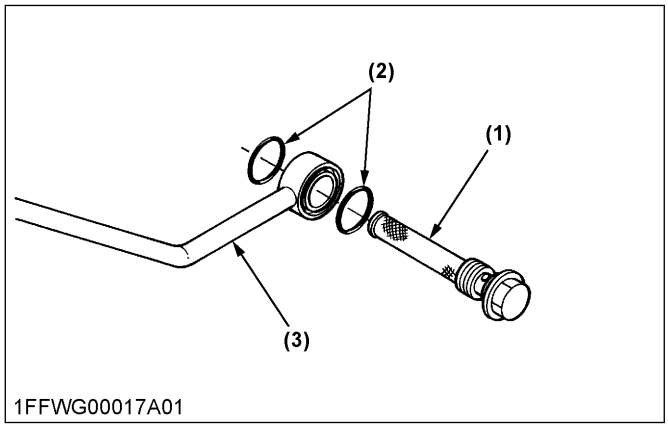
2. Cleaning transmission strainer

When changing the transmission fluid, remove and clean completely the oil strainers with kerosene.

IMPORTANT :
- **Be careful not to damage the strainer parts when installing.**
- **The fine filings in the oil could damage the component parts of the hydraulic system. It has been precision built to withstand high pressure that the suction line end is provided within the oil strainer.**



(1) Strainer

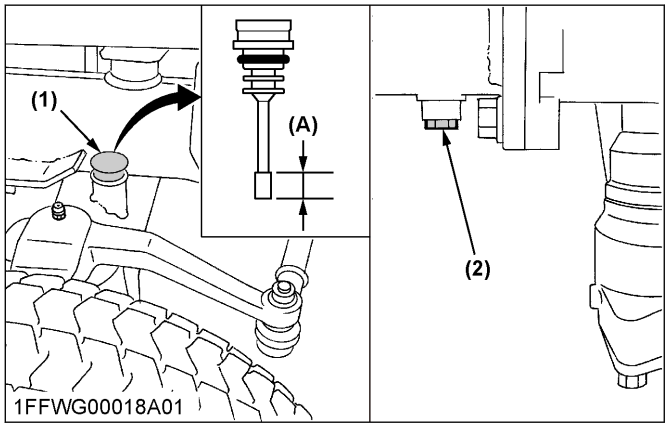


(1) Strainer
(2) O ring
(3) Suction pipe

3. Changing rear axle differential case fluid (4WD)

(See LUBRICANTS, FUEL AND COOLANT on page 55.)
Remove the drain and filling port plug. After draining, replace the drain plug and fill with new oil.

Oil capacity	1.5 L (1.6 U.S.qts.)



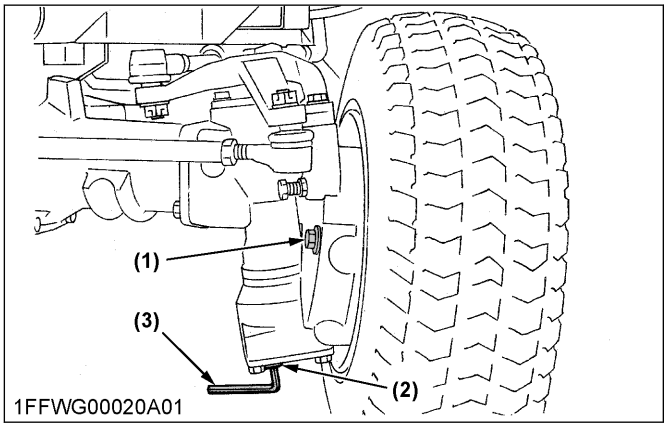
(1) Filling plug with dipstick
(2) Drain plug
(A) Oil level is acceptable within the range.

4. Changing rear axle gear case fluid (4WD)

Oil capacity	0.5 L (0.5 U.S.qts.)

(Right and left) (See LUBRICANTS, FUEL AND COOLANT on page 55.)

1. To check the oil level, remove the check plug (bolt).
   - Place the mower on a level surface.
     Loosen the check plug. Oil should be visible through the opening. If the oil level is too low or high, adjust it.



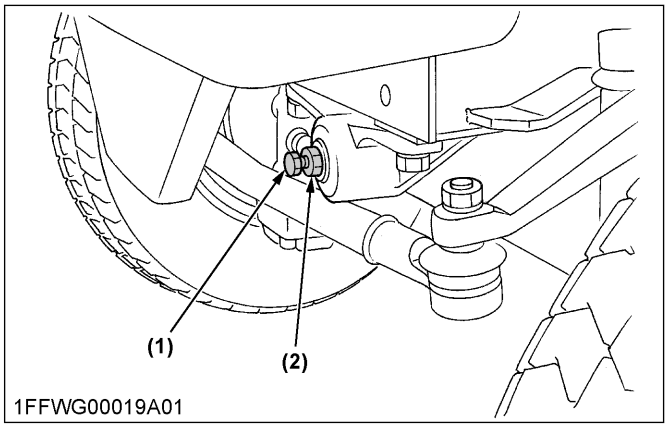
(1) Filling and checking plug (bolt)
(2) Drain plug
(3) Hex head wrench

2. To change gear oil, remove the drain and filling port plug with the hex head wrench to drain the used oil. After draining, replace the drain plug and fill with new oil.

5. Adjusting rear axle pivot

If the rear axle pivot pin adjustment is not correct, rear wheel vibration can occur causing vibration in the steering wheel.

1. Loosen the lock nut, tighten adjusting screw all the way, and then loosen the screw by 1/6 turn.
2. Retighten the lock nut.

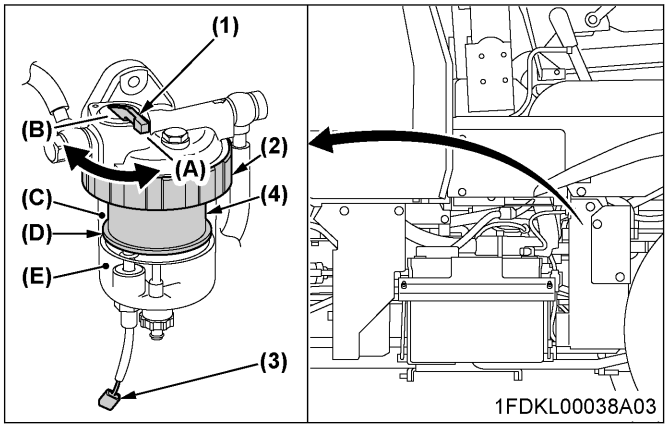


(1) Adjusting screw
(2) Lock nut

6. Replacing water separator element

This job should not be done in the field, but in a clean environment. Prepare a tray to catch the fuel.

1. Disconnect the water sensor connector.
2. Close the fuel shutoff-valve.



(1) Fuel shutoff-valve
(2) Retainer ring
(3) Water sensor connector
(4) Element
(A) "OPEN"
(B) "CLOSE"
(C) "FUEL"
(D) "UPPER LIMIT"
(E) "WATER"

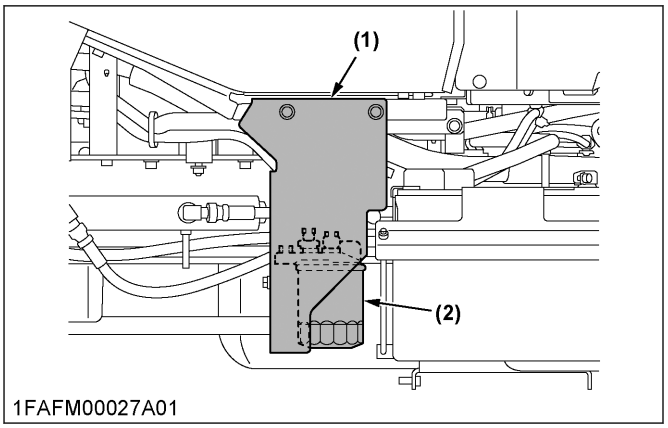
3. Remove the retainer ring and remove it, then rinse the inside with kerosene.
4. Take out the element and replace it with a new one.
5. After replacing, reassemble the water separator, keeping out dust and dirt.
   Tightening torque of the retainer ring is 30 N·m (22 lbf·ft).
6. Connect the water sensor connector.

7. Bleed the fuel system.
   (See Bleeding fuel system on page 78.)

   IMPORTANT :
   - **If the water separator and the fuel filter is not well maintained, the supply pump and injector may be damaged earlier than expected.**

7. Replacing fuel filter

1. Remove the cover and the fuel filter.



(1) Cover
(2) Fuel filter

2. Put a film of clean fuel on the rubber seal of the new filter.
3. Tighten the filter quickly until it contacts the mounting surface.
   Tighten the filter by hand an additional 1/2 turn only.
4. Bleed the fuel system.
   (See Bleeding fuel system on page 78.)

EVERY 800 HOURS

1. Adjusting engine valve clearance

Consult your local Kubota Dealer for this service.

EVERY 1000 HOURS OR EVERY YEAR

1. Replacing air cleaner element

(See Cleaning air cleaner element on page 66.)

IMPORTANT :
- **To prevent serious damage to the engine, use only a Kubota genuine filter.**

EVERY 1500 HOURS

1. Checking fuel injection nozzle (injection pressure)

Consult your local Kubota Dealer for this service.

2. Checking EGR cooler

Consult your local Kubota Dealer for this service.

EVERY 2000 HOURS OR EVERY 2 YEARS

Do the following service once every 2000 hours or every 2 years whichever comes faster.

1. Flushing cooling system and changing coolant

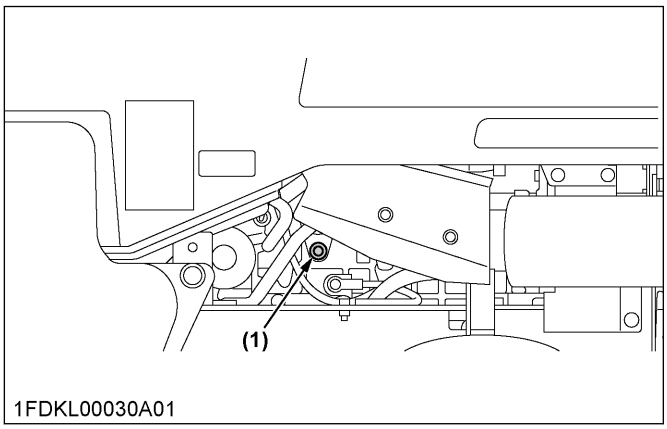
⚠ WARNING
To avoid serious injury or death:
- **Do not remove the radiator cap when the engine is hot. Then loosen cap slightly to the stop to relieve any excess pressure before removing cap completely.**

Coolant capacity	3.7 L (3.9 U.S.qts.)
Recovery tank capacity	0.6 L (0.7 U.S.qts.)

IMPORTANT :
- **Do not start engine without coolant.**
- **Use clean, distilled water and antifreeze to fill the radiator and recovery tank.**
- **When the antifreeze is mixed with water, the antifreeze mixing ratio must be less than 50 %.**
- **Securely tighten radiator cap. If the cap is loose or improperly fitted, water may leak out and the engine could overheat.**

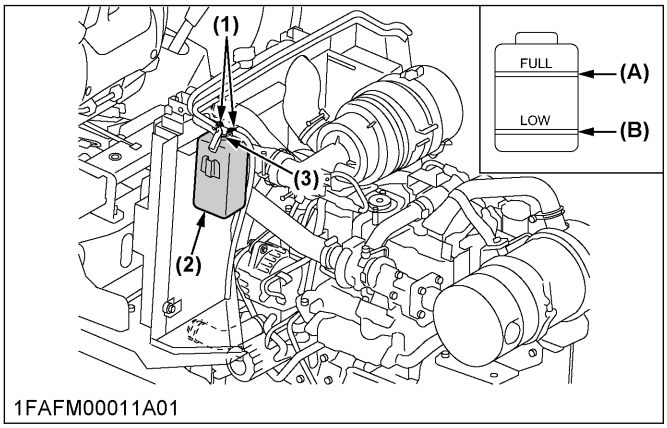
1. Stop the engine and let it cool down.

2. To drain the coolant, remove the drain plug, and then remove the radiator cap. The radiator cap must be removed to completely drain the coolant.



(1) Drain plug

3. After all coolant is drained, install the drain plug.
4. Fill with clean water and cooling system cleaner.
5. Follow directions of the cleaner instruction.
6. After flushing, fill with clean water and antifreeze until the coolant level is just below the fill port on the radiator. Install the radiator cap securely.
7. Fill with coolant up to the **[FULL]** mark on the recovery tank.



(1) Clamp
(2) Recovery tank
(3) Recovery tank cap
*(A) **[FULL]***
*(B) **[LOW]***

8. Start and operate the engine for a few minutes.
9. Stop the engine and let it cool down.
10. Check coolant level of recovery tank and add coolant if necessary.

2. Antifreeze

⚠ WARNING

To avoid serious injury or death:

- **When using antifreeze, put on some protection such as rubber gloves. (Antifreeze contains poison.)**
- **If someone drank antifreeze, seek immediate medical help. Do not make the person throw up unless you are told to do so by poison control or a health care professional. Use standard first aid and CPR for signs of shock or cardiac arrest. Call your local poison control center or your local emergency number for further assistance.**
- **When antifreeze comes in contact with the skin or clothing, wash it off immediately.**
- **Do not mix different types of antifreeze. The mixture can produce chemical reaction causing harmful substances.**
- **Antifreeze is extremely flammable and explosive under certain conditions. Keep fire and children away from antifreeze.**
- **When draining fluids from the engine, place some container underneath the engine body.**
- **Do not pour waste onto the ground, down a drain, or into any water source.**
- **Also, observe the relevant environmental protection regulations when disposing of antifreeze.**

Always use a 50/50 mix of antifreeze and clean soft water in Kubota engines.
Consult your local Kubota Dealer concerning coolant for extreme conditions.

1. Coolant comes in several types. Use ethylene glycol (EG) type for this engine.
2. Before employing the 50/50 mix, fill the radiator with fresh water and empty it again. Repeat this procedure 2 or 3 times to clean up the inside.
3. Mixing the coolant
   Premix 50 % antifreeze with 50 % clean soft water. When mixing, stir it up well, and then fill into the radiator.
4. The procedure for the mixing of water and antifreeze differs according to the make of the antifreeze and the ambient temperature. Refer to SAE J1034 standard, more specifically also to SAE J814c.

IMPORTANT :

- **When mixing the antifreeze with water, the antifreeze mixing ratio is 50 %.**

Vol% Antifreeze	Freezing point		Boiling point*	
	℃	℉	℃	℉
50	-37	-34	108	226

* **At 1.013 × 10^5 Pa (760 mmHg) pressure (atmospheric).**

A higher boiling point is obtained by using a radiator pressure cap which permits the development of pressure within the cooling system.

5. Adding the coolant
   a. Add only water if the coolant level reduces in the cooling system by evaporation.
   b. If there is a mixture leak, add the antifreeze of the same manufacturer and type in a 50/50 mixing ratio.

   IMPORTANT :
   - **Never mix different brands of coolant. (Different brands may have different additive components, and the engine may fail to perform as specified.)**
6. When the coolant is mixed, do not use any radiator cleaning agent. The antifreeze contains an anticorrosive agent. If mixed with the cleaning agent, sludge may build up, adversely affecting the engine parts.
7. Kubota's genuine long-life coolant has a service life of 2 years. Change the coolant every 2000 hours or every 2 years whichever comes faster.

   NOTE :
   - **The above data represent industry standards that necessitate a minimum glycol content in the concentrated antifreeze.**

EVERY 3000 HOURS

1. Checking fuel injection pump

Consult your local Kubota Dealer for this service.

2. Checking turbo charger

Consult your local Kubota Dealer for this service.

3. Checking EGR system

Consult your local Kubota Dealer for this service.

4. Checking supply pump

Consult your local Kubota Dealer for this service.

5. Cleaning DPF muffler

1. Remove the ash.
   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.
   Consult your local Kubota Dealer to clean the filter.

   IMPORTANT :
   - **The DPF needs to be cleaned with a specific cleaning device. Do not disassemble the DPF for cleaning or attempt to clean it yourself. Consult your local Kubota Dealer.**

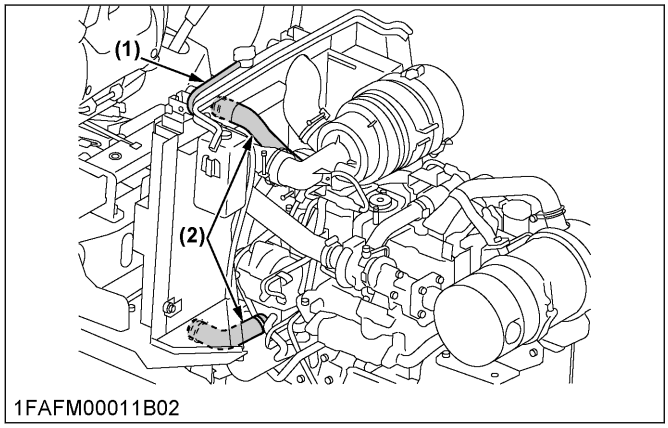
EVERY YEAR

1. Checking radiator hose and clamp

⚠ WARNING

To avoid serious injury or death:
- **Stop the engine and remove the key before checking radiator hose and clamps.**

1. If hose clamps are loose or water leaks, tighten clamps securely.
2. Replace hoses and tighten hose clamps securely, if radiator hoses are swollen, hardened or cracked.



(1) Radiator core
(2) Radiator hose

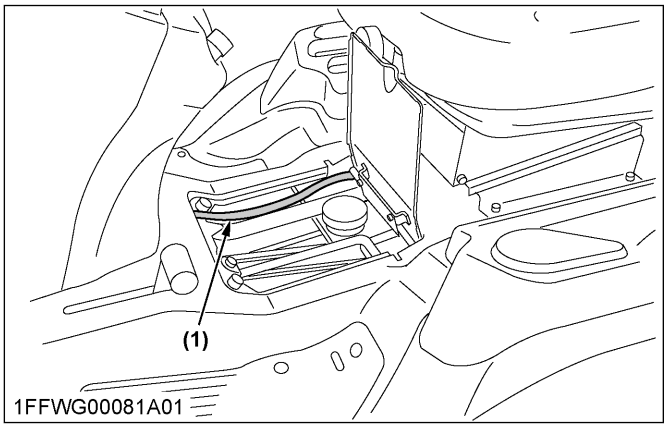
2. Checking hydraulic hose

⚠ WARNING

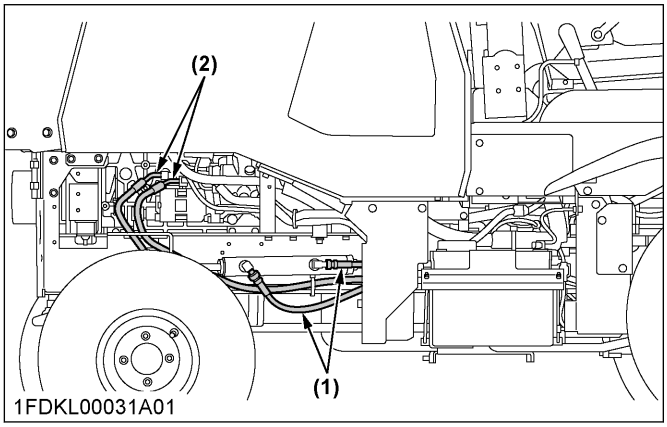
To avoid serious injury or death:
- **Stop the engine and remove the key before checking and replacing hydraulic hose.**
- **Allow transmission case to cool down sufficiently; oil can be hot and may cause burns.**

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.



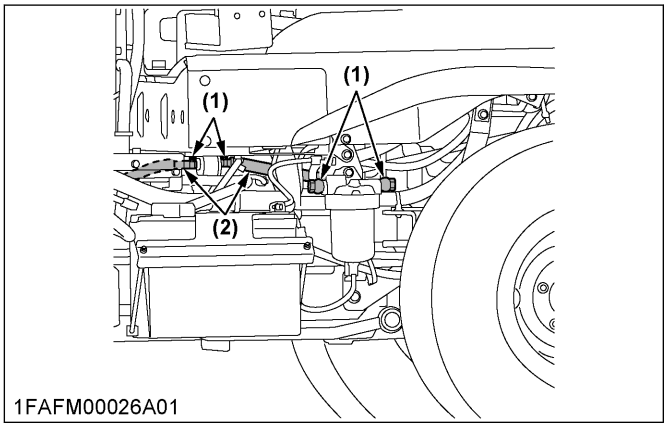
(1) Power steering hose



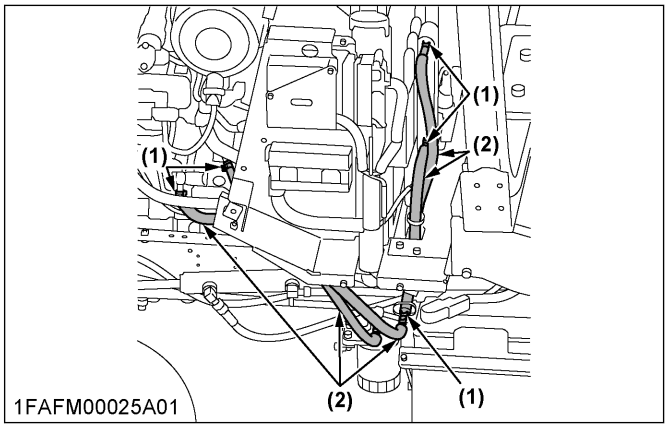
(1) Power steering hose
(2) Pump hose

3. Checking fuel lines

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



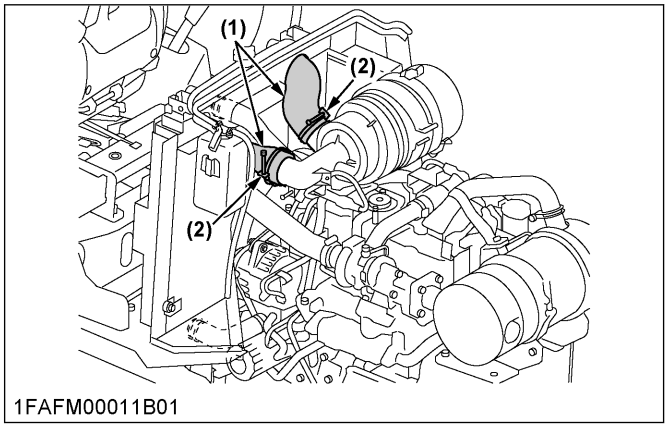
(1) Hose band
(2) Fuel hose



(1) Hose band
(2) Fuel hose

4. Checking intake air line

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



(1) Hose
(2) Clamp

5. Checking engine breather hose

Consult your local Kubota Dealer for this service.

6. Checking exhaust manifold

Consult your local Kubota Dealer for this service.

EVERY 4 YEARS

1. Replacing hydraulic hoses

Replace hoses and hose clamps if you checked and found that hoses are swollen, hardened or cracked.

2. Replacing fuel lines

Consult your local Kubota Dealer for this service.

3. Replacing engine breather hose

Consult your local Kubota Dealer for this service.

4. Replacing radiator hose

Replace hoses and hose clamp bands if you checked and found that hoses are swollen, hardened or cracked.
Consult your local Kubota Dealer for this service.

5. Replacing intake air line

(See Checking intake air line on page 76.)

6. Replacing differential pressure sensor hose

Consult your local Kubota Dealer for this service.

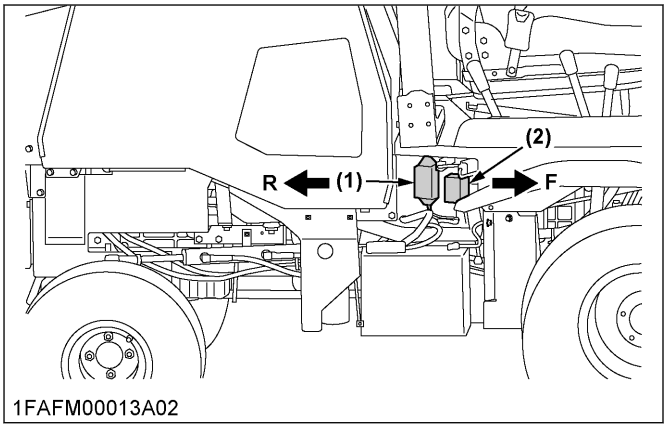
SERVICE AS REQUIRED

1. Replacing fuses

The machine electrical system is protected from potential damage by fuses.
A blown fuse indicates that there is an overload or short somewhere in the electrical system.
If any of the fuses should blow, replace with a new one of the same capacity.

IMPORTANT :

- **Before replacing a blown fuse, determine why the fuse blew and make any necessary repairs. Failure to follow this procedure may result in serious damage to the machine electrical system. See TROUBLESHOOTING on page 81 or your local Kubota Dealer for specific information dealing with electrical problems.**
- **If any of them should blow, replace with a new one of the same capacity.**
  Do not use a fuse that is rated for a different capacity.



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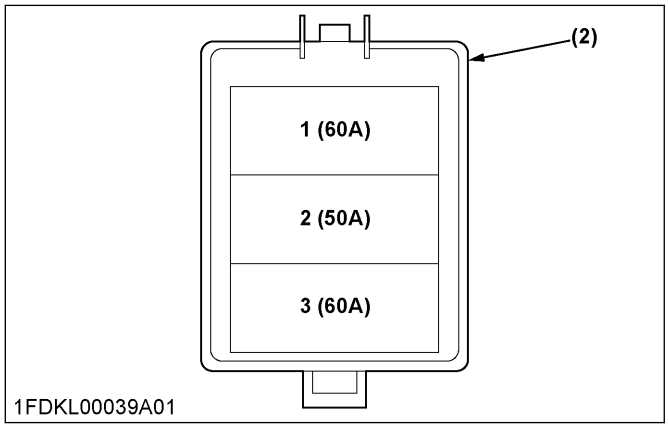
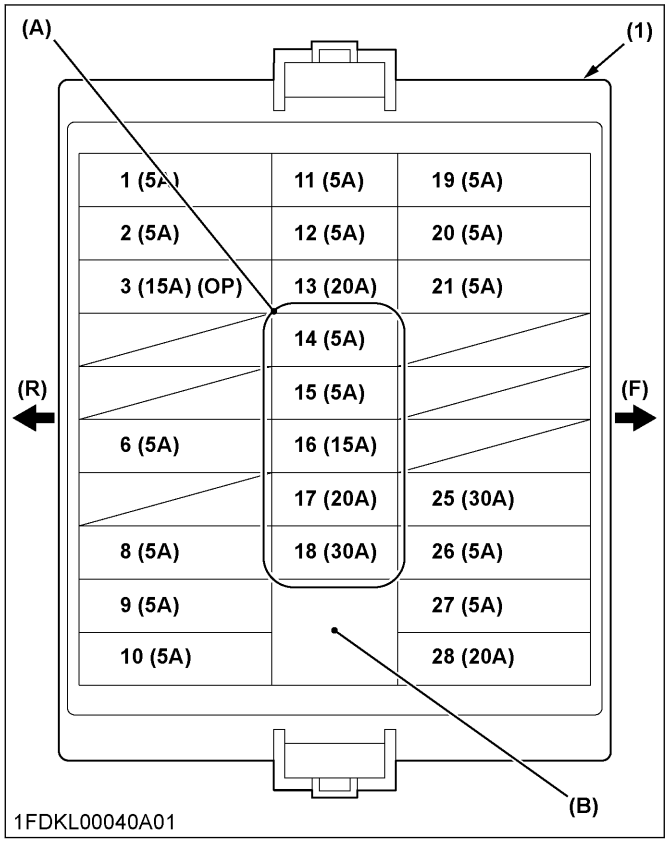


1FDKL00039A01

(1) Fuse box
(2) Slow blow fuse box
(F) Front
(R) Rear

Fuse No.	Capacity (A)	Protected circuit
1	60	Alternator
2	50	Main power
3	60	Heater plug



1FDKL00040A01

(1) Fuse box
(A) Spare
(B) Fuse puller
(F) Front
(R) Rear

Fuse No.	Capacity (A)	Protected circuit
1	5	Meter (service reset)
2	5	Work light
3	15	Work light (option), air suspension seat (option)
6	5	Meter (IGN)
8	5	Air flow sensor
9	5	Fuel pump
10	5	EGR valve
11	5	ST switch (main ECU, engine ECU)
12	5	OPC, DPF
13	20	OPC
14	Spare	5 A mini fuse
15	Spare	5 A mini fuse
16	Spare	15 A mini fuse
17	Spare	20 A mini fuse
18	Spare	30 A mini fuse
19	5	Horn
20	5	Alternator, IGN relay
21	5	IGN switch (main ECU, engine ECU, diag tool)
25	30	Starter motor
26	5	Meter (+B), K-OBD (+B)
27	5	Main ECU (+B)
28	20	Engine ECU (+B)

2. Replacing light bulb

- Work light
  The work light is an LED light. If the work light does not light up, replace it with a new one.
- Other lights
  Detach the lens and replace the bulb.

Light	Capacity
Work light	12 W
Work lamp	35 W

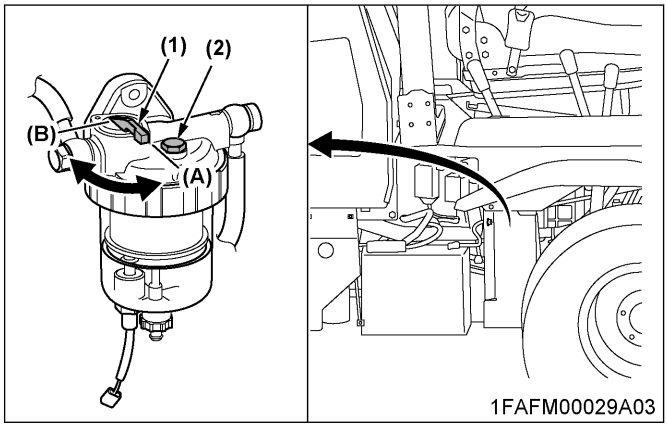
3. Bleeding fuel system

Air must be removed:
- When the fuel filter or lines are removed.
- When the water is drained from the water separator.
- When the tank is completely empty.
- After the machine has not been used for a long period of time.

Bleeding procedure

IMPORTANT :
- **When the tank is completely empty, the fuel tank needs to be filled with fuel before bleeding the fuel system.**

1. Park the machine on level ground before starting work.
2. Fill the fuel tank with fuel, and open the fuel shutoff-valve.
3. Loosen the air vent plug until the liquid level rises.



(1) Fuel shutoff-valve *(A) "OPEN"*
(2) Air vent plug *(B) "CLOSE"*

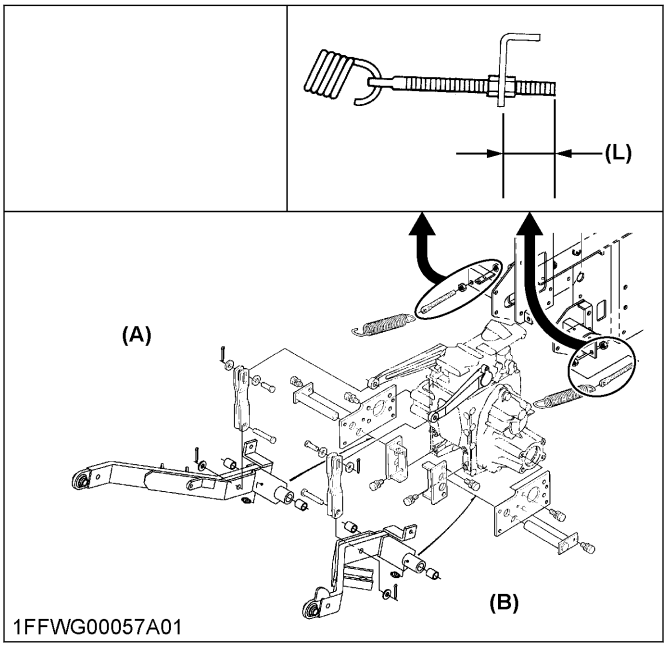
4. Wait until air in the tank is removed.
   Turn on the key when the increase of liquid level is slow.
5. Set the hand throttle lever at the minimum speed position, turn the key switch to the *"START"* position.
   If the engine does not start, try it several times at 30-second intervals.

   IMPORTANT :
   - **Do not hold the key switch at the engine *"START"* position for more than 10 seconds continuously. If more engine cranking is needed, try again after 30 seconds.**
6. Accelerate the engine to remove the small portion of air left in the fuel system.
7. If air still remains and the engine stops, repeat the previous steps.
8. Tighten the air vent plug.

4. Adjusting lift springs (LH and RH)

In order to help improve traction, adjust the lift springs according to the following chart.

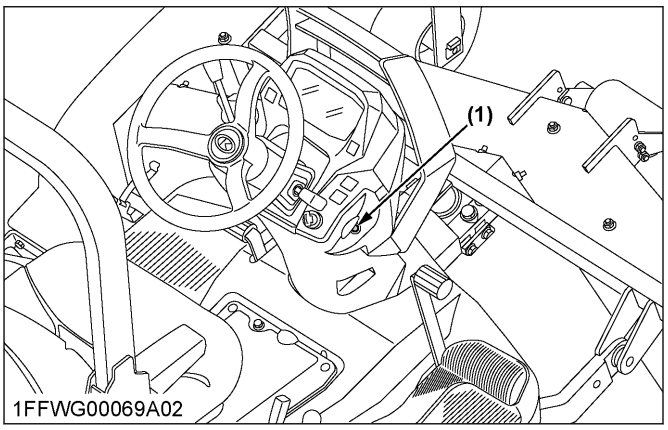
	RCK72P-F39, RCK72R-F36, RCK60P-F39, RCK60R-F36
RH	L=50 mm (2.0 in.)
LH	L=70 mm (2.8 in.)



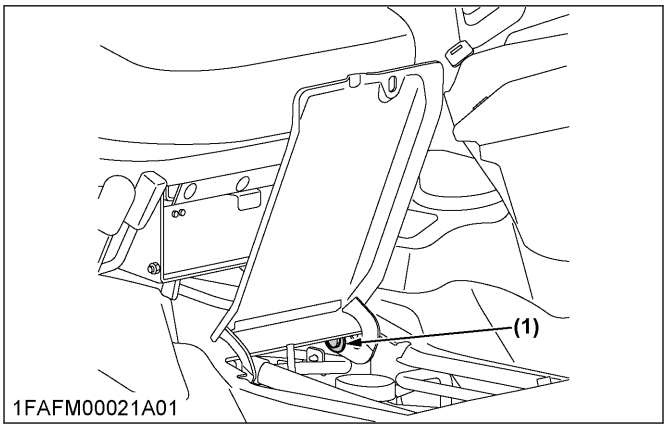
(A) RH
(B) LH
(L) Right hand: 50 mm (2.0 in.)
Left hand: 70 mm (2.8 in.)

5. Oiling

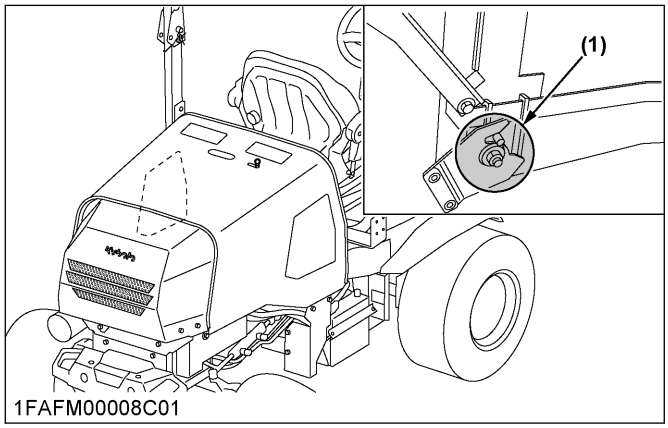
Oil the following location.



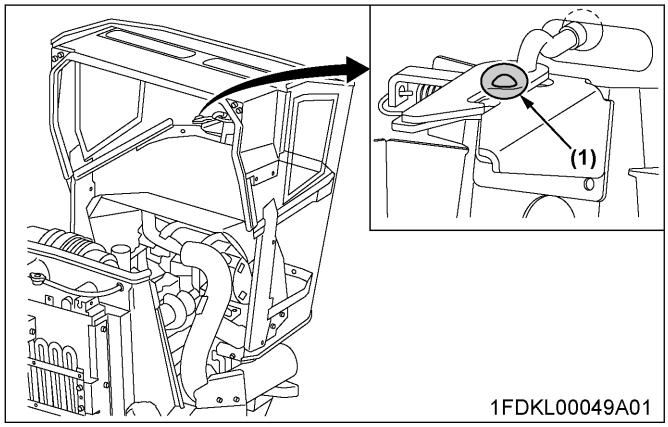
(1) Parking brake cable



(1) Floor cover pivot



(1) Hood pivot (inside)



(1) Hood lock pivot

STORAGE

⚠ WARNING

To avoid serious injury or death:

- **To reduce fire hazards, allow the engine and exhaust system to cool before storing the machine in an enclosed space or near combustible materials.**
- **To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.**
- **Do not clean the machine with the engine running.**
- **To avoid fire hazards, do not leave grass and leaves in the mower and the grass catcher (if equipped).**
- **When storing, remove the key to avoid unauthorized persons from operating the machine and getting injured.**

STORING THE MACHINE

When the machine will not be operated for over 2 months, clean the machine and perform the following operations before storage.

1. Repair parts as necessary.
2. Check bolts and nuts and tighten as necessary.
3. Apply grease or engine oil to parts most likely to rust.
4. Inflate the tires to a little above the standard pressure levels. (Approximately 110 %)
5. Lower the mower to the ground.
6. Remove the battery from the machine, recharge it, adjust the electrolyte to the proper level, and store in a cool dry place.
   The battery discharges over time even while in storage. Recharge it once a month in hot seasons and once every 2 months in cold seasons.
7. Drain fuel tank, fuel lines.
8. Store the machine where it is dry and sheltered from rain. Cover the machine with a tarpaulin.
9. Moisture content in most grasses can damage the mower and grass catcher (if equipped) if these components are not properly cleaned after use. Make sure the mower and the grass catcher are clean and completely empty before storage.
10. Jack the machine up and place blocks under the front and rear axles so that all 4 tires are off the ground. Keep the tires out of direct sunlight and extreme heat.

IMPORTANT :

- **When washing the machine, stop the engine. Allow sufficient time for the engine to cool before washing.**
- **Cover the machine after the muffler and the engine have cooled down.**

REMOVING THE MOWER FROM STORAGE

1. Check the tire inflation pressure and adjust as required.
2. Jack the machine up and remove the support blocks.
3. Install the battery. Before installing the battery, make sure it is fully charged.
4. Check the fan belt tension.
5. Check all fluid levels (engine oil, transmission and hydraulic oil, engine coolant and any attached implements).
6. Start the engine. Observe all gauges. If all gauges are functioning properly and reading normal, move the machine outside.
7. Once outside, park the machine and let the engine idle for at least 5 minutes.
8. Shut the engine off and walk around machine and make a visual inspection looking for evidence of oil water leaks.
9. With the engine fully warmed up, release the parking brake and test the brakes for proper adjustment as you move forward. Adjust the brakes as necessary.

TROUBLESHOOTING

ENGINE TROUBLESHOOTING

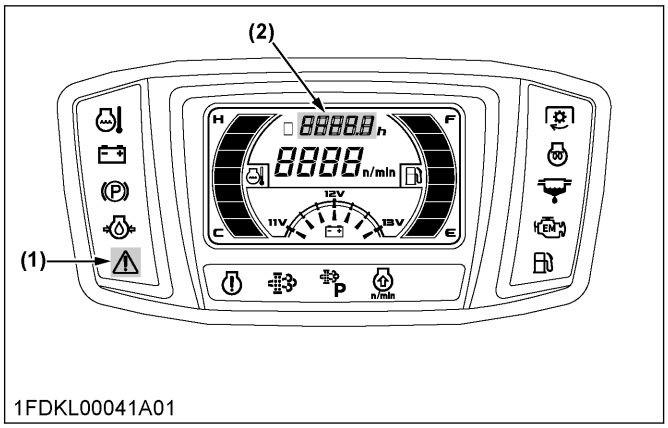
If something is wrong with the engine, see the following table for the cause and its corrective measure.

Trouble		Cause	Countermeasure
Engine is difficult to start or will not start.		• No fuel flow	• Check that the fuel shut-off valve is in the open position. • Check the fuel tank and the fuel filter. Replace the filter if necessary.
		• Air or water is in the fuel system.	• Check to see if the fuel line coupler bolt and nut are tight. • Bleed the fuel system. (See Bleeding fuel system on page 78 as required.)
		• In winter, oil viscosity increases, and engine revolution is slow.	• Use oils of different viscosities, depending on ambient temperatures. • Use the engine block heater. (Optional)
		• Battery becomes weak and the engine does not turn over quick enough.	• Clean battery cables and terminals. • Charge the battery. • In cold weather, always remove the battery from the engine, charge and store it indoors. Install it on the machine only when the machine is going to be used.
Insufficient engine power.		• Insufficient or dirty fuel • The air cleaner is clogged.	• Check the fuel system. • Clean or replace the element.
Engine stops suddenly.		• Insufficient fuel	• Refuel. • Bleed the fuel system if necessary.
Exhaust fumes are colored.	Black	• Fuel quality is poor. • Too much oil • The air cleaner is clogged.	• Change the fuel and fuel filter. • Check the proper amount of oil. • Clean or replace the element.
	Blue white	• The inside of exhaust muffler is damp from fuel. • Injection nozzle trouble • Fuel quality is poor.	• Heat the muffler by applying load to the engine. • Check the injection nozzle. • Change the fuel and fuel filter.
Engine overheats.		• Engine overloaded	• Shift to lower gear or reduce load.
		• Low coolant level	• Fill cooling system to the correct level and check the radiator and hoses for loose connections or leaks.
		• Loose or damaged fan belt	• Adjust or replace fan belt.
		• Dirty radiator screen or hood screen	• Remove all trash.
		• Coolant flow route corroded	• Flush cooling system.

If you have any questions, contact your local Kubota Dealer.

POWER TRAIN TROUBLESHOOTING

If something is wrong with the power train, the master system warning indicator starts blinking and the error code shown as follows is displayed on the liquid crystal display, indicating the location of the trouble.
If an error code appears, immediately contact your local Kubota Dealer for repairs.



(1) Master system warning indicator
(2) Error code

Displayed error code	Trouble	Operator's action
"E-84"	Throttle sensor trouble	Contact your local Kubota Dealer.
"E-93"	Starter relay trouble	
"E-94"	OPC output trouble	
"E-21"	CAN communication trouble	
"Err21"	CAN communication trouble	
"E-40"	Sensor supply trouble	
"E-30"	Accelerator adjustment trouble	

BATTERY TROUBLESHOOTING

Trouble	Cause	Remedy	Preventive measure
Starter does not function.	• Battery overused until lights are dim.	• Charge the battery sufficiently.	• Charge the battery properly.
	• Battery has not been recharged.		
	• Poor terminal connection.	• Clean the terminal and tighten securely.	• Keep the terminal clean and tight. Apply grease and treat with anticorrosive.
	• Battery life expired.	• Replace the battery.	
From beginning starter does not function, and lights soon become dim.	• Insufficient charging.	• Charge the battery sufficiently.	• Battery must be serviced properly before initial use.
When viewed from top, the top of plates looks whitish.	• Battery was used with an insufficient amount of electrolyte.	• Add distilled water and charge the battery.	• Regularly check the electrolyte level.
	• Battery was used too much without recharging.	• Charge the battery sufficiently.	• Charge the battery properly.
Recharging is impossible.	• Battery life expired.	• Replace the battery.	
Terminals are severely corroded and heat up.	• Poor terminal connection.	• Clean the terminal and tighten securely.	• Keep the terminal clean and tight. Apply grease and treat with anticorrosive.
Battery electrolyte level drops rapidly.	• There is a crack or pin holes in the electrolytic cells.	• Replace the battery.	

If you have any questions, contact your local Kubota Dealer.

MACHINE TROUBLESHOOTING

Trouble	Cause	Counter measure
Machine operation is not smooth.	• Hydrostatic transmission fluid is insufficient. • Filter is clogged. • Strainer is clogged.	• Replenish oil. • Replace the filter. • Clean the strainer.
Machine does not move while engine is running.	• Parking brake is on. • Transmission fluid level is insufficient.	• Release the parking brake. • Replenish oil.
Machine moves when speed control pedal is not depressed. (Engine is operated.)	• Hydrostatic lever linkage is not correctly adjusted.	• Ask your dealer for hydrostatic lever linkage adjustment or pressure adjustment.

If you have any questions, contact your local Kubota Dealer.

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