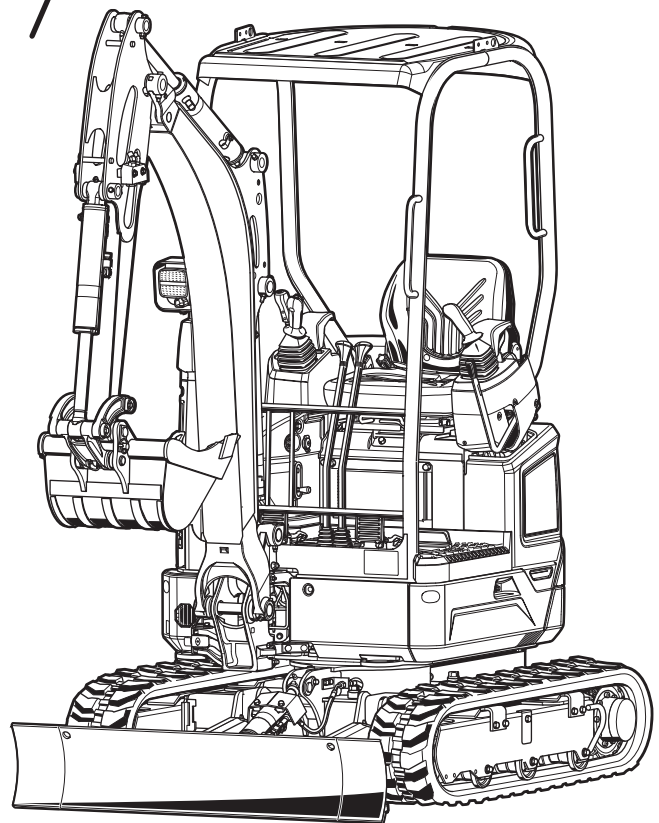


Kubota

COMPACT EXCAVATOR

GB

MODELS
U17-5
U18-5



1AALV00001A01

OPERATOR'S MANUAL

FOREWORD

Dear valued customer,

Thank you for the purchase of a Kubota product.

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

Please fill in the form below. Your information will help us to help you.

(See DEALER SERVICE on page 37.)

Type	
Year of construction	
Name of dealer	
Shipment date	
Product identification number	
Engine model	
Engine serial number	

This operator's manual applies only to the Kubota excavators listed in the following table, which comply with the EC declaration of conformity.

(See DECLARATION OF CONFORMITY on page 7.)

In addition, the machine's product identification number must correspond to the following scope of application.

Model	Scope of application
U17-5/U18-5	Valid as of serial number 20001

The serial number is part of the product identification number.

(See PRODUCT IDENTIFICATION NUMBER on page 37.)

Please contact your Kubota dealer for any additional information or troubleshooting procedures not mentioned in this operator's manual.

We would also like to point out that the contents of this operator's manual are not part of any previously existing agreement, commitment, or legal relationship, nor do they constitute an amendment to this. All responsibilities are taken from the respective sales contract, which contains the complete and exclusively valid contractual warranty.

(See Warranty and liability on page 10.)

This documentation neither extends nor restricts the contractual warranty.

Kubota Baumaschinen GmbH reserves the right to change the information contained in this document in the interest of future technical development without altering the basic characteristics of the machine described herein and without amending this document.

Distribution and reproduction of this documentation and disclosure of its content are not allowed unless express consent is given by the manufacturer. Violators of the above terms are liable for compensation for damages.

ABBREVIATIONS

API	American Petroleum Institute
ASTM	American Society for Testing and Materials
CECE	Committee for European Construction Equipment
DIN	Deutsches Institut für Normung (German Institute for Standards)
EMC	Electromagnetic compatibility
EN	Europäische Norm (European standard)
GL	Ground level
ISO	International Organisation for Standardisation
LpA	Noise level operator's place
LwA	Sound power level
MIL	Military Standards
OPG	Operator Protective Guard
RMS	Root Mean Square
ROPS	Roll-Over Protective Structure
SAE	Society of Automotive Engineers
TOPS	Tipping-Over Protective Structure

UNIVERSAL SYMBOLS

The instruments and operation elements have been marked with a series of symbols in order to simplify the operation of the excavator. These symbols are listed below with their respective descriptions.

	Safety alert symbol		Arm - crowd
	Warning lamp - <i>"Fuel level too low"</i>		Bucket - crowd
	Warning lamp - <i>"Engine oil pressure"</i>		Bucket - dump
	Warning lamp - <i>"Coolant temperature"</i>		Boom - swing (left)
	Warning lamp - <i>"Battery charge"</i>		Boom - swing (right)
	Indicator lamp - <i>"Glow"</i>		Dozer - raise
	Indicator lamp - <i>"Service interval"</i>		Dozer - lower
	Indicator lamp - <i>"Auxiliary port"</i>		Read operator's manual
	Indicator lamp - <i>"Clock set"</i>		Operation direction of control lever
	Working light switch		Operation direction of control lever
	Horn		Lock
	Diesel		Unlock
	Hydraulic fluid		Decreasing / Increasing track width
	Gear oil		Rotary beacon
	Fast		Display selector switch
	Slow		User setting switch
	Excavator - overhead movement toward the front		Fan
	Excavator - overhead movement toward the rear		Insert key
	Boom - up		Pull out key
	Boom - down		Seat belt indicator
	Arm - up		

SAFETY FIRST

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

**DANGER:**

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

**WARNING:**

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

**CAUTION:**

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

IMPORTANT:

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

NOTE:

Gives helpful information.

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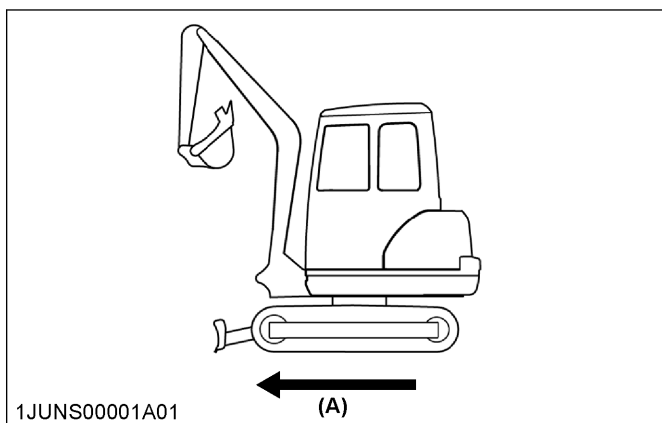
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GENERAL INFORMATION

- The safety instructions and the rules and regulations for the use of excavators given in this operator's manual apply to the excavators mentioned in this documentation.
- The following are the responsibility of the owner or owners.
 - To ensure that local, regional and national regulations are observed
 - To observe the bodies of rules (laws, regulations, guidelines, and so on) stated in the operator's manual to ensure safe handling of the equipment
 - To ensure that the operator's manual is available to the operating personnel at all times and that the information, such as notes, warnings, and safety rules and regulations, are followed in all points
- The specifications in the operator's manual apply to all model types. Information pertaining only to specific model types is marked accordingly. Information pertaining to optional equipment is marked with (optional).
- The terms “*front*” and “*direction of travel*” refer to the view of the operator when seated on the operator's seat. Forward direction of travel means that the dozer blade is at the front when driving forwards as shown in the figure.



(A) *Direction of travel*

- The symbols for operating and safety instructions are listed on the “*Universal symbols*” page before the table of contents in this manual.

DECLARATION OF CONFORMITY

- A copy of the Declaration of Conformity is issued for the European Union economic area and for the United Kingdom, and is supplied with the machine accordingly.
(See DECLARATION OF CONFORMITY on page 159.)
- Keep the Declaration of Conformity in a safe place and show it, if requested, to the responsible authorities.
- If the Declaration of Conformity is lost, the operator must request a replacement copy from the Kubota dealer.
- The CE and UKCA conformity markings are located on the type plate.
- If the machine is modified or retrofitted without the approval of the manufacturer, the safety of the machine may be affected, thus rendering the Declaration of Conformity invalid.

DECLARATION OF CONFORMITY FROM RADIO EQUIPMENT MANUFACTURER

Hereby, ASAHI DENSO CO., LTD. declares that the radio equipment type **CZ106** is in compliance with the directives of the following economic areas:

- European Union: 2014/53/EU
- United Kingdom: The Radio Equipment Regulation 2017 (S.I. 2017/1206)

The full text of the EU declaration of conformity is available at the following internet address:

<http://en.ad-asahidenso.co.jp/euro-compliance/>

Frequency Tx	119 kHz ~ 135 kHz
Maximum Tx power level	77.8 dBμV / m@3 m

DATE OF ISSUE OF THE OPERATOR'S MANUAL

The date of issue of the operator's manual is printed on the cover and on the bottom of each page of this manual.

OPERATING PERSONNEL

The duties of personnel with respect to operation, servicing, repairs, and safety inspections must be clearly defined by the owner.

Personnel in training are only allowed to work on or with the excavator under the supervision of an experienced operator.

Operator

According to industrial safety regulations, only persons who have completed 18 years of age, who were instructed in the operation of the excavator, who have proven their qualification to the owner (employer), and who can be expected to perform their duties in a reliable way, are allowed to operate the excavator independently.

Only instructed personnel are allowed to start the excavator and operate the controls.

Trained personnel

Trained personnel are skilled persons with a technical qualification who are able to determine damage to the excavator and perform repairs in their area of qualification (such as hydraulic or electrical engineering).

Only trained and instructed personnel is allowed to work on the excavator.

Qualified personnel

Based on their technical training and experience in their field, qualified personnel should have sufficient knowledge about the technology used in this machine and be familiar with the applicable national work safety regulations, accident prevention regulations, and the generally accepted technical rules so that they can assess the sound operating condition of the machine.

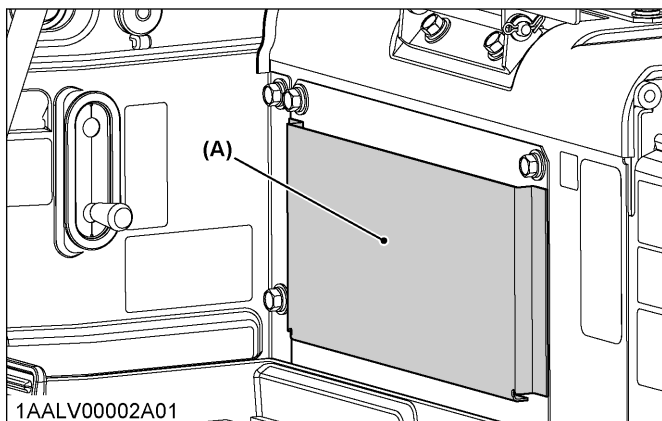
Only qualified personnel is allowed to perform safety inspections.

WHERE TO STORE THE OPERATOR'S MANUAL

The operator's manual must always be kept on the machine. If the operator's manual has become illegible due to continuous use, the owner (operator) must order a replacement from the Kubota dealer.

The storage location for the operator's manual is on the front of the seat console.

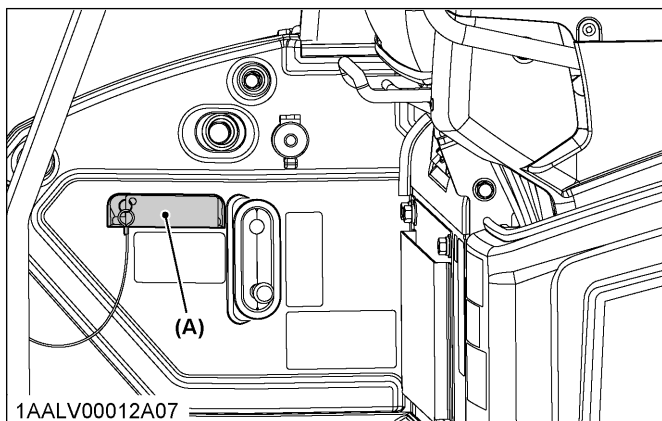
If the manual needs to be stored in a lockable compartment, store it in the OPM box that is attached to the canopy top plate (retrofitted OP).



(A) Storage location

WHERE TO STORE THE QUICK INSTRUCTION MANUAL

The quick instruction manual describes the essential rules of conduct for operating the machine safely. The quick instruction manual is not a substitute for the operator's manual. If the quick instruction manual has become illegible due to continuous use, the owner (operator) must order a replacement from the Kubota dealer. The storage location for the quick instruction manual is on the right-hand side control console.



(A) Storage location

SPECIAL DUTIES OF THE OWNER

The owner of the excavator, in the sense of this operator's manual, is any person or company which uses the excavator itself or on whose order it is used. In special cases (such as leasing or rental), the owner is the person who must perform the duties arising from operation according to the conditions of the contract between the owner and the user of the excavator.

- The owner must ensure that the excavator is only used properly and that any danger to the life and health of the user, or others who are in the proximity of the user, is eliminated. Furthermore, observance of the safety rules and regulations, as well as the operating, maintenance and repair regulations, must be ensured.
- The owner must make sure that all operators and users have read and understood this operator's manual.
- The owner must provide persons who work with or on the excavator with suitable personal protective equipment (PPE), such as safety shoes, safety helmets, eye protection, ear protection, and air-filter masks, and those persons must use that equipment where applicable.

The owner (employer) bears the main responsibility for the PPE, which is specified by the safety rules for particular types of activity.

- Waste such as old oil, fuel, hydraulic fluid, coolant, and batteries comes under the category of toxic waste, and can be a hazard to the environment, people, and animals.

Disposal must be undertaken in an appropriate way, according to legally prescribed pollution control and safety regulations.

If you have any questions about the proper disposal or storage of refuse and toxic waste, contact your Kubota dealer or a local waste management contractor.

Meaning of symbols on batteries regarding management of waste batteries:



- Separate collection symbol: batteries must not be disposed of with the household waste.

Pb

- Pb symbol: batteries contain more than 0.004 % lead.

DUTIES, LIABILITY AND WARRANTY

A basic prerequisite for the safe handling and problem-free operation of the excavator is the knowledge of the safety instructions and safety regulations.

This operator's manual, and in particular, the safety instructions, must be followed by all persons working near or with the excavator. Above and beyond this, the safety rules and regulations applicable for the site must also be observed.

1. Hazards occurring during the handling of the excavator

- The excavators are manufactured according to the state of technology and the recognized safety rules. Nevertheless, danger to life and limb of the operator or a third party, or damage to the excavator or other property, can occur.
- The excavator(s) may only be used as follows:
 - For its approved use
(See APPROVED USE on page 13.)
 - In completely safe operating conditions
- Malfunctions that can impair safety must be repaired immediately.

2. Warranty and liability

- The scope, period, and form of the warranty are set forth in the sales and delivery conditions of the manufacturer. The operator's manual valid at the time of delivery shall be the basis for any warranty claims arising from errors in the documentation.
(See DATE OF ISSUE OF THE OPERATOR'S MANUAL on page 8.)
- The following applies above and beyond the sales and delivery conditions: No warranty or liability shall be assumed for personnel and property damages resulting from one or more of the following reasons:
 - Unapproved use of the excavator
(See UNAPPROVED USE on page 13.)
 - Improper starting, operation, and maintenance of the excavator
 - Operation of the excavator with damaged safety devices or improperly installed or non-operational safety and protective devices
 - Ignorance or non-observance of this operator's manual
 - Insufficiently qualified or insufficiently instructed operating personnel
 - Improperly performed repairs
 - Unauthorised engineering changes to the excavator

- Poor surveillance of machine parts subject to wear
 - Catastrophes caused by the effect of foreign objects or force majeure
- It is the responsibility of the owner to ensure that:
 - The safety rules are observed.
(See SAFE OPERATION on page 13.)
 - Unapproved use and unauthorised operation are prevented.
(See UNAPPROVED USE on page 13.)
 - The excavator is used properly and is operated in accordance with the contractual conditions of use.
(See APPROVED USE on page 13.)

SAFE OPERATION

The best way to prevent accidents is to follow the safety instructions and warnings in this manual, regulations, and safe operating practices.

Read and understand this manual carefully before operating the machine.

Every user, however experienced, should carefully read and understand this manual and those of the attachments and accessories before operating the machine. The owner is obliged to inform the operators of these instructions in detail.

Store this manual in the designated storage location on the front of the seat console.

(See WHERE TO STORE THE OPERATOR'S MANUAL on page 8.)

APPROVED USE

- The excavator(s) specified in this operator's manual may only be used for loosening, excavating, lifting, transporting and dumping soils, rocks and other materials, as well as for work with the dozer or with a breaker. The load may be transported largely without driving the excavator. Do not exceed the maximum lifting capacity.
(See LIFTING CAPACITY on page 155.)
- Approved use also includes the following:
 - Observation of all notes in this operator's manual
 - Regular servicing
 - Regular safety inspections

UNAPPROVED USE

- Any improper use, meaning any deviation from the information documented in this operator's manual regarding the intended use of the excavator, is considered unapproved use. This also applies to the failure to observe the standards and guidelines listed in this operator's manual.
- Hazards can occur as a result of improper use.
- Such improper uses include:
 - Using the machine to lift loads without the proper equipment for lifting operations
 - Using the machine while the operator is not in the driver's seat
 - Using the machine in contaminated environments
 - Using the machine in explosive environments
 - Using the machine in enclosed spaces without sufficient ventilation

- Using the machine under conditions of extreme temperatures (extreme heat or cold)
- Using the machine in a thunderstorm, or when there is a possibility of lightning
- Using the machine for underground work
- Using the machine to transport people (for example on attachments)
- Using the machine in areas where there is a risk of falling objects
- Using the machine with a log grab

NOISE EMISSION AND VIBRATION

The values specified in this operator's manual were identified during the test cycle on an identical machine and are valid for a machine with the standard equipment.

(For the determined values, see TECHNICAL DATA on page 39.)

Noise emission

- The noise levels were determined using the method for determining the guaranteed sound pressure level of ISO 4871 based on the following directives:
 - European Union: 2000/14/EC Appendix VI
 - United Kingdom: Noise Emission in the Environment by Equipment for Use Outdoors Regulations 2001 (S.I. 2001:1701)
- The noise levels indicated are not applicable for the determination of additional workplace noise emissions. The actual noise levels may need to be determined directly at the workplaces, subject to actually existing conditions (other noise sources, special operating conditions, sound reflections).
- Depending on the actual noise emissions, the owner must provide the operator with the necessary personal protective equipment (ear protection).
 - Noises at a noise level of more than 85 dB (A) can cause hearing damage.
 - At a noise level of 80 dB (A) and up, the use of ear protection is recommended.
 - At a noise level of 85 dB (A) and up, the operator must wear ear protection.

Vibrations

- The vibrations on the machine have been determined using an identical machine.
- The vibration stress on the operator over a longer period of time must be determined by the owner at the operating site, in compliance with the following

! SAFE OPERATION

directives in order to consider individual magnitudes of influence:

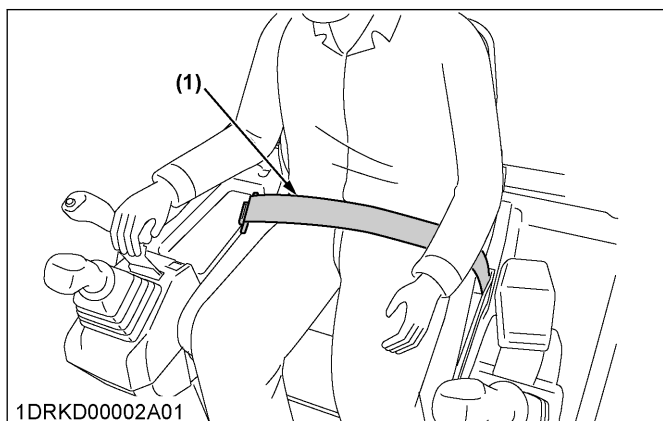
- European Union: 2002/44/EC
- United Kingdom: The Merchant Shipping and Fishing Vessels (Control of Vibration at Work) Regulations 2007 (S.I. 2007/3077)

BEFORE OPERATING THE MACHINE

Familiarise yourself with the machine and be aware of its limits. Read the operator's manual carefully before starting the machine.

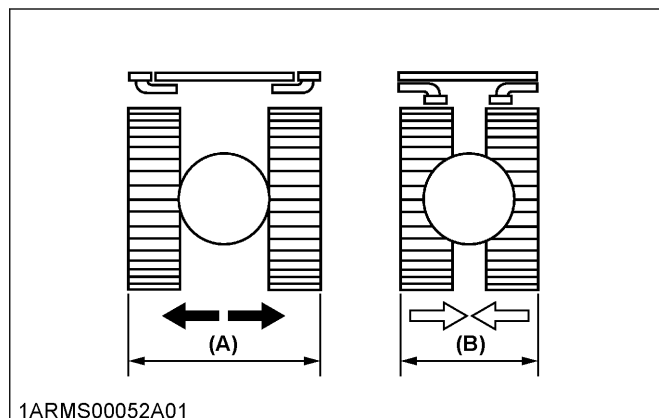
1. General safety rules

- The EC Use of Work Equipment Directive (2009/104/EC) from 16/09/2009 applies to the operation of the aforementioned excavator.
- The information in this operator's manual applies for maintenance and repairs.
- National rules and regulations apply where applicable.
- Obey the safety labels on the machine.
- The seat belt must be inspected regularly and replaced if damaged.



(1) Seat belt

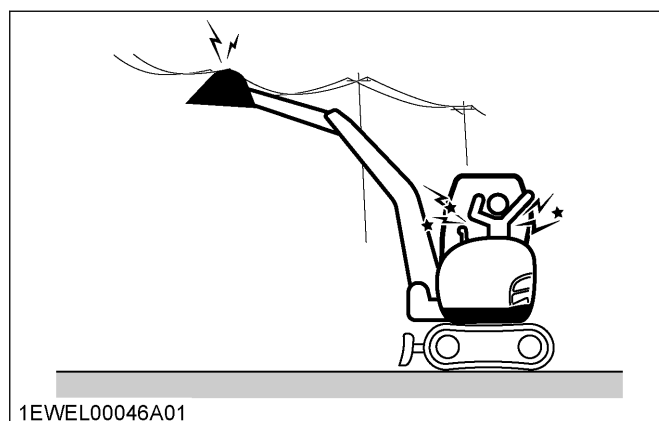
- Always sit in the operator's seat when starting the engine or operating levers or controls.
- The tracks can be set to narrow width (990 mm) or to completely extended width (1300 mm). (See TRACK WIDTH ADJUSTMENT AND DOZER OPERATION on page 67.)
- Do not operate in narrow track width (990 mm), as there is a risk of the machine tipping over.
- Always operate in completely extended width (1300 mm), except to pass through narrow spaces on even ground.



(A) 1300 mm

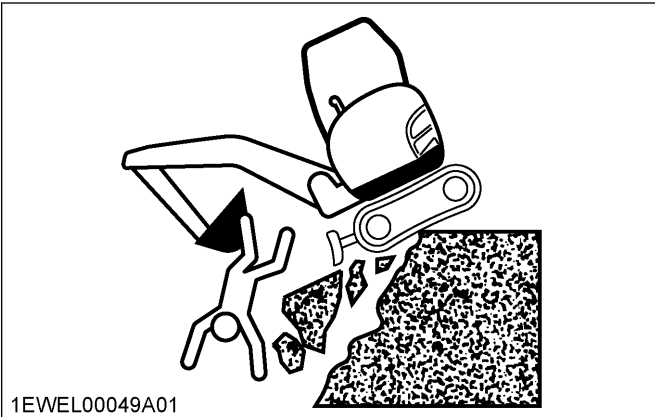
(B) 990 mm

- Do not operate the machine while under the influence of alcohol, medication, controlled substances, or while fatigued.
 - The excavator may only be operated in accordance with the information found in the following sections of this manual:
(See APPROVED USE on page 13 and UNAPPROVED USE on page 13.)
 - Check the surroundings carefully before using the machine or when attachments are being attached.
 - Pay attention to the overhead clearance with power lines.
- Details regarding safe operating procedures in the vicinity of overhead power lines can be found in a different section.
(See Working in the vicinity of overhead power lines on page 17.)



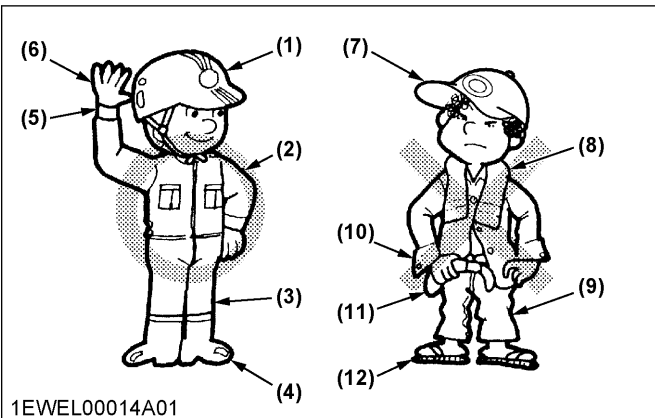
- Check for pipes and buried cables before digging.
- Details regarding safe operating procedures in the vicinity of underground power lines can be found in a different section.
(See Working in the vicinity of underground power lines on page 17.)
- Check for hidden holes, hindrances, soft underground, and overhangs.

! SAFE OPERATION



– While using the machine, do not allow any persons within the working range.

- Do not allow other persons to use the machine before having informed them on the exact operation and work instructions, and make sure that they have read and fully understood the operator's manual.
- Do not wear baggy, torn, or oversized clothing when working with the machine. Clothing can get caught in rotating parts or control elements, resulting in accidents or injuries. Wear adequate safety clothing, such as a safety helmet, safety shoes, eye protection, ear protection, working gloves, and so on, as necessary and as prescribed by law or other standards or regulations.



- | | |
|----------------------------------|--|
| (1) <i>Helmet</i> | (7) <i>Soft hat</i> |
| (2) <i>Clothing fit for work</i> | (8) <i>Towel</i> |
| (3) <i>Tight seams</i> | (9) <i>Baggy trousers</i> |
| (4) <i>Good grip footwear</i> | (10) <i>Loose cuffs of the shirt</i> |
| (5) <i>Well-fitting cuffs</i> | (11) <i>Baggy shirt</i> |
| (6) <i>Working gloves</i> | (12) <i>Sandals or open-toed shoes</i> |

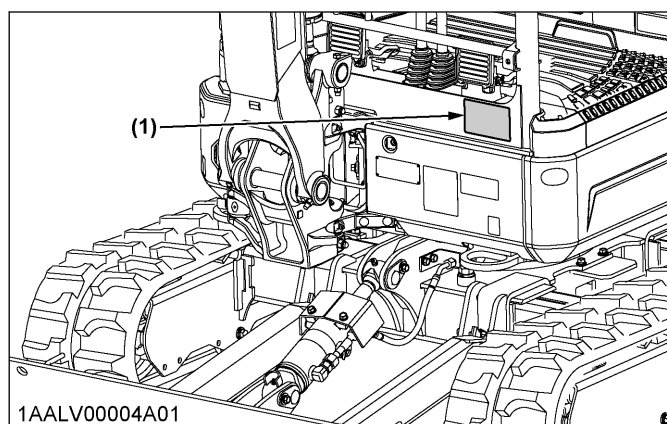
- Do not allow passengers to ride on any part of the machine at any time. The operator must remain in the machine seat during operation.
- Check mechanical parts for wear, and make sure that they are correctly adjusted. Replace worn or damaged parts immediately. Check nuts and bolts regularly to make sure that they are tightened to the correct torque.

- Keep your machine clean. Heavy soiling, grease, dust and grass can cause fires, accidents or injuries.
- Use only Kubota's authorised attachments.
- Before starting the machine, be absolutely sure that the machine has been filled with fuel, lubricated, greased, and undergone all necessary maintenance.
- Do not modify the machine, otherwise it could lead to unforeseen safety problems.
- Do not operate a hydraulic hammer on anything that is above the operator's seat level as objects may fall into the operator station.
- Make sure that attachments, particularly those utilising quick attach systems, are securely mounted.
- Install protective guards on the machine when working in areas where objects may fall or be thrown.
- If the dozer is being used to increase the machine's stability, an additional pipe safety valve must be installed in accordance with EN 474-1.
- Do not use the machine for demolition work where there is a danger of falling objects (such as tearing down walls). Doing so is considered unapproved use.

2. ROPS and OPG

- For your safety, a roll-over protective structure (ROPS) with a seat belt or operator protective guard, top guard level I (OPG, top guard level I) with a seat belt is installed by Kubota. The OPG (top guard level I), in accordance with ISO10262, is equivalent in definition to a falling object protective structure (FOPS).
- The seat belt must be fastened while the excavator is being operated.
- Never operate the excavator without the protective structure.
- Do not modify any structural members of the ROPS or OPG (top guard level I) by welding, drilling, bending, grinding or cutting, as this may weaken the structure.
- If parts of the protective structure of the canopy are damaged or plastically deformed, the canopy must be replaced. Repairing the damaged protective structure is not permitted. The protective function cannot be adequately restored through repairs and is not guaranteed in the event of accidents.
- The ROPS meets the requirements of ISO 3471. The OPG (top guard level I) meets the requirements of ISO 10262.
- Never operate the machine when the operating mass including the operator exceeds the maximum permissible total weight indicated on the ROPS identification plate.

! SAFE OPERATION



(1) ROPS identification plate

OPERATING THE EXCAVATOR

Operator safety is a priority. Safe operation, specifically with respect to overturning hazards, entails understanding the equipment and environmental conditions at the time of use. Some prohibited uses which can affect overturning hazards include those such as travelling and turning with implements and loads carried too high. This manual sets forth some of the obvious risks, but the list is not, and cannot be, exhaustive. It is the operator's responsibility to be alert to any equipment or environmental conditions that could compromise safe operation.

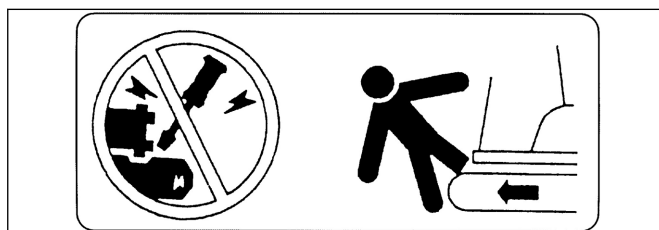
1. Restrictions with regards to quick couplers and attachments

- The Kubota excavator was extensively tested to ensure that it functions properly with the quick couplers and attachments sold or approved by Kubota.
- Using quick couplers or attachments that were not sold or approved by Kubota, or that are not suited for use with the Kubota excavator in some other way can cause damage to the excavator and to other property. Furthermore, they pose a risk of injury to the operator and other people.
- Damages caused to the excavator as a result of using unsuitable quick couplers or attachments are not covered by the warranty.

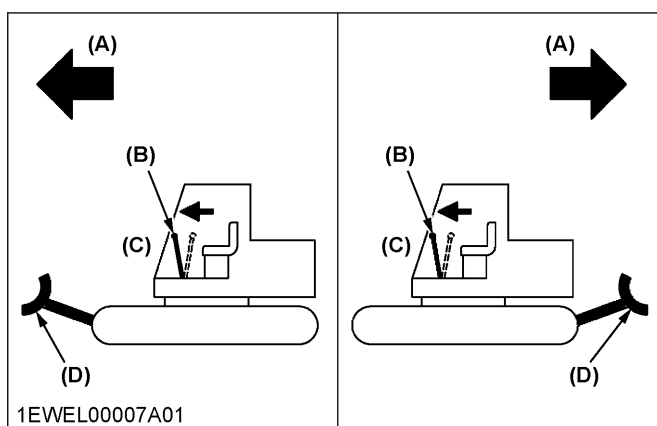
2. Starting to operate the machine

- Get into and out of the machine safely. Always face the machine. Always use handrails and available steps and keep yourself well balanced. Do not hold any of the control levers or switches. Do not jump on or off the machine, whether stationary or in motion.
- Start and control the machine only from the operator's seat. The driver should not lean out of their seat when the engine is running.

- Before starting the engine, make sure that lock levers are in the LOCK position, all control levers and pedals are in their "NEUTRAL" positions, and the seat belt is fastened correctly. Before starting the engine, make sure that the control levers, travel lever, pedals, and other control elements are not stuck and can be moved smoothly. If stuck, for example, a lever may fail to return, possibly putting the user in danger. If anything wrong is found, immediately pinpoint the cause and correct it.
- Do not start the engine by jumping the starter connections. Do not try to circumvent using the starter switch, otherwise the engine could start suddenly and the machine could move.



- Be mindful of the location of the dozer blade while travelling (the dozer must be raised). If the levers are activated with the dozer blade at the rear, the tracks will move in the opposite direction of the drive levers.

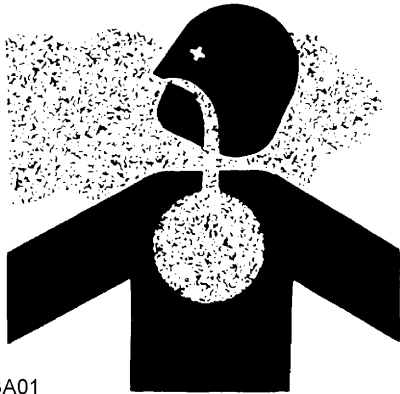


- (A) Travel direction
(B) Drive levers
(C) Front
(D) Dozer blade

3. Working the machine

- Do not operate or idle engine in a non-ventilated area. Carbon monoxide gas is colourless, odourless and deadly. If you experience the initial symptoms of low to moderate CO poisoning, which include headaches, fatigue, shortness of breath, nausea, or dizziness, stop operation and seek medical attention.

! SAFE OPERATION

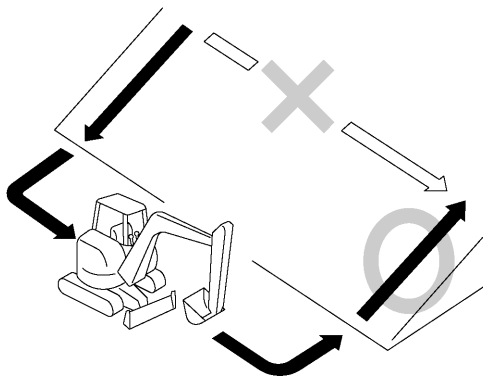


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- Keep all safety equipment and covers in place. Replace damaged or missing safety devices.
- When operating the machine, keep hands and body inside of the ROPS and OPG (top guard level I) protective envelope. Do not touch or depress the control levers or the pedals from outside the canopy while the engine is running.
- Operate the machine so that it does not tip over. Keep away from steep slopes and embankments. Do not swing the bucket downhill. If a pipe safety valve is installed on the dozer, lower the dozer when operating the attachment. Keep the bucket as low as possible while driving uphill. Turn slowly on slopes (at reduced speed). Do not place the machine near the edges of trenches and banks, as the earth can give away due to the weight of the machine. Never cross an incline horizontally or at an angle, as it can cause the machine to roll over. Approach inclines head-on to avoid the loss of control. Avoid performing any work with the machine when it is on an incline, as this could cause the machine to become unbalanced and roll over. Always take care when moving the machine on an incline.

Allowable climbing angle

27 % (15 degrees)



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- Always pay close attention to the area to which the machine is being moved.
- Keep enough distance from trench and bank edges.

- Do not change direction on steep slopes, as the machine could roll over.
- Before changing direction, be aware of people in the work area.
- Details regarding the operation of the machine can be found in a different section.
(See OPERATION OF A NEW MACHINE on page 61.)

4. Working in the vicinity of overhead power lines

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

Rated voltage	Safe distance
up to 1 kV	1.0 m
from over 1 kV and up to 110 kV	3.0 m
from over 110 kV and up to 220 kV	4.0 m
from over 220 kV and up to 380 kV or when rated voltage is unknown	5.0 m

- If safe distances cannot be maintained, the power lines must be switched off in coordination with their owner or provider and secured against turning on again.
- When approaching overhead power lines, any possible movements of the excavator must be taken into consideration.
- Being on uneven ground or on a slope can reduce the distance between the machine and the power lines.
- Wind can cause the overhead power lines to sway, thus reducing the distance between the machine and the power lines.
- Even in cases where the excavator does not come in contact with the power lines, there is still a risk of electric arcs forming between the lines and the excavator if the clearance between them is insufficient.
- In case of a contact between an excavator part and the power lines, leave the danger zone with the excavator carefully, if the excavator is still operational. If leaving the danger zone is not possible, do not leave the operator's place, warn any approaching persons of the danger and arrange to switch off the power lines.

5. Working in the vicinity of underground power lines

- Before starting the excavation work, the owner of the excavator or the person responsible for the

SAFE OPERATION

work must check if there are any underground power lines in the proposed working area.

- The owner of the machine or the person responsible for the work must ensure local, regional, and national regulations are observed.
- If there are underground power lines present, the position and routing of the power lines must be determined together with the owners or operators and the required safety measures must also be determined.
- If power lines are encountered or accidentally damaged, the operator must stop working immediately and inform the person responsible for the work.

6. Initial operation

- Before initial operation, the excavator must first be checked visually for external transit damages and checked if the shipped equipment is complete as ordered.
 - Check fluid levels as described in the “Maintenance” section.
(See MAINTENANCE on page 96.)
 - For a description of all operating features, see the relevant sections of this manual.
(See METER PANEL AND CONTROLS on page 43 and OPERATING THE EXCAVATOR on page 61.)
- If malfunctions are detected, inform your Kubota dealer immediately.

7. Object handling operations

- The lifting capacities are listed in a different section.
(See LIFTING CAPACITY on page 155.)
- The lifting attachment is to be fastened to the attachment or to other parts of the excavator in such a manner as to exclude the possibility of the lifting rope accidentally unhooking.
- The installation on the attachment or the equipment must be such as to guarantee the optimum field of vision between the operator and the guide (the person who fastens the lifting rope to the lifting attachment).
- The lifting attachment must be positioned so that the lifting rope is not deflected from its vertical direction of tension by other parts of the machine.
- The lifting attachment must be formed and positioned in such a manner as to exclude the possibility of the lifting rope accidentally slipping.
- Care must be taken when positioning the lifting attachment so that there is no risk of restriction (for example, becoming caught on something) during normal operation of the excavator or when working on any particular object.

- Load suspensions (such as hooks) may only be welded on by suitably skilled personnel. For this type of work, please contact your Kubota dealer.
- At every point of the attachment or the boom, the lifting attachment must withstand a load of 2.5 times its rated lifting load.
- A load suspension device with all the characteristics listed below is required:
 - The system must withstand a load 2.5 times its rated lifting load, regardless of the point at which that load is applied.
 - The system must be designed in such a way as to practically prevent any objects that have been lifted from falling from the lifting attachment, for example by means of a protective attachment designed for this purpose.
 - The system must not allow the lifting attachment to slip from the attachment being lifted.
- Do not lift loads that exceed the values indicated in the lifting capacity tables.
- Always observe the maximum permissible lifting capacity of the hoisting gear (such as load hooks). Lifting loads over the maximum permissible lifting capacity is not allowed.
- During lifting operations, do not swivel the boom to the left or right. Doing so could cause the entire machine to tilt. In order to avoid inadvertent actuation, lock the boom swing pedal by tilting it forward.
- During lifting operations, the driving or moving of the crawler chassis is not permitted.
- Use utmost care to avoid any risk of tipping, slipping, or other potential risks implied when lifting loads.
- The operator must do the following:
 - Pick up the load at the centre
 - Avoid sudden movements
 - Make sure the load does not swing

8. Safety for children

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

- Never assume that children will remain where you last saw them.
- Keep children out of the work area and under the watchful eye of another responsible adult.
- Be alert and shut your machine down if children enter the work area.
- Never carry children on your machine. There is no safe place for them to ride. They may fall off and be run over or interfere with your control of the machine.
- Never allow children to operate the machine even under adult supervision.

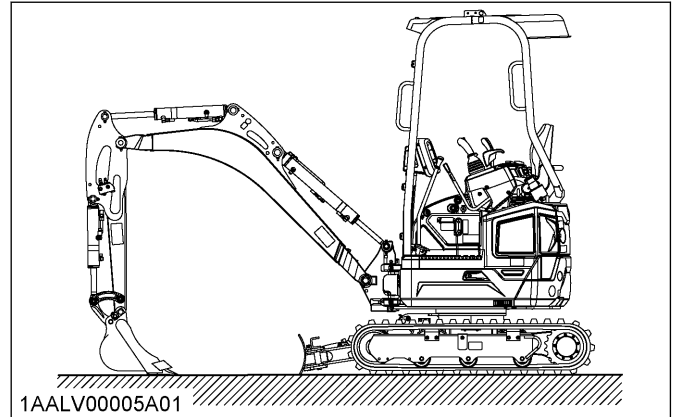
! SAFE OPERATION

- Never allow children to play on the machine or on the attachments.
- Use extra caution when backing up. Look behind and down to make sure the area is clear before moving.

9. Guiding the operator

- If the operator's working and driving area is obscured, the operator must be supported by a guide.
- The guide must be capable of performing this kind of work.
- Before starting work, the guide and the operator must agree on the necessary signals.
- The guide's position must be clearly visible to the operator.
- The operator must stop the excavator immediately if eye contact with the guide is interrupted.
- As a rule, either the excavator or the guide may move, never both at once.

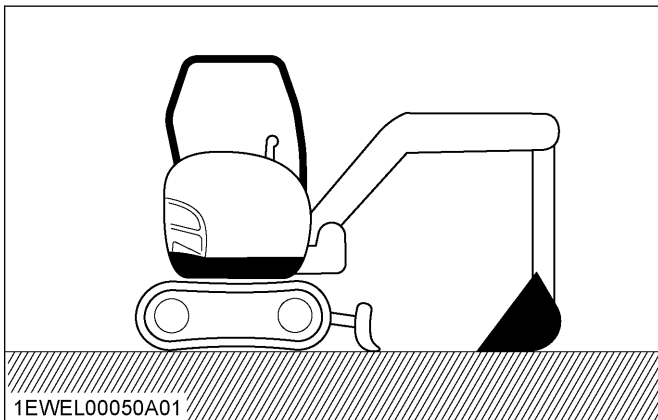
- Check the excavator for external damage and for leaks. Any damage or leak must be repaired before the next start.
- In case of a heavy accumulation of dirt in the area of the tracks and the hinges on the front attachments, clean the excavator.
(See PRECAUTIONS WHEN WASHING THE MACHINE on page 96.)



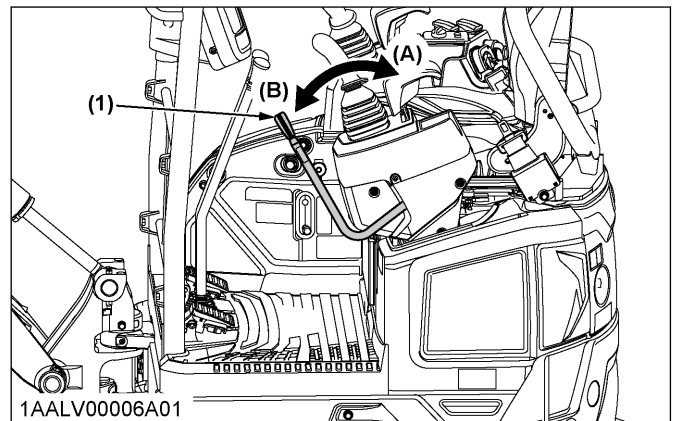
AFTER OPERATION

Before leaving the machine:

- Park the machine on a firm, flat and level surface. If this is not possible, put the bucket on the ground and place all control levers in their "NEUTRAL" positions, then brace the tracks with chocks. Park the machine in such a way that it cannot move and is secured against unauthorised use. Do not park the machine anywhere there are combustible materials such as dried grass or straw.



- Lower the attachments and the dozer blade to the ground.
- Stop the engine.
- Release the pressure from the hydraulic system.
- Lock all control levers.
- Remove the key.
- Refuel the excavator if necessary.
(See Checking the fuel level on page 112.)
- Close and lock all covers.



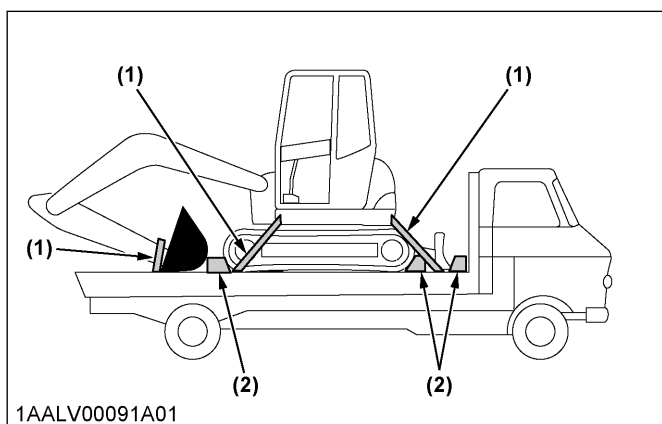
(1) Pilot control lock lever
(A) LOCK
(B) UNLOCK

SAFE LOADING AND TRANSPORT OF THE MACHINE

- Observe all regulations concerning the transport of machines on public roads.
- The transport vehicle must be designed for the load of the excavator.
- Use adequately long and robust ramps when loading on the machine. The ramps must be wider than the tracks of the excavator and have footboards on the sides.
(See TRANSPORTING ON A VEHICLE on page 90.)
- Do not change the running direction. To avoid tipping over, do not try to swing the attachment crosswise to the loading ramps.
- A guide is required for driving the excavator onto and off of the transport vehicle.
 - The guide is responsible for the safe loading.

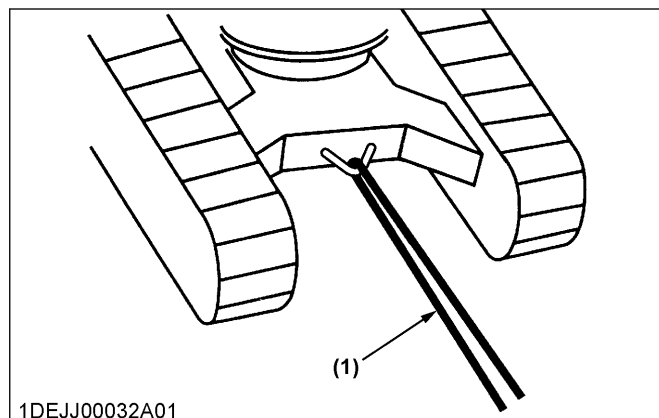
! SAFE OPERATION

- The excavator may only be moved on instruction of the guide.
- The operator and guide must always maintain eye contact.
- If this is not possible, the operator must stop the excavator immediately.
- Lower the attachment on the loading bed and release the pressure from the hydraulic system. Block the tracks with blocks and chain down the machine. After loading the machine on the vehicle, securely chain down the undercarriage of the machine. Only use approved and labelled lashing material, such as lashing straps or sling chains that are suited for the machine's weight. The operator of the transport vehicle is responsible for securely fastening the excavator onto the vehicle.



- (1) Chain
(2) Block

- Support the loading area at the rear of the transport vehicle with sufficiently dimensioned supports.
- When driving with an excavator loaded, always keep a clearance of 1.0 m to overhead power lines. Observe the applicable traffic rules and regulations.
- Avoid abrupt braking of the vehicle with the machine loaded. Sudden braking causes the machine to move and may cause a serious accident.
- If the machine is to tow another machine, make sure the load is smaller than the strength of the hook, tow chain, or cable.



- (1) Steel cable

Maximum drawbar pull at coupling hook	27.0 kN
Maximum vertical load at coupling hook	4.7 kN

The above values are for U18-5.

- Do not use hooks on the roof of canopy for lifting the machine.

SAFE RECOVERY OF THE MACHINE

- For recovery of the excavator, a towing vehicle of at least the same weight class as the excavator must be used.
- A tow bar must be used for the recovery. If a tow rope is used, an additional vehicle must also be attached to brake the excavator. The tow bar or tow rope must be suitable for the recovery of the excavator with regard to the towed load. Do not use damaged recovery aids.
- Do not step into the danger zone between the vehicles during the recovery procedure. If a tow rope is used, keep a distance of at least 1.5 times the length of the rope.
- Use the towing eye on the track frame for the recovery.
- The above safety rules also apply if the excavator is used as the towing or recovery vehicle.
- Observe the admissible values for the towed load and the vertical load during recovery.
(See SAFE LOADING AND TRANSPORT OF THE MACHINE on page 19.)

MAINTENANCE

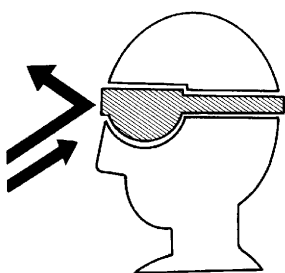
1. Precautions when performing checks or maintenance

Before doing maintenance work on the machine, park the machine on a firm, flat and level surface, lower the attachments to the ground, stop the engine, release pressure trapped in the hydraulic system, and lock all control levers. When dismantling hydraulic parts, make

SAFE OPERATION

sure that the hydraulic oil has cooled down sufficiently to avoid burns. Start maintenance work carefully, such as loosening a plug slowly so that oil will not squirt out.

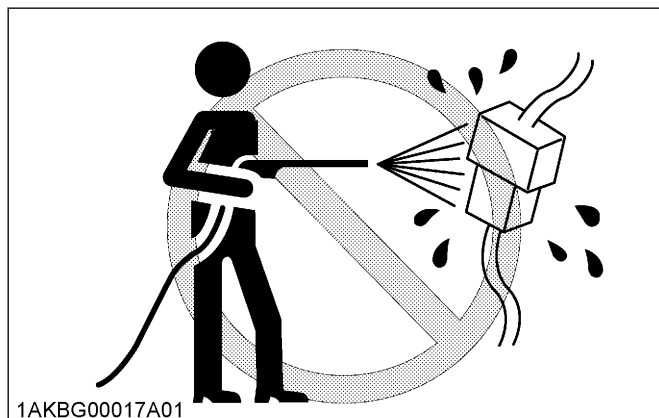
- Before doing work on the engine, the exhaust system, the radiator and the hydraulics, let the machine cool down sufficiently.
- Always turn off the engine when filling the fuel tank. Avoid spilling and over-filling of fuel.
- Keep a first aid box and a fire extinguisher handy at all times.
- Use eye protection and a face mask to protect the eyes and respiratory system against dust and other foreign particles.



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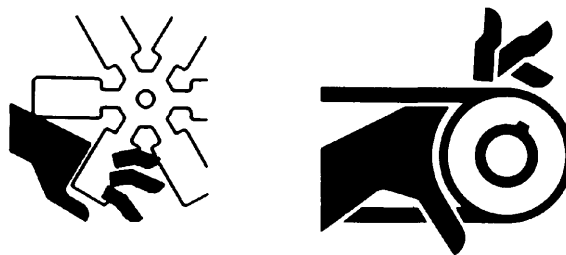
- Inspect ROPS/OPG (top guard level I) for damage and if damage is found contact your Kubota dealer for repairs.
- Kubota does not use components which contain asbestos and recommends against the use of such components.
- To avoid hazardous voltage, turn the starter switch to the **[STOP]** position if it is necessary to check to repair the computer, harness or connectors.
- Prohibit unauthorised persons from entering the work area to prevent injury caused by debris flying off of machine parts during grinding, welding, using a hammer, or other tasks.
- Make sure that the work area is clear and safe. Work on a firm, level surface with adequate lighting. Work in well-ventilated area if you work indoors. Make sure that the area is free from any potentially dangerous conditions such as obstacles, slippery surfaces, and so on.
- Make sure that the machine is clean and free of debris.
 - Always remove any debris from the machine and clean it before performing maintenance or repair work.
 - Before washing or cleaning the machine using water and a commercial cleaning agent, stop engine and make sure that all of the electrical parts and devices are covered. Any water seepage into the electrical wiring on the machine can cause a short circuit or cause the controls to malfunction. Never use water or

steam to clean any of the electrical parts and devices, such as the battery, the sensors, or the connectors.



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- Always make sure that the engine is stopped before performing any maintenance or repairs. Otherwise, clothing, tools, hands, or other parts of the body can get caught in moving parts of the machine, causing personal injury or death.



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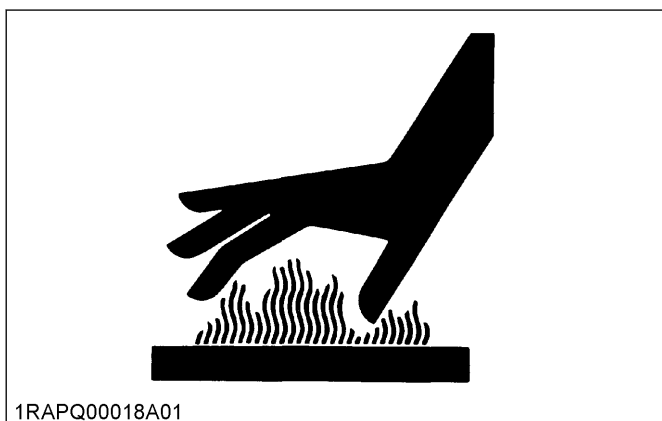
- Do not lubricate or mechanically adjust while the engine is running, even if the machine is stationary.
- Exercise caution when refuelling:
 - Never smoke cigarettes or permit the use of fire while refuelling or in the vicinity of refuelling.
 - Always make sure that the engine is off before removing the fuel cap to refuel the tank. Avoid getting fuel on any hot components.
 - Keep control of the fuel filler nozzle while refuelling.
 - Never overfill the tank with fuel. Leave room for thermal expansion.
 - Always remove any excess or spilled fuel immediately.
 - Always make sure that the fuel-tank-cap is securely reinstalled. Replace the fuel-tank-cap only with a manufacturer-approved cap whenever it becomes damaged. Use of the wrong type of cap may not allow for proper venting, causing pressure in the tank to build up.
 - Never use fuel to clean the machine.

SAFE OPERATION

- Always use the correct type of fuel for the machine and the temperature in which it is being operated.
- Always use a properly earthed fuelling system.



- Use caution when working around hot and pressurised components.
 - Always allow the engine to cool sufficiently before performing any maintenance, inspection, or repairs.
 - Never touch any parts such as the engine, the muffler, the radiator, the hydraulic lines, the sliding parts, and so on as they may be very hot immediately after the machine has been running and can cause burning. Allow the engine, the muffler, the radiator, the hydraulic lines, the sliding parts, and so on to cool sufficiently before touching them.
 - Always use sufficient care whenever removing the caps and plugs on the coolant, oil, and hydraulic fluid as they are hot and pressurised and can cause burning and injury from spraying of hot fluid.



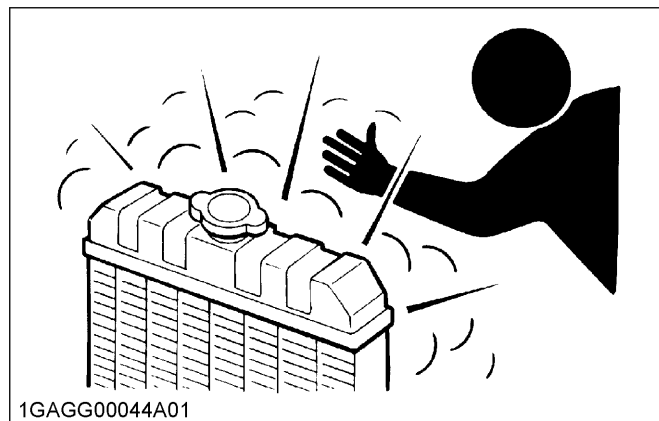
- Always carefully check the machine after performing any maintenance or repairs. Confirm that no oil, water, and so on is leaking from any parts that had been serviced by carefully inspecting the parts. Gradually speed up the engine from a low speed to higher speed to check operation.

2. Handling the battery

- Smoking is prohibited while refuelling or handling the battery. Keep sparks and fire away from the fuel tank and battery. Flammable gases escape from the battery, especially during charging.
- Do not use or charge a 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 sparks from an accidental short circuit, always disconnect the earthing cable (-) of the battery first and reconnect it last.
- Read and follow the instructions when starting with an auxiliary battery.
(See **STARTING WITH AN AUXILIARY BATTERY** on page 59.)

3. Handling the radiator

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



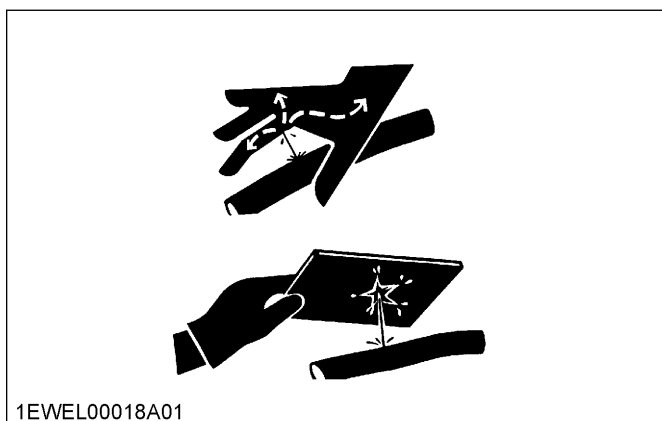
4. Handling the hydraulic components

- Make sure that pressure from all systems is sufficiently released before performing any maintenance or repairs. Oil or other fluids could be released when caps or filters are removed before the pressure has been stabilised in the hydraulic system.
 - Gradually release internal pressure build-up by standing out of the line of any possible spray and slowly removing plugs, screws, or disconnect hoses.

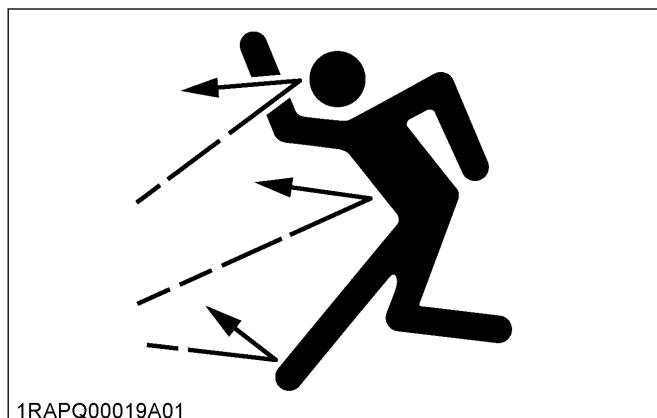
! SAFE OPERATION

- Leaking hydraulic fluid has enough pressure to penetrate the skin and cause serious injuries. Leakages from pin holes can be totally invisible. Do not use hands for checking for leaks. Always use a piece of wood or cardboard. It is strongly recommended that you use a face shield or eye protection.

In case of injuries caused by leaking hydraulic fluid, contact a doctor immediately. This fluid can cause gangrene or serious allergic reactions.

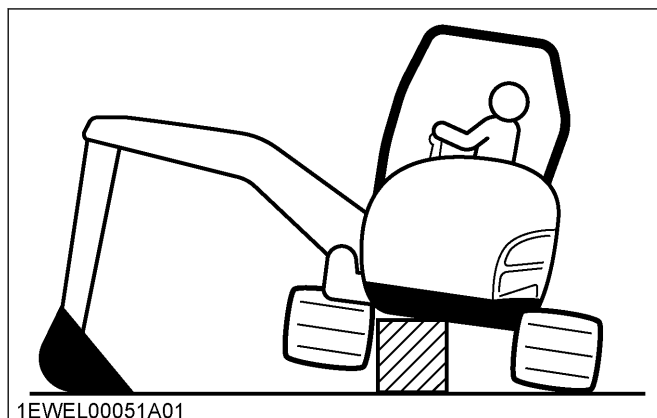


- Do not dismantle the spring of the track tensioner. If dismantling is necessary, contact your Kubota dealer. The assembly must be done according to the Kubota work shop manual (WSM) for the product involved.
- Always use care whenever using grease that is pressurised.
 - Always follow the proper procedure to adjust tension. Grease in the track adjuster is pressurised and improper release can cause the discharge valve to fly off, causing personal injury or death.
 - Always loosen the grease fitting slowly.
 - Avoid standing in front of, or putting any parts of the body in the line of the grease fitting.
 - If no grease is released when the grease fitting is loosened, the machine has a malfunction. Do not perform repairs of any kind yourself and contact the local dealer for repairs. If no grease is released when the grease fitting is loosened, any operation of the machine can be very dangerous.



5. Precautions when using the front attachments to lift the machine

- Securely support the machine with stands or suitable blocking before working underneath. For your safety, do not work under any hydraulically supported devices. They can settle, suddenly leak down, or be accidentally lowered.



- When lifting the machine itself with an attachment, place a safety block or safety post to prevent the machine from rolling over. Keep the pilot control lock lever in the LOCK position.

6. Fire prevention

- The machine and some attachments have components that are at high temperatures under normal operating conditions. The primary source of high temperatures is the engine and exhaust system. The electrical system, if damaged or incorrectly maintained, can be a source of arcing or sparks.

The following fire prevention guidelines will help to keep your equipment up and running efficiently and keep the risk of fire to a minimum.

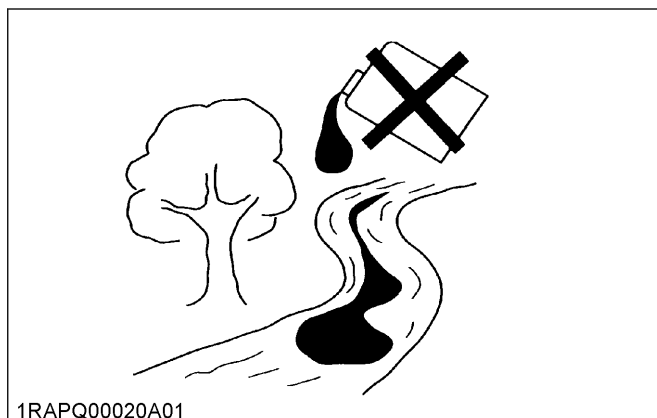
- Blow off all accumulated debris near hot engine exhaust components such as the turbocharger, exhaust manifold, exhaust pipes and muffler.

SAFE OPERATION

Do this more frequently when working in severe conditions.

- Clean out all accumulated flammable debris (such as leaves, straw, pine needles, branches, bark, small wood chips) and any other combustible materials from inside the machine belly pans or lower unit structures as well as from the area in proximity to the engine.
- After use and pressure-washing, make sure there is nothing flammable near the exhaust pipe. Grass, twigs or other organic debris under the bonnet may cause fire.
- Inspect all fuel lines and hydraulic hoses for wear or for deterioration. Replace them immediately if they begin to leak.
- Examine electrical wiring and connectors frequently for damage. Repair any wires that are loose or frayed before operating the machine. Clean all electrical connections and tighten them as necessary.
- Inspect the exhaust system daily for any signs of leakage. Check for broken pipes and muffler and also for loose or missing bolts, nuts and clamps. If any exhaust leaks or fractured parts are found, repairs must be completed prior to operation.
- Always keep a multipurpose fire extinguisher on or near the machine. Be familiar with the operation of the fire extinguisher.
- Do not weld on pipes or tanks containing flammable liquids. Do not gas cut pipes or tanks containing flammable liquids. Before doing any such work, carefully drain any flammable fluids. Then clean pipes and tanks thoroughly with a non-flammable solvent before welding or cutting.
- To prevent personal injury or death, use explosion-proof lighting when working on, inspecting, or using fuel, oil, coolant, battery fluid, and so on.

If you do not use the explosion-proof lighting or if it breaks, it can ignite and cause fire, injury, or death.



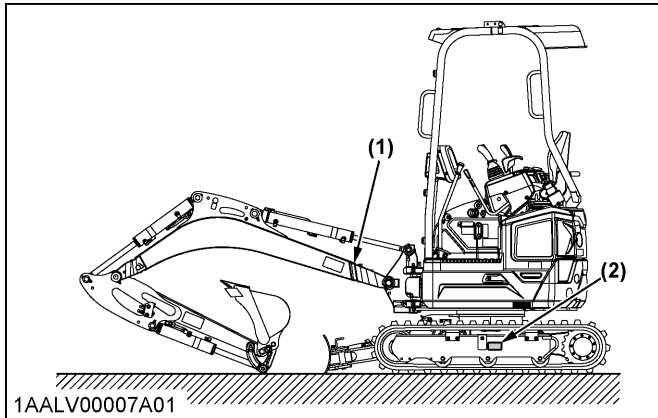
WASTE MATERIAL

- Always make sure that any material and waste products from the repair and maintenance of the machine are collected into proper containers using a funnel, or other device.

Dispose of waste material properly to avoid pollution and contamination of the environment.

- Consult local regulations and codes when disposing of oil, fuel, engine coolant, refrigerant, solvents, filters, batteries, and any other potentially harmful and hazardous material or substance.

SAFETY LABELS

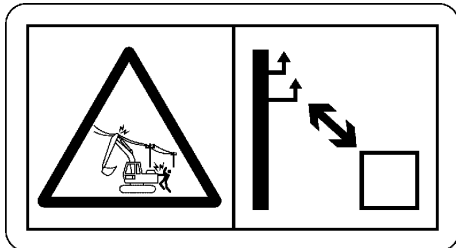


(1) Part No. RB456-5788-0

Danger due to electric current.

When working in the vicinity of overhead power lines without a sufficient safe distance between them and the machine, the electricity can jump onto the machine.

- Maintain a safe distance from overhead power lines.

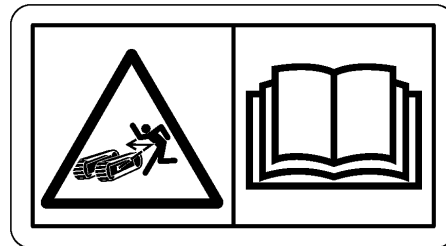


(2) Part No. RB456-5795-0

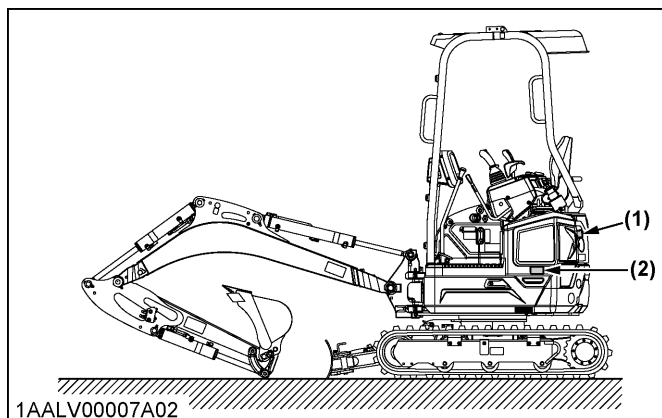
Danger of injury from components under pressure.

In the case of improper operating of the crawler tensioner, grease can splash out or the grease fitting can fly off under high pressure and lead to injury.

- Before working on the crawler tensioner, read the operator's manual and take the correct measures.



! SAFE OPERATION

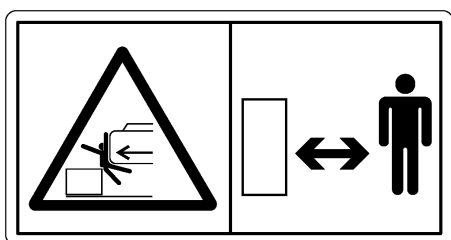


(1) Part No. RA028-5728-0

Mortal danger by crushing.

Low safe distance to the excavator and to obstacles can prevent an emergency exit from the danger zone. Crushing by excavator results in severe injury or death.

- Do not enter the manoeuvring area.
- Ensure safe distance to obstacles and sufficient freedom of movement.

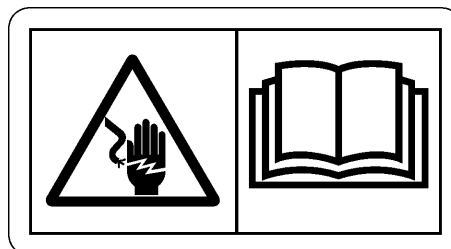


(2) Part No. RB456-5786-0

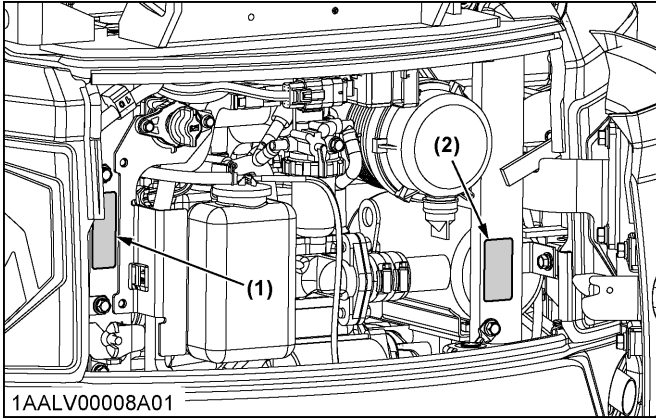
Danger due to electric current.

Excess voltage can cause injuries while working on the electrical system.

- Before working on the electrical system, disconnect it from the power supply.
- Wear personal protective equipment.
- Before working on the electrical system, read the operator's manual.



SAFE OPERATION



(1) Part No. RA269-5737-0



Danger of crushing from rotating components.

The rotary fan can cut into the extremities.

The rotary belt drive can draw in limbs and crush them.

- Do not reach into rotating components.
- When performing inspections and maintenance, completely stop the rotation.

(2) Part No. RD579-5738-0

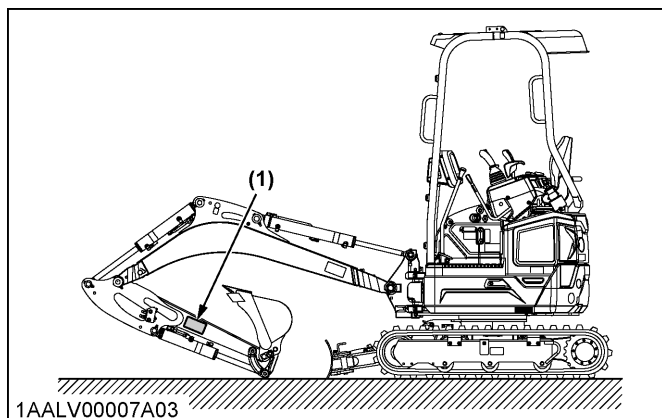


Risk of burns from hot components.

Touching surfaces such as the muffler or other hot sections of the machine during operation or after stopping can cause burns.

- Do not touch hot parts of the machine, such as exhaust muffler.

! SAFE OPERATION

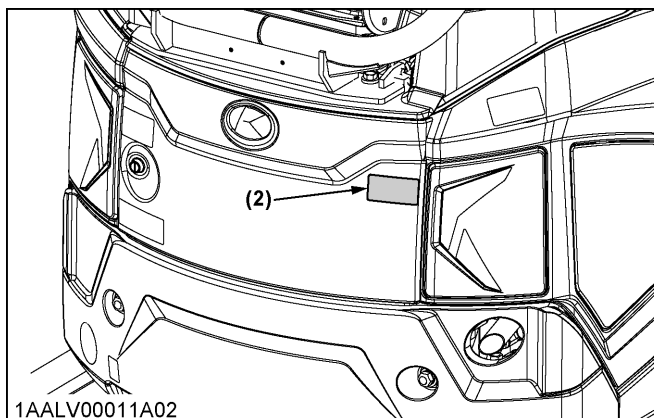
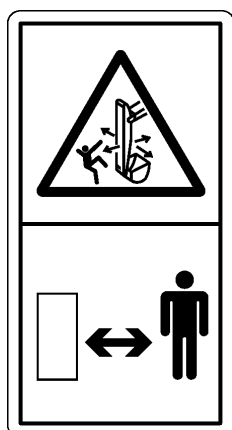


(1) Part No. RB456-5789-0

Danger in the danger zone of the front attachments.

Standing in the danger zone while the front attachments are moving suddenly can lead to severe injury or even death.

- Do not stand in the danger zone of the front attachments.
- Ensure safe distance to obstacles and sufficient freedom of movement.

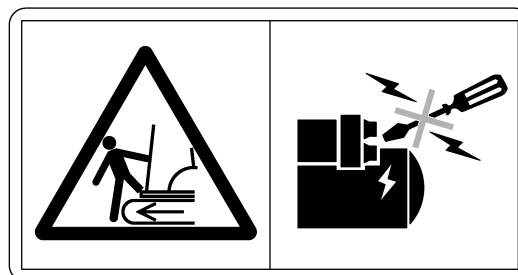


(2) Part No. RA269-5739-0

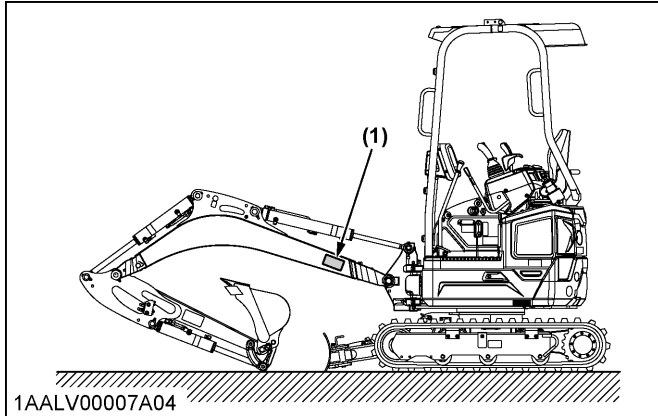
Mortal danger from moving excavator.

When staying in the danger zone and in the case of a suddenly starting excavator, there is the danger of being run over by the excavator.

- Only start the machine from the operator's seat.
- Do not start the machine by bypassing the starter poles.



! SAFE OPERATION

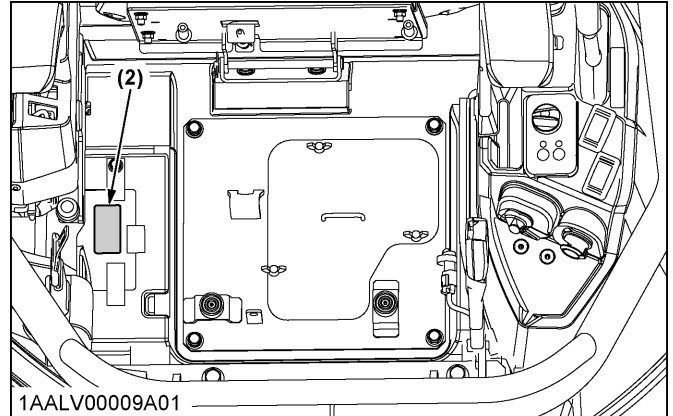
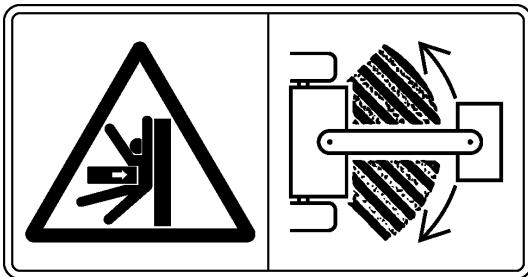


(1) Part No. RB456-5722-0

Mortal danger by crushing.

A low safe distance to the boom can impede an emergency exit from the danger zone. Being crushed by the boom can result in severe injury or death.

- Do not stay in the swing area of the boom.
- Ensure safe distance to obstacles and sufficient freedom of movement.



(2) Part No. RD579-5754-0

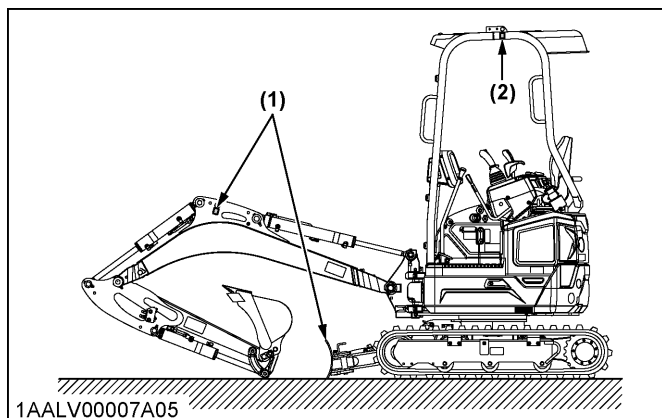
Risk of scalding from hot coolant.

The coolant may leak suddenly when opening the cap of a hot radiator, posing a risk of scalding your face and hands.

- Do not open the hot radiator.
- Allow the machine to cool down before working on the cooling circuit.

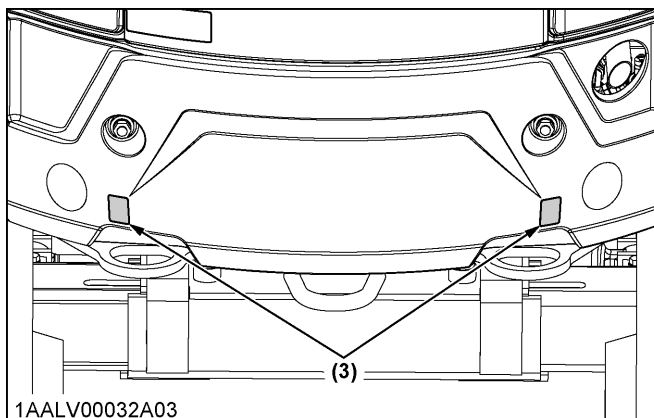
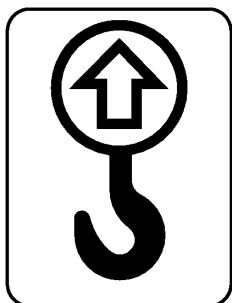


SAFE OPERATION



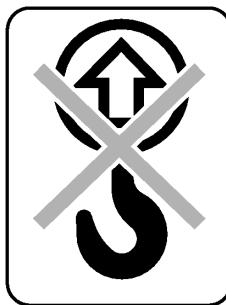
(1) Part No. RA269-5795-0

(Both sides)
Lifting point



(2) Part No. RA269-5796-0

(Both sides)
Not a lifting point. Do not use the hook for lifting.

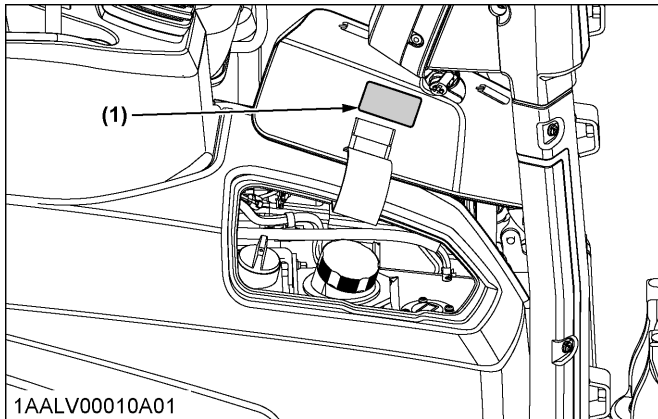


(3) Part No. RD809-5733-0

Tie-down eye. Only use to lash down the machine.



SAFE OPERATION

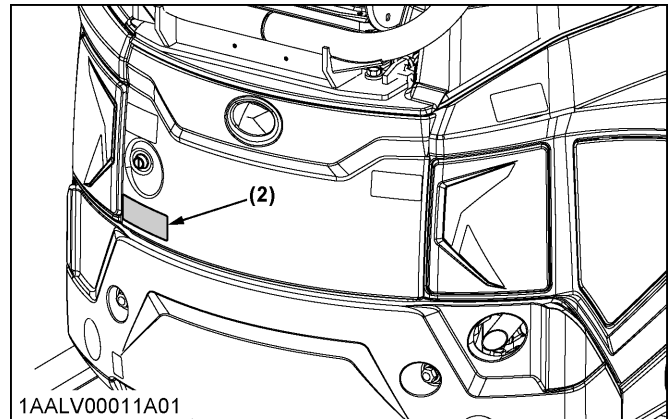
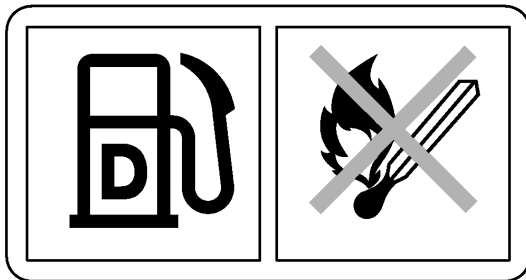


(1) Part No. RD579-5736-0

Risk of fire from inflammable diesel fuel.

Inflammatory fumes can occur in the fuel tank, which may go up in flames as a result of an ignition source.

- Do not use open flames in the vicinity of the fuel tank.

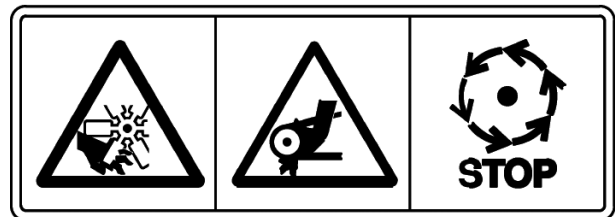


(2) Part No. RD458-5738-0

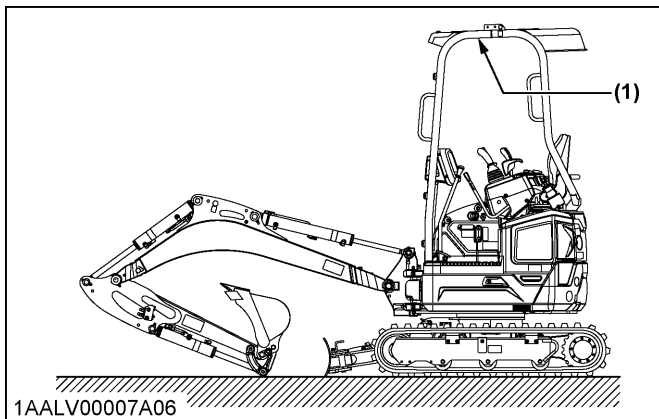
Risk of being crushed or cut by rotating components.

The rotating fan can cut into limbs and the rotary belt drive can pull in limbs and crush them.

- Switch off the engine before working in the engine compartment.
- Make sure that the engine and all engine components have come to a complete standstill.
- Do not reach into rotating components.



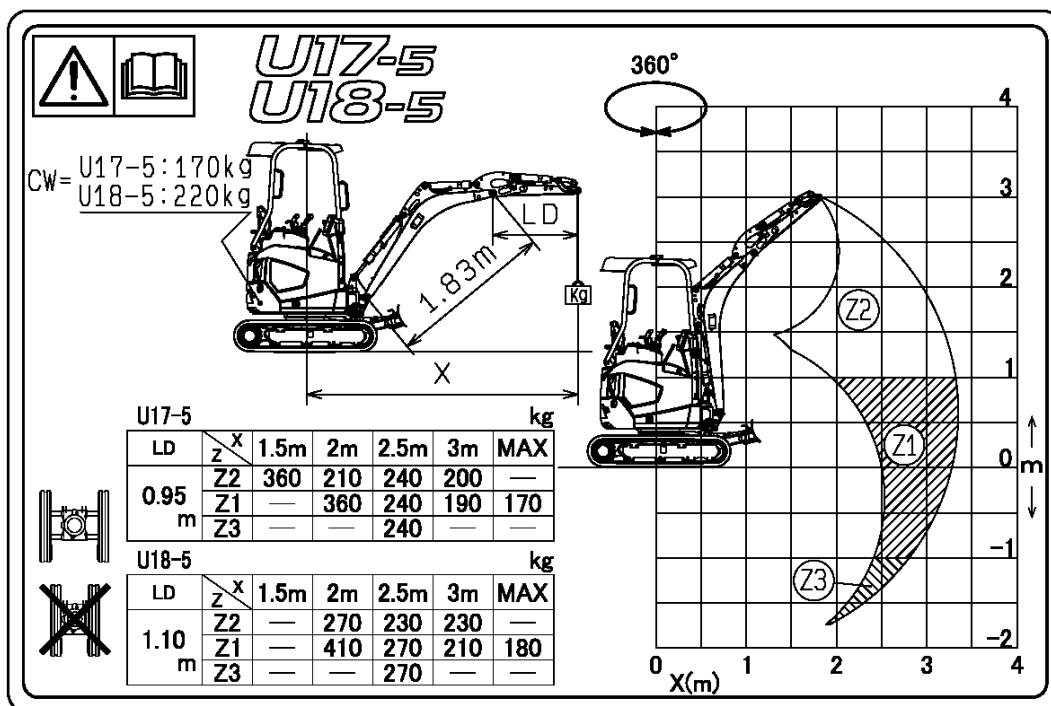
SAFE OPERATION

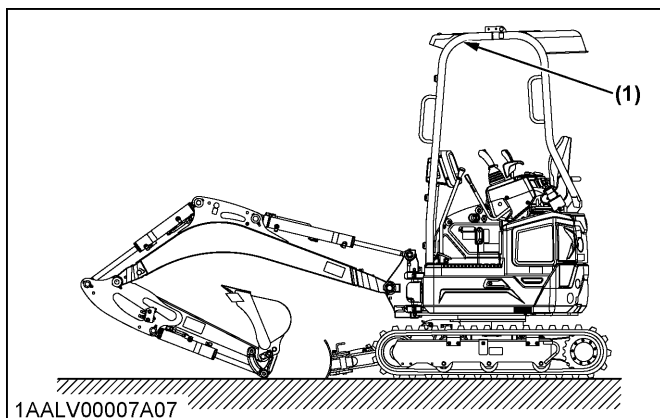


(1) Part No. RA269-5748-0

Maximum lifting capacity when rotating up to 360°

[U17-5, U18-5 (Canopy)]

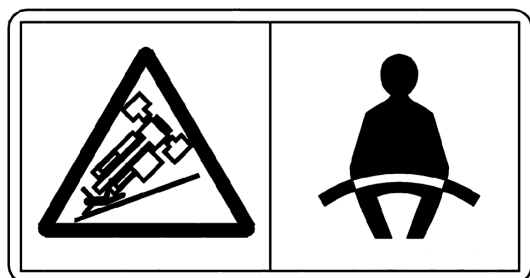




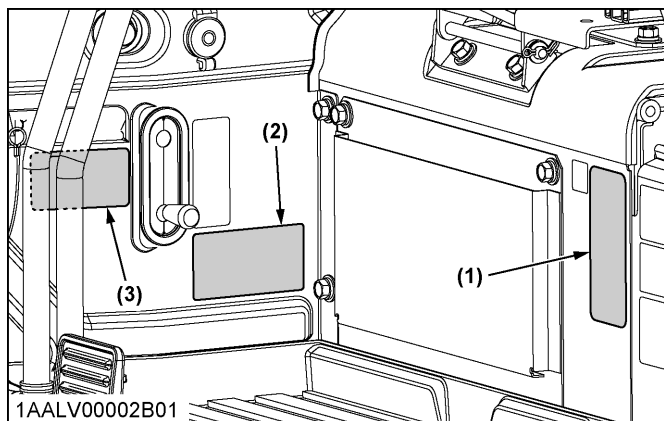
(1) Part No. RD579-5743-0

Risk of personal injury.

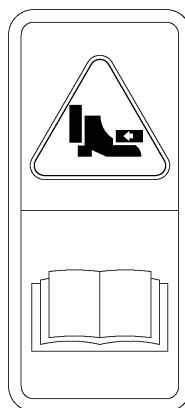
- Always buckle up.



! SAFE OPERATION



(1) Part No. RA118-5776-0



Risk of being crushed by the boom.

When lifting and swinging the boom, there is a danger of getting caught between the boom and the protective structure or swivel frame.

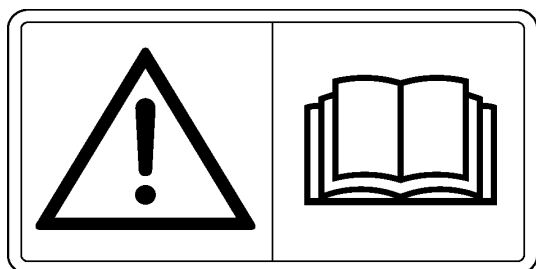
- Do not step beyond the front part of the boom swing pedal.

(2) Part No. 69198-5784-0

Risk of accidents due to incorrect operation.

Improper operating can lead to damage to the excavator, to serious accidents with a high risk of injury and death as a result.

- Please read the operator's manual before commissioning.



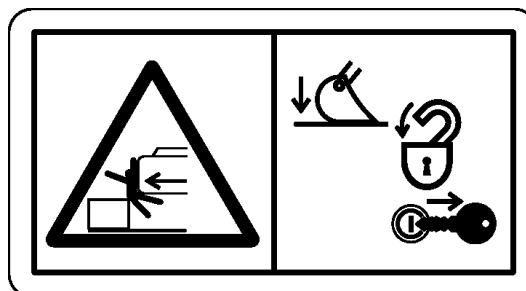
(3) Part No. RB456-5783-0

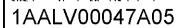
Mortal danger by crushing.

Standing in the danger zone while the swivel frame is rotating can lead to severe injuries or even death by crushing.

If you are required to stand in the working area, turn off the machine and secure it against restarting.

- Lower and lock front attachments.
- Pull out key.





火気禁止 メガネ着用 こども禁止 硫酸注意 説明書熟読 爆発注意
⚠ 危険 DANGER KEEP SPARKS, FLAME, CIGARETTES AWAY.
 ÉLOIGNEZ LES ÉTINCELLES, FLAMME, CIGARETTES.

20HR 42Ah CCA 370A

<Manufacturer>  GS Yuasa International Ltd.
Inobanba-cho 1, 601-8520 KYOTO, JAPAN
<https://www.gs-yuasa.com/en/eubr/>

GS YÚASA

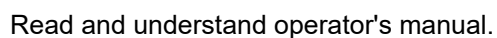
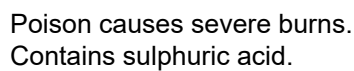
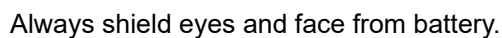
CE

公称电压12V

LB990[®]YM

- 水素ガス発生、取扱いを誤ると引火爆発の恐れあり
- 工具等でショートやスパークをさせない●充電は風通しのよい所で行う
- ブースターケーブルの使用は取扱説明書に準じ
- バッテリー液(硫酸)で失明ややけどとの恐れあり
- 液がつかいたらすぐに多量の水で洗い、目の場合は医師の治療を受ける
- 爆発の恐れあり、液面はLOWER以下で使用しない
- 液漏れ、の恐れあり、UPPER以上に補水しない

B24(JIS)



SAFE OPERATION

1. 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 Kubota dealer.
- If a component with safety label(s) affixed is replaced with new part, make sure new label(s) is (are) attached in the same location(s) as the replaced component.
- Mount new safety labels by applying on a clean dry surface and pressing any bubbles to outside edge.

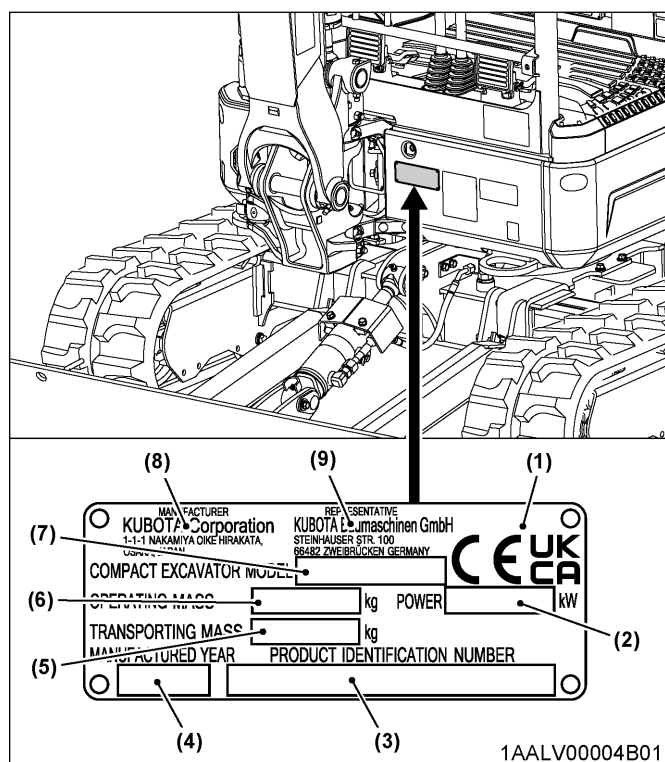
DEALER SERVICE

Your Kubota dealer is always ready to help so that your machine offers the best performance. After having carefully read these instructions, you will realise that much of the routine maintenance can be done by yourself. For service, contact the Kubota dealer shop from which you purchased your product, or your local Kubota dealer. When ordering parts from your Kubota dealer, always mention the product identification number of the machine and the serial number of the engine.

Note these numbers right away in the space provided on the back of the front cover of this manual.

MACHINE IDENTIFICATION

The type plate is located on the front of the swivel frame. The following information is stamped in the plate.

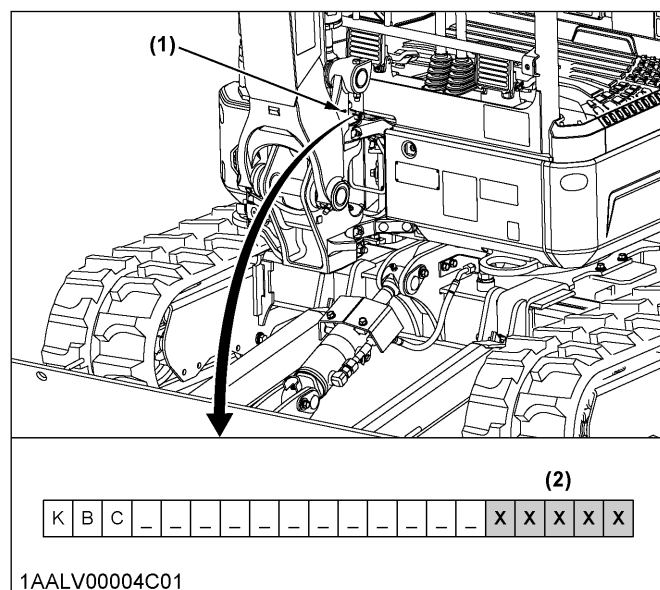


- (1) Conformity marking
- (2) Engine performance
- (3) Product identification number
- (4) Year of construction
- (5) Transport weight
- (6) Operating weight
- (7) Model name
- (8) Manufacturer
- (9) Representative

PRODUCT IDENTIFICATION NUMBER

The machine's product identification number is stamped on the swivel frame near the swing bracket. The serial number can be determined based on the product identification number.

The serial number consists of the last 5 digits of the product identification number.



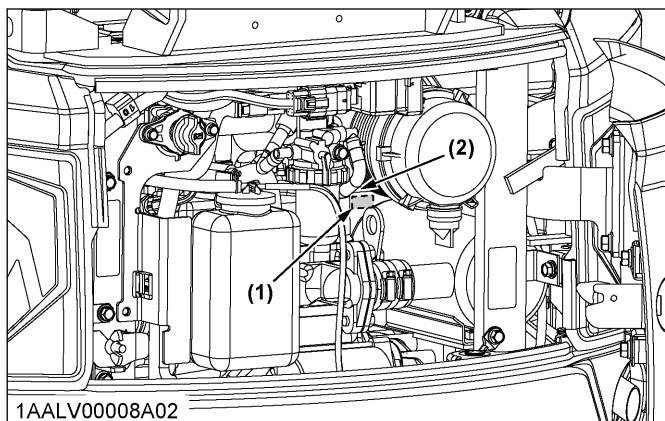
(1) Product identification number

(2) Serial number

ENGINE IDENTIFICATION

The engine can be identified based on the engine serial number, and the numbers of the engine family and the engine type.

The numbers are affixed to the engine's valve cover.



- (1) Engine serial number
(2) Engine family and type

SPARE PARTS

When ordering spare parts, always make sure to provide the following information:

- The machine's product identification number and year of construction. This information can be found on the type plate.
(See MACHINE IDENTIFICATION on page 37.)
- Designation and/or type of spare part (refer to original Kubota spare parts catalogue)
- Part number of the spare part (refer to the original Kubota spare parts catalogue)
- Quantity
- Customer number

For written orders, provide this information exactly, and for telephone orders, have this information ready before calling.

Place your order with your local Kubota dealer.

SCRAPPING THE PRODUCT AND ITS PROCEDURE

To put the product out of service, follow the local rules and regulations of the country or territory where you reside. If you have questions, contact your local Kubota dealer.

ANTI-THEFT SYSTEM

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

(See ANTI-THEFT SYSTEM on page 86.)

This device reduces the risk of theft, but does not guarantee that the machine will not be stolen.

TECHNICAL DATA

				Kubota excavator	
Model name				U17-5	U18-5
Type				Canopy	
				Rubber crawler	
				Arm 950 mm	Arm 1100 mm
Machine weight*1			kg	1705	1760
Operating weight*2			kg	1780	1835
Bucket	Capacity (CECE)		m ³	0.035	
	Capacity (ISO 7451)		m ³	0.041	
	Width	With teeth	mm	472	
		Without teeth	mm	452	
Engine	Type			Water cooled diesel engine with 3 cylinders	
	Model name			D902-E4-BH-6EU	
	Total displacement		cm ³	898	
	Engine performance ISO 14396		kW	11.8	
	Rated speed		1/min	2300	
	CO ₂ emission*3 (Engine family HKBXL.898KCB)		g/kWh	1047.4	
	Emission stage in engine type Approval according (EU) 2016/1628			Stage V	
Performance	Swivel speed		1/min	9.4	
	Vehicle speed	Travel speed	km/h	4.4	
		Low speed	km/h	2.3	
	Ground pressure ISO 16754		kPa (kgf/cm ²)	28.1 (0.29)	28.9 (0.30)
	Max. climbing angle		% (degrees)	58 (30)*4*5*6	
	Max. lateral sway		% (degrees)	18 (10)	
Dozer	Width & height		mm	990/1300 × 260	
Boom swing angle	Left		rad (degrees)	1.10 (63)	
	Right		rad (degrees)	1.01 (58)	

(Continued)

Auxiliary port connector	Max. flow rate (theoretical)		L/min	AUX1: 27.7 AUX2: 10.4
	Max. pressure		MPa (bar)	AUX1: 21.6 (220) AUX2: 18.6 (190)
Fuel tank capacity			L	20
Noise level	LpA		dB (A)	79
	LwA (2000/14/EC) / (S.I. 2001:1701))		dB (A)	93
Vibration*7	Hand arm system (ISO 5349-2:2001)	Digging	m/s ² RMS	< 2.5
		Levelling	m/s ² RMS	< 2.5
		Driving	m/s ² RMS	< 2.5
		Idling	m/s ² RMS	< 2.5
	Whole body (ISO 2631-1:1997)	Digging	m/s ² RMS	< 0.5
		Levelling	m/s ² RMS	< 0.5
		Driving	m/s ² RMS	0.56
		Idling	m/s ² RMS	< 0.5
Seat belt			Compliant with ISO 6683	

*1 With the original Kubota bucket (34 kg), ready for operation

*2 Machine weight and the operator weight (75 kg)

*3 The CO₂ measurement is based on a check carried out on a representative from the engine family, using a designated check cycle under laboratory conditions. The specifications do not implicate or guarantee the performance of a given engine.

*4 Firm compacted soil.

*5 Operators must exercise extra caution and follow the operator's manual instructions.

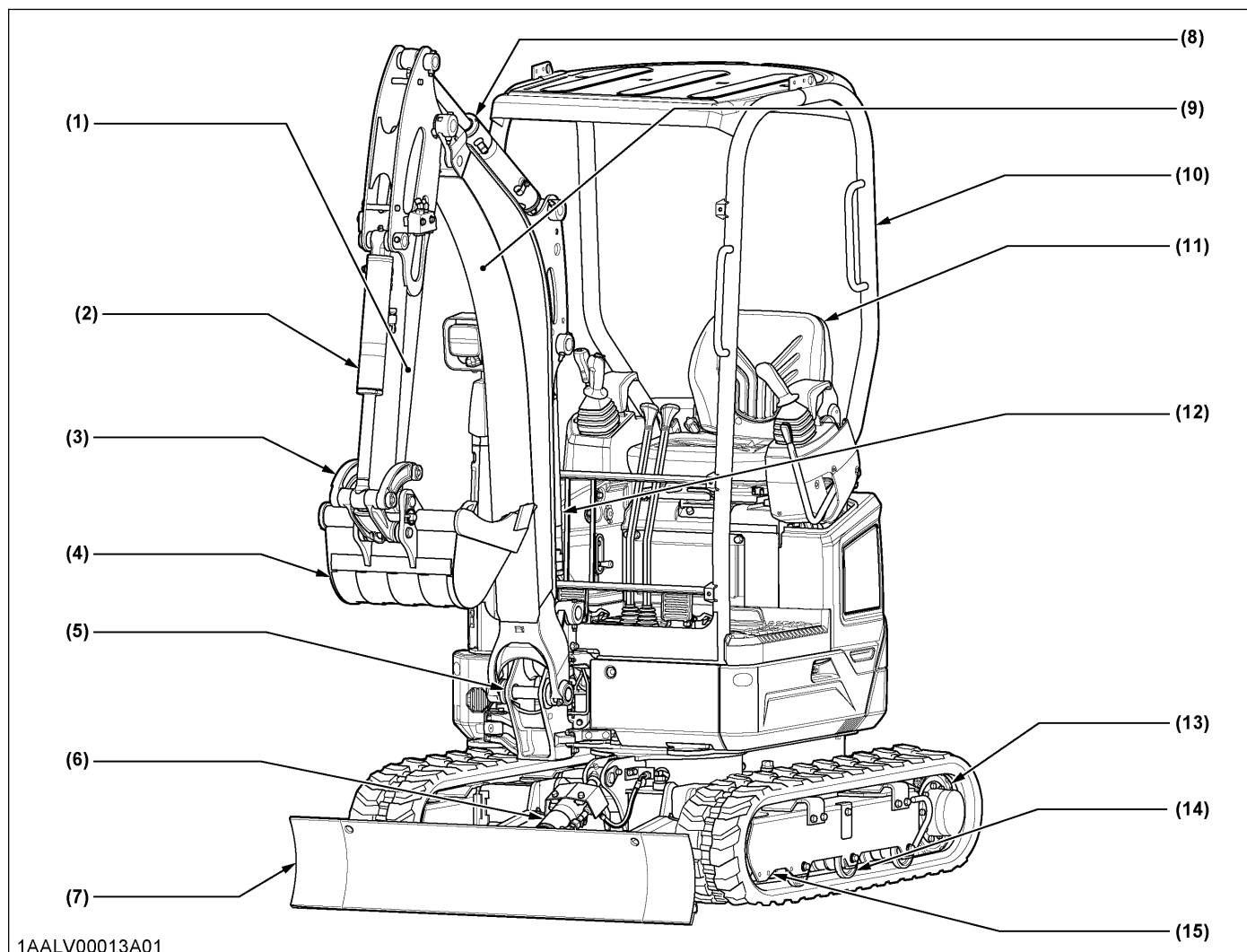
*6 Worse conditions or heavier attachments will decrease climbing angle.

*7 These values are measured under specific conditions at maximum engine speed, and can deviate depending on the operating situation.

NOTE :

- The technical data is just the capability values of the machine. Operate safely as described in this manual. (See SAFE OPERATION on page 13.)

EXCAVATOR PARTS



- | | | | |
|---------------------|--------------------|--------------------------|---------------------|
| (1) Arm | (6) Dozer cylinder | (10) Canopy | (13) Drive sprocket |
| (2) Bucket cylinder | (7) Dozer | (ROPs and OPG [top guard | (14) Track roller |
| (3) Bucket link | (8) Arm cylinder | level I]) | (15) Front idler |
| (4) Bucket | (9) Boom | (11) Operator's seat | |
| (5) Swing bracket | | (12) Boom cylinder | |

STANDARD EQUIPMENT

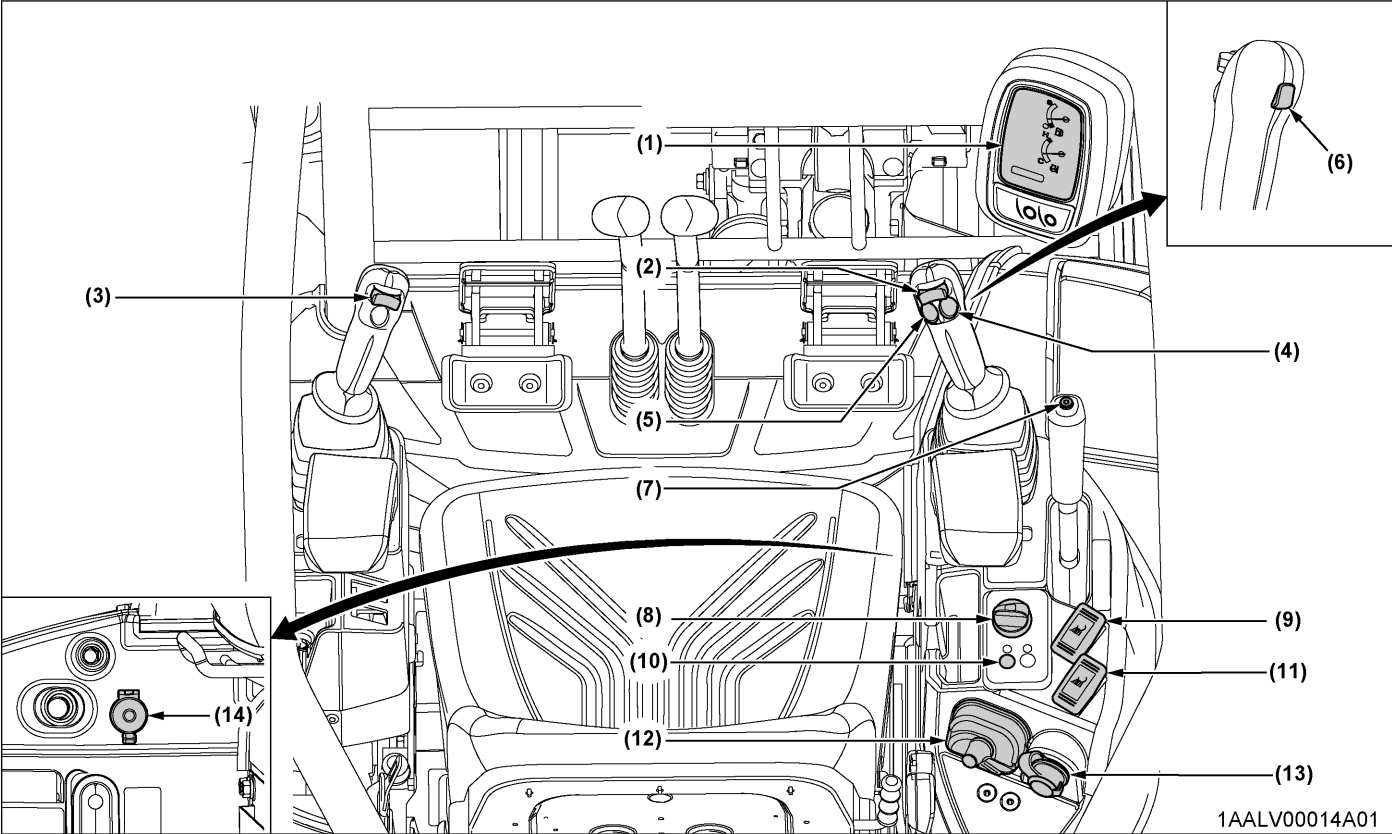
This model includes the following standard equipment:

- Operator's manual
- Spare parts catalogue
- Protective cover
- Filter wrench
- Grease gun
- Spare fuse (50 A)
- Guarantee

The spare parts catalogue and the guarantee can be kept together with the operator's manual.
(See WHERE TO STORE THE OPERATOR'S MANUAL on page 8.)

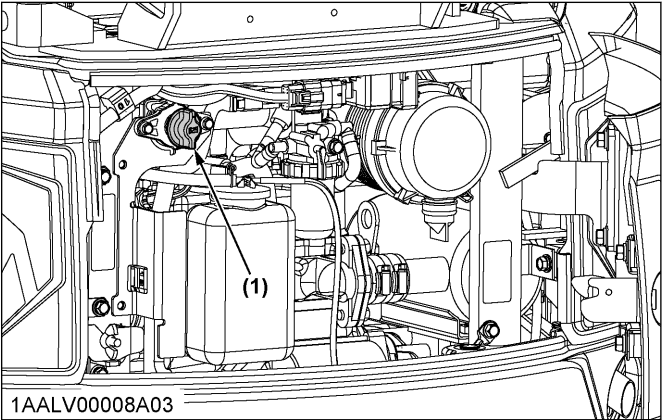
METER PANEL AND CONTROLS

METER PANEL AND SWITCHES



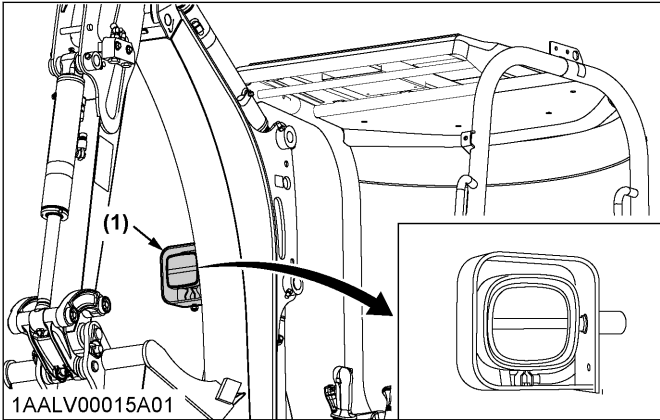
1AALV00014A01

(1) Meter panel.....	45	(7) Travel speed switch	52
(2) Rocker switch for auxiliary port [AUX1 switch type, AUX1 and AUX2 switch type].....	75	(8) Potentiometer for the adjustment of the engine speed.....	53
(3) Rocker switch for auxiliary port 2 [AUX1 and AUX2 switch type] ..	75	(9) Working light switch	51
(4) AUX port enable switch [AUX1 switch type, AUX1 and AUX2 switch type].....	75	(10) Auto Idle switch.....	53
(5) Horn switch.....	51	(11) Rotary beacon switch (optional equipment).....	51
(6) One-way hold switch [AUX1 switch type, AUX1 and AUX2 switch type].....	77	(12) Starter switch.....	45
		(13) USB outlet.....	53
		(14) Auxiliary electric.....	53



1AALV00008A03

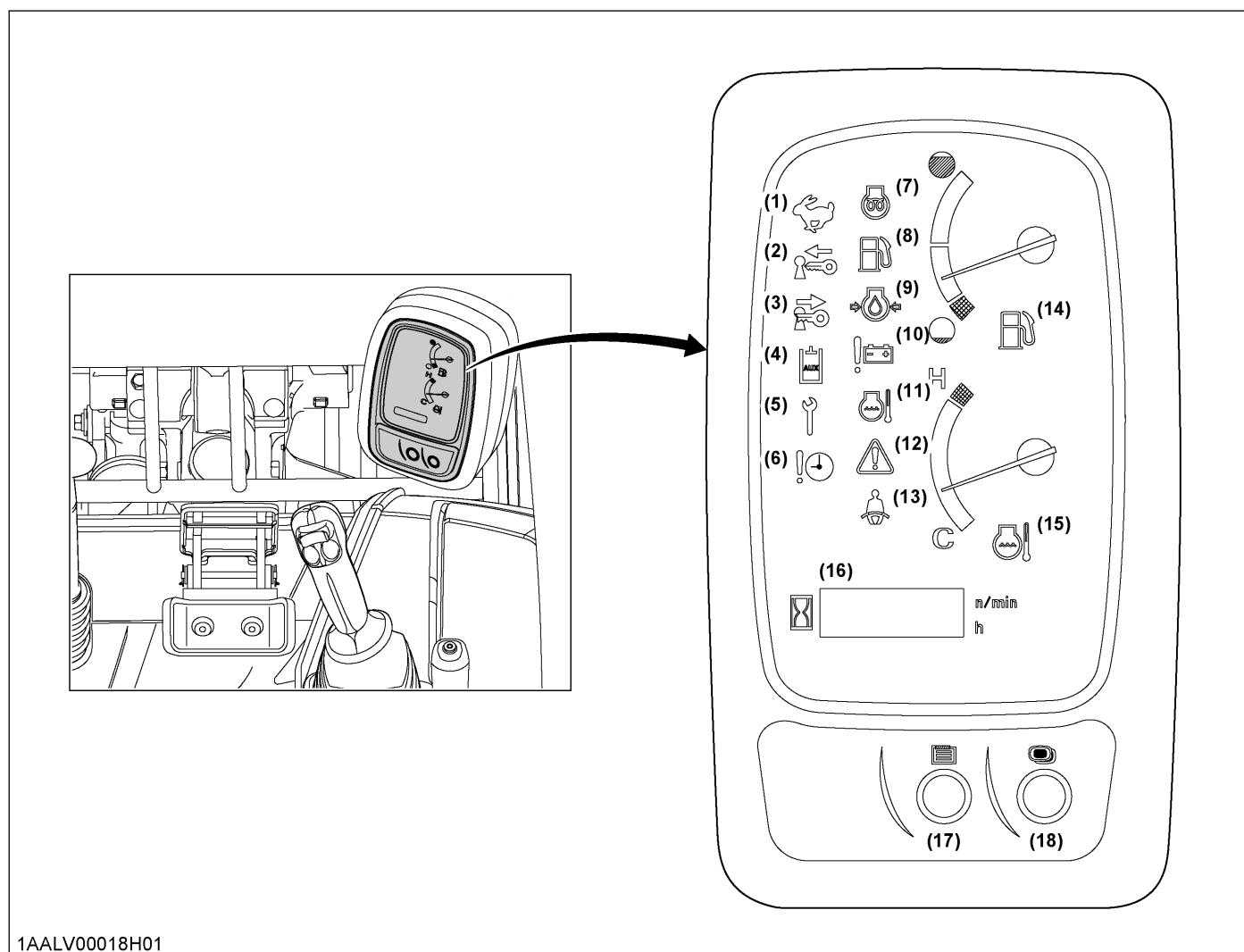
(1) Battery power off switch.....	52
-----------------------------------	----



1AALV00015A01

(1) Working light.....	51
------------------------	----

Meter panel



1AALV00018H01

- | | |
|--|---------------------------------------|
| (1) Speed indicator lamp | (10) Battery charge lamp |
| (2) Insert key lamp | (11) Coolant temperature warning lamp |
| (3) Pull out key lamp | (12) Warning lamp |
| (4) AUX operation lamp [AUX1 switch type, AUX1 and AUX2 switch type] | (13) Seat belt indicator lamp |
| (5) Periodic check lamp | (14) Fuel gauge |
| (6) Clock setting request lamp | (15) Coolant temperature gauge |
| (7) Glow lamp | (16) LCD |
| (8) Remaining fuel warning lamp | (17) User setting switch |
| (9) Engine oil pressure warning lamp | (18) Display selector switch |

1. Starter switch

[STOP]

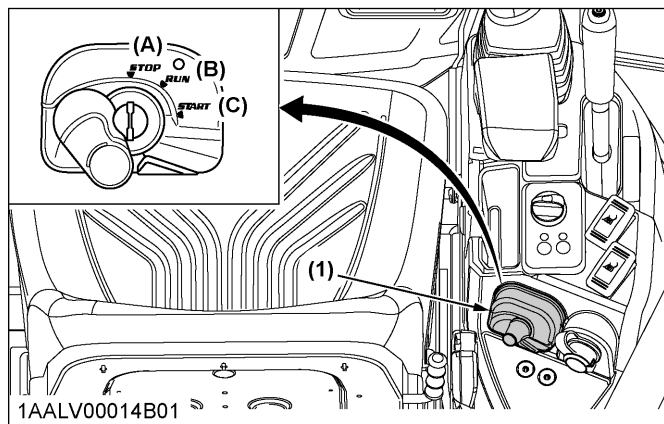
- The key can be inserted at the **[STOP]** position.

[RUN]

- Turn the key 1 click from the **[STOP]** position to the **[RUN]** position. All the circuitry gets energised to start preheating. The glow indicator is displayed. When checking for any lamp breakage, keep in mind that the lamp lights up and stays on for about 1 second.

[START]

- Move the pilot control lock lever to the LOCK position. Turn the key 1 more click from the **[RUN]** position to the **[START]** position. The starter motor is then activated to get the engine started. Release your hand from the key, and the key returns to the **[RUN]** position. Therefore, once the engine has started, let go of the key.



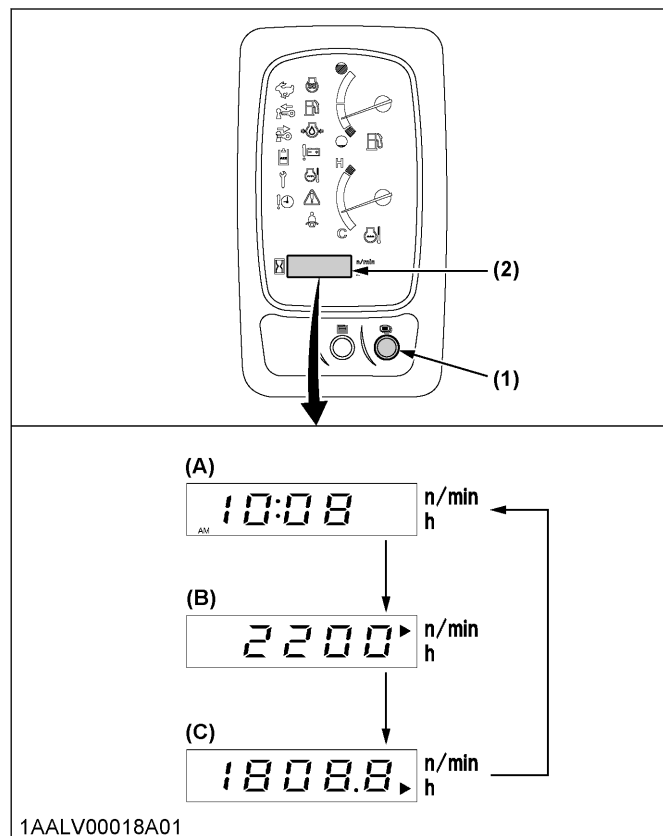
(1) Starter switch

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

2. Display selector switch

Press the display selector switch while the engine is running. The meter display will change from one indication mode to the other.

Change the 3-mode display according to your jobs.



1AALV00018A01

(1) Display selector switch
(2) LCD

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

NOTE :

- With the starter key in the **[STOP]** position, press the electronic meter's display selector switch. Depending on the previously selected mode, the LCD shows the hour meter, the tachometer, or the clock for 10 seconds.

3. Display for normal operation

IMPORTANT :

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

3.1 Fuel gauge



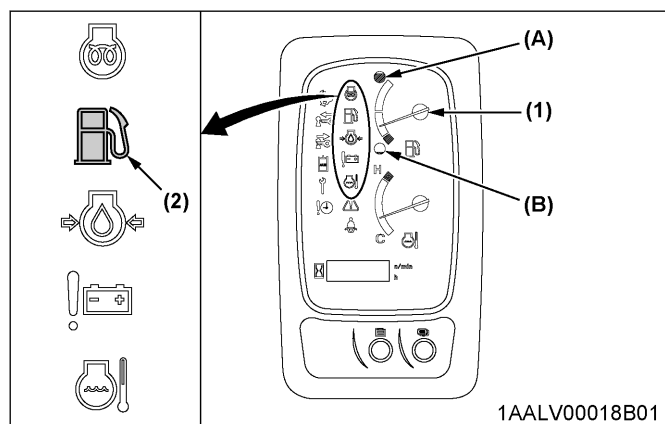
WARNING

To avoid personal injury or death:

- Before adding fuel, stop the engine.
- Keep open flame away from the machine. Otherwise a fire may result.
- Tighten the fuel cap after refuelling.

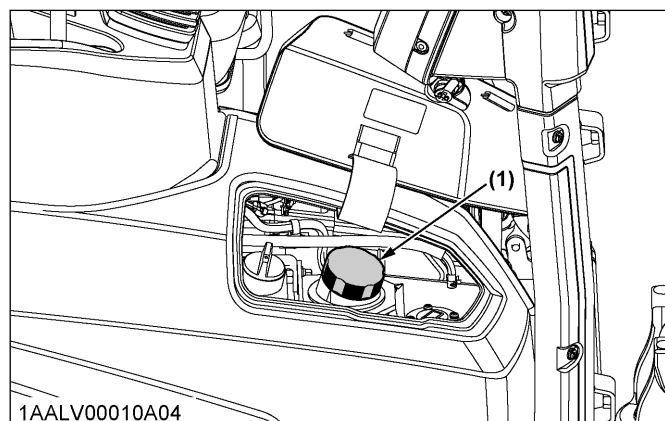
If the fuel in the tank goes below the prescribed level, the warning lamp flashes.

If this happens during operation, refuel as soon as possible.



- (1) Fuel gauge (A) FULL
(2) Remaining fuel warning lamp (B) EMPTY

To refuel, open the cap, and add fuel to the tank.



- (1) Fuel cap

IMPORTANT :

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

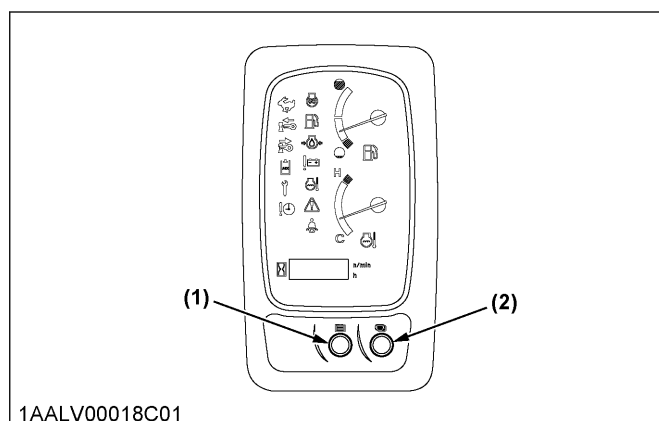
NOTE :

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

3.1.1 Fuel supply

The following functions are helpful when adding fuel. The fuelling progress can be monitored by a buzzer sound.

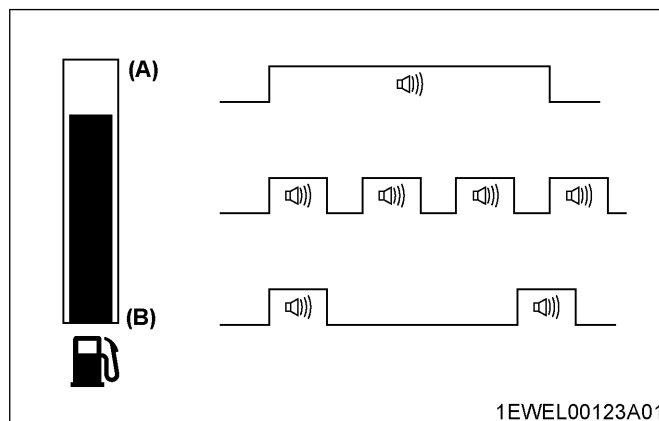
- Press the user setting switch or the display selector switch on the meter with the starter key at the [STOP] position (keep the starter key at the [STOP] position).



- (1) User setting switch
(2) Display selector switch

2. Add fuel.

The buzzer sound interval changes according to the amount of fuel is added. As the fuel amount becomes close to full, the buzzer sound changes to continuous beeping.



- (A) FULL
(B) EMPTY

NOTE :

- If the fuel is poured too fast, the buzzer may not sound according to the fuelling process.
- When the fuel tank is nearly full, the buzzer starts beeping.
- Look into the fuel tank when pouring the fuel. Listen to the buzzer sound for a rough estimate of the fill-up progress.

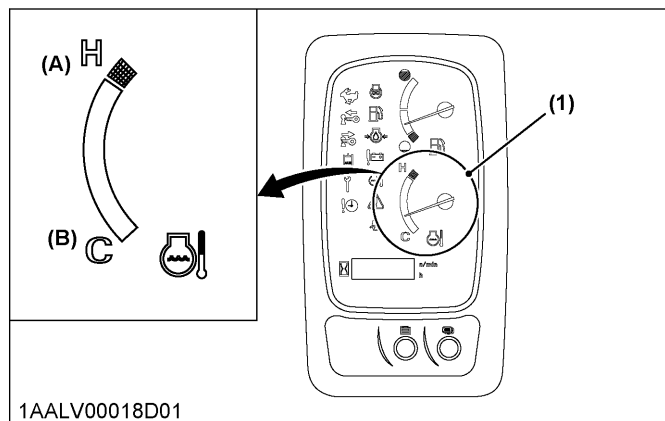
3.2 Coolant temperature gauge

! WARNING

To avoid personal injury or death:

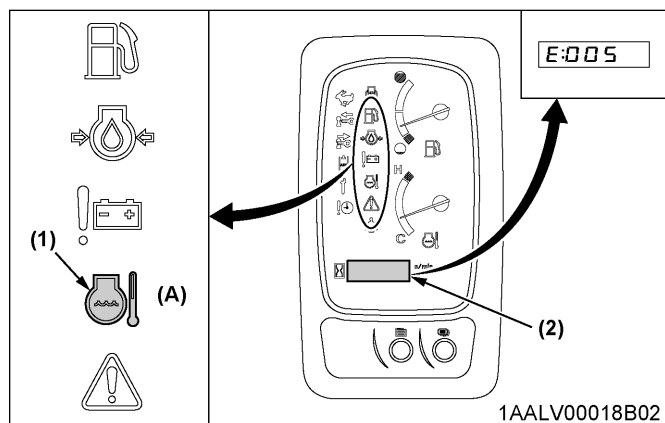
- Do not open the radiator cap during or just after operation. Hot coolant may gush out and scald you. Wait for the coolant to cool down before opening the cap.

The coolant temperature is indicated when the starter key is at the [RUN] position.



(1) Coolant temperature gauge (A) HOT
(B) COOL

If the coolant temperature indicator is near **[H]**, the coolant temperature warning lamp blinks and the following error code is displayed.
("E:005")



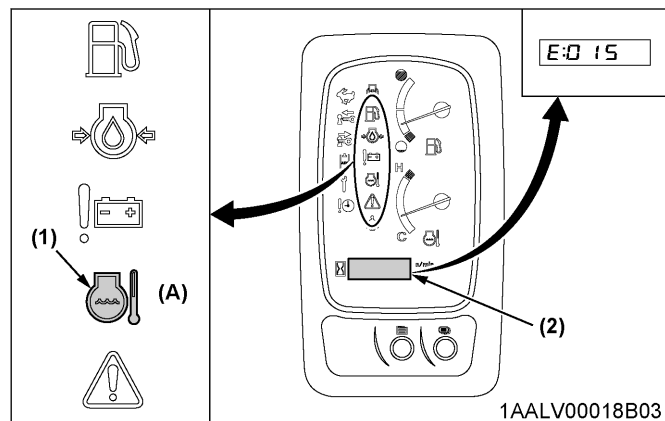
(1) Coolant temperature warning (A) Blinks lamp
(2) LCD

If this code is displayed, perform the following procedure:

1. Stop the job.
2. Reduce engine's rpm to idle and keep it at idle for 5 minutes.
3. Stop the engine and check the following points:
 - a. Low coolant level or leakage
 - b. V-belt tension
 - c. Mud or dust deposits on radiator
 - d. Hydraulic oil leakage

3.2.1 Overheat warning

- If the coolant temperature becomes too high, the coolant temperature warning lamp lights up and the following error code is displayed.
("E:015")



(1) Coolant temperature warning (A) Lights up lamp
(2) LCD

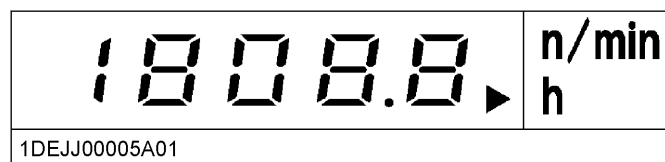
If this code is displayed, take corrective measures.
(See Overheating countermeasures on page 60.)

3.3 Hour meter

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

How it works:

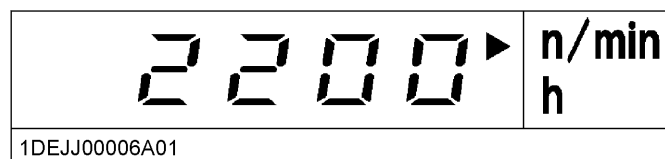
- The meter advances 1 hour after an hour of operation regardless of the engine rpm.



(1) Hour meter

3.4 Engine tachometer

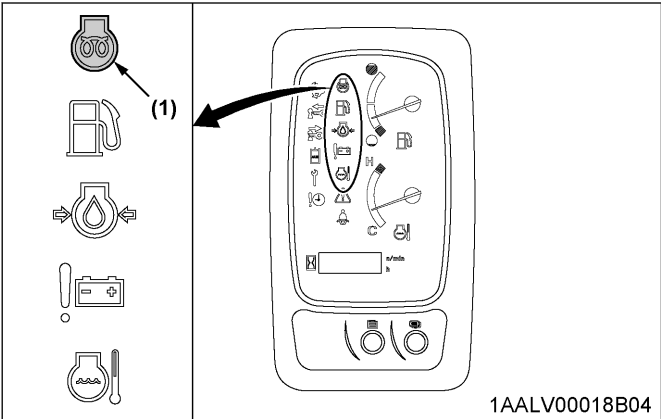
The engine tachometer indicates the current rpm of the engine.



(1) Engine tachometer

3.5 Glow lamp

The lamp lights up when the starter key is turned to the **[RUN]** position but the engine requires preheating. Wait until the lamp goes out, and then start the engine.



(1) Glow lamp

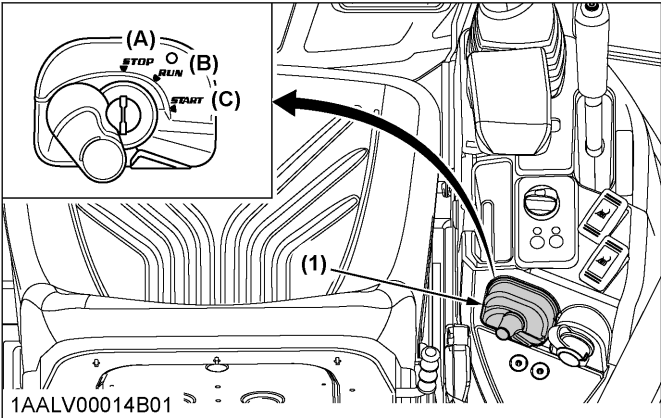
3.6 User settings

NOTE :

- If you have any questions, contact your local Kubota dealer.

3.6.1 Setting the clock

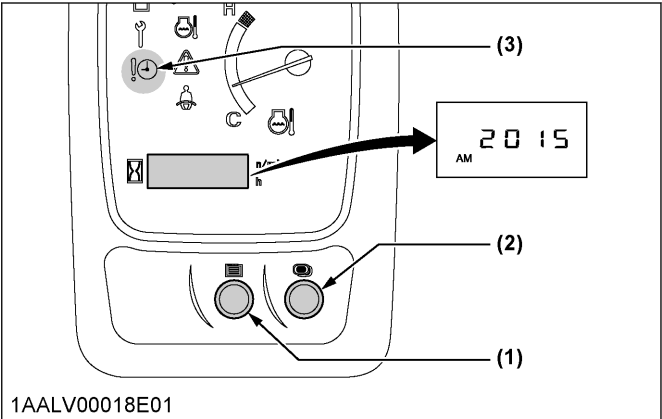
1. Turn the starter key to the [RUN] position.



(1) Starter switch

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

2. Press the user setting switch.
3. Select the clock setting mode by pressing the display selector switch.
The clock setting request lamp  on the meter panel lights up.



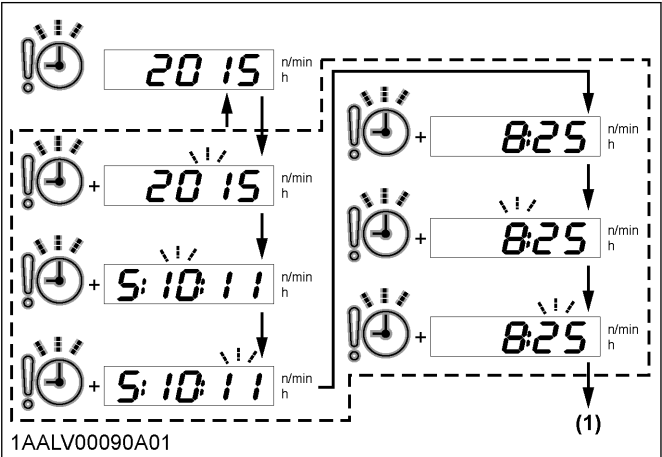
- (1) User setting switch
(2) Display selector switch
(3) Clock setting request lamp

NOTE :

- For the operation and functions of the switches, refer to the following table.

Switch name	Operation	Function
User setting switch	Press	Decrease numerical value
	Hold	Return to the previous item
Display selector switch	Press	• Increase numerical value • Move to the next item
	Hold	Register setting

4. Press the user setting switch or the display selector switch to decrease or increase the numerical value.
5. Press and hold the display selector switch to register the new setting.
6. Set each item in the following order: year, month, day, AM/PM, hour, minute.
Example: 2015/10/11 AM8:25

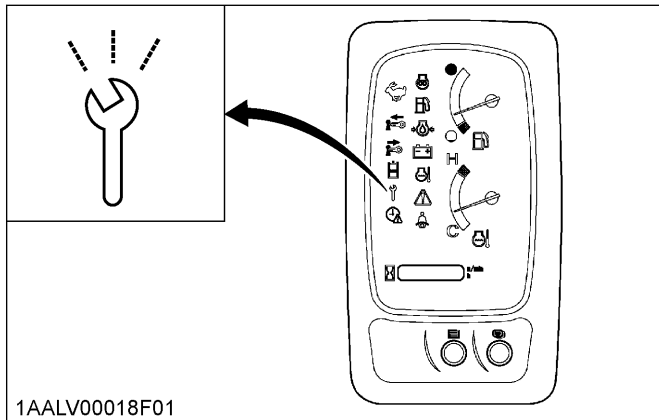


(1) Normal mode

3.7 Service hour meter

When the hour meter has counted up to one of the servicing hours listed below, the periodic check lamp lights up, and a periodic check code is displayed to show which part requires servicing.

(See Periodic service codes on page 100.)



The periodic check codes reappear each time that maintenance is required.

NOTE :

- The codes appear 10 hours before the servicing is due.
- In the event that multiple parts require servicing at the same time, press the display selector switch to cycle through the periodic check codes.

Indicator	Maintenance point	Task	Elapsed hours of operation								Interval
			50	100	250	500	600	750	1000	2000	
C: 01	Engine oil	Change				○			○	○	Every 500 h
C: 02	Hydraulic oil	Change							○	○	Every 1000 h
C: 03	Air filter element	Change							○	○	Every 1000 h
C: 04	Fuel filter	Change				○			○	○	Every 500 h
C: 05	Engine oil filter	Change				○			○	○	Every 500 h
C: 06	Drive unit oil	Change	◎			○			○	○	Every 500 h
C: 07	Return filter	Change			◎	○			○	○	Every 500 h
C: 08	Suction filter	Change							○	○	Every 1000 h
C: 09	—	—									—
C: 10	Oil in idler and track roller	Change								○	Every 2000 h
C: 11	Breather filter	Change				○			○	○	Every 500 h

The servicing identified with ◎ must be carried out once the specified hours of operation after initial commissioning have been reached.

NOTE :

- When the starter switch is turned from the [STOP] position to the [RUN] position, the periodic check code reappears, and then disappears automatically after 10 seconds.
- If the starter switch is turned on and off 10 times or more, the periodic check code disappears.
- In the event that the hour meter is replaced due to malfunction or damage, the hour meter is reset to 0. Contact your local Kubota dealer regarding maintenance intervals.

4. Warning lamp

The warning lamp is used to indicate broken wire, short circuit, fuel shortage, and other problems.

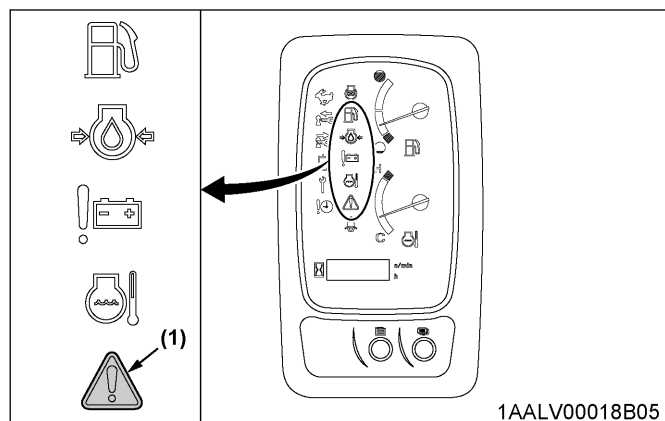
The warning lamp starts flashing in red if any problem occurs. If the system senses a warning signal, the warning lamp starts flashing in yellow.

IMPORTANT :

- If the warning lamp illuminates, perform the appropriate inspection and correction accordingly.
(See MAINTENANCE on page 96.)

NOTE :

- If any warnings and problems are displayed, an alarm buzzer will beep.
(See ERROR CODES on page 140.)
- Contact your local Kubota dealer for details concerning care and maintenance.

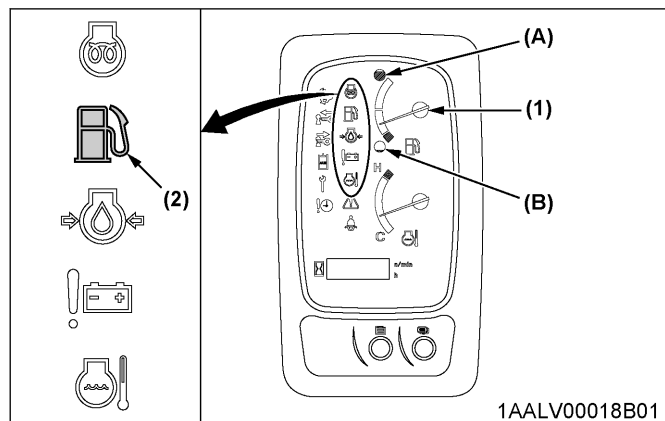


(1) Warning lamp (red, yellow)

5. Display for warnings

5.1 Remaining fuel warning

When the fuel level is very low, the remaining fuel warning lamp starts to flash.



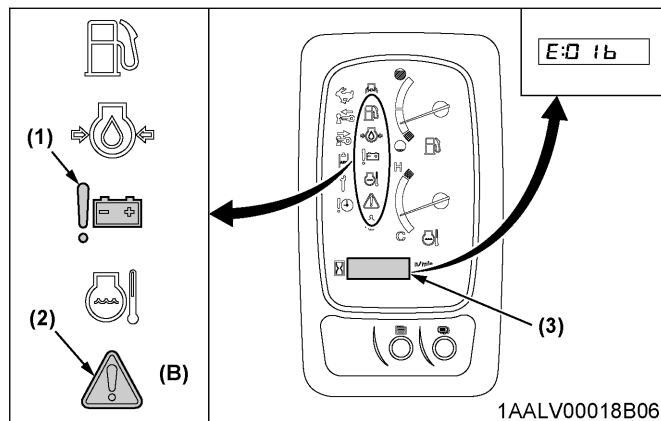
(1) Fuel gauge (A) FULL
(2) Remaining fuel warning lamp (B) EMPTY

5.2 Battery charge warning

When the charging system fails, the  lamp blinks red, the charging lamp lights up, and the following error code is displayed.

("E:016")

Immediately stop the engine and check the V-belt.



(1) Battery charge lamp (A) Lights up
(2) Warning lamp (red) (B) Blinks
(3) LCD

NOTE :

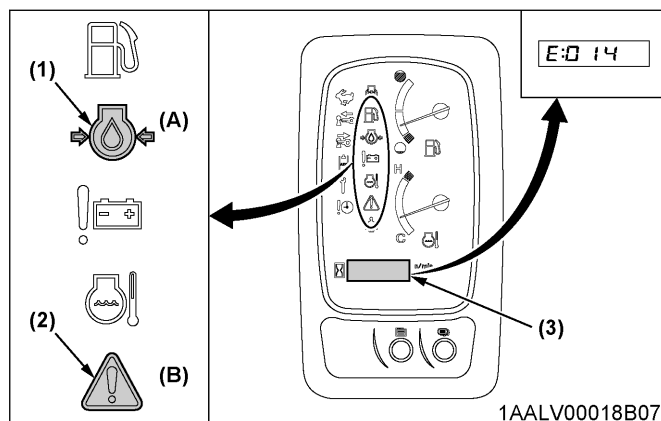
- If the charging lamp stays off when the starter key is turned to the [RUN] position without starting the engine, the charging system may have failed.
In such a case, immediately contact your local Kubota dealer for repairs.

5.3 Low engine oil pressure warning

When the engine oil pressure drops too low, the  lamp blinks red, the engine oil pressure lamp lights up, and the following error code is displayed.

("E:014")

Immediately stop the engine and check the engine oil level.



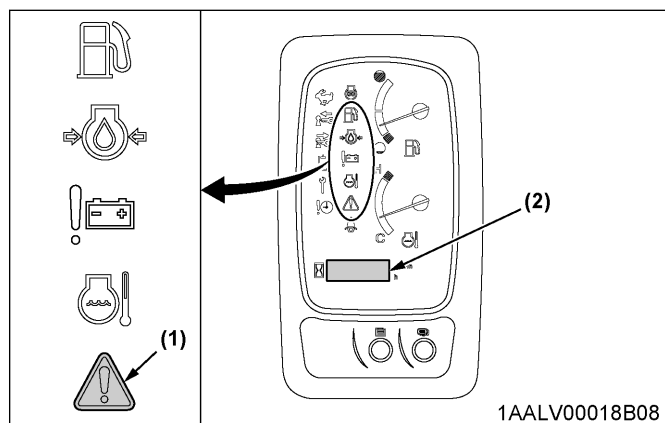
(1) Engine oil pressure warning lamp (A) Lights up
(2) Warning lamp (red) (B) Blinks
(3) LCD

NOTE :

- If the oil lamp stays off when the starter key is turned to the [RUN] position without starting the engine, the hydraulic system may have failed. In such a case, immediately contact your local Kubota dealer for repairs.

5.4 Various error warnings

If any components are detected to be experiencing trouble, an error code is displayed.
(See ERROR CODES on page 140.)



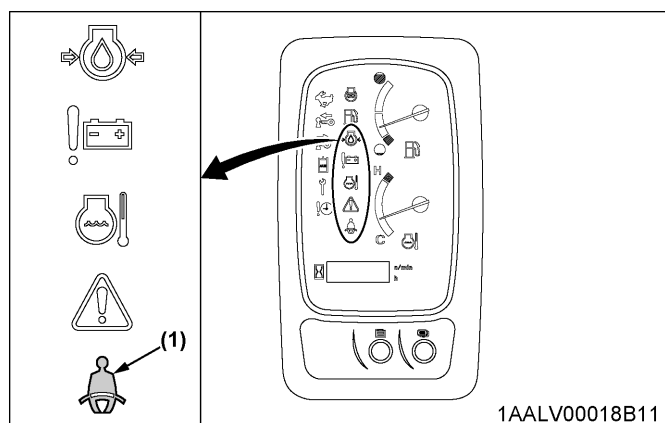
- (1) Warning lamp
(2) LCD

NOTE :

- When the error code is displayed, you can return the display to the normal mode by pressing the display selector switch.

5.5 Seat belt indicator

The seat belt indicator lamp lights up if the seat belt is unbuckled.

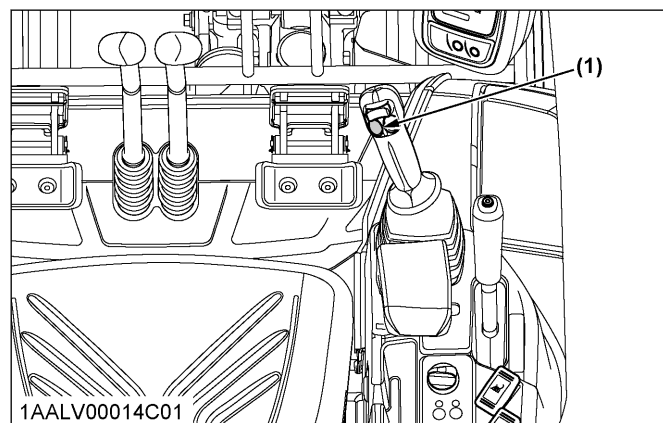


- (1) Seat belt indicator lamp

6. Horn switch

Pressing the horn switch sounds the horn.

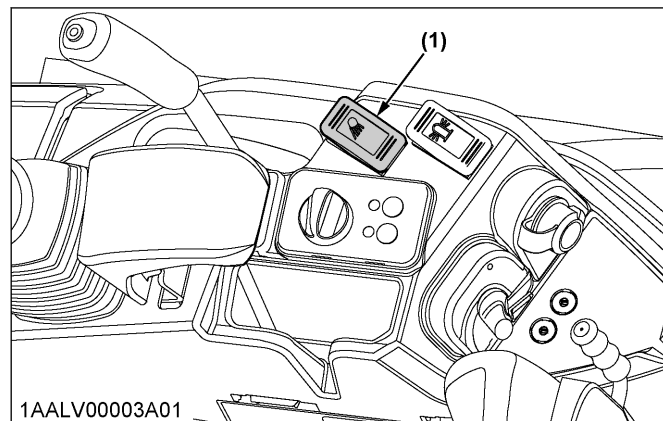
You can use the horn even when the starter switch is in the [STOP] position.



- (1) Horn switch

7. Working light switch

To turn on the working light, set the starter switch to the [RUN] position and press the working light switch.



- (1) Working light switch

7.1 Night operation**! WARNING**

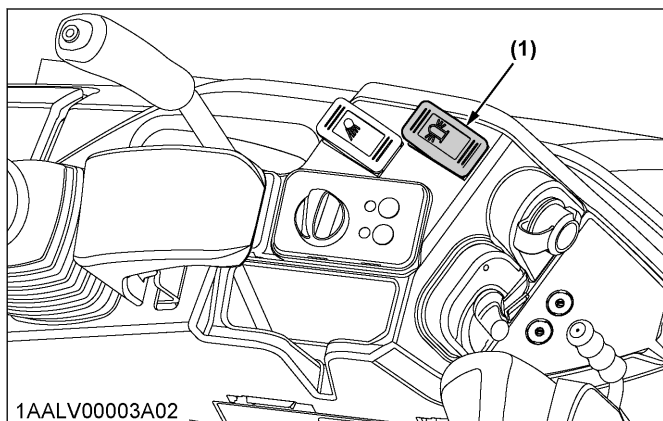
To avoid personal injury or death:

- When the working light alone does not provide sufficient visibility, prepare additional stationary artificial lighting and observe the safe operating practices for night work.
- When working on public roads, be careful not to blind other road users.

8. Rotary beacon switch

This machine is only equipped with the rotary beacon switch (including the coupler for connecting a rear left speaker).

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



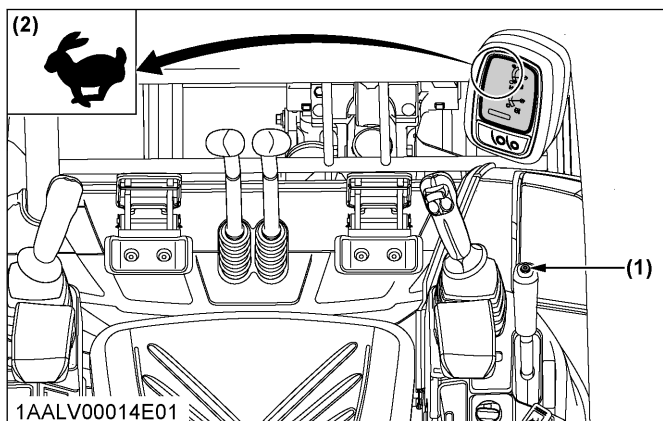
(1) Rotary beacon switch

9. Travel speed switch

Travel speed will increase when this switch is pushed down.

Switching the dual travel speed:

- Press the travel speed switch. The buzzer beeps twice and the travel speed changes from low to high. The  symbol lights up.
- Press the travel speed switch again, the buzzer beeps once and the travel speed changes from high speed to low. The  symbol goes out.



(1) Travel speed switch

(2) Speed indicator lamp

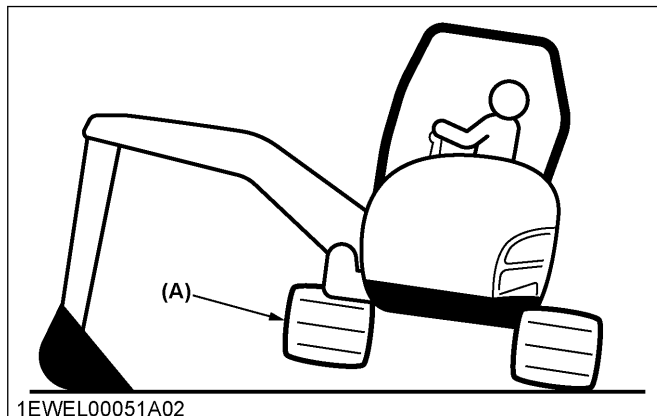
NOTE :

- When activating the travel speed switch, it must be pushed down completely.
- Each time the travel speed switch is pressed, the travel speed is switched between low and high.

IMPORTANT :

- The travel speed automatically changes into first speed (low speed) when the drive resistance increases while travelling in the second speed (high speed). Thereafter, when the resistance decreases, it returns to second speed.

- If a crawler is clogged with sand or gravel while working on soft ground, lift up the crawler with the help of the boom, arm, bucket, and dozer blade, and let the crawler rotate to remove the sand and gravel.



(A) Rotate to remove sand and gravel



DANGER

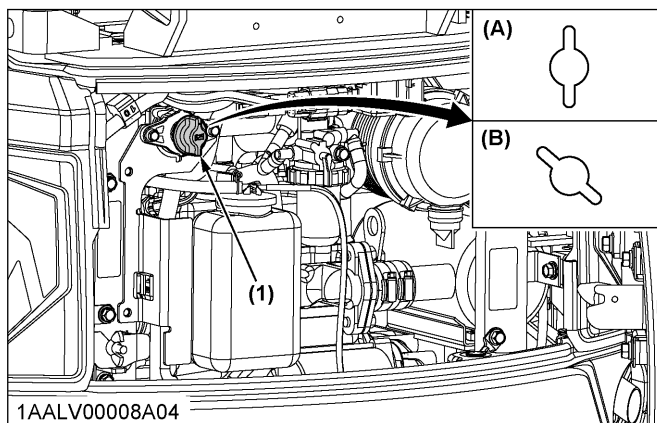
To avoid serious injury or death:

- Do not work under the machine in this condition.

10. Battery power off switch

The battery power off switch turns off the main power to the circuit.

The switch is located inside the engine bonnet.



(1) Battery power off switch

(A) ON

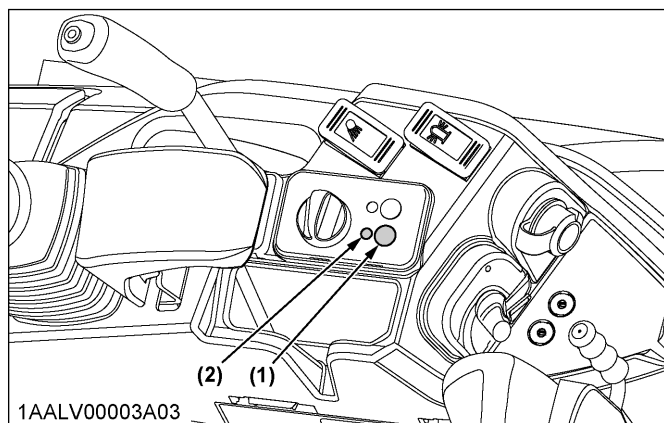
(B) OFF

- When the battery power off switch is in the "ON" position, and the starter switch is in the [RUN] position, the circuit energises.
- When the battery power off switch is in the "OFF" position, the battery does not power on.
- Even when the battery power off switch is in the "OFF" position, the clock and radio functions of the meter panel can still be used.

- When the battery power off switch is in the "OFF" position, and the starter switch is in the [STOP] position, most functions are disabled.

IMPORTANT :

- Do not turn off the battery power off switch when the starter switch is in the [START] position, or when the engine is running. Doing so causes the battery power off switch to degrade or fail, which causes other electronic components to fail.

11. Auto Idle switch

(1) Auto idle switch
(2) Indicator

The switch is used to enable and disable the Auto Idle control.

Enable

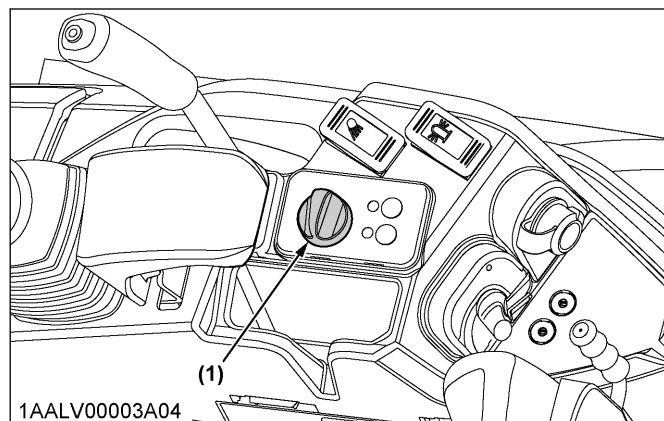
Press the Auto Idle switch. When the Auto Idle control is enabled, the indicator stays lit.

Disable

Press the Auto Idle switch again. When the Auto Idle control is disabled, the indicator goes out.

12. Potentiometer for the adjustment of the engine speed

- Sit down on the operator's seat and turn the potentiometer clockwise toward high speed, and the engine revs up.
- To stop the engine, turn the potentiometer fully toward low speed and keep the engine at idling speed. Then set the starter switch to the [STOP] position.



(1) Potentiometer

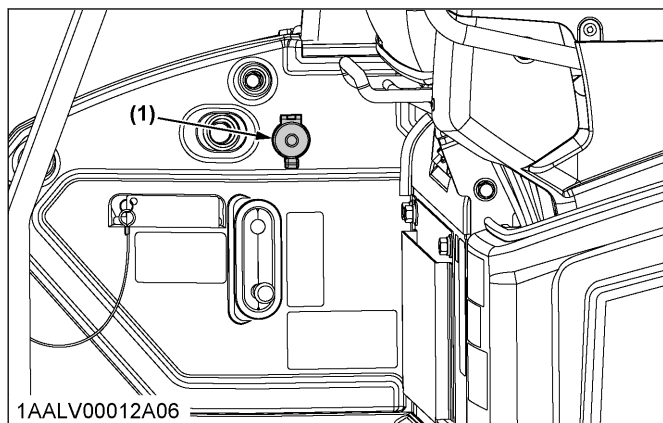
13. Auxiliary electric

The maximum power is less than 120 W, of which 55 W is used to power the working light.

If you require another auxiliary electric outlet, contact your local Kubota dealer.

IMPORTANT :

- The rated current of the connected load must not exceed 10 A.



(1) Auxiliary electric A

14. USB outlet

A USB (Type-A) outlet for the connection of external electric devices is located on the right side of the control console.

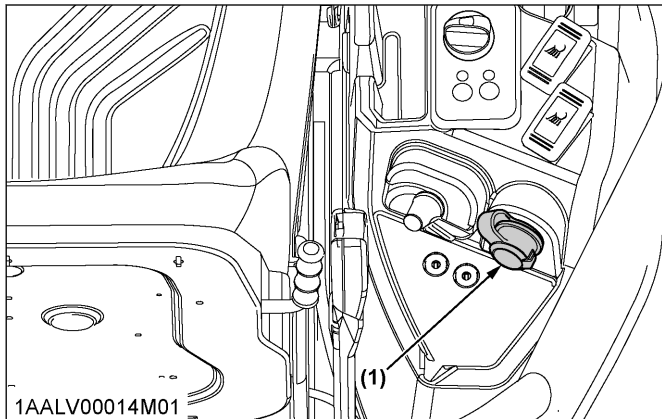
The maximum output current of the USB outlet is 2 A.

Always close the cap when the USB outlet is not in use to prevent water from getting into the outlet.

As a safety mechanism, if any water does get into the outlet, the power to the outlet is cut off. Once it dries out, the power is restored.

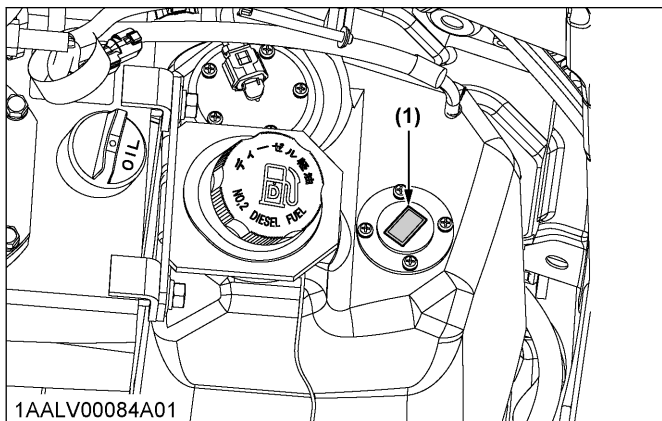
IMPORTANT :

- The rated current of the connected load must not exceed 2 A.

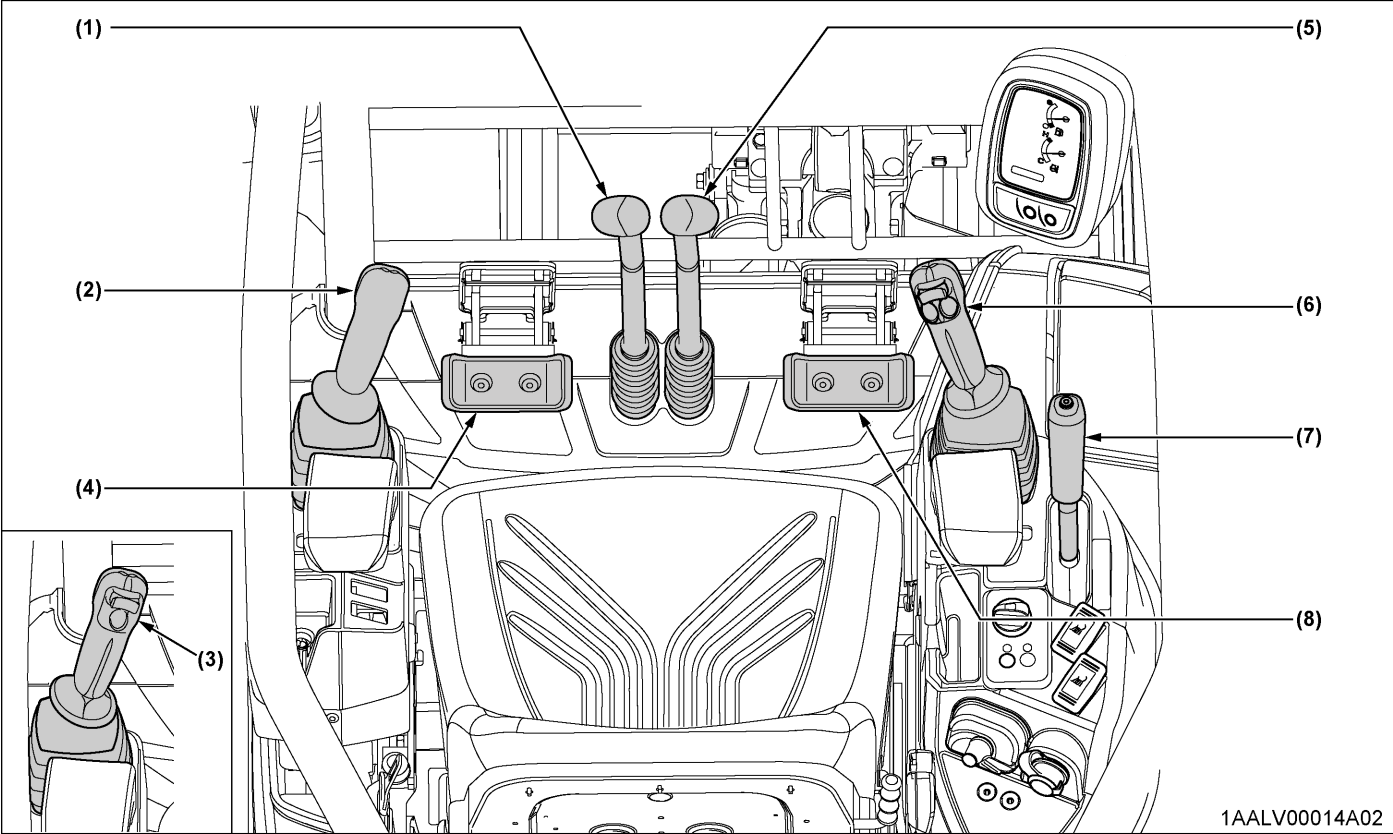


15. Fuel gauge

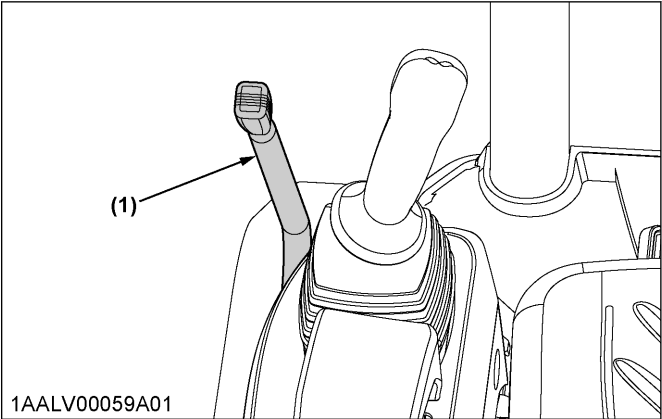
The excavator is equipped with an additional fuel gauge. The fuel gauge is located in fuel tank cover on the right hand side of the machine.



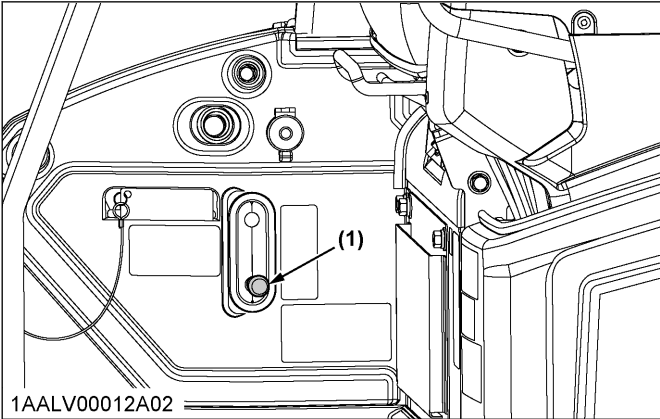
CONTROL PEDALS AND LEVERS



(1) Drive lever (left)	64	(5) Drive lever (right)	64
(2) Control lever (left)	69	(6) Control lever (right)	69
(3) Control lever (left) [AUX1 and AUX2 switch type]	69	(7) Control lever for dozer or track width	67
(4) Auxiliary port pedal [AUX1 pedal type]	73	(8) Boom swing pedal	71



(1) Pilot control lock lever	56
------------------------------------	----



(1) Track width change and dozer selection lever	67
--	----

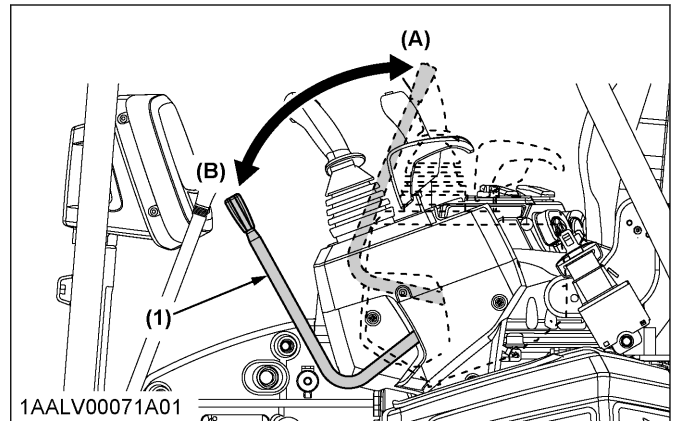
IMPORTANT :

- Pulling the pilot control lock lever up into the LOCK position prevents inadvertent machine movement.
(See Pilot control lock lever on page 56.)

HANDLING THE SAFETY DEVICES

WARNING

- Before starting the machine, make sure that all safety devices are properly installed and fully operational. Performing unauthorised maintenance or modifications to the safety devices is prohibited.
- Protective devices may only be removed once the following conditions have been met:
 - The excavator is standing still and the engine is stopped.
 - The starter switch is in the [STOP] position and key removed in order to secure the machine against restarting.



(1) Pilot control lock lever

(A) LOCK

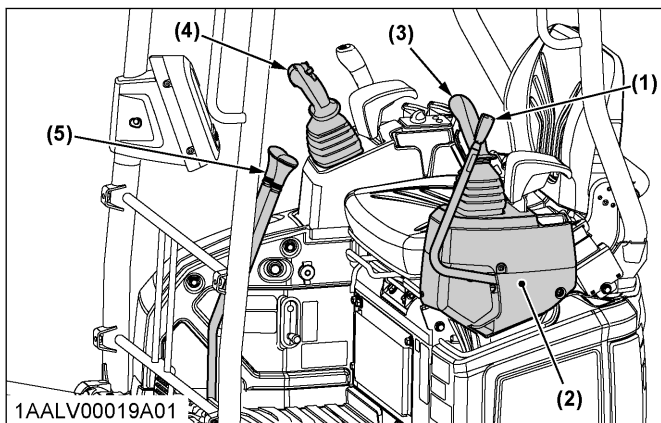
(B) UNLOCK

1. Pilot control lock lever

WARNING

To avoid personal injury or death:

- When the machine is not in use or left unattended, place the pilot control lock lever in LOCK position.
- To lock the hydraulic functions of the control levers, the drive levers, the dozer control lever, and the auxiliary port, completely raise the left control console by pulling the pilot control lock lever up.
- To unlock the hydraulic functions, lower the control console completely using the pilot control lock lever.



(1) Pilot control lock lever

(2) Left control console

(3) Left control lever

(4) Right control lever

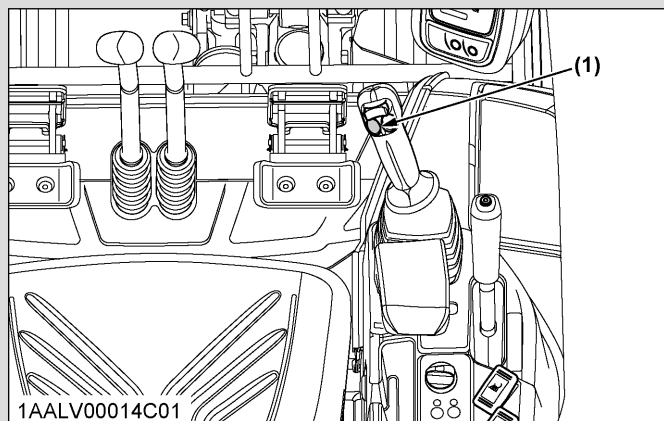
(5) Drive levers

OPERATING THE ENGINE

WARNING

To avoid personal injury or death:

- Read and understand the safe operation section.
(See SAFE OPERATION on page 13.)
- Obey the safety labels on the machine.
- To avoid the danger of carbon monoxide poisoning, do not operate the machine indoors without proper ventilation.
- Always start the engine from the operator's seat. Do not start the engine while standing next to the machine. Before starting the engine, sound the horn to alert people standing nearby.



(1) Horn switch

IMPORTANT :

- Do not use starting fluid or ether.
- To prevent overloading the battery and starter, avoid engaging the starter for more than 10 seconds.
- If the engine does not start in 10 seconds, please wait 20 seconds or more, before attempting to restart.
- Never start the engine when a safety tag indicating that the machine is being serviced is attached to the control system.
(See MAINTENANCE on page 20.)

STARTING THE ENGINE

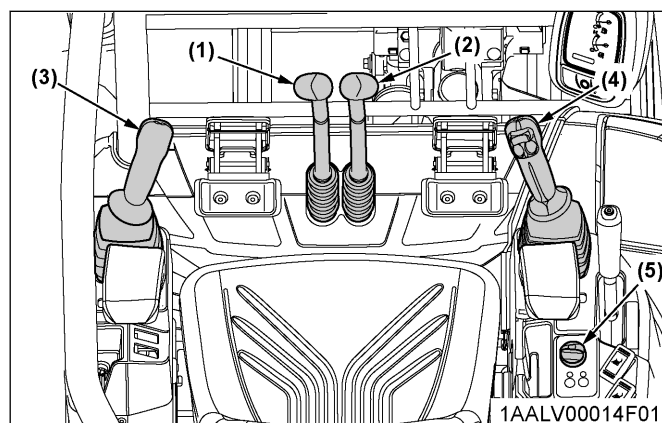
WARNING

To avoid personal injury or death:

- The operator should not depend solely on the warning lamps, but should always conduct the routine checks.

(See MAINTENANCE on page 96.)

1. Before starting the engine, make sure that all control levers are in the neutral position.



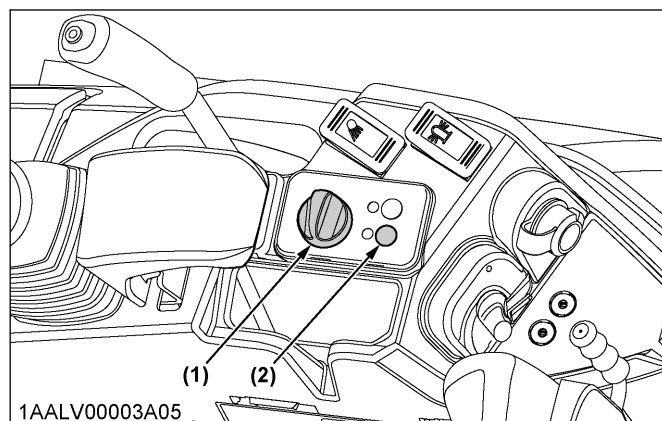
- (1) Drive lever (left)
- (2) Drive lever (right)
- (3) Control lever (left)
- (4) Control lever (right)
- (5) Potentiometer

2. Pull the lock lever all the way back to the LOCK position.

3. Put the potentiometer in the middle between the  and  symbols.

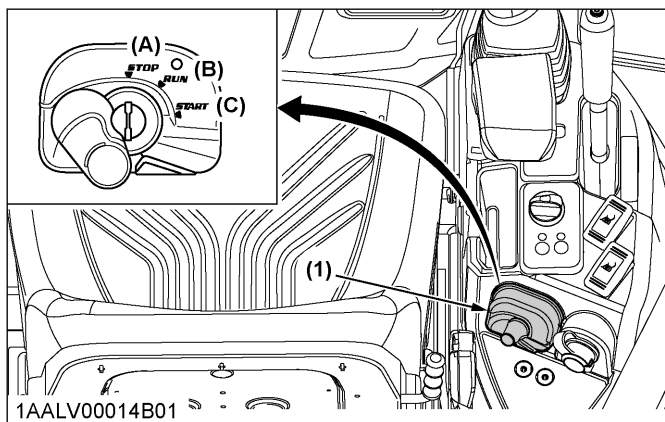
The Auto Idle switch is in the OFF position.

(See AUTO IDLE (AI) OPERATION on page 85.)



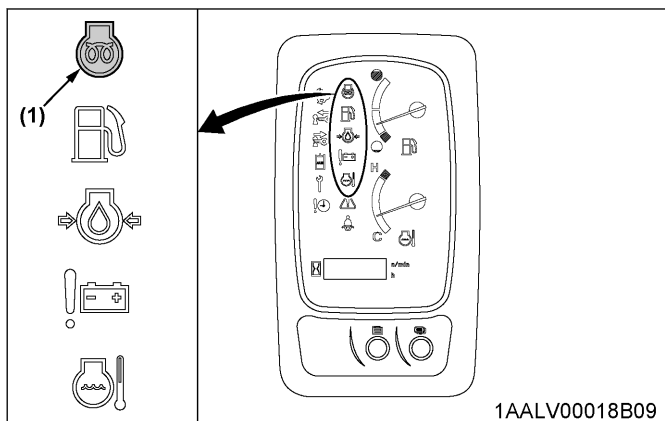
- (1) Potentiometer
- (2) Auto Idle switch

- Insert the key into the starter switch and turn it to the **[RUN]** position. The glow lamp lights up while the engine is preheated and goes out automatically after preheating is finished.



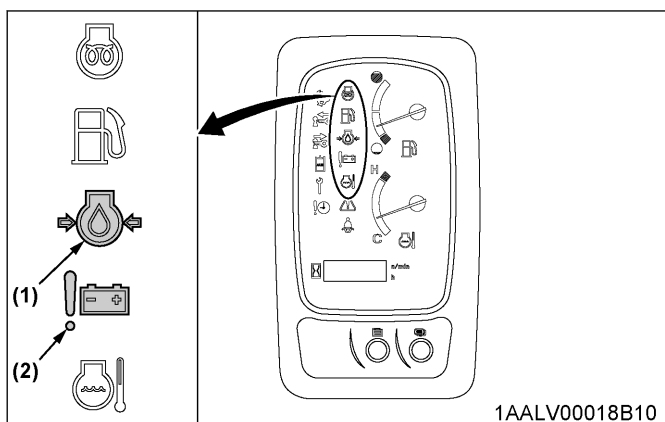
(1) Starter switch

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



(1) Glow lamp

- Make sure that engine oil pressure warning lamp and the battery charge lamp light up. If they do not light up, the system has malfunctioned. Contact your local Kubota dealer for repairs.



(1) Engine oil pressure warning lamp
(2) Battery charge lamp

- Turn the key to the **[START]** position and release it after the engine has started.

- Check that all warning lamps have gone out. If a warning lamp is still lit up, stop the engine, remove the key, and check for the cause.

IMPORTANT :

- The starter motor draws a large amount of current. Avoid running it for longer than 10 seconds continuously. If the engine fails to start within 10 seconds, set the key to the **[STOP]** position, wait for 20 seconds or longer and repeat steps 5 through 7.
- If the battery is dead and must be connected to another battery with jumper cables, use a 12 V battery. Never use 24 V batteries.

NOTE :

- If you keep the pilot control lock lever at the **UNLOCK** position and try to start the engine, the engine cannot be started. Before starting the engine, make sure that the pilot control lock lever is set at the **LOCK** position.
- If the bunch of keys contains metal parts, such as key rings or other keys, the engine might fail to start.

STARTING THE ENGINE UNDER COLD CONDITIONS

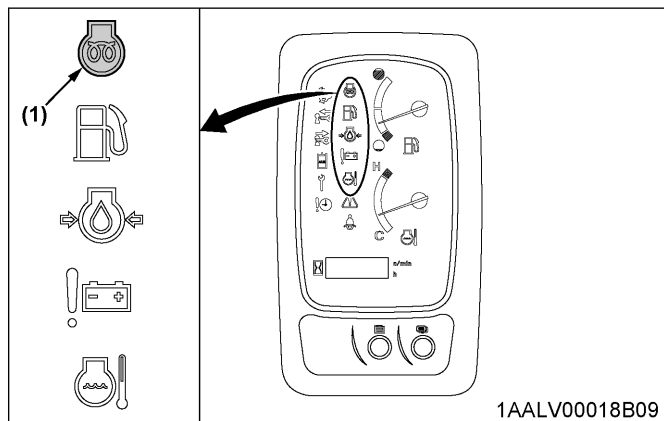
! WARNING

To avoid personal injury or death:

- Make sure that the pilot control lock lever is in the **LOCK** position during warm-up.

- Make sure the auto idle switch is at the **OFF** position (indicator off).
- Pull the pilot control lock levers all the way back to the **LOCK** position.
- Insert the starter key into the starter switch.
- Put the potentiometer toward  (high speed) position.

- Set the starter key to the **[RUN]** position. Hold the key at this position until the glow lamp goes out.



(1) Glow lamp

- Move the starter switch to the **[START]** position to crank and start engine.
- Release the starter switch after the engine has started. It will automatically return to the **[RUN]** position.
- If the engine fails to start, set the starter switch to the **[STOP]** position and repeat steps 4 through 6.

IMPORTANT :

- Let the engine warm up after start-up for approximately 10 minutes without any load. If the hydraulic fluid temperature is too low, the operations will be affected. Do not operate the machine under full load before the engine has warmed up enough.

STARTING WITH AN AUXILIARY BATTERY



WARNING

To avoid personal injury or death:

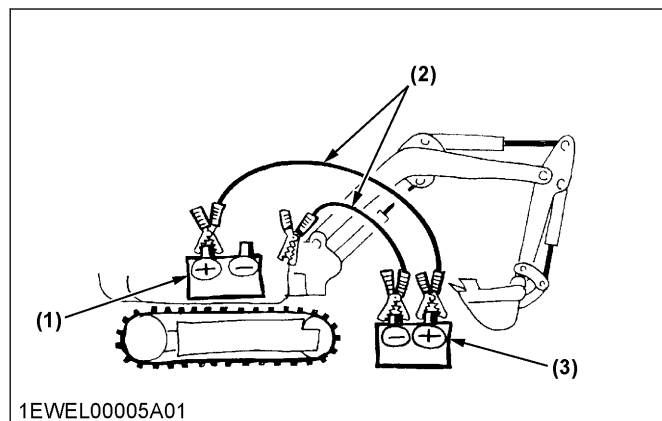
- Battery gases can explode. Do not smoke and keep sparks and flames away.
- Do not start the engine with an auxiliary battery if machine battery is frozen.
- Do not connect the black jumper cable to the negative (-) terminal of the machine battery.
- The operator must remain seated on the operator's place, and the battery jumper cables must be connected by a second person.

Observe following guidelines when starting with an auxiliary battery.

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

IMPORTANT :

- The machines must not come in contact with each other.
- Set the levers and pedals of both machines to the neutral position.
 - Wear eye protection and rubber gloves.
 - Ensure that the vent caps are securely in place (if equipped).
 - Connect the terminal of the red jumper cable with the plus (+) terminal of the low battery and connect the other end of the cable to the plus (+) terminal of the auxiliary battery.
 - Connect the black negative cable to the minus (-) terminal of the auxiliary battery.
 - Connect the other end of the black negative cable (coming from the auxiliary battery) to the machine frame as far away as possible from the low battery.
 - Start the engine of the helping machine and let it run for a while. Start the machine with the low battery.
 - Disconnect the jumper cables in the reverse sequence (Steps 7, 6, 5).



- (1) Low battery
(2) Jumper cables
(3) Auxiliary battery

IMPORTANT :

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

CHECKPOINTS AFTER STARTING THE ENGINE

After starting the engine, but before starting operation, perform the following procedure:

1. Turn the potentiometer fully to low speed and let the engine idle for approximately five minutes. This allows the engine lubricant to warm up and penetrate every part of the engine.
2. Once the engine has warmed up, check the following points:
 - The engine oil pressure warning lamp has gone out.
 - The battery charge lamp goes out when engine speed is increased.
 - The colour of the exhaust is normal and no abnormal noises or vibrations are heard or felt.
 - No fluid is leaking from pipes or hoses.

IMPORTANT :

- Should any following conditions occur, stop the engine immediately:
 - The engine rpm increases or decreases suddenly.
 - Sudden abnormal noises are heard.
 - Exhaust is black.
 - Warning lamp for engine oil lights up during operation.
- In these cases, the machine must be checked and serviced by your local Kubota dealer.

STOPPING THE ENGINE

WARNING

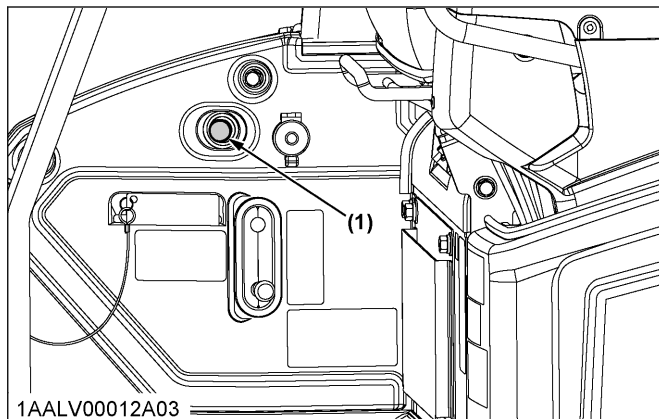
To avoid personal injury or death:

- Do not keep the bucket or dozer in an elevated position because a person could accidentally touch the levers and cause serious accidents.

1. Place the bucket and dozer on the ground.
2. After slowing the engine to idle, turn the key to the [STOP] position.
3. Remove the key.
4. Set the pilot control lock lever to the LOCK position.

1. Emergency stop button

The engine stops when the starter key is turned to the [STOP] position. If the engine does not stop, pull the stop button to stop the engine.



(1) Emergency stop button

IMPORTANT :

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

2. Overheating countermeasures

WARNING

To avoid personal injury or death:

- Do not open the radiator cap during operation or immediately after engine shutdown. Otherwise, steam or very hot coolant may escape and cause scalding. Make sure the radiator has cooled down enough before opening its cap.

If the coolant temperature rises close to, or above, the boiling point ([H] on the coolant temperature gauge, overheat condition), take the following steps:

1. Stop operating the machine and relieve the engine of any load.
2. Do not shut off the engine suddenly. Before shutting off the engine, keep it idling under no load for about 5 minutes.
3. Stay away from the engine for 10 minutes or until the steam overflow stops.
4. Be sure that there is no danger of getting scalded. Check and remove the cause of the overheat. (See TROUBLESHOOTING on page 136.) Once the trouble is resolved, the engine may be restarted.

OPERATING THE EXCAVATOR

OPERATION OF A NEW MACHINE

The operation and maintenance of the new machine influences its life span. Your new machine has been carefully checked and tested before leaving the factory. In spite of this, all movable components must be run-in during the first 50 work hours. Do not work with full rpm and full loads during this period. It is most important to run-in your machine properly in order to achieve its full performance and longevity. During the running-in, the following points should be adhered to in all cases.

Do not work with full engine rpm or full loads during the first 50 working hours

- Let the engine warm up sufficiently in the cold season.
- Do not let the engine rev-up more than necessary.

Oil change in the run-in stage

The lubrication oil plays a specific and important role during the run-in phase of the machine. The numerous movable parts are not yet run-in, so many fine metal particles are generated and cause damage and shorten the life of many components. Pay attention to the oil-change intervals and complete them sooner rather than later.

Details regarding oil change intervals can be found in a different section.

(See REGULAR CHECKS AND MAINTENANCE WORK on page 115.)

PREPARATIONS BEFORE STARTING THE MACHINE

1. Adjusting the operator's seat

WARNING

To avoid personal injury or death:

- Make sure that the seat is completely secured after each adjustment.
- Do not allow any person other than the driver to ride on the machine.

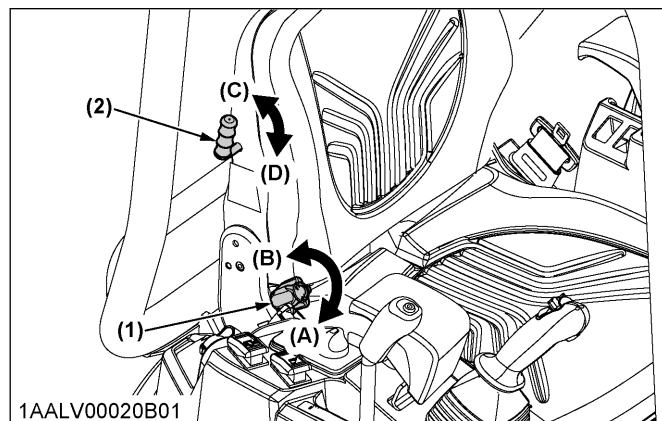
Adjusting the backrest angle

Pull up the backrest angle adjustment knob, and turn it in direction (A) or direction (B) to set the backrest to your desired position.

Adjusting the suspension

Sit down on the operator's seat, and adjust the suspension as follows:

- Turning the suspension adjustment lever towards position (C) increases the spring tension (heavier operator).
- Turning the suspension adjustment lever towards position (D) reduces the spring tension (lighter operator).

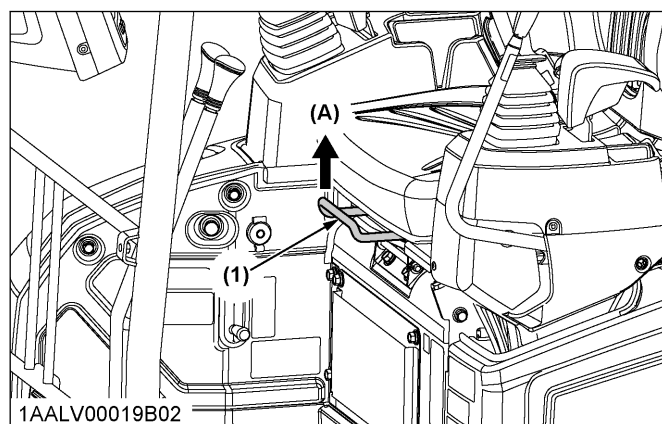


- (1) Backrest angle adjustment knob
(2) Suspension adjustment lever
(A) Forward
(B) Back
(C) Spring force gets stronger
(D) Spring force gets weaker

Travel adjustment (horizontal)

Pull the travel adjust lever up into the UNLOCK position, and slide the seat back and forth to obtain the optimum position.

After adjusting, release the lever, and make sure that the seat is locked in position.



- (1) Travel adjust lever
(A) UNLOCK

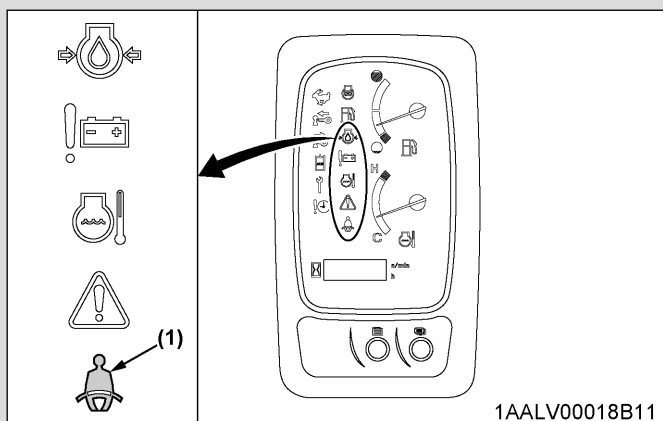
2. Using the seat belt

WARNING

To avoid personal injury or death:

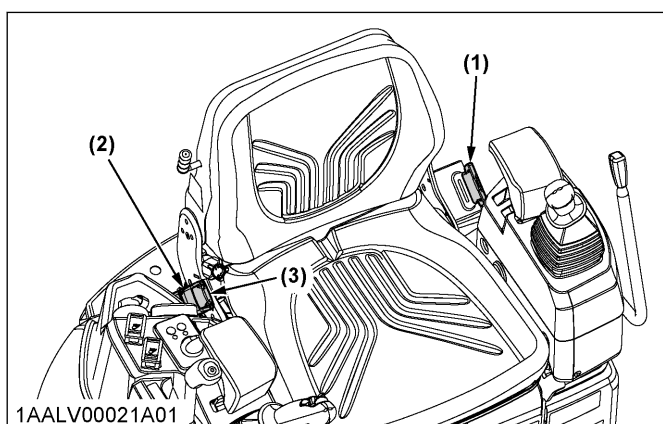
- Always use the seat belt when operating the machine. Adjust the operator's seat to the optimal position and buckle it up.
- The belt buckle is equipped with a sensor. This sensor detects whether the seat belt is fastened and whether the tongue is inserted and latched in the buckle.

If the engine starts and the seat belt is not latched inside the buckle, the seat belt indicator lamp lights up.



(1) Seat belt indicator lamp

- Always fasten the seat belt securely before starting the engine.



(1) Seat belt
(2) Socket
(3) Button

Fastening the seat belt

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

Releasing the seat belt

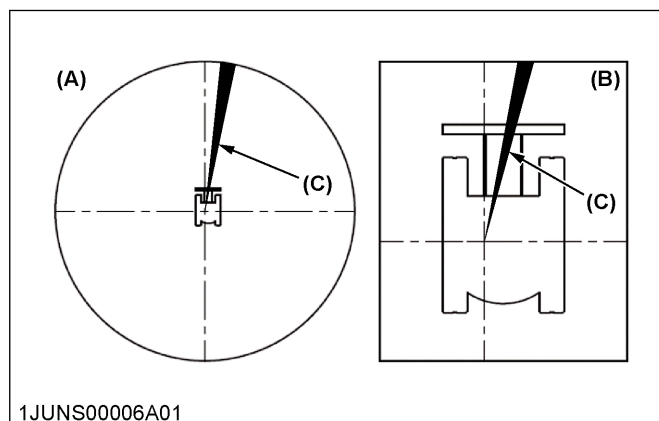
1. Press the red button of the socket to release the seat belt.
The seat belt reels itself in and gets retracted to the left side.

IMPORTANT :

- When removing the seat belt, store the belt straight.
If you store the belt without straightening it, the seat belt locking mechanism may not work properly.

3. Field of view

- When the operator is sitting in the operator's seat, the field of view is partially impaired, as some areas are obscured by the machine. When operating the machine, it is important to be familiar with and understand the visibility conditions within the machine's immediate radius of action. This helps to detect hazards early on and thus prevent accidents.
- The following illustration shows the field of view and the areas that are not visible. The field of view varies from operator to operator and depends on the position of the seat.
- Before starting the machine, check the field of view from the operator's seat, and familiarise yourself with the obscured areas in order to secure a clear line of sight.



(A) Field of view within a radius of 12 m
(B) Field of view in the immediate area
(C) Obscured areas

IMPORTANT :

- The obscured areas in the previous figure were determined using a field of view test method based on the performance criteria from ISO 5006:2017.
If structural modifications to the machine restrict the defined visibility conditions, then the machine operator must carry out a new risk assessment for the changed visibility conditions. The operator can use the "Field of view" section in this operator's manual as a reference for the new risk assessment.

STARTING THE MACHINE

WARNING

To avoid personal injury or death:

- Nobody, other than those who have read and understood this manual and who are familiar with the machine, should be allowed to use the machine.
- Do not allow any person other than the operator to ride on the machine.
- When operating, keep hands and body inside of the ROPS and OPG (top guard level I).
- Do not touch the control levers and the pedals from outside the canopy while the engine is running.
- If the excavating devices do not respond to the control lever as expected, stop the engine immediately.

1. Pilot control lock lever

WARNING

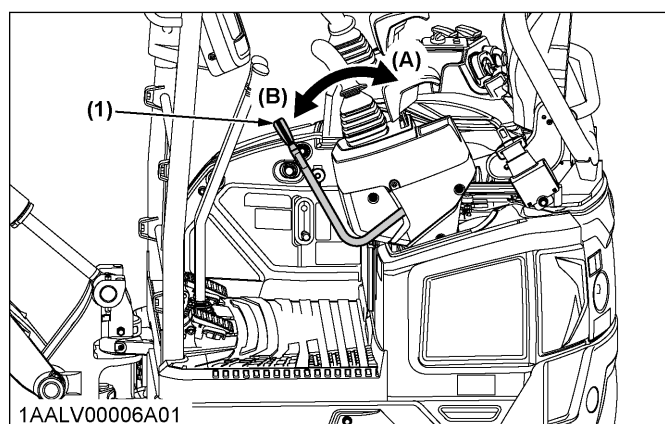
To avoid personal injury or death:

- Always pull the pilot control lock lever up to the LOCK position when leaving the operator station.

NOTE :

- If the pilot control lock lever is in the UNLOCK position, the engine will not start.

After starting the engine, bring the pilot control lock lever into the UNLOCK position to enable all functions of the control levers, the drive levers, the dozer control lever, and the auxiliary port.



(1) Pilot control lock lever

(A) LOCK

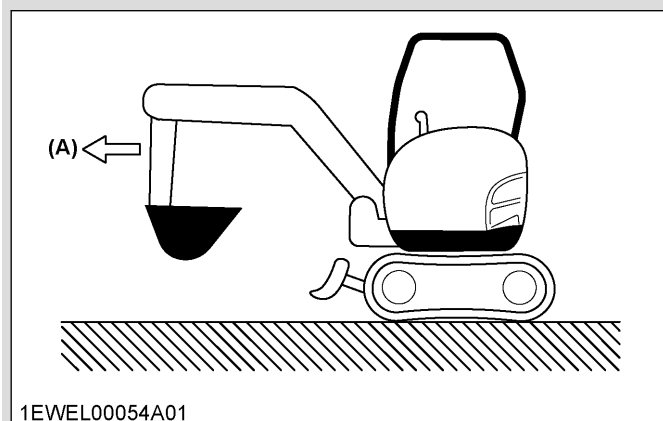
(B) UNLOCK

DRIVING

WARNING

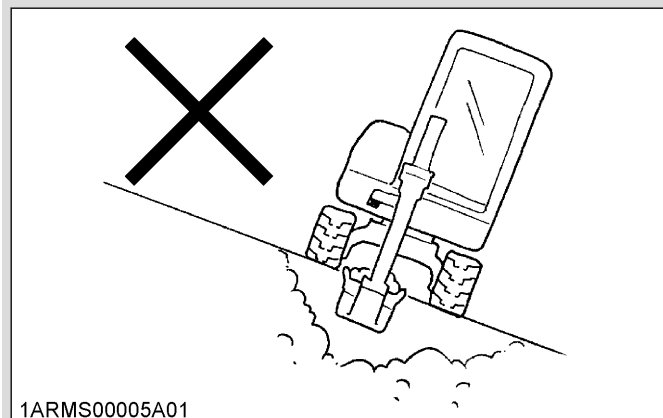
To avoid personal injury or death:

- Before starting the engine, make sure that no one is near the machine.
- Before operating the machine, check the track direction (front idler and dozer blade to the front of the machine).

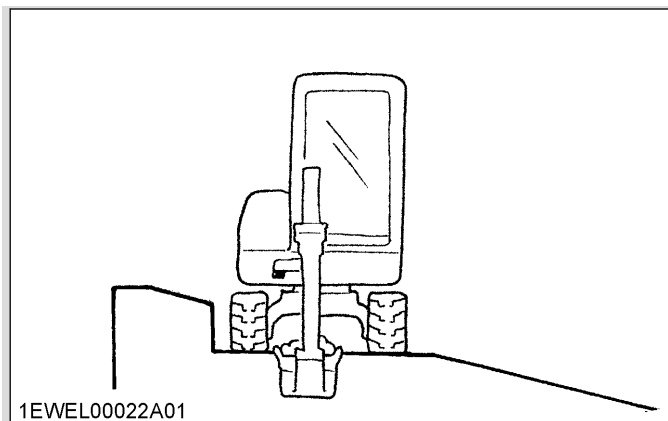


(A) Front of the machine

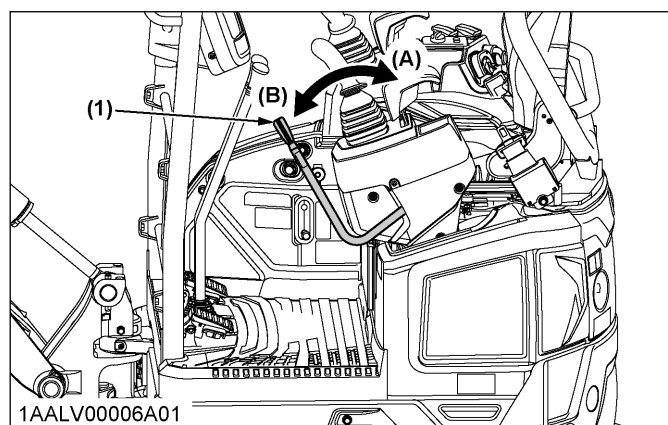
- Check the ground for stability, and verify whether there are holes or other potential obstacles.
- Approach overhangs and edges of ditches carefully as they could cave in.
- Use extra caution when travelling across a slope or working sideways on a slope.



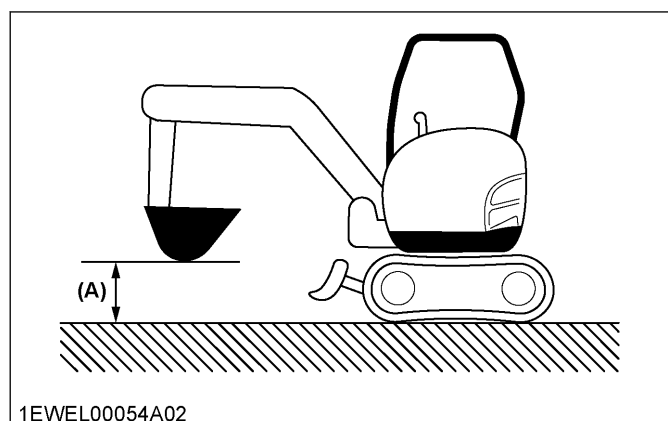
- When working on a slope, the technique illustrated below is recommended.



1. Adjust the engine speed from idling to an intermediate speed.
2. Unlock the lock levers, pull in the bucket, and hold the bucket about 20 cm to 40 cm above the ground.



- (1) Pilot control lock lever
- (A) LOCK
(B) UNLOCK

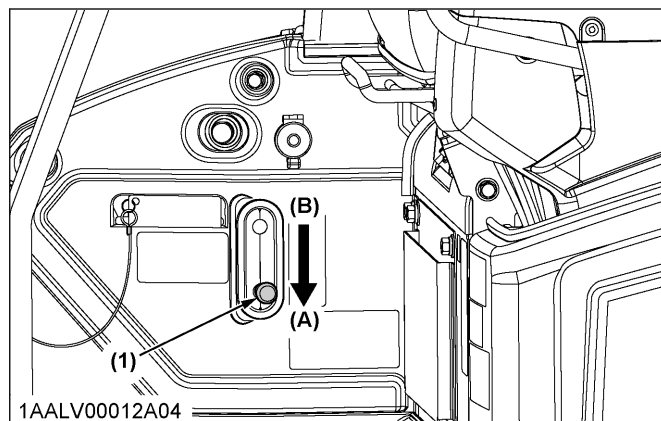


- (A) 20 cm to 40 cm

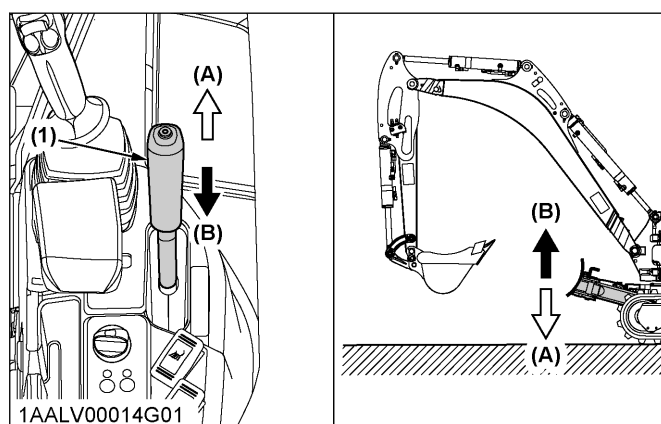
3. Activate the dozer control lever to raise the dozer.

NOTE :

- While operating the dozer, the track width change and dozer selection lever must be set to position (A).



- (1) Track width change and dozer selection lever
- (A) Dozer
(B) Track width change



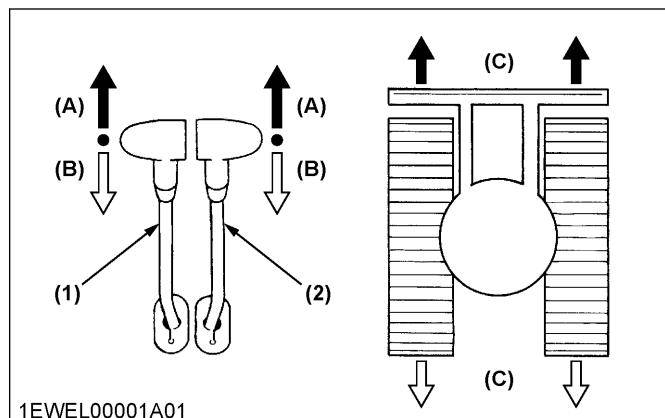
- (1) Dozer control lever
- (A) Lower
(B) Raise

1. Drive levers (right, left)

NOTE :

- When driving the machine, keep the dozer blade in the front. To move the machine forward, move the drive levers to (A). To move in reverse, move the drive levers to (B) with dozer blade in front. If the dozer blade is behind the operator station, then the controls are reversed. Moving the machine forward will require (B) and moving the machine backward will require (A), but this is not recommended.

Pushing the drive levers forward moves the machine forward and vice-versa. The dozer is located at the front of the machine. The drive sprocket is located at the rear of the machine.



(1) Drive lever (left)
(2) Drive lever (right)

(A) Forward
(B) Backward
(C) Straight

2. Travel alarm (optional equipment)

When the machine begins to travel forward or backward, the travel alarm starts sounding.

TURNS



WARNING

To avoid personal injury or death:

- Do not change direction on steep slopes, or the machine could tip over.
- Before changing direction, beware of people and obstacles in the work area.

1. Pivot turn

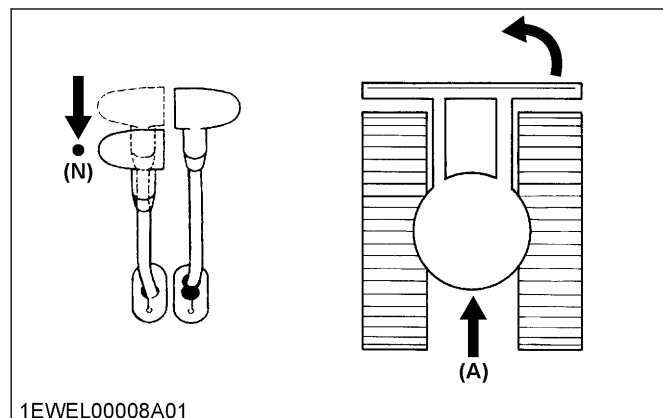
NOTE :

- Movement as illustrated is done with the dozer blade in front of the operator.

When the dozer is in the back, the steering direction is reversed (for example, when the left drive lever is pushed forward, the machine turns right, since the left track, seen from the operator, moves backward from the operator).

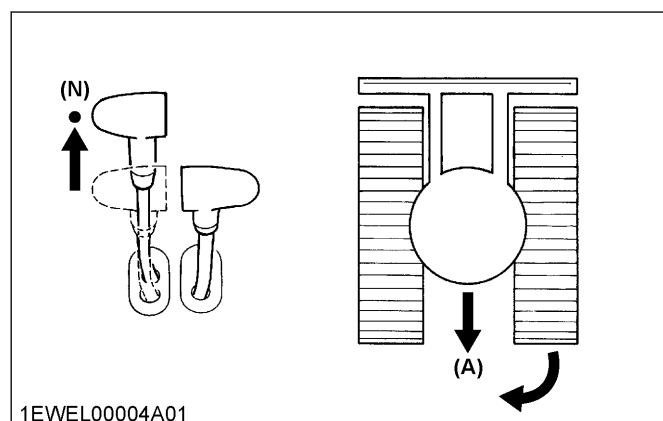
Change of direction while travelling

- While travelling forwards, bring the left drive lever into the "NEUTRAL" position, and the machine turns to the left.



(A) Travelling forward
(N) Neutral position

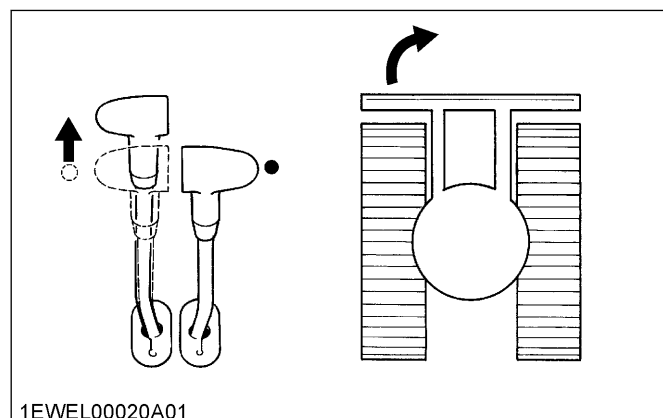
- While travelling backwards, bring the left drive lever into the "NEUTRAL" position, and the machine turns to the right.



(A) Travelling backward
(N) Neutral position

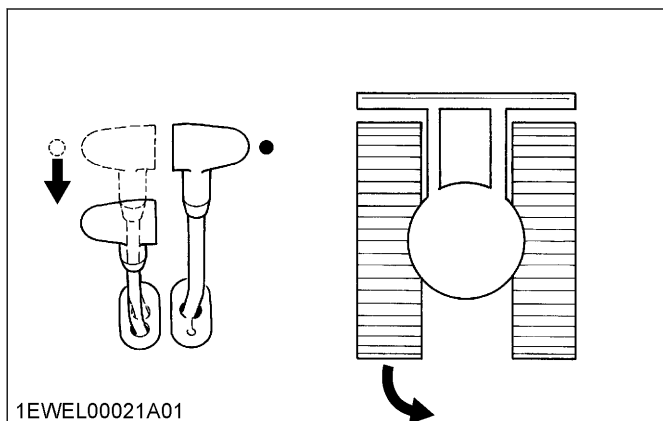
Change of direction while stationary

- Push the left drive lever forward, and the machine turns to the right.



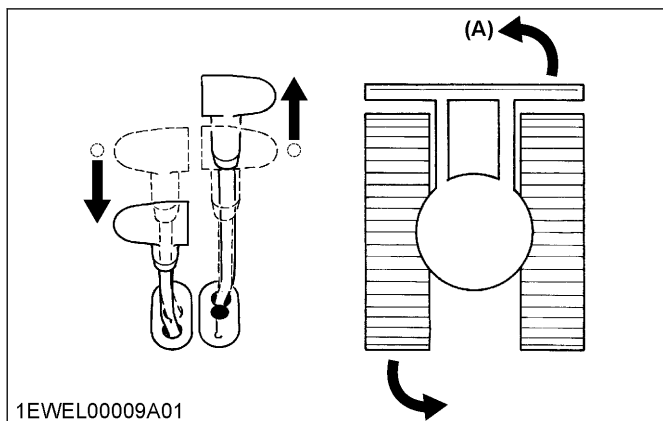
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- Pull the left drive lever backward, and the machine turns to the left.

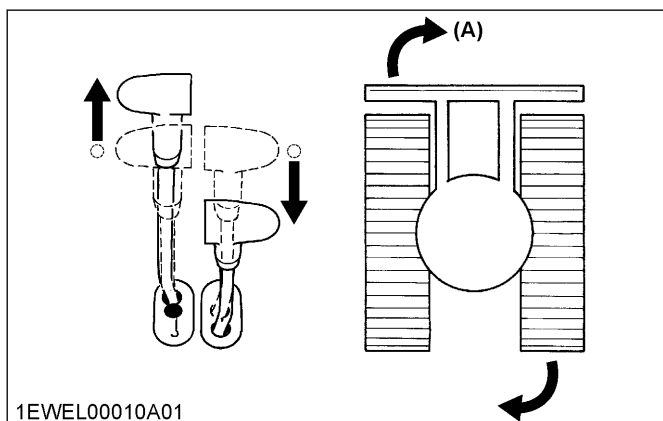


2. Spin turn

When both drive levers are activated in the opposite directions, both tracks will rotate with the same speed but in opposite directions. The centre of rotation is the centre of the machine.



(A) Left spin turn



(A) Right spin turn

UPHILL AND DOWNHILL DRIVING



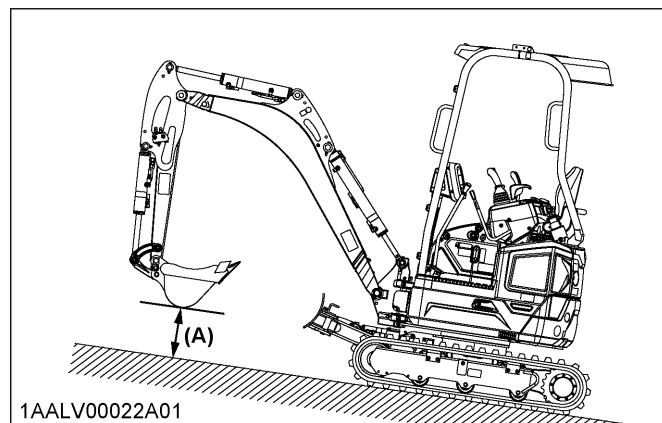
WARNING

To avoid personal injury or death:

- Before travelling up and downhill, be sure to be in completely extended track width (1300 mm).
- When travelling up or down a slope, use extra caution and follow the instructions below.

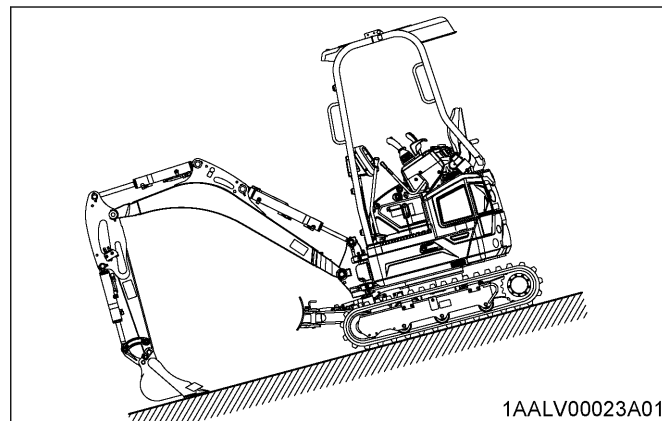
While travelling uphill, keep the lower edge of the bucket approximately 20 cm to 40 cm above the ground. While travelling downhill, it is safer to let the bucket slide over the ground. Although the excavator will not slip easily because of the crawlers, it is safer to let the bucket slide over the ground while travelling downhill. Always choose slow speed for uphill and downhill travelling.

Travelling uphill



(A) 20 cm to 40 cm

Travelling downhill



PARKING



WARNING

To avoid personal injury or death:

- Do not keep the bucket or dozer in an elevated position, as a person could accidentally touch the levers and cause serious accidents.

1. Park the machine on hard flat ground, stand the arm vertically, and lower the bucket to the ground.

2. Turn the potentiometer fully to low speed and idle the engine for about 5 minutes to cool it off gradually.
3. Turn the starter switch to **[STOP]**, stop the engine, then remove the key.
4. Pull the pilot control lock lever up to the LOCK position.
5. When leaving the machine, close all covers and lock.

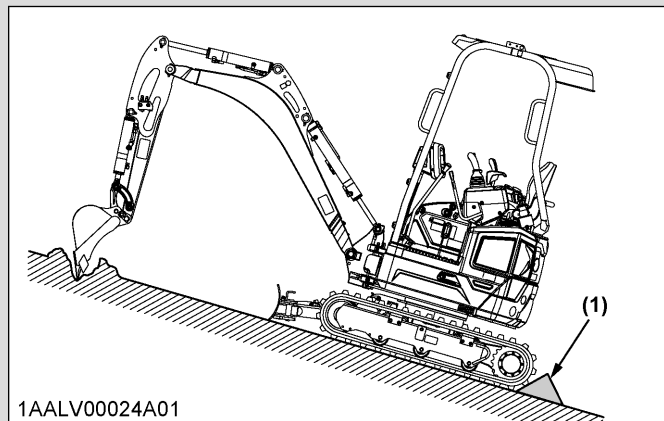
1. Parking on a slope



WARNING

To avoid personal injury or death:

- When the machine is parked or left unattended on a slope, put the bucket on the ground and place all control levers in their **"NEUTRAL"** positions, then brace the tracks with chocks.



1AALV00024A01

(1) Chock

TRACK WIDTH ADJUSTMENT AND DOZER OPERATION



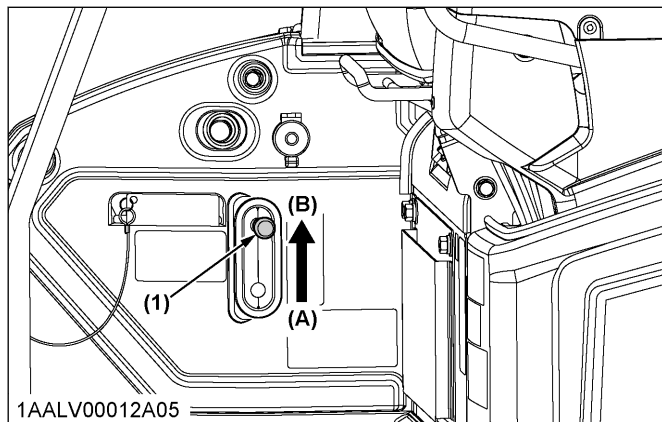
WARNING

To avoid personal injury or death:

- Only operate in narrow track width mode to pass through a narrow space on even ground. Other operation should be done in standard track width mode.
- To change the track width or use the dozer, set the track width change and dozer selection lever fully. If not, the machine may unintentionally move.
- To adjust the track width, both track width cylinders must be either completely extended (1300 mm) or completely retracted (990 mm).

1. Adjusting the track width

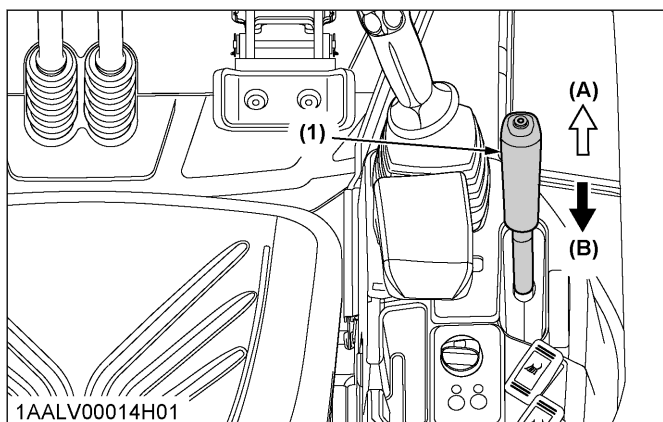
1. Set the track width change and dozer selection lever to the **"Track width change"** position (B).



(1) Track width change and dozer selection lever (A) Dozer (B) Track width change

2. Adjust the track width as follows:

- Push the control lever forward to increase the track width (from 990 mm to 1300 mm).
- Pull the control lever backward to decrease the track width (from 1300 mm to 990 mm).



(1) Control lever

(A) Increase
(B) Decrease

IMPORTANT :

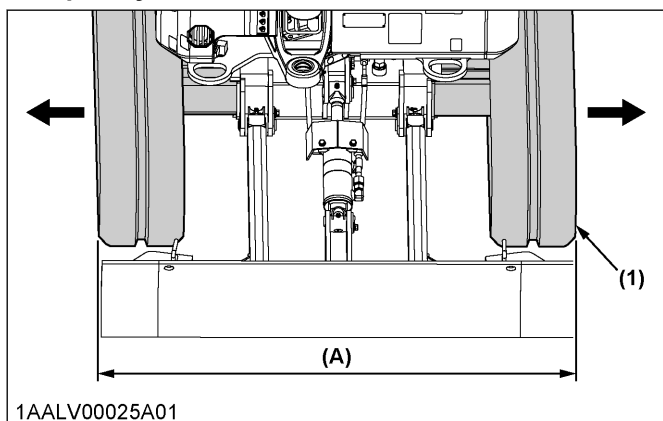
- If there are any obstructions or other such objects that impede the telescopic movement of the adjustable tracks, either remove the obstructions, or move the machine to a flat and level surface. If the tracks still don't move freely, use the front attachments and the blade to lift the tracks off the ground before adjusting the track width. Additionally, if the telescopic beams are clogged, remove any mud or other such foreign substances.

2. Adjusting the dozer width

To change from completely extended width to narrow width:

1. Pull out the fixing pin (1) and remove the extension dozer (2).
2. Set the extension dozer (2) as in the following illustrations and insert the fixing pin (1).

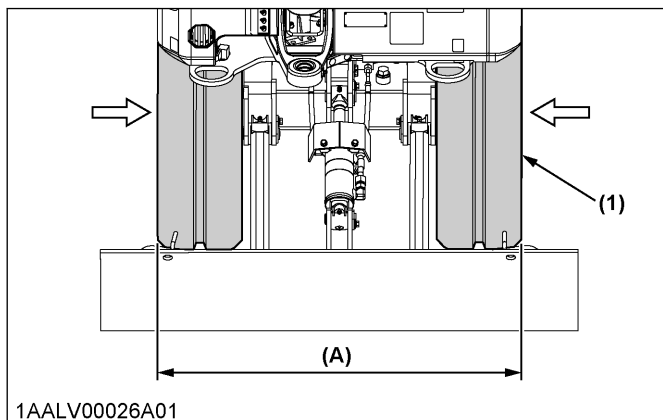
Completely extended width



(1) Track

(A) 1300 mm

Narrow width



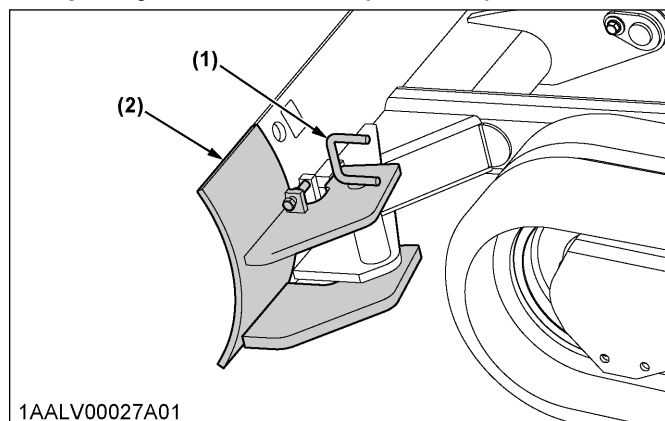
(1) Track

(A) 990 mm

3. After changing the track width, set the track width change and dozer selection lever to the "Dozer" position (A).

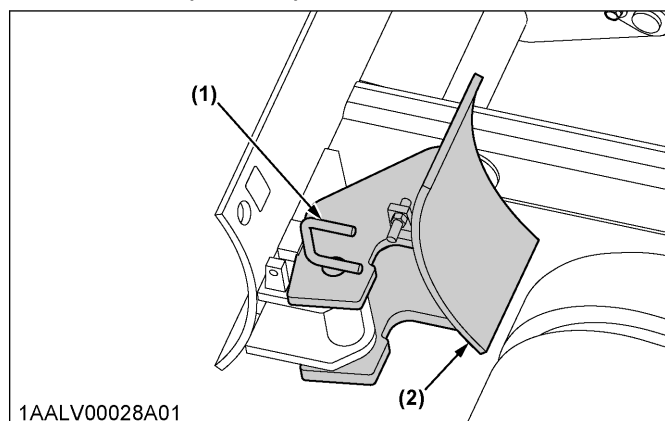
- Perform the same operations on the opposite side (left or right).

Completely extended width (1300 mm)



- (1) Fixing pin
(2) Extension dozer

Narrow width (990 mm)



- (1) Fixing pin
(2) Extension dozer

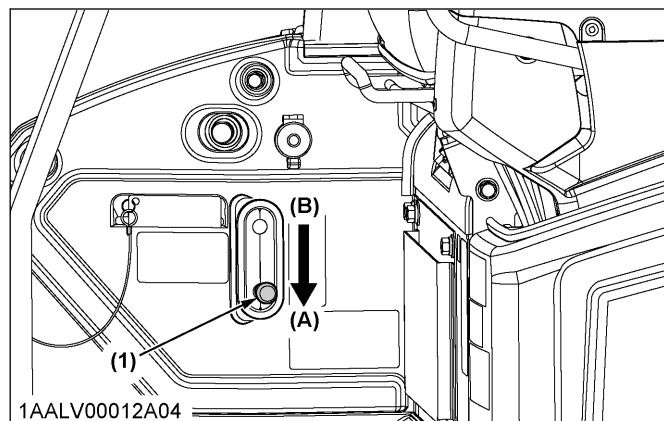
NOTE :

- The operation for changing from narrow width to completely extended width is the reverse.

3. Operating the dozer

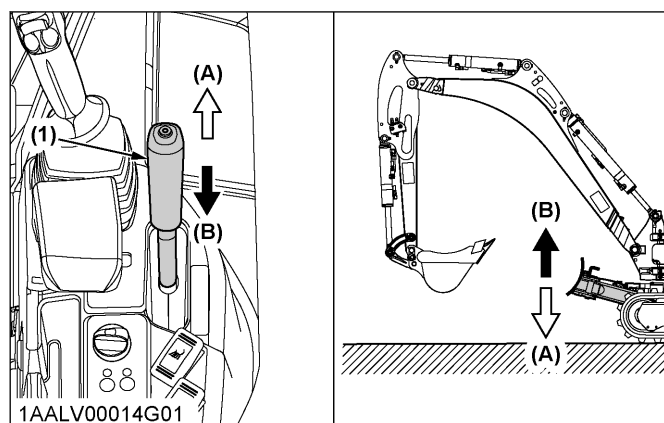
NOTE :

- While operating the dozer, the track width change and dozer selection lever must be in set position (A).



- (1) Track width change and dozer select lever
(A) Dozer
(B) Track width change

- Pulling the control lever back raises the dozer.
- Pushing the control lever forward lowers the dozer.



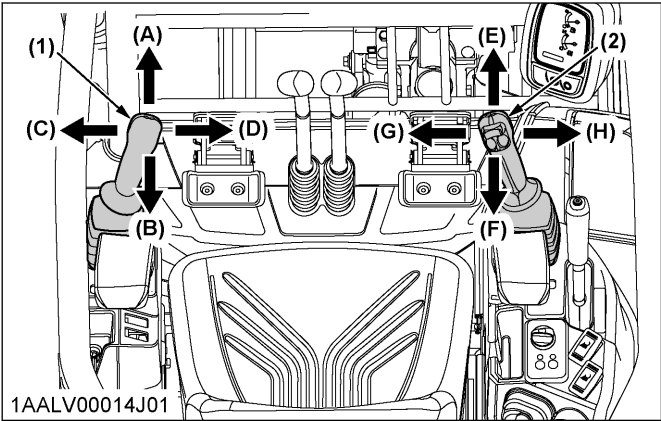
- (1) Control lever
(A) Lower
(B) Raise

- While undertaking earth moving work, control both drive levers with the left hand and the control lever with the right hand.

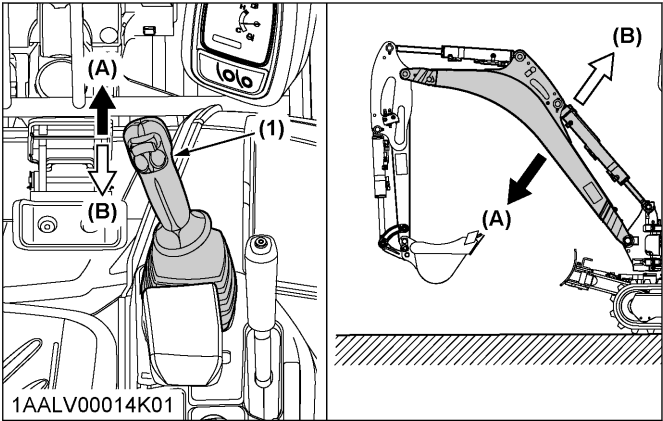
OPERATING THE CONTROL LEVERS

IMPORTANT :

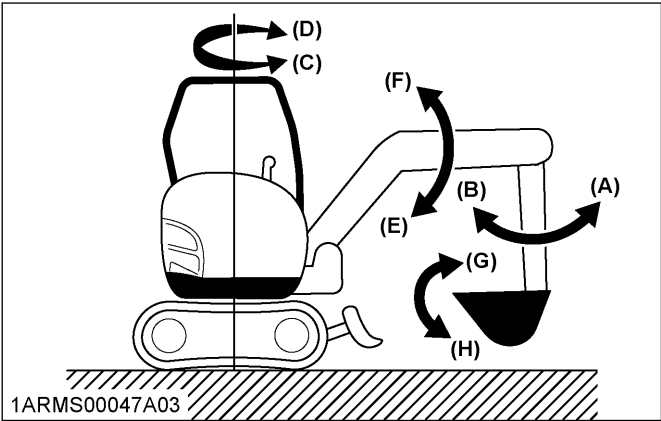
- Because a hydraulic pilot system is used, the control levers are only operational while the engine is operating. To ground the bucket, operate the engine at a low speed.
- Before getting on or off the machine, always lift the lock lever to the LOCK position.
- If the hydraulic fluid temperature is low, perform a warm-up operation to improve the response of the controls.
- With a low fluid temperature, the levers may feel heavy. This is not a problem.



(1) Control lever (left)
(2) Control lever (right)



(1) Control lever (right)
(A) Boom down
(B) Boom up



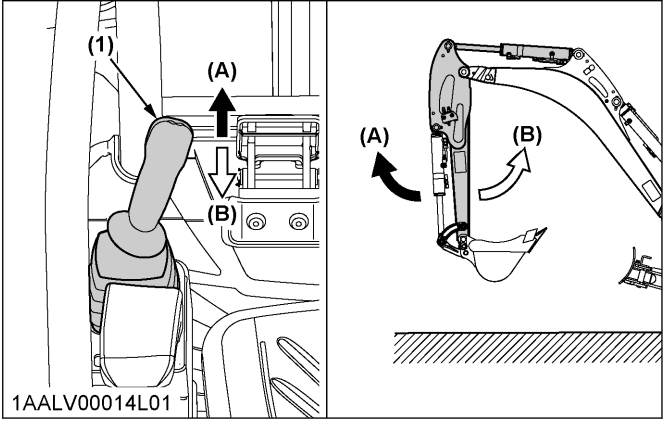
Lever position		Movement
Left control lever	(A)	Arm up
	(B)	Arm crowd
	(C)	Swivel left
	(D)	Swivel right
Right control lever	(E)	Boom down
	(F)	Boom up
	(G)	Bucket crowd
	(H)	Bucket dump

IMPORTANT :

- When lowering the boom, make sure that it does not hit the dozer and that the bucket teeth do not touch the dozer.

OPERATION OF THE ARM

- Pulling the control lever back pulls the arm in.
- Pushing the control lever forward moves the arm out.



(1) Control lever (left)
(A) Arm up
(B) Arm crowd

NOTE :

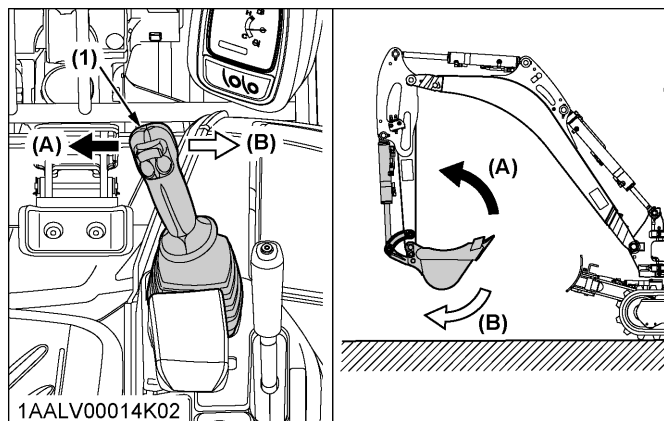
- When pulling in the arm, the movement may stop for a short moment when the arm is in its vertical position. This is caused by the combined load of the arm and bucket moving the cylinder piston away from the hydraulic flow causing a delay in the cylinder action, until the flow catches up with cylinder piston. This is a characteristic of the hydraulic system and is not a sign of a malfunction.

OPERATION OF THE BOOM

To raise the boom, pull the control lever backward. The boom is equipped with a cushion cylinder which helps prevent excavated material in the bucket from falling out. At low hydraulic oil temperature, for instance after starting the engine in cold weather, the cushioning function will be affected for a short period of time (approximately 3 to 5 seconds). This condition results from the viscosity of the hydraulic oil and is not a sign of malfunction. The cushion cylinder will operate normally as the oil warms up. To lower the boom, push the control lever forward.

OPERATION OF THE BUCKET

- To dig using the bucket, move the right control lever left from the "NEUTRAL" position.
- Moving the control lever right moves the bucket outwards and empties its contents.



(1) Control lever (right)

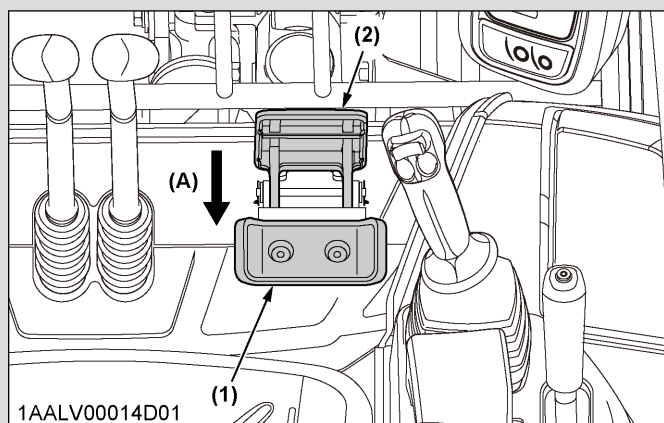
(A) Bucket crowd
(B) Bucket dump

SWIVEL AND BOOM SWING OPERATION

WARNING

To avoid personal injury or death:

- When working in groups, always let the others know the operation which is going to be performed before operating the machine.
- Keep others away from the machine working area.
- Lock the boom swing pedal when the boom swing function is not used.

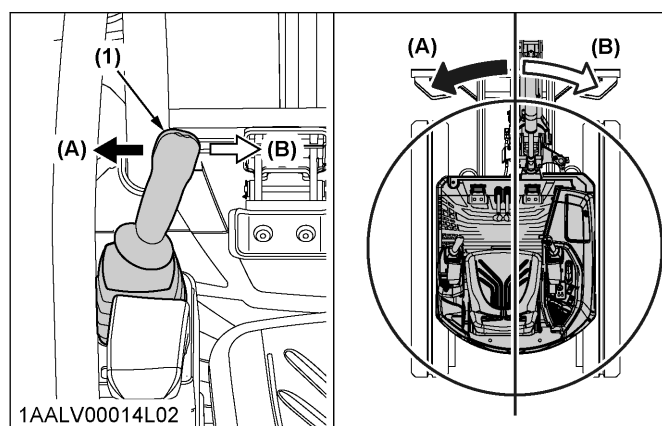
(1) Boom swing pedal
(2) Pedal lock

(A) Lock

1. Swivel operation

IMPORTANT :

- Do not operate the left attachment control lever abruptly from right to left (or vice versa). The low inertia causes high impact load on the swivel gear and the swivel motor, shortening the life of the machine.
- Move the control lever to the left and the upper structure will swivel to the left.
- Move the control lever to the right and the upper structure will swivel to the right.

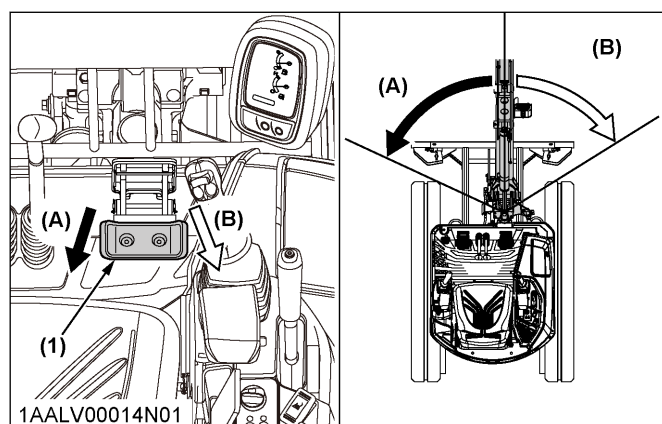


(1) Control lever (left)

(A) Swivel left
(B) Swivel right

2. Boom swing operation

1. Flip the pedal lock up to unlock the pedal.
2. Operate the boom swing as follows:
 - Step on the left side of the pedal to swing the boom to the left.
 - Step on the right side of the pedal to swing the boom to the right.



(1) Boom swing pedal

(A) Swing left
(B) Swing right

AUXILIARY PORT OPERATION

The auxiliary port is used to operate hydraulic attachments such as breakers.

WARNING

To avoid personal injury or death:

- Only attachments approved by Kubota may be used. The attachments must be installed and operated in accordance with their operator's manuals.
- When using a breaker or other attachment for demolition work, personal protective equipment is to be worn at all times (safety shoes, safety helmet, eye protection, ear protection and, if necessary, a breathing mask).
- Before carrying out any work that utilises the auxiliary port connectors, perform the following procedures:
 - Release the pressure in the hydraulic system.
(See **RELEASING PRESSURE TRAPPED IN THE HYDRAULIC SYSTEM** on page 84.)
 - Release the pressure in the auxiliary port connectors. [AUX1 switch type, AUX1 and AUX2 switch type]
(See **Releasing pressure trapped in the auxiliary port** on page 83.)
 - Make sure that the return change valve has to be set to the appropriate position for the selected operation mode. [AUX1 switch type, AUX1 and AUX2 switch type]
(See **Return change valve for direct return flow** on page 83.)

CAUTION

To avoid personal injury:

- The auxiliary ports may only be activated when an implement is attached.

IMPORTANT :

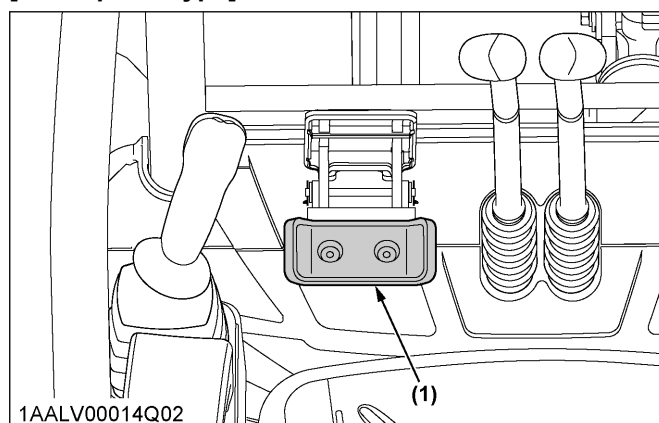
- The power rating of the auxiliary ports can be found in a different section.
(See **TECHNICAL DATA** on page 39.)

NOTE :

- When draining hydraulic oil, collect the drained hydraulic oil in a container and discard it in accordance with the applicable environmental regulations.

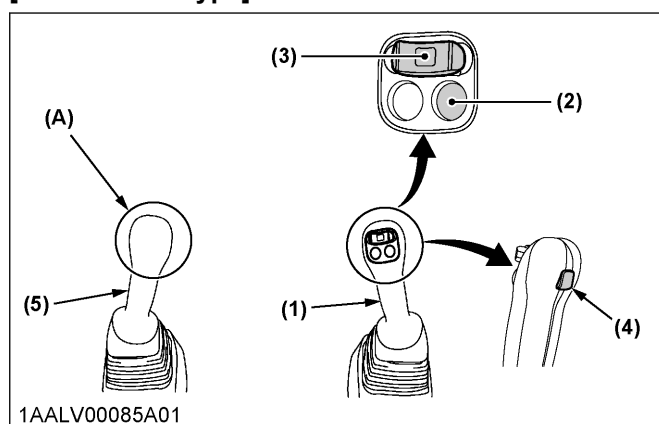
There are 3 different model types: the AUX1 pedal type, the AUX1 switch type, and the AUX1 and AUX2 switch type.

[AUX1 pedal type]



(1) Auxiliary port pedal

[AUX1 switch type]



(1) Control lever (right)

(2) AUX port enable switch

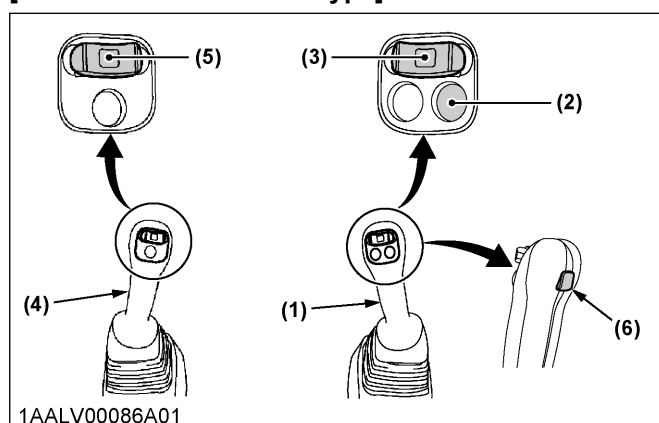
(3) Rocker switch for the auxiliary port

(4) One-way hold switch (right)

(5) Control lever (left)

(A) No switches on the lever

[AUX1 and AUX2 switch type]



(1) Control lever (right)

(2) AUX port enable switch

(3) Rocker switch for the auxiliary port

(4) Control lever (left)

(5) Rocker switch for the auxiliary port 2

(6) One-way hold switch (right)

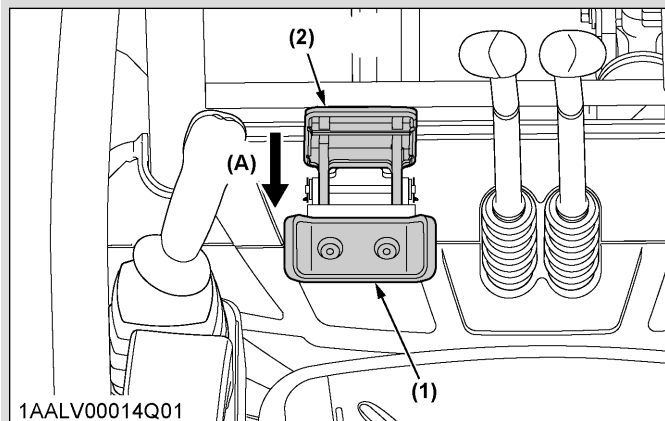
1. Auxiliary port pedal [AUX1 pedal type]



WARNING

To avoid personal injury or death:

- To lock the auxiliary port pedal, flip the pedal lock down. Make sure that the pedal is always locked when not in use.



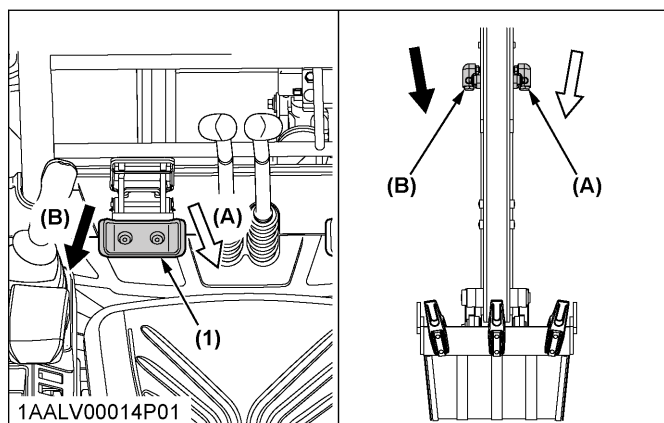
(1) Auxiliary port pedal

(A) Lock

(2) Pedal lock

IMPORTANT :

- When the auxiliary port is not used for a long period, dirt particles can settle in the lower part of the auxiliary port lines.
- When the plugs on the auxiliary port lines are removed to connect attachments, drain approximately 0.1 litres of oil per side before making the connection.
- Concerning the choice of a breaker, contact your dealer.



(1) Auxiliary port pedal

(A) Sends oil to pipe (A)

(B) Sends oil to pipe (B)

- Pushing the left of the pedal sends oil to pipe (B).
- Pushing the right of the pedal sends oil to pipe (A).

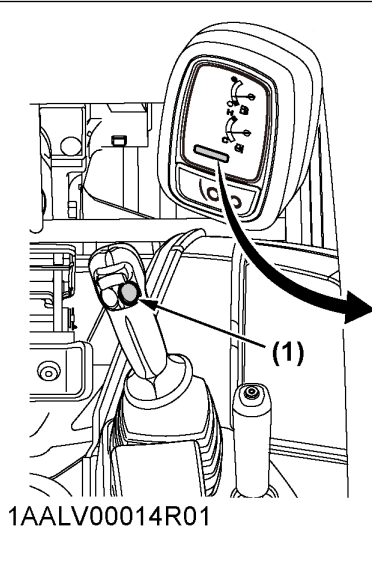
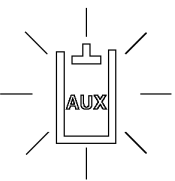
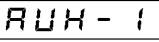
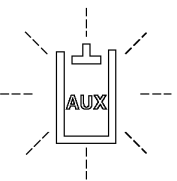
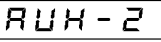
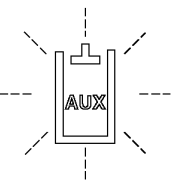
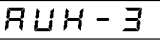
Maximum flow volume (theoretical)	27.7 L/min.
Maximum pressure	21.6 MPa (220 kgf/cm ²)

2. Selecting operation modes [AUX1 switch type, AUX1 and AUX2 switch type]

The auxiliary port connector is preset at the factory, enabling 3 operation modes to be selected in the case of the AUX1 switch type, and 2 modes to be selected in the case of the AUX1 and AUX2 switch type. Up to 6 operating modes can be preset.

Whenever the AUX port enable switch is pressed the operating mode changes by one level. The AUX operation lamp and the code on the display change accordingly.

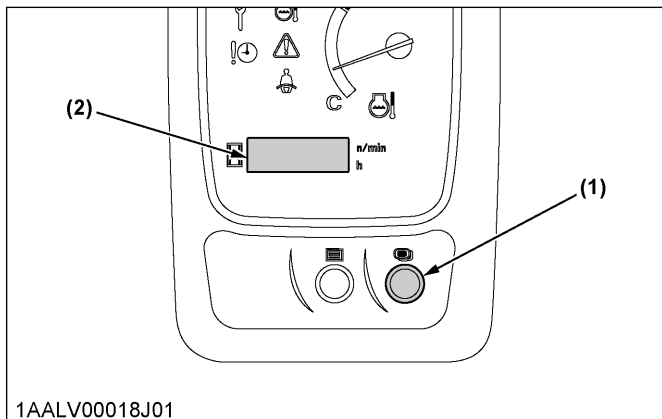
- NOTE :
- When the starter switch is turned to the [RUN] position the most-recently used setting is activated.

 1AALV00014R01	Mode 0 (Lamp off)   1JUNS00008A01 Auxiliary port not active	Mode 1 (Lamp lights up)   1JUNS00008A02 Maximum flow rate	Mode 2 (Lamp blinks)   1JUNS00008A03 One-way flow	Mode 3 (Lamp blinks)   1JUNS00008A04 Limited flow volume
--	--	--	--	---

(1) AUX port enable switch

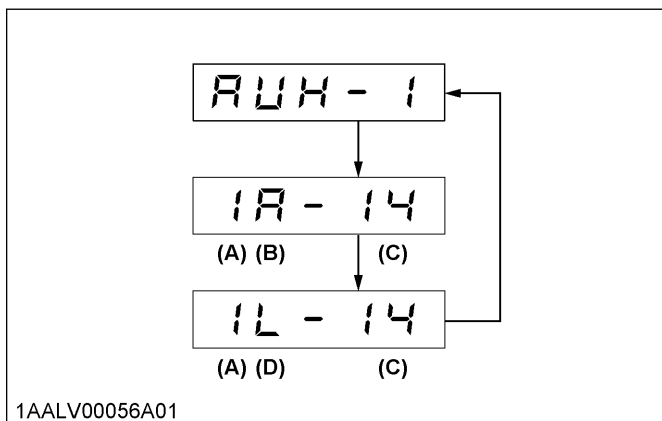
3. Checking the operation mode settings [AUX1 switch type, AUX1 and AUX2 switch type]

When the auxiliary port is switched on and an operation mode has been selected, press the display selector switch to display the selected flow rates on the LCD for a few seconds. Afterwards, the display reverts back to the selected operating mode.



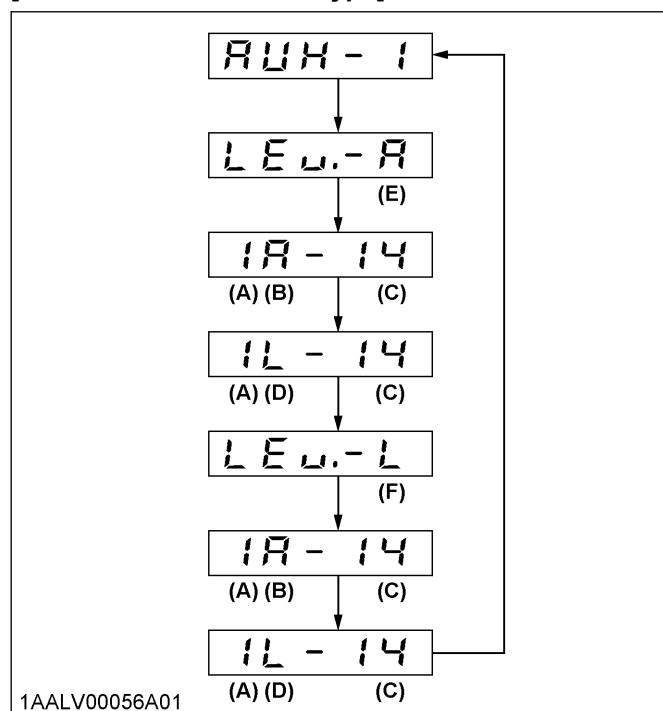
- (1) Display selector switch
(2) LCD

[AUX1 switch type]



- (A) Selected operation mode
(B) Right auxiliary port connector
(C) Selected flow rate level
(D) Left auxiliary port connector

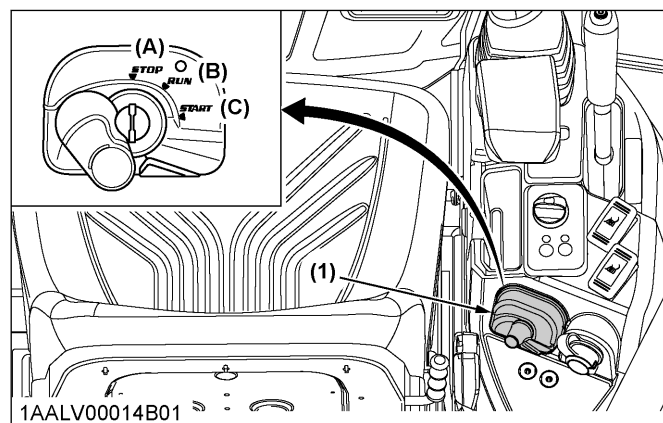
[AUX1 and AUX2 switch type]



- (A) Selected operation mode
(B) Right auxiliary port connector
(C) Selected flow rate level
(D) Left auxiliary port connector
(E) Right lever
(F) Left lever

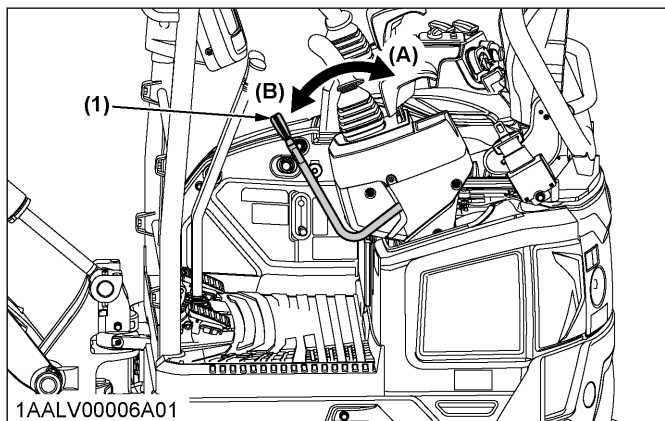
4. Operating the auxiliary port [AUX1 switch type, AUX1 and AUX2 switch type]

1. Turn the starter switch to the [RUN] position.



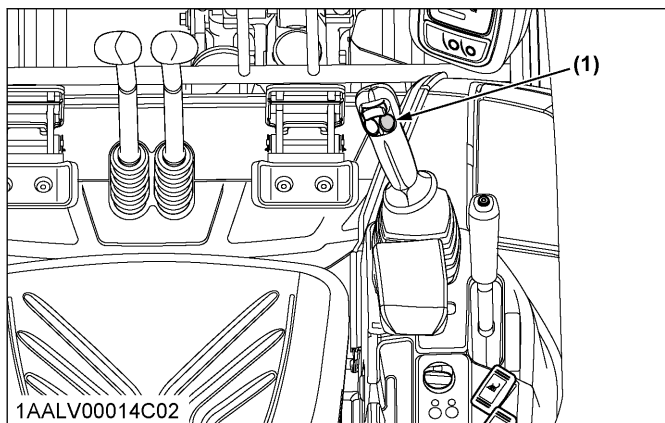
- (1) Starter switch
(A) STOP
(B) RUN
(C) START

2. Set the pilot control lock lever to the UNLOCK position.

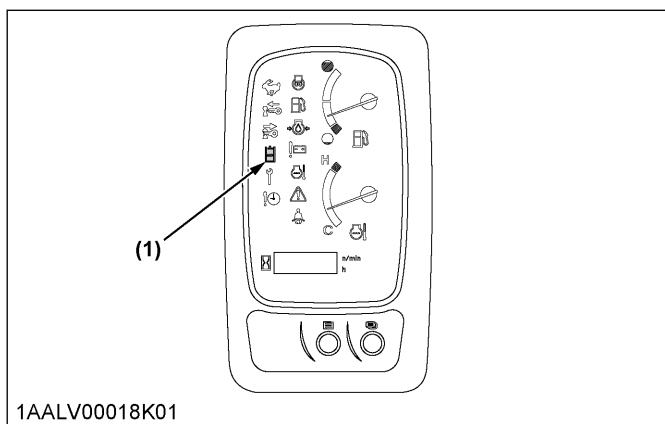


(1) Pilot control lock lever
(A) LOCK
(B) UNLOCK

3. Push the AUX port enable switch to enable the auxiliary port.
The AUX operation lamp comes on or flashes.



(1) AUX port enable switch



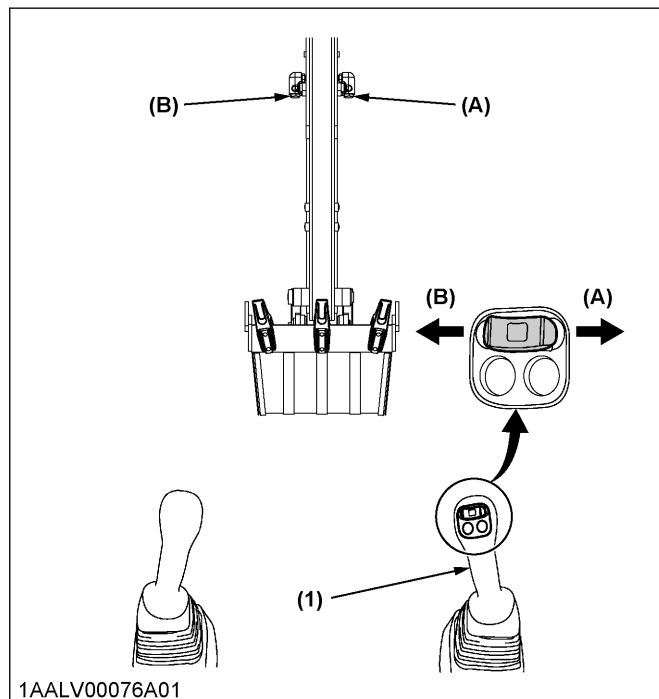
(1) AUX operation lamp

4. Operate the auxiliary port as follows:

[AUX1 switch type]

- Move the auxiliary port rocker switch on the right control lever to the right, and the oil flows towards connector 1.

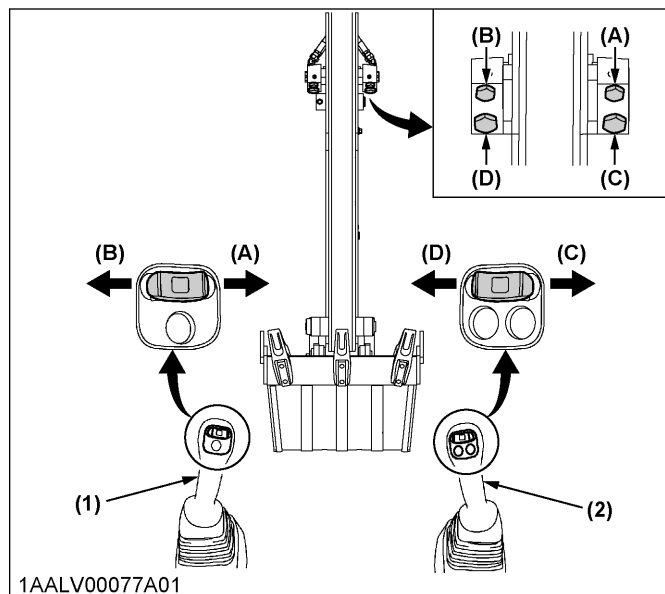
- Move the auxiliary port rocker switch on the right control lever to the left, and the oil flows towards connector 2.



(1) Control lever (right)
(A) Connector 1
(B) Connector 2

[AUX1 and AUX2 switch type]

- Move the auxiliary port rocker switch on the left control lever to the right, and the oil flows towards connector 1.
- Move the auxiliary port rocker switch on the left control lever to the left, and the oil flows towards connector 2.
- Move the auxiliary port rocker switch on the right control lever to the right, and the oil flows towards connector 3.
- Move the auxiliary port rocker switch on the right control lever to the left, and the oil flows towards connector 4.



(1) Control lever (left)
(2) Control lever (right)

(A) Connector 1
(B) Connector 2
(C) Connector 3
(D) Connector 4

NOTE :

- The proportional control enables you to smoothly control the implement speed. For example, if you move the rocker switch half way to the left, the implement moves at half speed.

5. One-way hold operation [AUX1 switch type, AUX1 and AUX2 switch type]



DANGER

To avoid serious injury or death:

- Before using the one-way hold switch, make sure that nobody is in the working area. The attachment can move in a sudden manner.
- Before using the one-way hold switch, check that the accessory is suitable for use with continuous oil flows. Use of this function on an accessory that is not suitable for use with continuous oil flow may cause injury or damage the machine or accessory.
- Always adapt the flow volume of the auxiliary port to the accessory. The auxiliary port cannot be operated proportionally with the one-way hold switch. The flow volume is adjusted to the highest level from the factory.

IMPORTANT :

- For one-way hold operation, the return change valve has to be set to the direct return flow position. (See Return change valve for direct return flow on page 83.)

- Set the operating mode to "One-way flow". (See Selecting operation modes on page 74.)
- Operate the one-way hold function as follows:

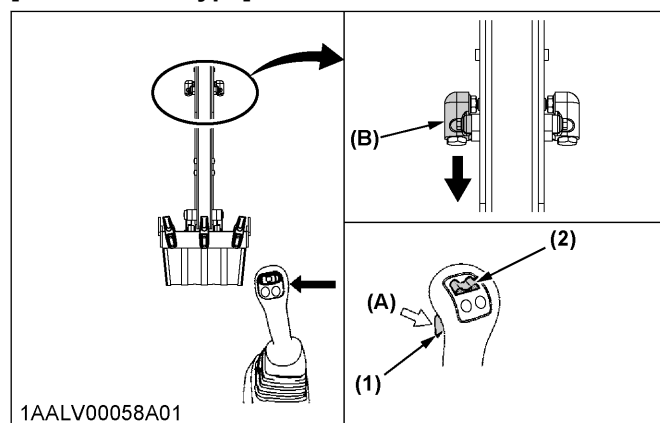
Switching on

- Briefly press the one-way hold switch, and the oil flows unilaterally to the auxiliary port connectors on the left side of the arm.

Switching off

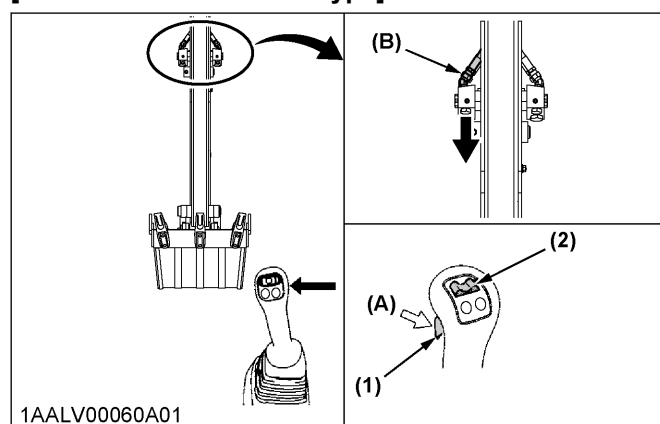
- Briefly press the one way hold switch again, and the oil flow stops.
- Alternatively, press the auxiliary port rocker switch briefly to the right or left to stop the oil flow.

[AUX1 switch type]



(1) One-way hold switch (A) Briefly press
(2) Auxiliary port rocker switch (B) Oil flows to the left

[AUX1 and AUX2 switch type]



(1) One-way hold switch (A) Briefly press
(2) Auxiliary port rocker switch (B) Oil flows to the left

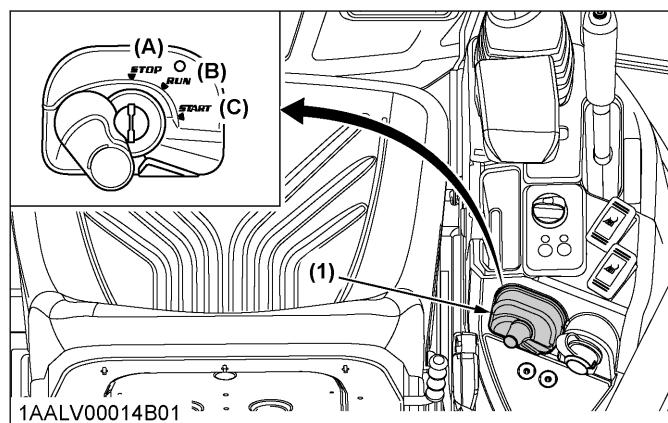
6. Setting the flow rate [AUX1 switch type, AUX1 and AUX2 switch type]

IMPORTANT :

- The flow at the auxiliary port is not constant when using a different function or when a relief valve is enabled.
- It is recommended to adjust this setting during the operation of the implement.

Suppose the same implement has to be attached to a different excavator. Even when using identical flow rate settings for the other excavator, the working speed may differ. For each excavator, you need to individually adjust the flow rate settings. Upon changing the implement, you need to determine and adjust the optimum flow rates for the new implement.

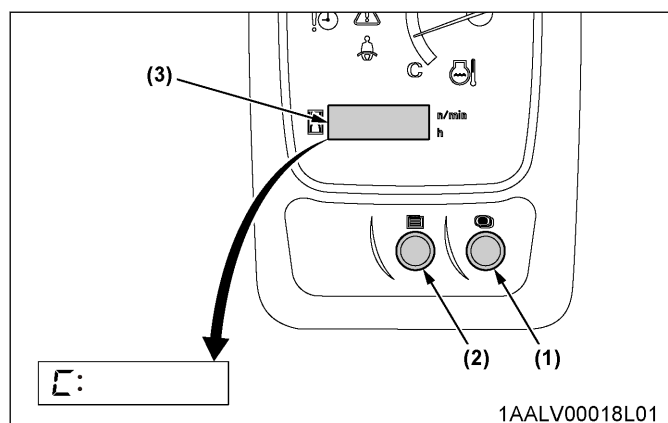
1. Turn the starter switch to the **[RUN]** position.



(1) Starter switch

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

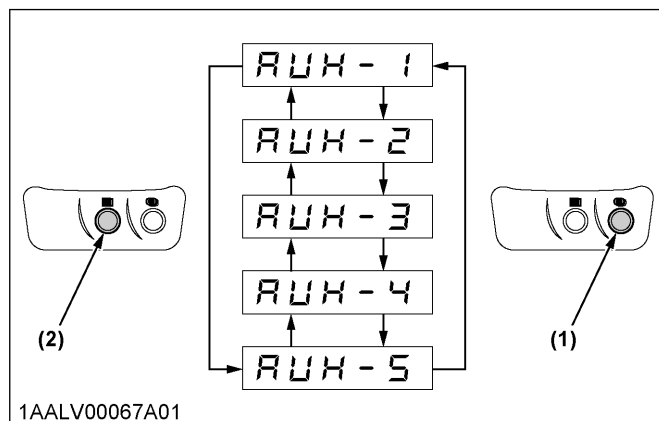
2. Press the user setting switch.
The following display message appears on the LCD.



(1) Display selector switch
(2) User setting switch
(3) LCD

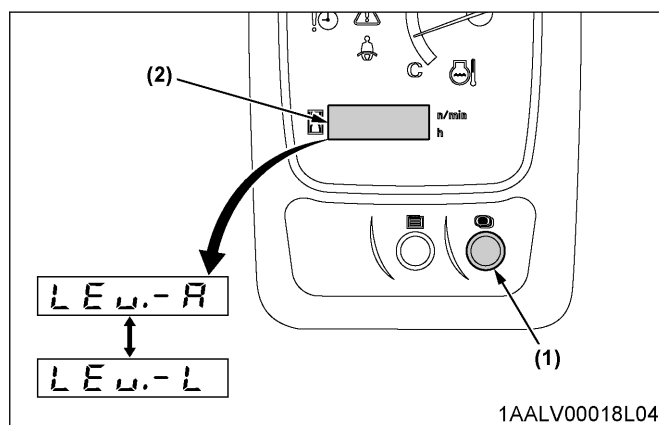
3. Press the display selector switch until "AUX" is displayed on the LCD.

4. Press and hold the display selector switch again to enable operating mode selection.
5. Cycle through the operating modes as follows until the desired operating mode is displayed:
 - Press the display selector switch to move to the next mode.
 - Press the user setting switch to return to the previous mode.



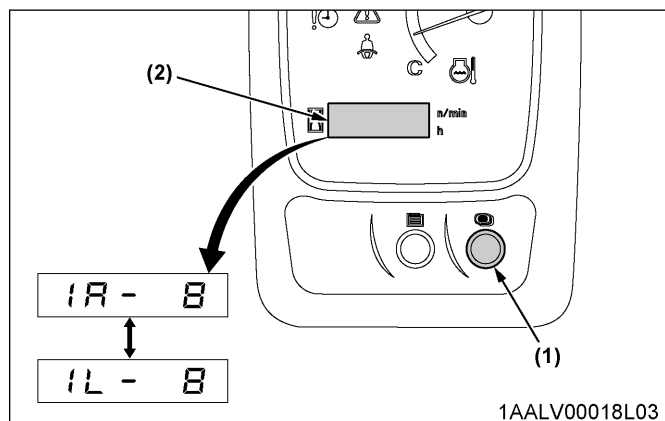
(1) Display selector switch
(2) User setting switch

6. **[AUX1 and AUX2 switch type only]**
Press the display selector switch to switch between the right control lever and the left control lever.



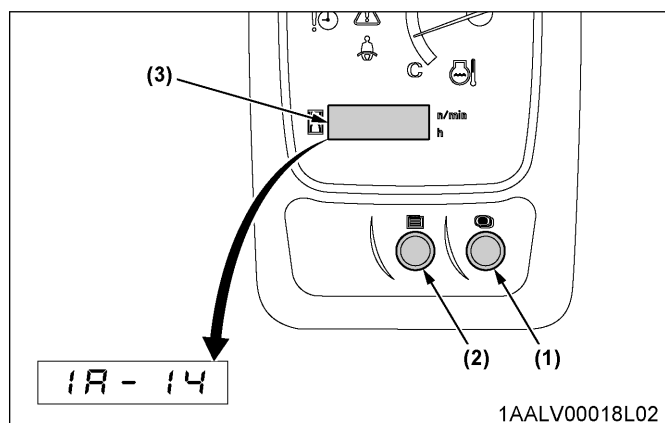
(1) Display selector switch
(2) LCD

7. Press and hold the display selector switch to switch between the left and right auxiliary port connectors.



- (1) Display selector switch
(2) LCD

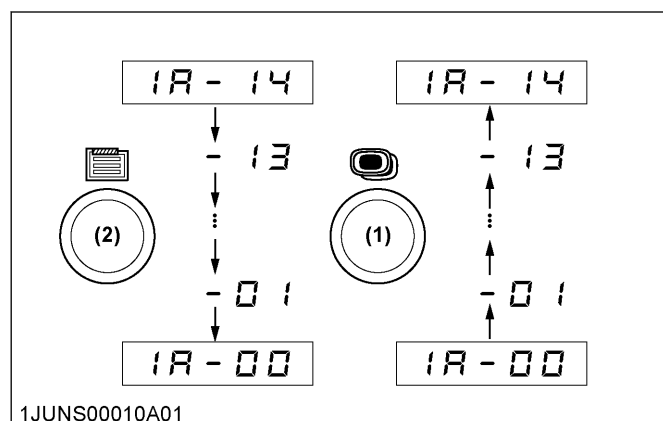
8. When the desired connector is displayed, use the display selector switch and the user setting switch to increase or decrease the flow rate as follows:
- Press the user setting switch to decrease the flow rate.
 - Press the display selector switch to increase the flow rate.



- (1) Display selector switch
(2) User setting switch
(3) LCD

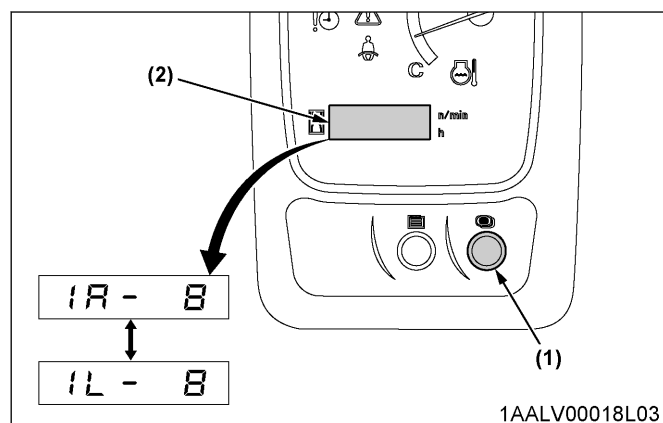
NOTE :

- The flow rate can be increased or decreased in 14 steps.
 - At the highest step, the flow rate reaches its maximum level.
 - If the flow rate is at the lowest level, flow is blocked and there is no oil flow.



- (1) Display selector switch
(2) User setting switch

9. Press and hold the display selector switch to select the next connector, and set the flow rate in the same manner.



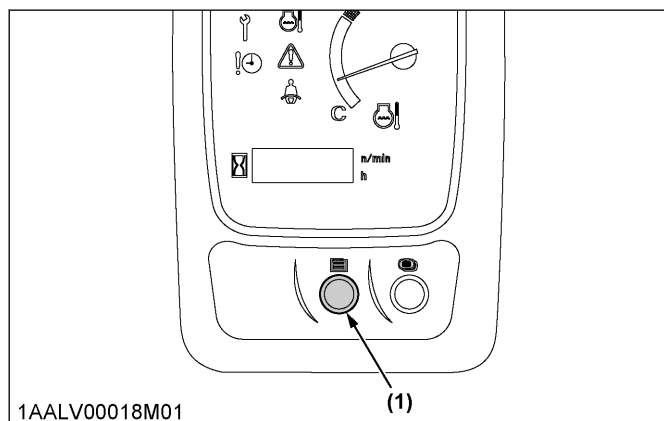
- (1) Display selector switch
(2) LCD

NOTE :

- You can switch continuously between the left and right AUX port flow rate settings.

10. Once the flow rates for the desired operation mode have been set, press and hold the user setting switch. The operating mode is once again shown on the display.
11. If necessary, set the flow rates for the other operation modes by repeating steps 5 through 10.
12. Once the flow rates for the final operation mode have been set, press and hold the user setting switch to exit flow rate setting.

13. Press the user setting switch to return to the normal display screen.

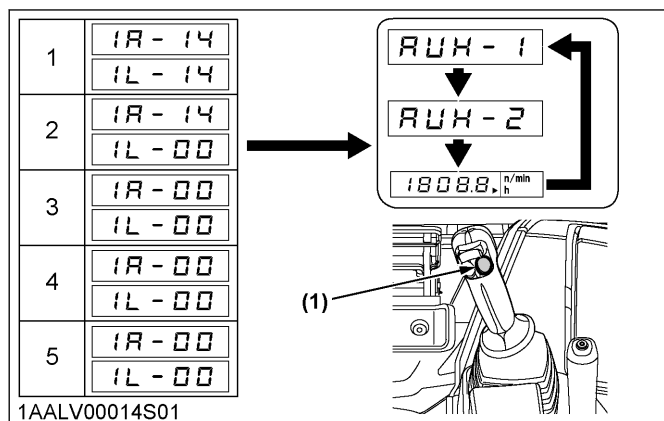


(1) User setting switch

NOTE :

- When the flow rate setting value for all connectors in a single mode is set to Zero, this operating mode will not be indicated when pressing the AUX port enable switch. During operation of the excavator, only those modes with a flow rate greater than Zero will be available.

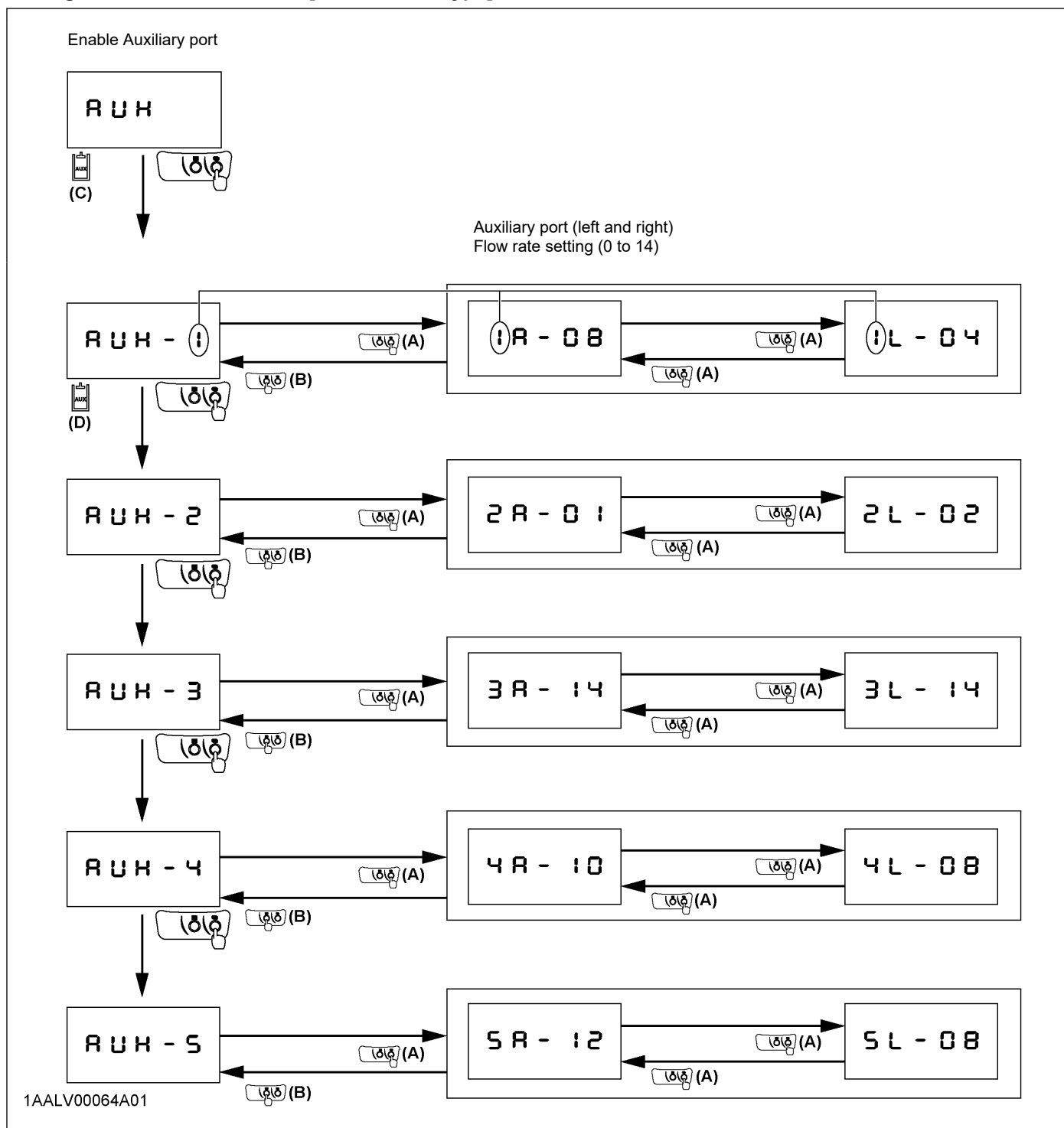
The example in the following illustration shows that only mode 1 and mode 2 have been assigned a flow rate. Each time the AUX port enable switch is pressed, the display screen switches between mode 1, mode 2, and the default display screen.



(1) AUX port enable switch

7. Auxiliary port flow rate setting flow chart [AUX1 switch type, AUX1 and AUX2 switch type]

Setting the maximum flow rate [AUX1 switch type]



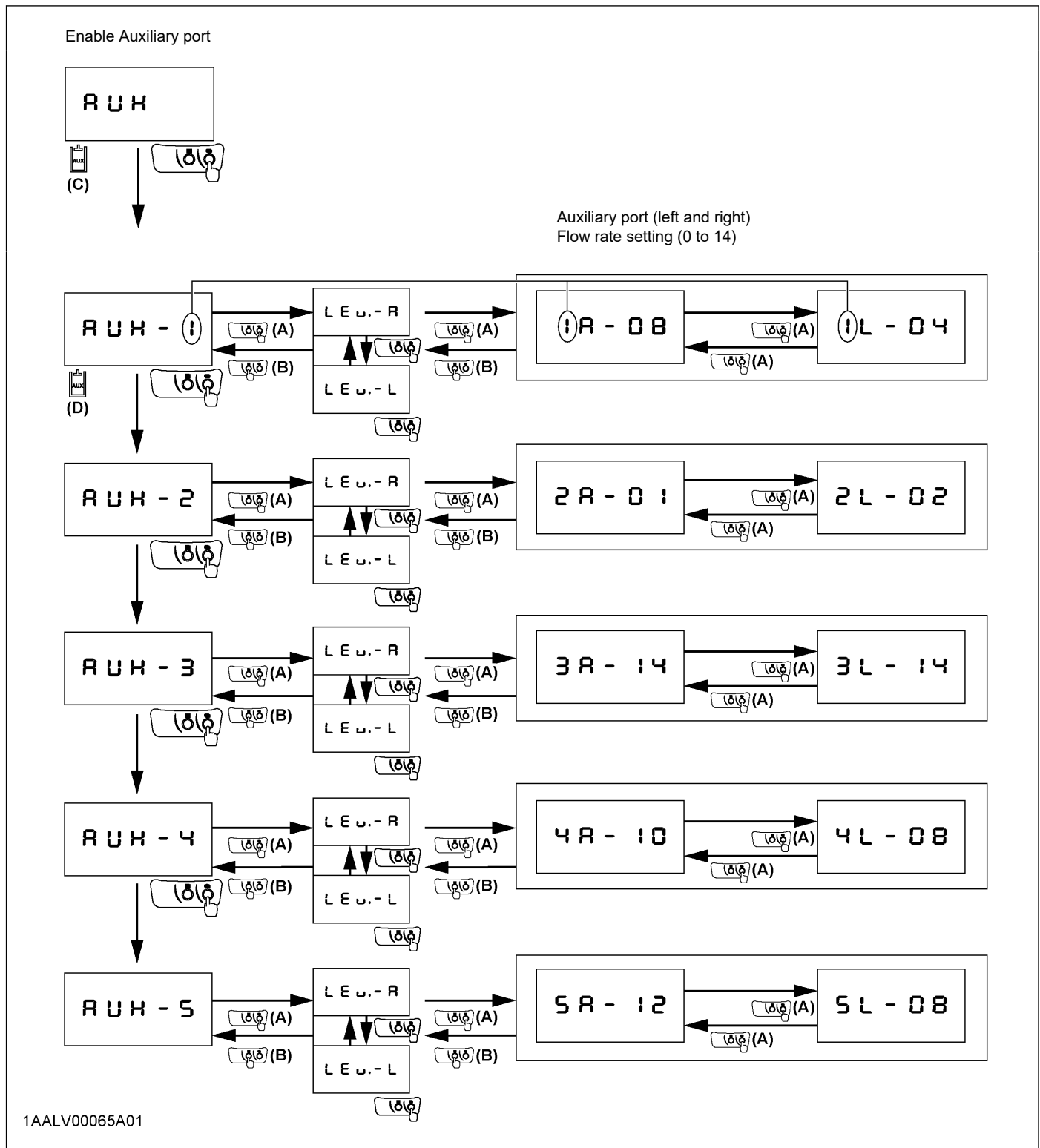
(A) Press and hold the display selector switch.

(B) Press and hold the menu button.

(C) Lit up

(D) Blinking or lit up

Setting the maximum flow rate [AUX1 and AUX2 switch type]



(A) Press and hold the display selector switch.

(B) Press and hold the menu button.

(C) Lit up

(D) Blinking or lit up

8. Return change valve for direct return flow [AUX1 pedal type, AUX1 switch type, AUX1 and AUX2 switch type]



WARNING

To avoid personal injury or death:

- If the change valve is in position “*direct return flow*”, although an attachment with indirect return flow has been mounted, the return flow to the hydraulic oil tank remains open. This can lead to uncontrolled movements of the attachment, even if the machine has been switched off.

Make sure that the change valve is switched according to the attachment.

The change valve has two settings.

Direct return flow

- Move the lever clockwise up to the stop to enable “*direct return flow*”.
- When “*direct return flow*” is enabled, the return flow is directed from the attachment to the hydraulic oil tank via the return filter. The return flow only occurs via the right auxiliary port connector of the arm.

IMPORTANT :

- The “*direct return flow*” position is used for hammering attachments, such as a hydraulic hammer.

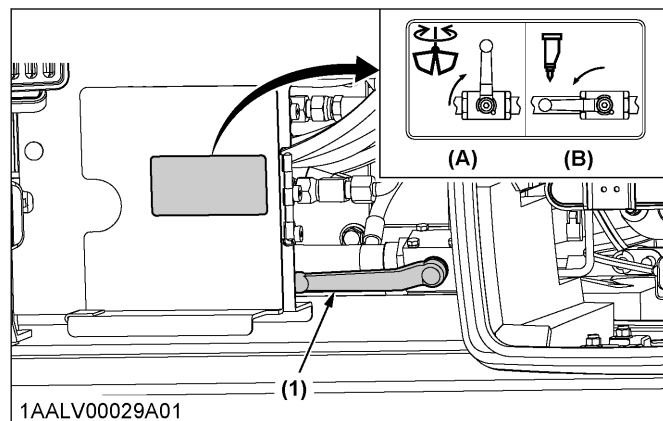
Indirect return flow

- Move the lever counterclockwise up to the stop to enable “*indirect return flow*”.
- When “*indirect return flow*” is enabled, the return flow is directed from the attachment to the return filter via the control valve and then to the hydraulic oil tank. In this case, return flow can be via the left or right auxiliary port connector (according to the position of the auxiliary port pedal) of the arm.

IMPORTANT :

- The “*indirect return flow*” position is used for rotating attachments, such as a rotary gripper or an auger.

Move the return change valve to the required position, depending on the action of the attachment being used (rotary or breaking).



(1) Lever

(A) Indirect return flow

(B) Direct return flow

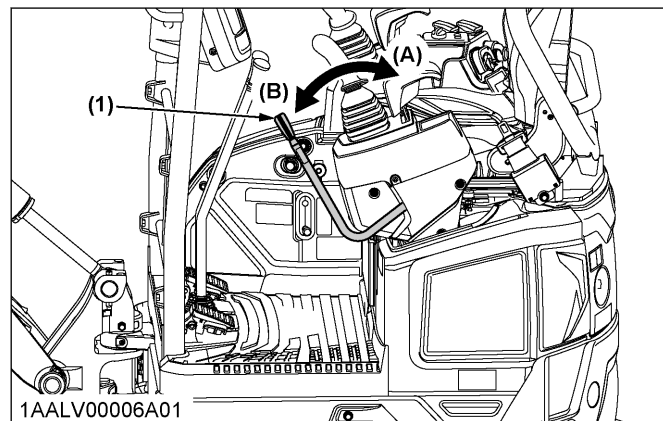
9. Releasing pressure trapped in the auxiliary port [AUX1 switch type, AUX1 and AUX2 switch type]

1. Lower the bucket and dozer down to the ground.
2. Turn the starter key to the [STOP] position and shut off the engine.
3. Wait until the engine has come to a standstill.
4. Turn the starter switch to the [RUN] position.

IMPORTANT :

- Do not start the engine.

5. Set the pilot control lock lever to the UNLOCK position.



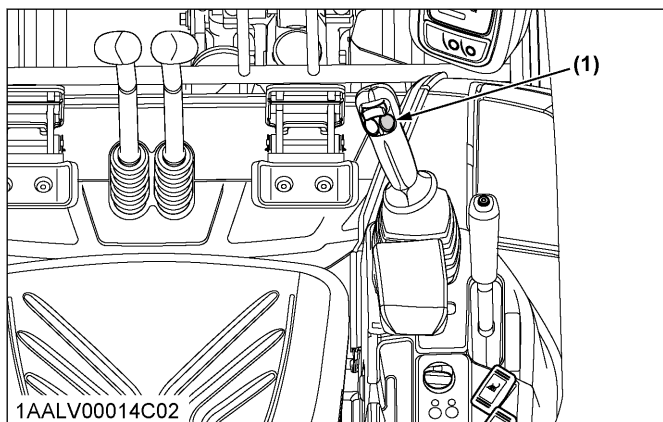
(1) Pilot control lock lever

(A) LOCK

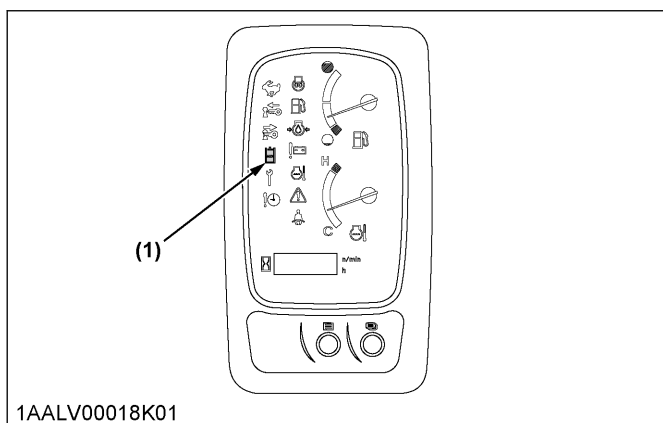
(B) UNLOCK

6. Press the AUX port enable switch and turn on the auxiliary port function.

When the auxiliary port is switched on, the AUX operation lamp comes on or flashes.



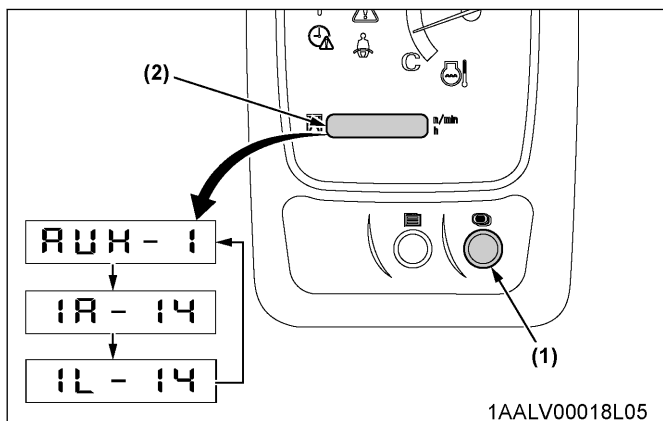
(1) AUX port enable switch



(1) AUX operation lamp

7. Press the display selector switch, and the set flow rate in the right auxiliary port connector and then in the left auxiliary port connector is displayed for few seconds.

Make sure that the flow rates are not set to the lowest level. If the flow rate is at the lowest level (zero), flow is blocked and there is no oil flow.



(1) Display selector switch

(2) LCD

IMPORTANT :

- If the flow is blocked, the pressure cannot be relieved completely. The hydraulic couplings at the auxiliary port connectors can jam as a result. If this happens, connection or separation of the hydraulic cables of attachments is not possible.

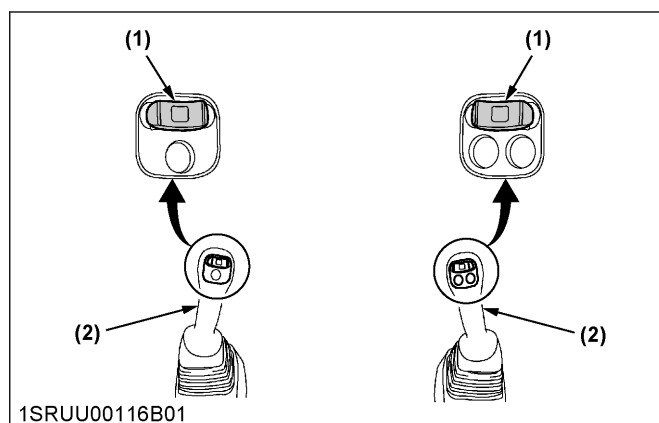
To rectify the situation, take one of the following measures:

- Switch to a different mode.
(See Selecting operation modes on page 74.)
- Increase the flow rate.
(See Setting the flow rate on page 78.)

8. Push the auxiliary port rocker switch on the right control lever all the way over to the right, and then all the way over to the left.

9. [AUX1 and AUX2 switch type only]

Push the auxiliary port 2 rocker switch on the left control lever all the way over to the right, and then all the way over to the left.



(1) Rocker switch

(2) Control lever

RELEASING PRESSURE TRAPPED IN THE HYDRAULIC SYSTEM



WARNING

To avoid personal injury or death:

- Relieve residual hydraulic pressure immediately after the engine has stopped.

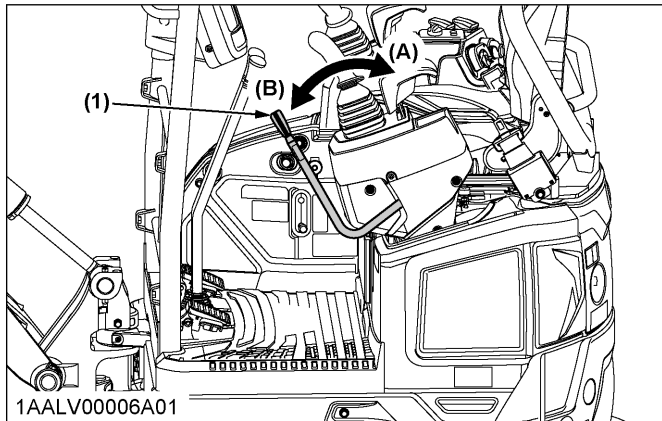
1. Lower the attachments and the blade down to the ground.
2. Turn the starter key to the [STOP] position and shut off the engine.

- After stopping the engine, turn the starter key to the [RUN] position.

IMPORTANT :

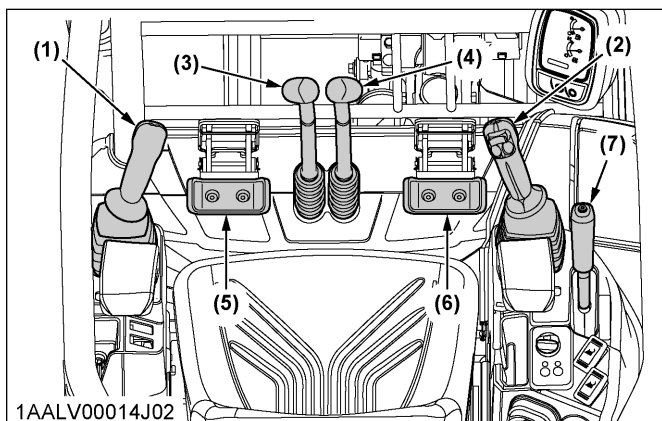
- Do not start the engine.

- Set the pilot control lock lever to the UNLOCK position.



(1) Pilot control lock lever
(A) LOCK
(B) UNLOCK

- Move all of the control levers and pedals to the limit stop in all directions to release pressure from the hydraulic system.



(1) Control lever (left)
(2) Control lever (right)
(3) Drive lever (left)
(4) Drive lever (right)
(5) Auxiliary port pedal [AUX1 pedal type]
(6) Boom swing pedal
(7) Control lever for dozer or track width

LOWERING FRONT ATTACHMENTS MANUALLY

The boom and arm can be lowered in case of an engine failure or if malfunctions occur in the hydraulic system.



DANGER

To avoid personal injury or death:

- Make sure nobody is standing in the lowering area before starting the emergency lowering procedure.

- Make sure that the starter switch is in the [RUN] position.
- Lower the boom and the arm with the control levers. (See OPERATING THE CONTROL LEVERS on page 69.)

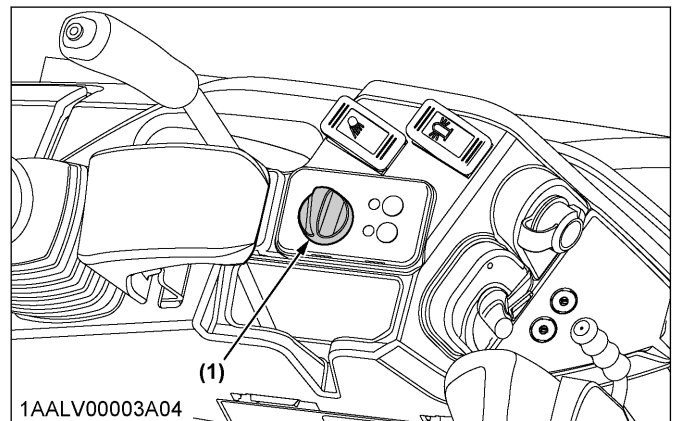
NOTE :

- The lowering function is available only for a short time, as it is controlled by the accumulator in the hydraulic system. The cylinders extend or retract by force of gravity.

AUTO IDLE (AI) OPERATION

Potentiometer

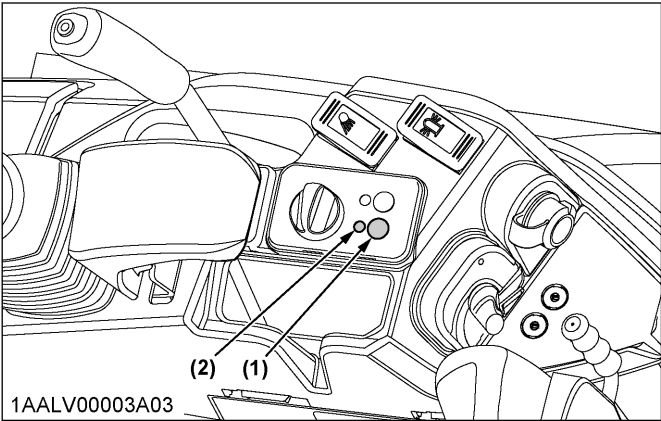
With this potentiometer, the operator can adjust the engine speed when the Auto Idle control is activated.



(1) Potentiometer

Auto Idle (AI) switch

With this switch, the Auto Idle control is turned on or off. The Auto Idle control allows the engine speed to drop to idle speed when the control levers are left in neutral for longer than four seconds. If the control is activated, the engine speed rises immediately to the preset rpm. If the Auto Idle is not activated, the potentiometer can be utilised to control engine speed in a similar way to a conventional throttle control lever.



(1) Auto Idle switch
(2) Indicator

CAUTION

To avoid personal injury:

- When operating in confined spaces or when loading onto a vehicle, turn off the Auto Idle switch (lamp off). This is to prevent unwanted engine speed increase when control levers are activated.

IMPORTANT :

- It is possible that the Auto Idle may not function until hydraulic oil warms up in cold weather. Therefore, it is not recommended to activate Auto Idle until the machine has completely warmed up.

NOTE :

- Before operating the control lever, check the indicator.
- The Auto Idle control, when selected by a switch, provides the operator with a way to control the engine speed without moving the potentiometer. This is done simply by not activating any control levers for about 4 seconds after stopping work, and then to simply restore a preset (by potentiometer) engine speed, activate any control lever to return to work.
- The purpose of the system is to reduce fuel consumption, noise and operator fatigue.

ANTI-THEFT SYSTEM

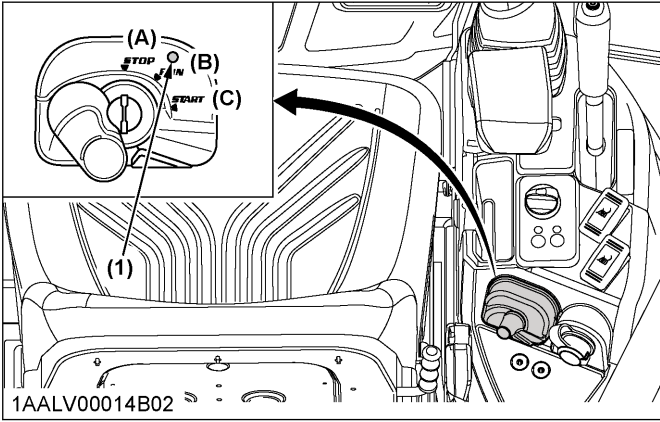
If the machine is equipped with an anti-theft system that restricts the engine to only being started using a registered key.

If a registered key is lost or stolen, the key can be unregistered. This prevents the key from being able to start the engine, thus protecting the machine against theft.

With the key at the [STOP] position, the anti-theft indicator stays on to signal that the anti-theft function is

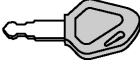
enabled. Make sure that this indicator is on before leaving the machine.

The anti-theft system makes it difficult to steal the machine. However, it cannot prevent theft completely.



(1) Anti-theft indicator
(A) STOP
(B) RUN
(C) START

The machine comes with two different types of keys:

 1KXTR00011A01	Black key (individual key)	This key is used to start the engine. It is possible to start the engine as before by inserting the key and turning it to the [START] position. Registering a black key with the machine by using the red key will allow the black key to start the engine. A key not registered with the machine cannot be used to start the engine. • Initially, 2 keys including a spare key, are supplied. The 2 accompanying keys have been already registered. Up to 4 keys can be registered.
 1KXTR00012A01	Red key (registration key)	If a black key, used for starting the engine, should be lost, the red key is used to register another black key with the machine. The engine cannot be started with this key. Details regarding how to use the red key can be found in a different section. (See Registering a black key (individual key) with the machine (when a black key is lost) on page 86.)

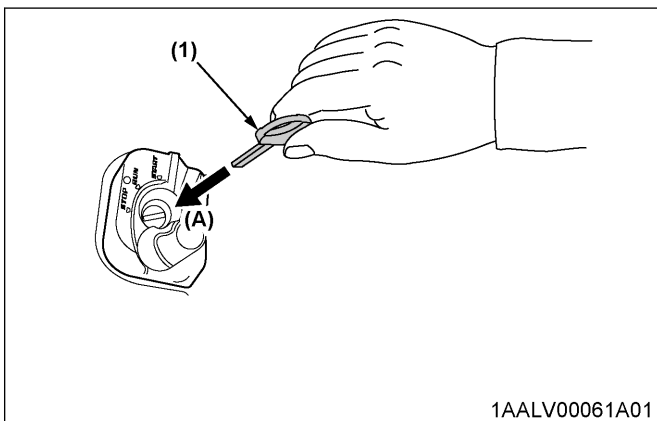
1. Registering a black key (individual key) with the machine (when a black key is lost)

WARNING

To avoid personal injury or death:

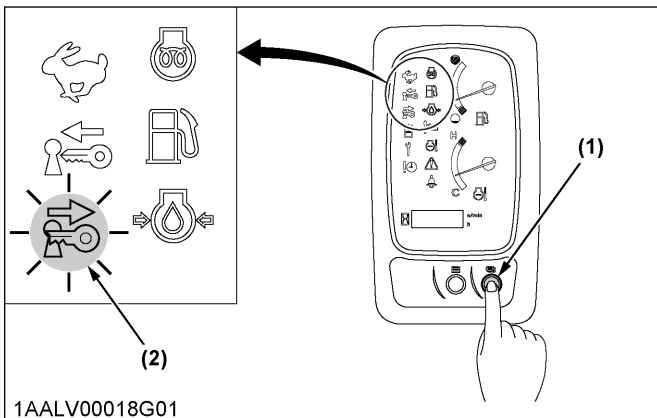
- Before programming an anti-theft key, sit in the operator's seat and make sure all the control levers are in their "NEUTRAL" positions. If this is neglected, the machine may start moving as soon as the engine is started, which could lead to a dangerous situation. Starting the excavator is only allowed when the operator is sitting on the operator's seat.
- Make sure that there are no persons within the excavator's working area. It is essential to warn persons in the vicinity of the excavator by briefly honking the horn.
- The exhaust gas from the engine includes harmful substances such as carbon monoxide. Be careful not to make this setting in a room where the exhaust gases easily build up or in an ill-ventilated place. The exhaust gas contains carbon monoxide, a colourless, odourless, and lethal gas.

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



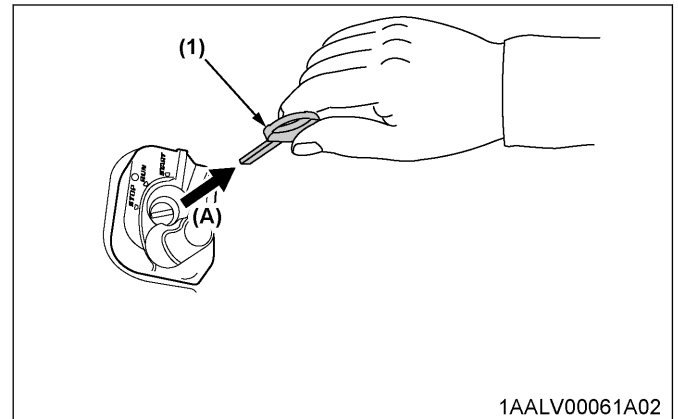
(1) Red key (A) Insert

2. Press the display selector switch once and the pull out key lamp blinks.

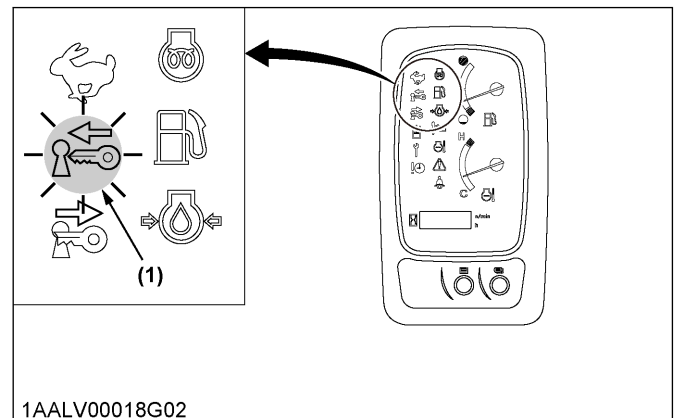


(1) Display selector switch
(2) Pull out key lamp

3. Pull out the red key from the starter switch, and the insert key lamp blinks.



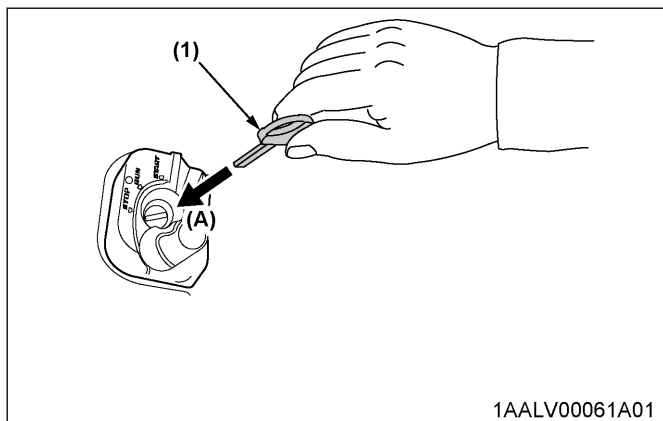
(1) Red key (A) Remove



(1) Insert key lamp

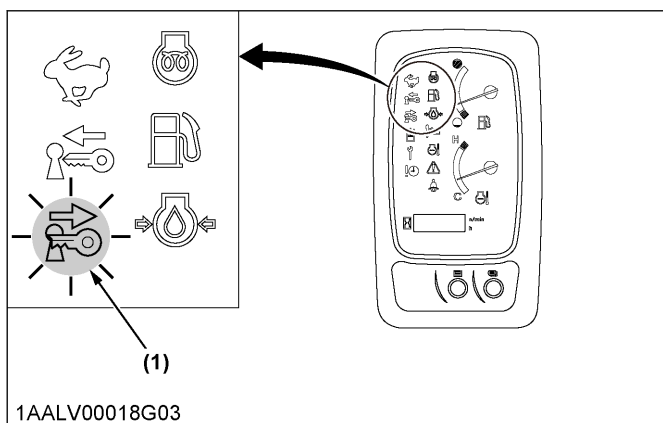
4. Insert the black key into the starter switch.
Do not turn the inserted key. If the key is turned to the **[RUN]** position, return it to the **[STOP]** position and return to step 1.

After a short moment, the pull out key indicator blinks. This confirms that the black key has been registered with the machine.



(1) Black key

(A) Insert



(1) Pull out key lamp

5. Turn key into **[RUN]** position to complete the registration process.
6. One after the other, insert all registered black keys into the starter switch and check whether the engine can be started using these keys.

NOTE :

- If a registered black key is stolen or lost, re-register the remaining black key. When the re-registration is performed, the stolen or lost black key is unregistered and it becomes impossible to start the engine with that key.
- If the red key is stolen or lost, it becomes impossible to register or re-register a black key (for starting the engine) and the peripheral devices should be replaced. Therefore store the red key with great care. If by any chance it gets lost, promptly contact your dealer or a Kubota-designated service factory.

- Use the Kubota-specified key ring to hold the black key or the red key. Any unspecified key rings may interfere with the signal transfer between the key and the starter switch, possibly failing to start the engine or to register a key properly.
- Do not bundle two or more keys when using them. Doing so may cause electric wave interference, possibly failing to start the engine.
- Cut and remove the ring that is used to bundle the keys at the time of delivery. If the keys remain bundled, the engine may start with the red key or the re-registration may not be performed properly.
- If an unregistered key is inserted and turned more than 6 times in 1 minute, the alarm sounds for 30 seconds. The alarm keeps sounding even if the key is removed.
Insert and turn on the registered key, and the alarm stops itself.
- If something is wrong with the machine, immediately contact your dealer and have the machine inspected and repaired.

IMPORTANT INFORMATION ON MACHINE OPERATION

- Do not try to crush concrete or boulders using side swings with the bucket. Also avoid using side sweeps of the bucket to move earth piles.
- Under all circumstances avoid the following operations:
 - Excavation using the gravitational impact of the machine.
 - Compacting of gravel or soil using the dropping action of the bucket.
 - Excavation using the travelling power of the machine.
- Never use the bucket as a hammer to drive posts into the ground.
- Do not try to drop or shake off soil adhering to the bucket with a shock caused by suddenly stopping the machine while in full-stroke operation. This can cause damage to the machine.
Adhering soil can be shaken off when the bucket is being emptied by moving the bucket out to the maximum stroke of the cylinder. Should this not suffice, swing out the arm as far as possible and operate the bucket back and forth.
- Do not drive or dig with the bucket teeth rammed into the ground.
- When loading soil, do not dig the bucket deeply into the ground. Instead, make relatively shallow slices with the bucket out as far as possible. This technique reduces the stress on the bucket.
- When working in water, the water should only reach up to the lower edge of the swivel frame.

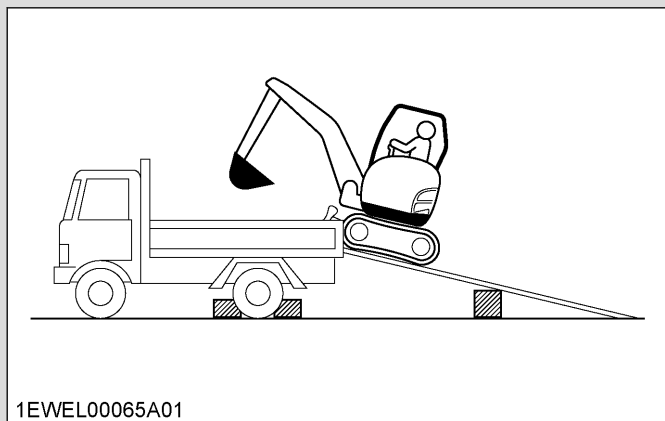
- Do not hit the dozer with the boom cylinder.
Make sure that the boom cylinder does not hit the dozer when doing deep excavation. If necessary swivel around so that the dozer is in the back of the machine.
- Pay attention when pulling in the bucket.
When pulling in the bucket (for driving or transportation) avoid hitting the dozer.
- Avoid collisions.
When moving the machine, pay attention that the dozer does not collide with obstructions such as boulders, and so on.
Such collisions shorten the life of the dozer and the cylinder substantially.
- Support the machine correctly.
When stabilising the machine with the dozer, lower the dozer to engage the full width on the ground.
- If the water or mud level reaches higher than the top of the tracks, the swivel bearing, swivel motor gear, and ring gear may be exposed to mud, water, and other foreign objects.
The machine must be properly pressure washed after each use.
 - Thoroughly clean the area around the swivel bearing, swivel motor gear, and ring gear to remove foreign objects.
 - Inspect the swivel motor oil sump (if equipped) for water contamination. If water is present, refer to operator's manual for lubricant replacement procedure.
 - Refer to operator's manual for proper swivel bearing, swivel motor gear, and ring gear lubrication procedures.
 - Reinstall any protective covering if removed earlier.

TRANSPORTING THE MACHINE ON A VEHICLE

DANGER

To avoid personal injury or death:

- Before driving the machine onto the transport vehicle, clean the loading area and tracks of the machine in order to ensure as much friction as possible between the crawlers and the loading area.
- No directional changes should be made when the machine is on the ramp. Should a change of direction be necessary, drive off the ramp completely and make the turn.
- Nobody is allowed in the loading area or in close proximity to that area while operating the machine on the ramp and in the loading area, such as when driving onto the ramp or when rotating the swivel frame.
 - Guides must maintain a safe distance away from the machine.



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- When the machine reaches the point between the ramp and the bed, halt and then move very slowly until the machine reaches the horizontal position.
- Move the machine onto the vehicle only with the arm completely pulled in.
- Do not jack up the machine using its boom to load or unload the machine from the vehicle. Doing this is dangerous.
- Make sure that the ramp is of sufficient capacity and securely connected to the vehicle to support the machine safely throughout the loading / unloading operation.

IMPORTANT :

- When driving forwards or backwards onto the vehicle, or when swivelling the upper body, make sure that the gates of the vehicle will not be damaged.

TRANSPORTING ON A VEHICLE

WARNING

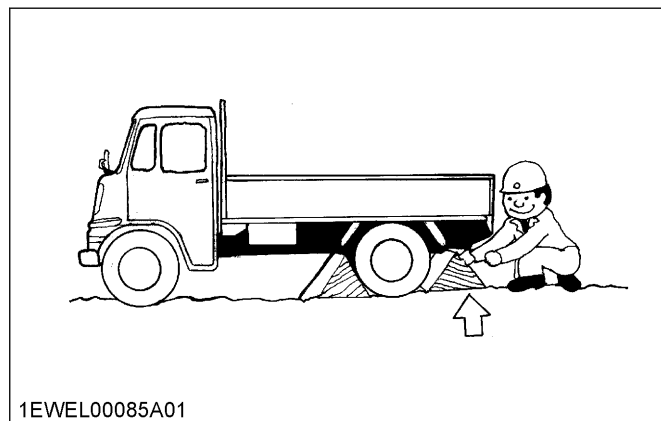
To avoid personal injury or death:

- After loading the machine on the vehicle, lower the bucket and dozer onto the bed.

Prepare a platform to load or unload the machine.

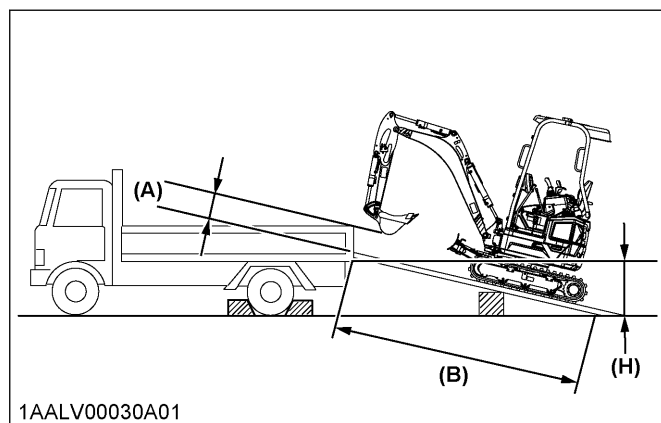
Take following steps when using ramps.

1. Apply the parking brakes of the vehicle, and block the drive wheels from both sides.



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2. Use mounting brackets to secure the ramp properly. Connect the ramp directly to the bed.

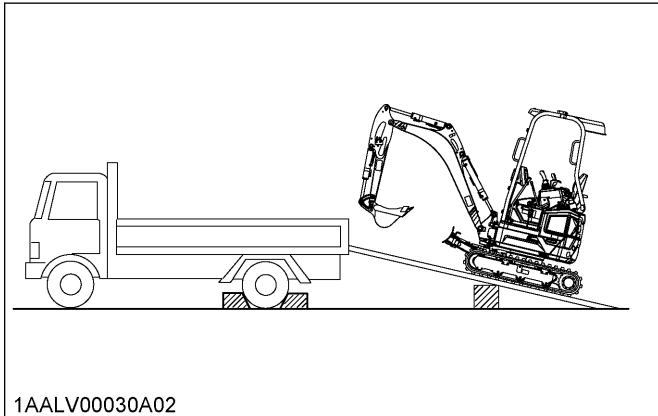


1AALV00030A01

- (A) 20 cm to 40 cm
(B) $4 \times H$ or more

3. Position the left and the right ramp so that the centre line of the transport vehicle is aligned with the centre line of the excavator to be loaded.

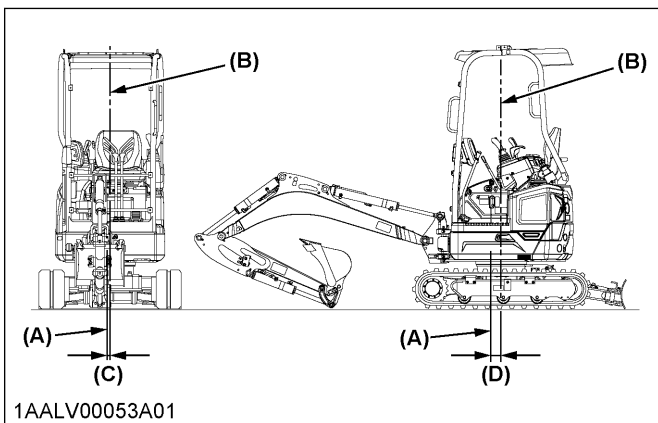
4. For additional safety, use blocks or supports under the ramp and the bed.



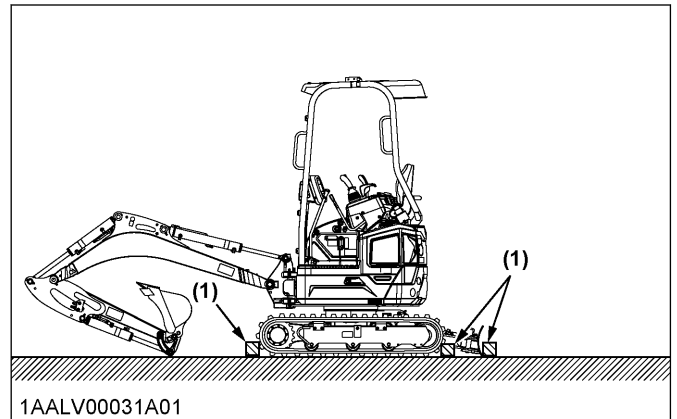
5. Completely align the ramp and the tracks and then drive the machine slowly up the ramp with the dozer in the front.
6. After ensuring that the tracks are completely on the bed, lower the dozer and swivel the upper body around to the back of the vehicle.
7. Completely retract the arm and bucket. Lower the boom until the bucket linkages touch the loading area.
8. Block the tracks and chain down the machine.

NOTE :

- The machine's centre of gravity is 15 mm to the right, and 50 mm in front of the axis of rotation.



- (A) Centre of gravity
(B) Axis of rotation
(C) 15 mm
(D) 50 mm



- (1) Block

! WARNING

To avoid personal injury or death:

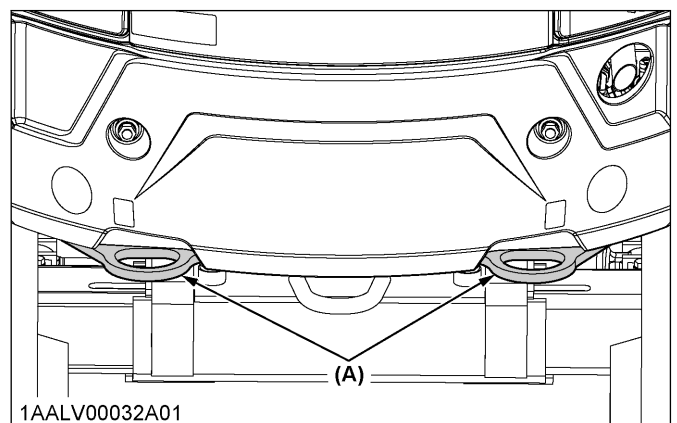
- Risk of accidents due to malfunction in transport safety device.

The machine's lashing points are designed and constructed to secure the machine safely. If fastening points other than the lashing points described here are used, the transport safety device could malfunction and the machine could slip or fall from the transport vehicle while being transported.

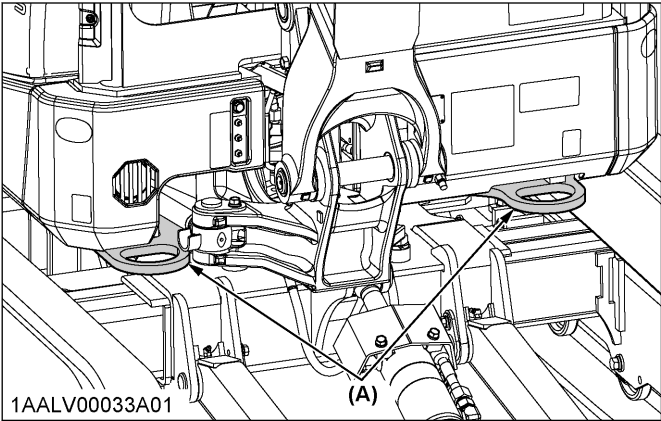
- Only use the indicated lashing points for the transport safety device.

When tying down the machine observe the following points:

- Only use the approved lashing points.

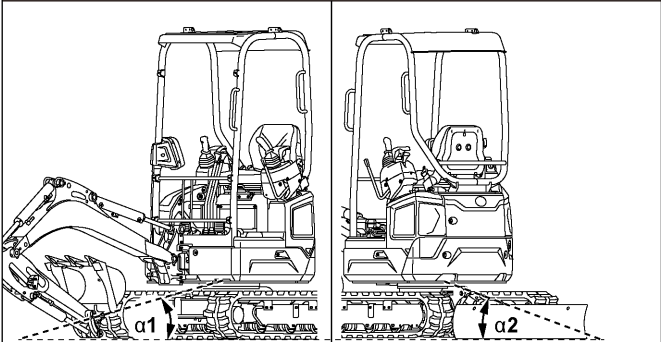
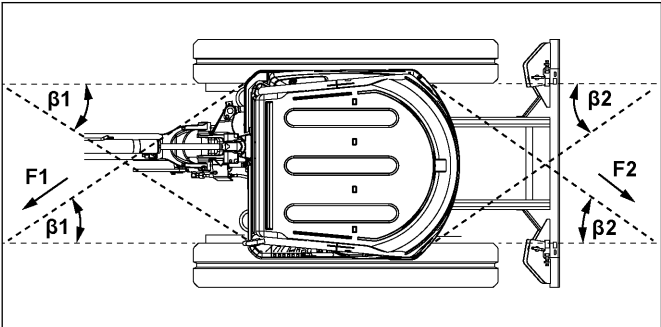


- (A) Lashing point



(A) Lashing point

- Fasten the lashing material to the approved lashing points and tension diagonally. Maintain the appropriate angle as shown in the following illustrations.



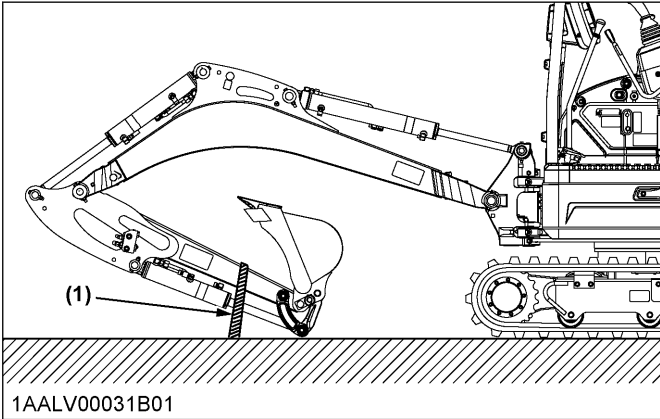
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Tying-down angle (°)	$\alpha 1$	$\alpha 2$	$\beta 1$	$\beta 2$
	< 30	< 15	< 50	< 50
Maximum tying-down force (kN)	F1		F2	
	10		10	

CAUTION

- To avoid personal injury:
- Do not tie down and tension the lashing material across the top of the crawlers. In this case, the machine is not lashed down securely and the crawlers can be damaged.

- In order to secure the swivel frame to prevent it from pendulating, tie down the bucket arm on the loading area using lashing material.



(1) Lashing material

- After loading and securing the machine, tightly close all of its covers and doors.

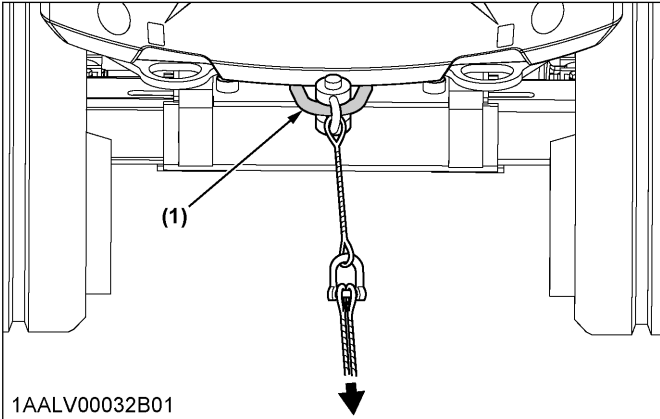
RECOVERY OF THE MACHINE

WARNING

- To avoid personal injury or death:
- Adhere to the safety rules and the safety rules for recovery. (See SAFE OPERATION on page 13 and SAFE RECOVERY OF THE MACHINE on page 20.)
 - Visually inspect all towing eyes. If there is any damage such as deformation or cracks, request repairs from your Kubota dealer.

IMPORTANT :

- A recovery is only allowed over a short distance and at walking speed (0.5 m/s to 1.0 m/s).
- Attach the tow bar or tow rope to the towing eye on the machine and on the towing vehicle.



(1) Towing eye

- If the towing eye on the machine is not accessible, a tow rope can also be fastened around the centre of the dozer.
- During the recovery procedure, the operator must be seated on the operator's place.
- Drive slowly with the towing vehicle to avoid abrupt impacts.

LIFTING THE EXCAVATOR

DANGER

To avoid serious injury or death:

- The correct instructions for safe handling are described here. Read these instructions carefully before moving the machine. Make sure that the operating personnel has read the operator's manual carefully.

BASIC POINTS WHEN LIFTING WITH CABLES OR STRAPS

- The lifting and crane operation is to be undertaken according to the safe operation guidelines described.
- The equipment used for lifting mentioned in these instructions are only given as reference. The standards concerning strength, control and other details are based on the respective applicable guidelines.

SAFETY ASPECTS WHEN LIFTING WITH CABLES OR STRAPS

Abide by the following steps when lifting:

- Do not lift loads that exceed the maximum load capacity of the crane.
- Choose correct equipment suitable to the weight, size and form of the load.
- Do not use steel cables or straps that show signs of wear and tear.
- First, assess the centre of gravity of the load, position the hook directly over the load and lift the load so that the centre of gravity of the load is as low as possible.
- The steel cables or straps must be fixed in the middle of the hook.
- The load must be lifted vertically from the ground.
- Do not enter the working area under suspended loads and do not move the load over people. The load must only be moved in an area where the balance can be easily maintained.

LIFTING THE MACHINE

WARNING

To avoid personal injury or death:

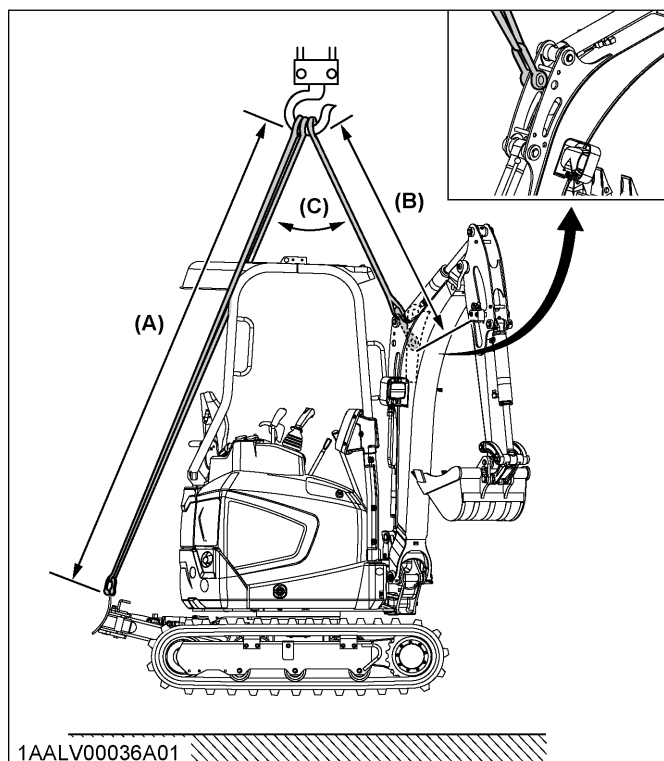
- Do not lift the machine from any point other than at the 3 points shown in the following illustrations.
- Do not use the ROPS for lifting the machine.
- Visually inspect all lifting points. If there is any damage such as deformation or cracks, request repairs from your Kubota dealer.

General guidelines for lifting

1. Prepare the machine for lifting as follows (see illustration for correct lifting position):
 - a. Pull in the boom completely towards the rear.
 - b. Pull in the arm completely.
 - c. Pull in the bucket completely.
 - d. Adjust the swing angle to the right end.
 - e. Swivel the frame around so that the dozer blade is to the rear and frame is parallel with the tracks.
 - f. Raise the dozer blade fully.

2. Attach the cables or straps while observing the following safety points:

- Always hook the machine at 3 points (one on the boom and one on each side of the dozer).
- Always use a shackle on each lifting hole when attaching the cables or straps.
- Use cushioning material at all places where the cables or straps contact the machine.
- Keep the angle between the front and rear cables or straps within 30°.



(A) Approximately 4000 mm

(B) Approximately 2500 mm

(C) Approximately 30°

- Tackle
Choose components with enough strength.

3. Lift the machine while observing the following safety points:

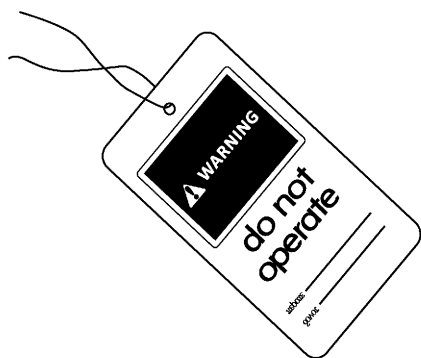
- Lift slowly and safely.
- Do not enter the machine area when lifting.
- Lift the machine horizontally (modify cable or strap connections according to needs).

MAINTENANCE

WARNING

To avoid personal injury or death:

- Before refuelling or performing maintenance on the machine, take the following steps:
 1. Park the machine on a firm, flat, and level surface.
 2. Lower the attachments and the dozer blade to the ground.
 3. Stop the engine.
 4. Release the pressure from the hydraulic system.
 5. Remove the key.
 6. When working on the electrical system, disconnect it from the voltage source before starting the work. The work may only be carried out by technicians with electrical training.
 7. Check the machine and the surrounding area for any potential safety issues.
- Thoroughly read and understand the safety warnings in this manual before performing any work on the machine.
(See MAINTENANCE on page 20.)
- Before performing checks or maintenance on the machine, hang a safety tag indicating that the machine is being serviced on the operator station. Make sure that the safety tag is easily visible so as to prevent unrelated parties from inadvertently touching the machine. Additionally, display warning tags in the area around the machine.



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- Only use spare parts that are recommended by the manufacturer. Non-approved spare parts of inferior quality or wrong classification result in an increased risk of accidents. Operators using non-approved spare parts are fully responsible for any damage arising as a consequence.

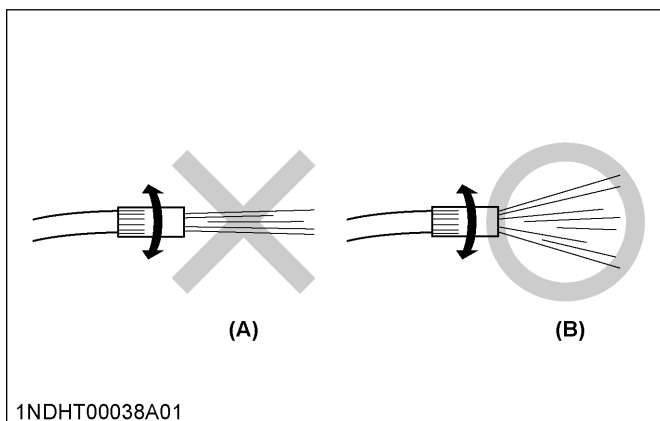
PRECAUTIONS WHEN WASHING THE MACHINE

WARNING

To avoid personal injury or death:

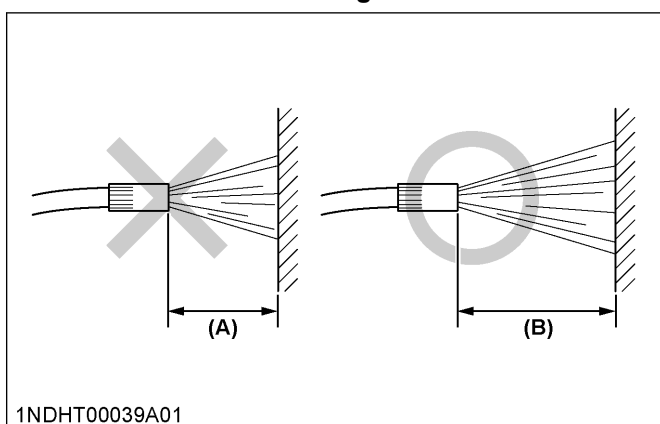
- Set the nozzle of the pressure washer to a low-pressure setting or use a low-pressure nozzle, and maintain a distance of at least 2 m from the machine when washing it. If the spray is concentrated in a single spot, or if the machine is washed from too close with a high-pressure flow, the following accidents, machine damage, and malfunctions may occur:
 - The wire coverings may be damaged or the wiring may be severed, causing a fire.
 - The hydraulic hoses may be damaged, causing a high-pressure oil blowout, which may cause injury.
 - The stickers or safety labels may peel off.
 - Water may seep into the electronic components, the engine compartment, the cabin, or other parts of the machine, leading to damage or malfunctions.
 - The water may cause damage to the rubber based components such as the crawlers and the oil seals, to the decorative covers and other plastic-based components, or to the windows and other glass-based components.
 - The paint, coatings, and plating may peel off.
- Do not clean the excavator with inflammable liquids.
- Only wash the excavator at suitable places (using oil and grease separators).

When misused, pressure washers can cause personal injury and machine damage. Always operate the pressure washer correctly and safely in accordance with its operator's manual and safety labels.

Do not use a high-pressure nozzle or setting

(A) High pressure

(B) Low pressure

Do not wash from close range

(A) Less than 2 m

(B) 2 m or more

CLEANING THE PLASTIC PARTS AND SYNTHETIC LEATHER

- Use a soft cloth when wiping plastic parts or synthetic leather.
- If the plastic or synthetic leather is very dirty, use a soft cloth dipped in a mild detergent that has been diluted with water.
- Wipe off any remaining moisture or detergent with a soft cloth that has been moistened with water and then thoroughly wrung out.
- Cleaning the plastic parts with alkaline, acidic, or organic solvents such as alcohol or benzene can damage them.

TIGHTENING TORQUES

The table below contains the torques for nuts and bolts. These may only be tightened with a torque wrench. Missing torques can be requested from Kubota.

Tightening torque for screws

	4 T (4.6)	7 T (8.8)	9 T (9.8-10.9)
M6	7.8 to 9.3 (0.8 to 0.95)	9.8 to 11.3 (1.0 to 1.15)	12.3 to 14.2 (1.25 to 1.45)
M8	17.7 to 20.6 (1.8 to 2.1)	23.5 to 27.5 (2.4 to 2.8)	29.4 to 34.3 (3.0 to 3.5)
M10	39.2 to 45.1 (4.0 to 4.6)	48.1 to 55.9 (4.9 to 5.7)	60.8 to 70.6 (6.2 to 7.2)
M12	62.8 to 72.6 (6.4 to 7.4)	77.5 to 90.2 (7.9 to 9.2)	103.0 to 117.7 (10.5 to 12.0)
M14	107.9 to 125.5 (11.0 to 12.8)	123.6 to 147.1 (12.6 to 15.0)	166.7 to 196.1 (17.0 to 20.0)
M16	166.7 to 191.2 (17.0 to 19.5)	196.1 to 225.6 (20.0 to 23.0)	259.9 to 304.0 (26.5 to 31.0)
M20	333.4 to 392.3 (34.0 to 40.0)	367.7 to 431.5 (37.5 to 44.0)	519.8 to 568.8 (53.0 to 58.0)

N·m (kgf·m)

NOTE :

- Use screws 9 T for canopy assembly, but tighten with torque indicated for screws 7 T.

Tightening torque for hose clamps

Diameter	Part number	Part name	Tightening torque
Ø 31 to 40	09318-89039	Clamp (screw version)	2.5 to 3.4 (0.25 to 0.34)
Ø 36 to 46	09318-89045	Clamp (screw version)	2.5 to 3.4 (0.25 to 0.34)
Ø 11 to 17	RP321-6306-0	Clamp (11-17)	2.5 to 3.4 (0.25 to 0.34)
Ø 15 to 24	RC101-6458-0	Clamp (15-24)	4.4 to 5.4 (0.45 to 0.55)
Ø 19 to 28	R1401-6321-0	Clamp (19-28)	4.4 to 5.4 (0.45 to 0.55)
Ø 22 to 32	R1401-6315-0	Clamp (22-32)	4.9 to 5.9 (0.50 to 0.60)
Ø 32 to 44	RD411-6382-0	Clamp (32-44)	4.9 to 5.9 (0.50 to 0.60)
Ø 32 to 50	68311-7283-0	Clamp (32-50)	4.9 to 5.9 (0.50 to 0.60)

N·m (kgf·m)

Tightening torque for hydraulic hoses

Wrench size	Size	Tightening torque
14 or 17	1/8	7.8 to 11.8 (0.8 to 1.2)
19	1/4	24.5 to 29.4 (2.5 to 3.0)
22	3/8	37.2 to 42.1 (3.8 to 4.3)
27	1/2	58.8 to 63.7 (6.0 to 6.5)

N·m (kgf·m)

These torques are also valid for adapter with premounted nut.

Tightening torque for tube connections with washers

Size	Tightening torque
1/8	15.0 to 16.5 (1.5 to 1.7)
1/4	24.5 to 29.4 (2.5 to 3.0)
3/8	49.0 to 53.9 (5.0 to 5.5)
1/2	58.8 to 63.7 (6.0 to 6.5)

N·m (kgf·m)

MAINTENANCE INTERVALS

1. Periodic service codes

When the hour meter has counted up to one of the service intervals, one of the following periodic check codes is displayed on the LCD.

(See Service hour meter on page 49.)

No.	LCD	Part that requires servicing
1	0: 01	Engine oil
2	0: 02	Hydraulic oil
3	0: 03	Air cleaner element
4	0: 04	Fuel filter
5	0: 05	Engine oil filter
6	0: 06	Drive unit oil
7	0: 07	Return filter
8	0: 08	Suction filter
9	0: 09	—
10	0: 10	Oil in idler and track roller
11	0: 11	Breather filter

2. Operator maintenance chart

The operator is only permitted to carry out cleaning and care activities.

Check items		Tasks	Hours of operation indicator										Maintenance intervals	Page
			50	100	150	200	250	300	350	400	450	500		
Walk-around inspection		Check											Daily	108
Dust valve		Clean											Daily	108
Engine oil level		Check											Daily	108
Coolant level		Check											Daily	109
Coolant radiator and oil cooler		Check											Daily	109
V-belt		Check											Daily	110
Exhaust system leakage		Check											Daily	110
Hydraulic oil level		Check											Daily	110
Water separator		Check											Daily	111
Bucket bolt and linkage bolt		Grease											Daily	112
Front attachments	Swing bracket	Grease											Daily	111
	Other greasing points	Grease											Daily	111
Fuel level		Check											Daily	112
Electrical equipment		Check											Daily	113
Seat belt		Check											Daily	113
Engine and electrical wiring		Check Clean											Daily	113
ROPS canopy		Check											Daily	113
Track frame telescopic beams		Grease											Daily	114
Fuel tank		Drain	○	○	○	○	○	○	○	○	○	○	50 h	115
Battery		Check	○	○	○	○	○	○	○	○	○	○	50 h	115
Swivel gear		Grease	○	○	○	○	○	○	○	○	○	○	50 h	116
Crawler tension	Check		○	○	○	○	○	○	○	○	○	○	50 h	117
	Adjust		○	○	○	○	○	○	○	○	○	○	50 h	117
Water separator		Clean	○	○	○	○	○	○	○	○	○	○	50 h	117
Swivel bearing		Grease				○				○			200 h	117
Air filter*1		Clean				○				○			200 h	118
Fuel lines and rubber hoses of the intake air line		Check				○				○			200 h	119

*1 Under dusty conditions, the air filter must be cleaned more frequently or replaced.

Check items		Tasks	Hours of operation indicator										Maintenance intervals	Page
			550	600	650	700	750	800	850	900	950	1000		
Walk-around inspection		Check											Daily	108
Dust valve		Clean											Daily	108
Engine oil level		Check											Daily	108
Coolant level		Check											Daily	109
Coolant radiator and oil cooler		Check											Daily	109
V-belt		Check											Daily	110
Exhaust system leakage		Check											Daily	110
Hydraulic oil level		Check											Daily	110
Water separator		Check											Daily	111
Bucket bolt and linkage bolt		Grease											Daily	112
Front attachments	Swing bracket	Grease											Daily	111
	Other greasing points	Grease											Daily	111
Fuel level		Check											Daily	112
Electrical equipment		Check											Daily	113
Seat belt		Check											Daily	113
Engine and electrical wiring		Check Clean											Daily	113
ROPS canopy		Check											Daily	113
Track frame telescopic beams		Grease											Daily	114
Fuel tank		Drain	○	○	○	○	○	○	○	○	○	○	50 h	115
Battery		Check	○	○	○	○	○	○	○	○	○	○	50 h	115
Swivel gear		Grease	○	○	○	○	○	○	○	○	○	○	50 h	116
Crawler tension	Check	○	○	○	○	○	○	○	○	○	○	○	50 h	117
	Adjust	○	○	○	○	○	○	○	○	○	○	○	50 h	117
Water separator		Clean	○	○	○	○	○	○	○	○	○	○	50 h	117
Swivel bearing		Grease		○				○				○	200 h	117
Air filter*1		Clean		○				○				○	200 h	118
Fuel lines and rubber hoses of the intake air line		Check		○				○				○	200 h	119

*1 Under dusty conditions, the air filter must be cleaned more frequently or replaced.

3. Skilled personnel maintenance chart

IMPORTANT :

- Carry out all of the checks listed in the operator maintenance chart.
(See Operator maintenance chart on page 101.)

Check point	Tasks	Hours of operation indicator										Maintenance intervals	Page
		50	100	150	200	250	300	350	400	450	500		
Coolant hoses and hose clamps	Check					○					○	250 h	119
V-belt	Adjust					○					○	250 h	119
Pilot valve linkage	Grease					○					○	250 h	120
Engine oil and oil filter	Change										○	500 h	120
Drive unit oil* ¹	Change	◎									○	500 h	121
Fuel filter	Change										○	500 h	122
Return filter* ²	Change					◎					○	500 h	122
Breather filter	Change										○	500 h	123
Engine valve clearance	Check	Please contact your Kubota dealer.										750 h	123
Hydraulic oil and suction filter* ³	Change											1000 h	124
Air filter element* ⁴	Change											1000 h	125
Auxiliary circular valve filter	Change											1000 h	125
Pilot line filter	Clean											1000 h	125
Fuel injection nozzle - Injection pressure	Check	Please contact your Kubota dealer.										1500 h	126
Oil in idler and track roller	Change	Please contact your Kubota dealer.										2000 h	126
Alternator and starter motor	Check	Please contact your Kubota dealer.										2000 h	126
Fuel injection pump	Check	Please contact your Kubota dealer.										3000 h	126
Electric lines and connections	Check											Annually	126
Safety inspection* ⁵	Check											Annually	129
Coolant hoses and hose clamps	Change	Please contact your Kubota dealer.										Every 2 years	126
Coolant	Change											Every 2 years	127
Rubber hoses of the intake air line	Change	Please contact your Kubota dealer.										Every 2 years	128
Fuel lines	Change	Please contact your Kubota dealer.										Every 2 years	128
Hydraulic hoses	Change	Please contact your Kubota dealer.										Every 2 years	128

The servicing identified with ◎ must be carried out once the specified hours of operation after initial commissioning have been reached.

*1 Earlier if necessary.

*2 When using a breaker over 20 % → every 200 hours
When using a breaker over 60 % → every 100 hours
(For further details, see Hydraulic oil checks (hydraulic breaker operation) on page 124.)

*3 When using a breaker over 20 % → every 800 hours
When using a breaker over 40 % → every 400 hours
When using a breaker over 60 % → every 300 hours
When using a breaker over 80 % → every 200 hours
(For further details, see Hydraulic oil checks (hydraulic breaker operation) on page 124.)

*4 Under very dusty conditions, the air filter must be cleaned more frequently or replaced.

*5 At least annually.

Check point	Tasks	Hours of operation indicator										Maintenance intervals	Page
		550	600	650	700	750	800	850	900	950	1000		
Coolant hoses and hose clamps	Check					○					○	250 h	119
V-belt	Adjust					○					○	250 h	119
Pilot valve linkage	Grease					○					○	250 h	120
Engine oil and oil filter	Change										○	500 h	120
Drive unit oil* ¹	Change										○	500 h	121
Fuel filter	Change										○	500 h	122
Return filter* ²	Change										○	500 h	122
Breather filter	Change										○	500 h	123
Engine valve clearance	Check	Please contact your Kubota dealer.										750 h	123
Hydraulic oil and suction filter* ³	Change										○	1000 h	124
Air filter element* ⁴	Change										○	1000 h	125
Auxiliary circular valve filter	Change										○	1000 h	125
Pilot line filter	Change										○	1000 h	125
Fuel injection nozzle - Injection pressure	Check	Please contact your Kubota dealer.										1500 h	126
Oil in idler and track roller	Change	Please contact your Kubota dealer.										2000 h	126
Alternator and starter motor	Check	Please contact your Kubota dealer.										2000 h	126
Fuel injection pump	Check	Please contact your Kubota dealer.										3000 h	126
Electric lines and connections	Check											Annually	126
Safety inspection* ⁵	Check											Annually	129
Coolant hoses and hose clamps	Change	Please contact your Kubota dealer.										Every 2 years	126
Coolant	Change											Every 2 years	127
Rubber hoses of the intake air line	Change	Please contact your Kubota dealer.										Every 2 years	128
Fuel lines	Change	Please contact your Kubota dealer.										Every 2 years	128
Hydraulic hoses	Change	Please contact your Kubota dealer.										Every 2 years	128

*1 Earlier if necessary.

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(For further details, see Hydraulic oil checks (hydraulic breaker operation) on page 124.)

*3 When using a breaker over 20 % → every 800 hours
When using a breaker over 40 % → every 400 hours
When using a breaker over 60 % → every 300 hours
When using a breaker over 80 % → every 200 hours
(For further details, see Hydraulic oil checks (hydraulic breaker operation) on page 124.)

*4 Under very dusty conditions, the air filter must be cleaned more frequently or replaced.

*5 At least annually.

OPENING AND CLOSING THE COVERS

1. Opening and closing the engine bonnet



WARNING

To avoid personal injury or death:

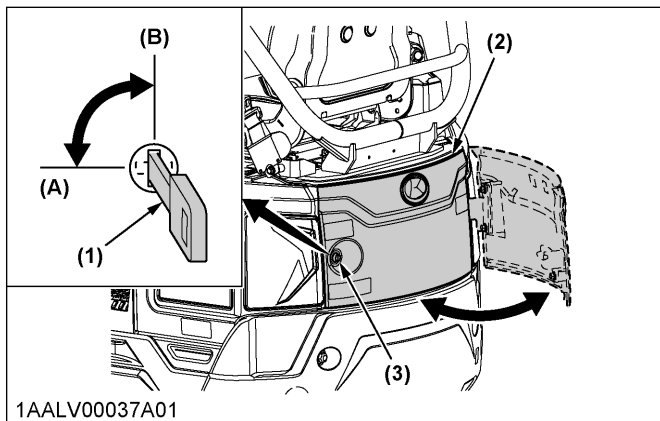
- Do not open the engine bonnet with the engine running unless in an emergency.
- Do not touch the exhaust muffler or the exhaust pipe. Otherwise, serious burns can occur.

IMPORTANT :

- Do not operate the machine with the engine bonnet open. The engine bonnet may get damaged.

Opening

1. Turn the starter switch to the [STOP] position and remove the key.
2. Insert the starter key in the key slot and turn it clockwise to the vertical position to unlock the engine bonnet.
3. Press the button and open the engine bonnet sideways.
When the engine bonnet is open, it will be locked with the lock lever.

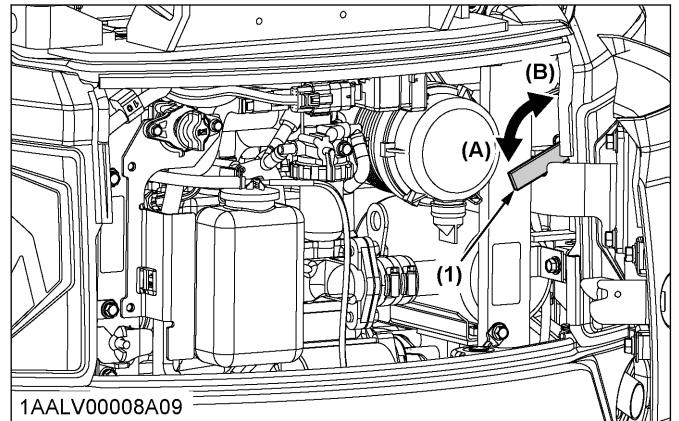


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- | | |
|-------------------|------------|
| (1) Key | (A) Lock |
| (2) Engine bonnet | (B) Unlock |
| (3) Button | |

NOTE :

- The key cannot be removed while the engine bonnet is open.



(1) Lock lever

(A) Lock

(B) Release

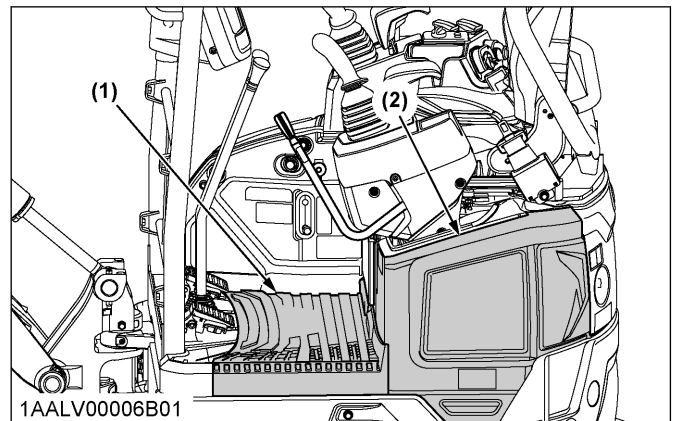
Closing

1. Make sure that the side cover is locked.
(See Opening and closing the side cover on page 105.)
2. Release the lock lever and push the engine bonnet until it clicks into position.
3. Turn the starter key counterclockwise to the horizontal position.

2. Opening and closing the side cover

Opening

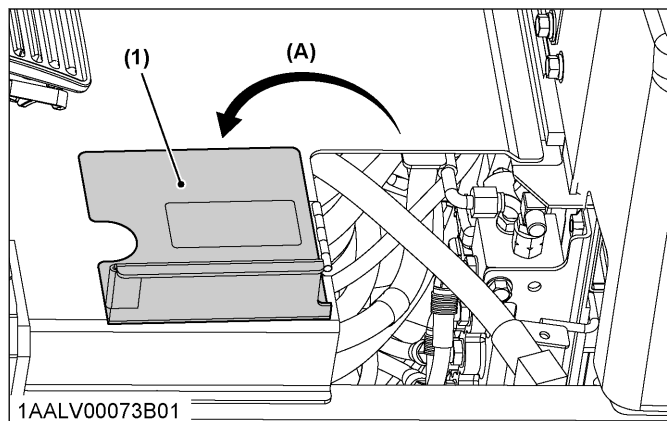
1. Remove the rubber mat from the side cover side.



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- | |
|----------------|
| (1) Rubber mat |
| (2) Side cover |

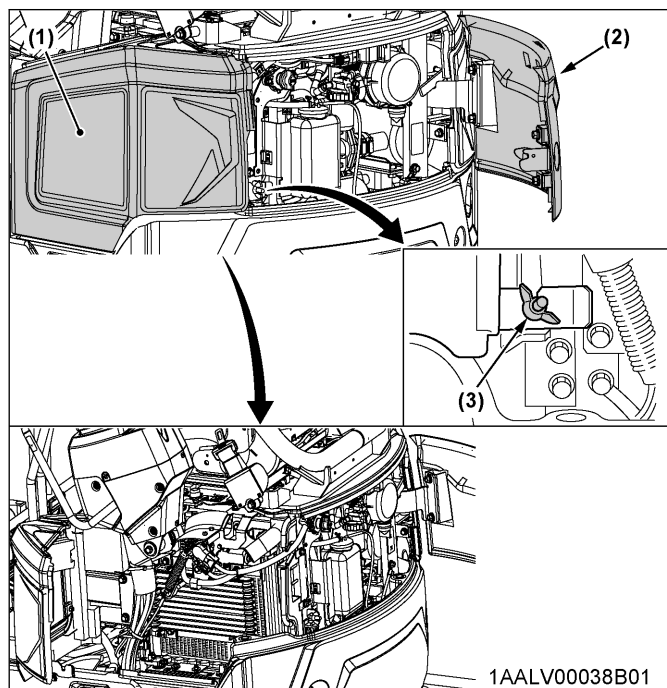
2. Open the partial cover on the step.



(1) Partial cover

(A) Open

3. Open the engine bonnet.
(See Opening and closing the engine bonnet on page 105.)
4. Turn the wingnut to release the side cover.
5. Pull the side cover open.



(1) Side cover

(2) Engine bonnet

(3) Wingnut

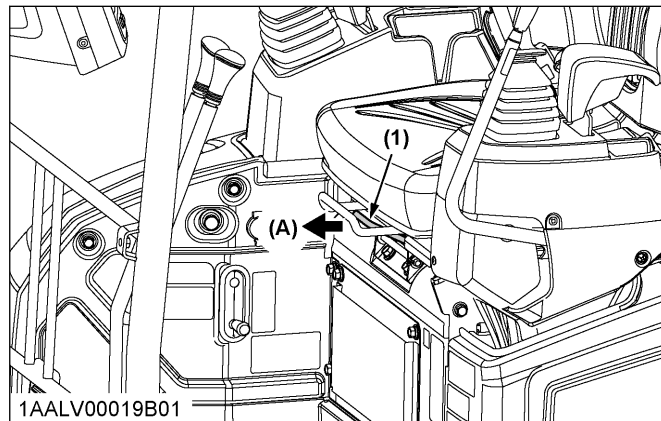
Closing

1. Push the side cover back into position.
2. Fit the locking device and tighten the wingnut by hand.
3. Close the partial cover on the step.
4. Spread the rubber mat back in its original place.

3. Opening and closing the centre cover

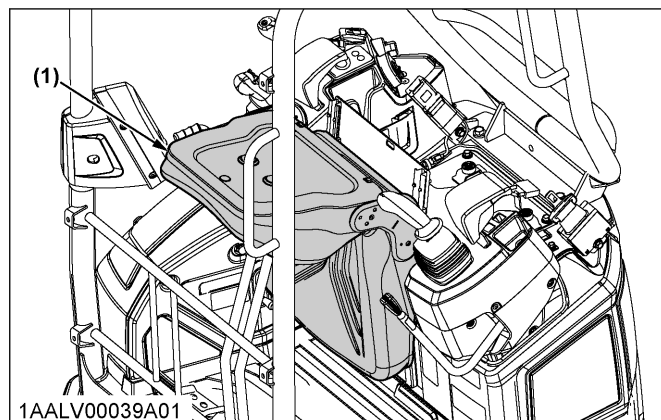
Opening

1. Pull the seat lock lever, and collapse the operator's seat forward.



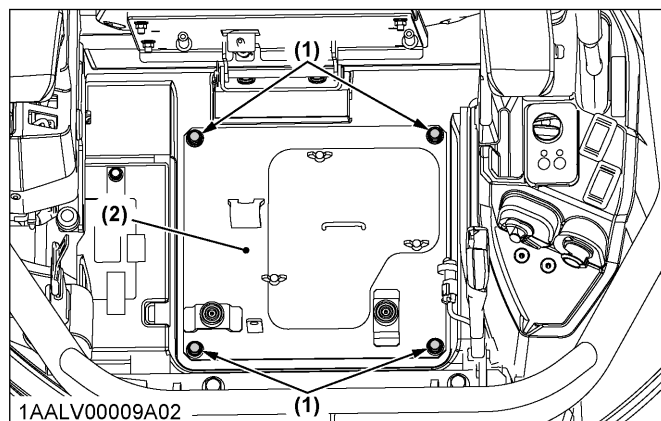
(1) Seat lock lever

(A) Pull



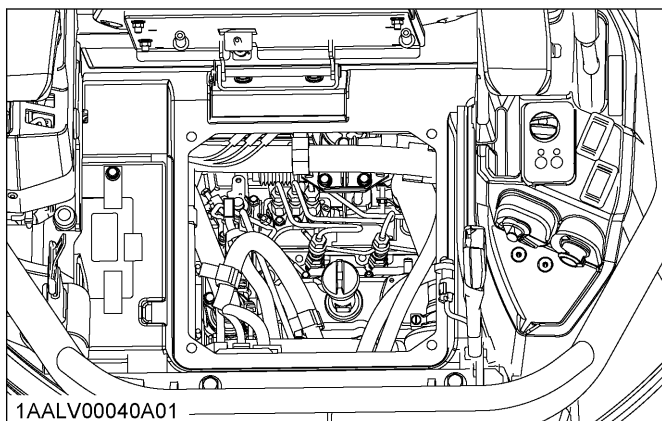
(1) Seat

2. Remove the bolts and then remove the centre cover.



(1) Bolt

(2) Centre cover



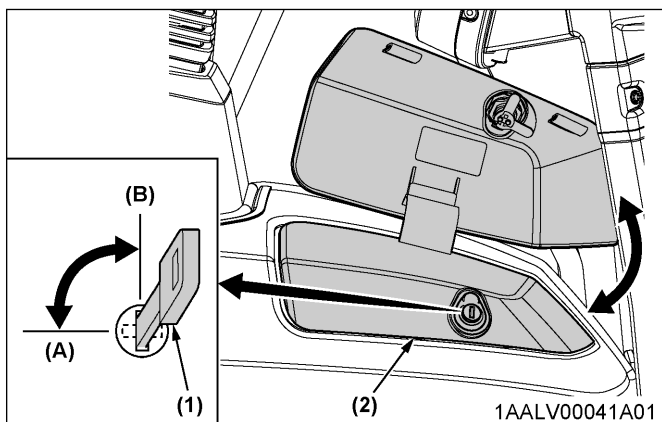
Closing

1. Attach the centre cover and secure it with the bolts.
2. Return the seat to its original position, and check to make sure that it is securely locked in place by the seat lock lever.

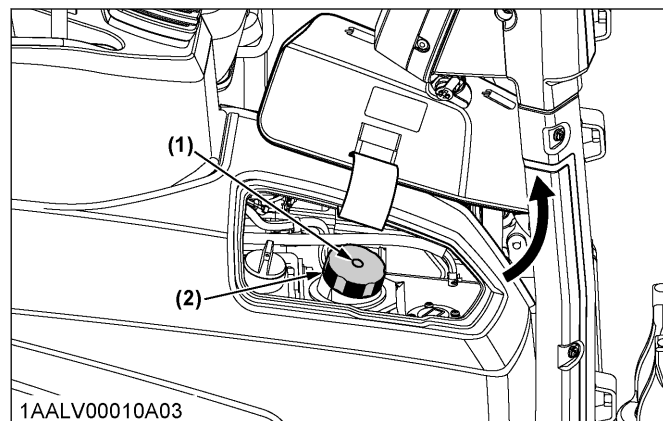
4. Opening and closing the fuel tank cover

Opening

1. Insert the key into the key slot and turn it counterclockwise to release the cover.
2. Open the tank cover upward.



- (1) Key
(2) Fuel tank cover
(A) Release
(B) Lock



- (1) Air vent
(2) Fuel tank cap

IMPORTANT :

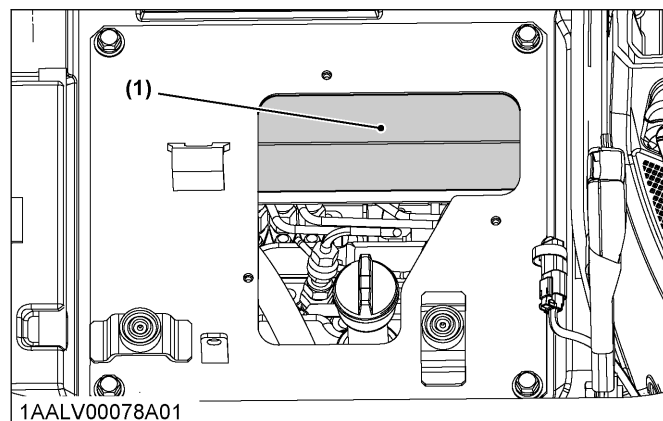
- If dust or dirt is stuck in the fuel tank cap, the fuel tank may fail to allow in air, which can cause it to become deformed.

Closing

1. Return the tank cover to its original position.
2. Turn the key clockwise to lock the cover, and remove the key.

5. Tool compartment

The tool compartment is located below the operator's seat.



- (1) Tool compartment

6. Washing the whole machine

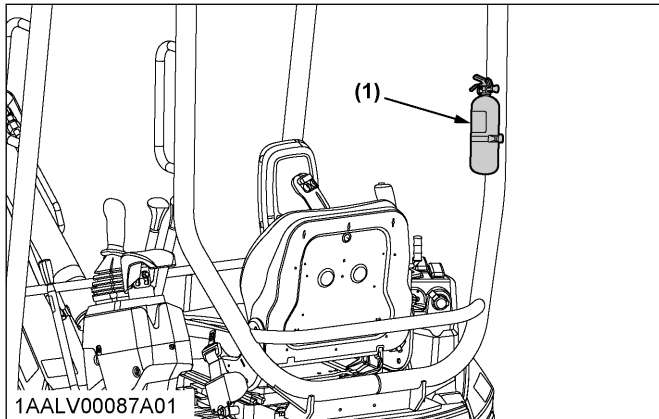
IMPORTANT :

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

1. Stop the engine.
2. Wash the machine.

7. Fire extinguisher storage location

The fire extinguisher is stored on the rear right side of the canopy.



(1) Fire extinguisher

DAILY CHECKS

For your own safety and to assure the long life of your machine, perform a thorough check before each operation.

1. Walk-around inspection

! WARNING

To avoid personal injury or death:

- Check the hot parts for any buildup of flammable materials, as such buildup can lead to a fire.

1. Check the machine for visible damage, loose nuts and screws, and leaks.
2. Check for any accumulated dirt adjacent to hot components (such as the engine or exhaust manifold), and remove as necessary.
3. Check for accumulated residue from leaves, straw, pine needles, twigs, barks, or any other flammable materials, and remove as necessary.
4. Check the safety labels on the machine, and ensure that they are completely legible.
(See SAFETY LABELS on page 25.)

2. Cleaning the dust valve

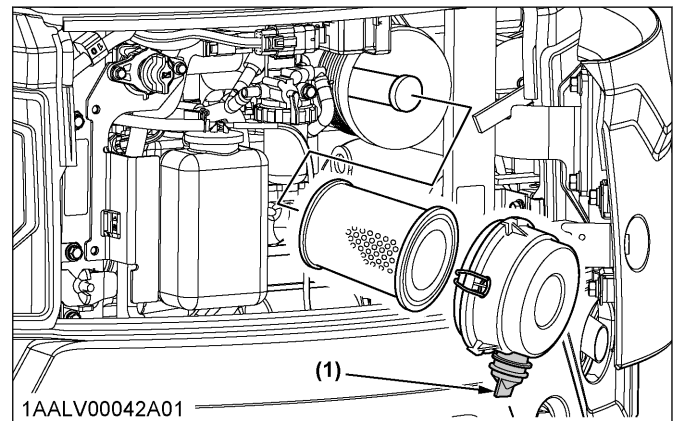
! WARNING

To avoid personal injury or death:

- Always stop the engine and remove the key before cleaning the dust valve.

1. Open the engine bonnet.
2. Open the dust valve.

3. Remove any dust or debris from the valve.



(1) Dust valve

4. Close the engine bonnet.

3. Checking the engine oil level

! WARNING

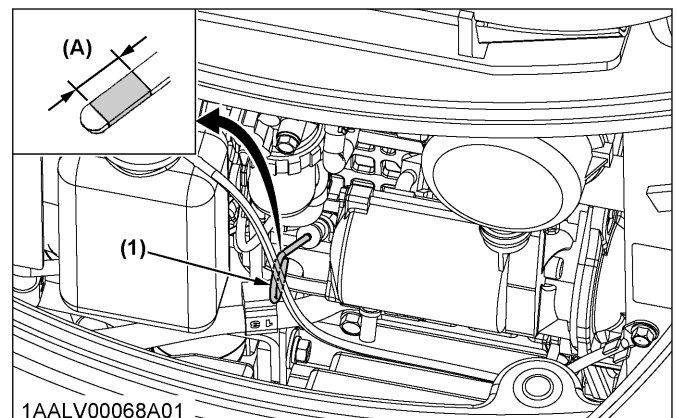
To avoid personal injury or death:

- Stop the engine and remove the key before checking the oil level.

IMPORTANT :

- Use engine oil with the correct viscosity (according to the outside temperature).
- After stopping the engine and removing the key, wait for 5 minutes and then check oil level. The machine must be on the level ground.

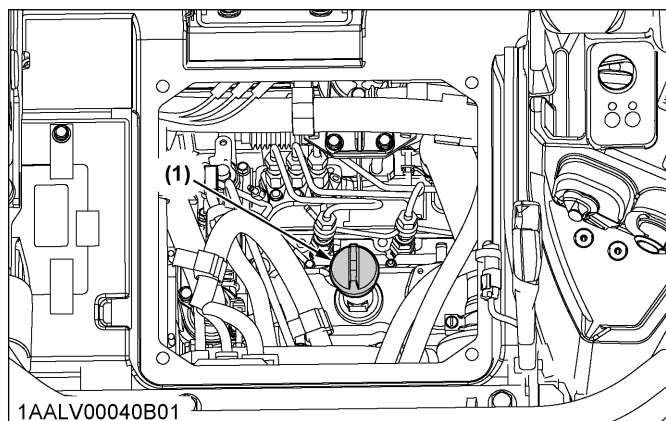
1. Park the machine on a firm, flat and level surface, stop the engine, and remove the key.
2. Insert the engine oil dipstick fully into the opening.
3. Remove the dipstick and check the oil level.



(1) Engine oil dipstick

(A) Oil level is acceptable within this range.

4. Add oil into the filling port if necessary.



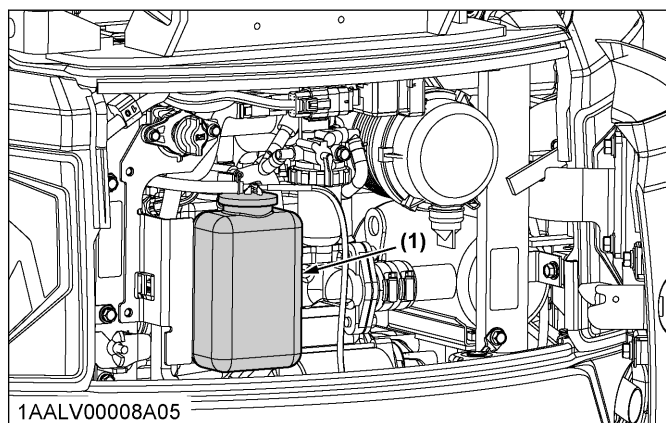
(1) Filling port

4. Checking the coolant level

! WARNING

To avoid personal injury or death:

- Park the machine on a firm, flat, and level surface.
- Make sure that the engine is turned off.
- Do not open the radiator cap right after the engine has been stopped. Serious burns can occur from contact with escaping hot coolant fluid.
- Check the coolant level in the recovery tank only after the engine has cooled down.
- Remove the radiator cap only if absolutely necessary.



(1) Recovery tank

The radiator has a recovery tank. If the coolant level in the radiator drops, the water will be automatically forwarded to the radiator.

1. Open the engine bonnet.
2. Check the coolant level in the recovery tank and fill up if necessary. The coolant level should be between the **[FULL]** and **[LOW]** marks.

IMPORTANT :

- Before delivery coolant was filled with 50 % water and 50 % antifreeze.
- Do not fill with dirty or salty water.

5. Checking the coolant radiator and oil cooler



WARNING

To avoid personal injury or death:

- Always stop the engine and remove the key before checking the radiator.
- Wear eye protection when cleaning with compressed air.

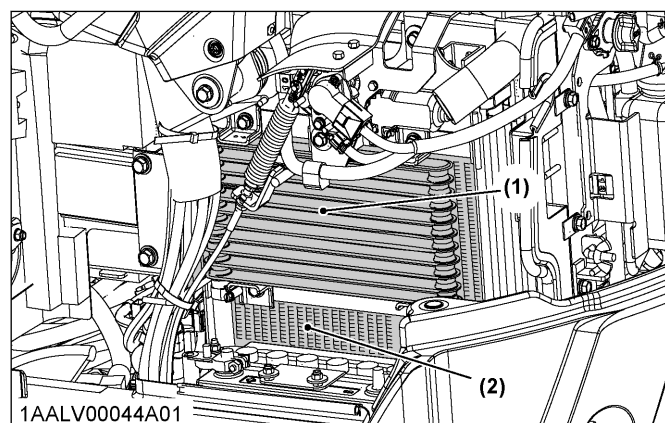
Checking the fins

1. Check to see if the fins are clogged.
2. If the fins are clogged, clean them with compressed air or steam.

IMPORTANT :

- Cleaning the coolant radiator and oil cooler with compressed air can cause damage to the fins. Damaged fins can cause water leakage and overheating.
In order to prevent damage to the fins, operate the cleaner from a distance, and blow the air perpendicular to the core as much as possible.
- The coolant radiator and oil cooler fins and ribs must be clean in order to keep the engine from overheating and allow free flow of air through the cooling elements.
- Keep the pressure of the compressed air under the following values.

Air pressure	205 kPa (2.1 kgf/cm ²) or less
--------------	--

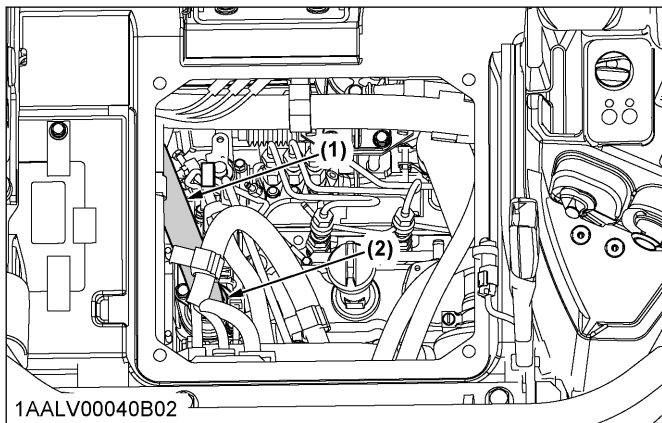


(1) Oil cooler
(2) Coolant radiator

Checking the rubber hoses and clamps

1. Check the rubber hoses for damage and replace if cracked or old.

2. Check that the hose clamps are tight enough.



- (1) Rubber hoses
(2) Hose clamps

6. Checking the V-belt

! WARNING

To avoid personal injury or death:

- Before checking the V-belt, stop the engine and remove the key.

1. Check the V-belt to make sure that it is not cracked and that the tension is correct.
(See Checking and adjusting the V-belt tension on page 119.)

7. Checking for exhaust system leakage

! WARNING

To prevent personal injury or death:

- Risk of burns.
Make sure that the engine has stopped and the exhaust system has cooled down.

1. Stop the engine and take out the starter switch key.
2. Check the exhaust system for leaks and security (formation of cracks).
If the exhaust system is leaky or loose, the machine must be repaired before it can be taken into operation.
3. Check the exhaust system for flammable materials such as oil deposits, cloths, or leaves, and clean if necessary.
4. Check that there is no soot residue caused by leaking exhaust gas.

8. Checking the hydraulic oil level

! WARNING

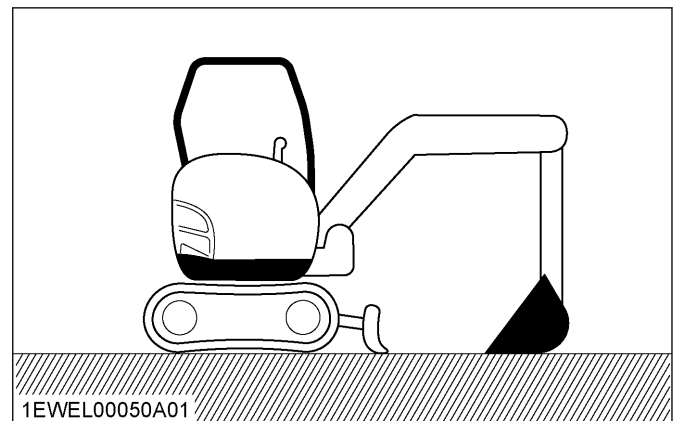
To avoid personal injury or death:

- Stop the engine and remove the key before checking the oil level.
- There is a risk of being injured by hot pressurised hydraulic oil. Make sure that the oil has cooled down sufficiently, and then release the pressure in the tank before loosening the hydraulic oil filling plug.

IMPORTANT :

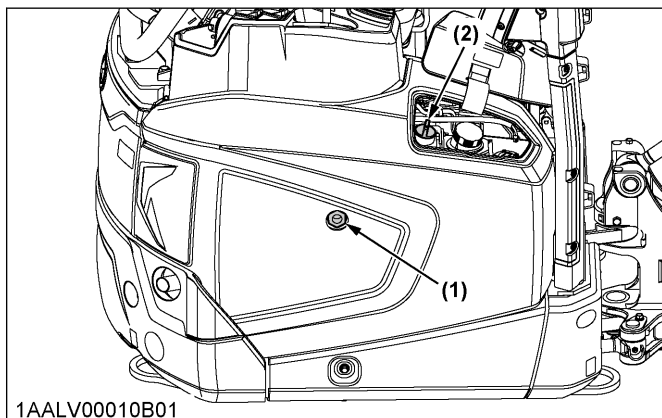
- Before filling with oil, wipe away all sand and dust from around the oil port. Make sure to use an identical type of hydraulic fluid.
- The machine has been filled with hydraulic fluid before delivery. Do not mix different oils.
(See OPERATING MATERIALS on page 148.)

1. Set the track width to completely extended (1300 mm).
(See TRACK WIDTH ADJUSTMENT AND DOZER OPERATION on page 67.)
2. Park the machine on a firm, flat and level surface. Adjust the swing angle to the centre. Lower the attachment and dozer blade to the ground and stop the engine.



3. Check the oil level, making sure that it lies at the centre of the gauge at normal hydraulic oil temperatures (10 °C to 30 °C).
Enough oil is present when the oil level is at the centre mark.

- If the oil level is too low, fill oil through the oil port before starting the engine. This step is important for the protection of the hydraulic system.

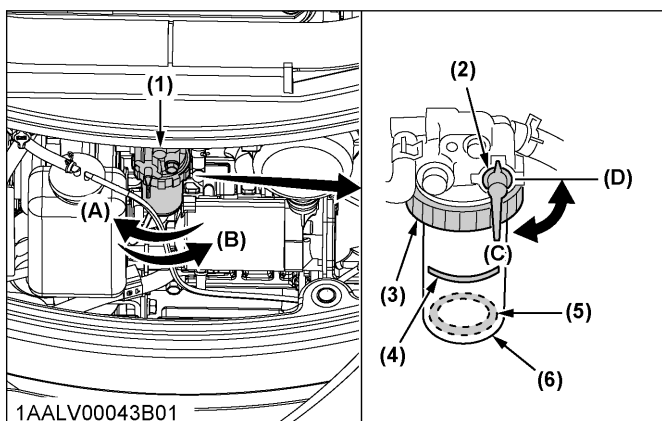


- (1) Gauge
(2) Tank cap

9. Checking the water separator

IMPORTANT :

- As water is collected in the cup, the red float rises up. Once the float has reached the specified line, immediately drain the water separator.
- When reattaching the water separator, make sure that no dust or dirt gets into the cup or other surrounding parts.
- Purge the fuel system before restarting the machine.
(See PURGING THE FUEL SYSTEM on page 130.)



- | | |
|----------------------------|-------------|
| (1) Water separator | (A) Loosen |
| (2) Water separator handle | (B) Tighten |
| (3) Retainer ring | (C) ON |
| (4) Line | (D) OFF |
| (5) Float | |
| (6) Cup | |

As separated water is collected in the cup, the red float rises up. Regularly check the water level and drain the water as necessary.

NOTE :

- Water and dirt contained in the fuel settle in the water separator. When deposits of such foreign substances build up, clean the water separator.

- Open the engine bonnet.
(See Opening and closing the engine bonnet on page 105.)
- Check the water level. If the float has reached the line, drain the water as follows:
 - Set the water separator handle to the **[OFF]** position so that no fuel can run out.
 - Loosen the retainer ring and remove the cup.
 - Pour out all of the water in the cup.
 - Reattach the cup, tighten the retainer ring, and set the water separator handle to the **[ON]** position.
- Close the engine bonnet.

10. Greasing the front attachments



WARNING

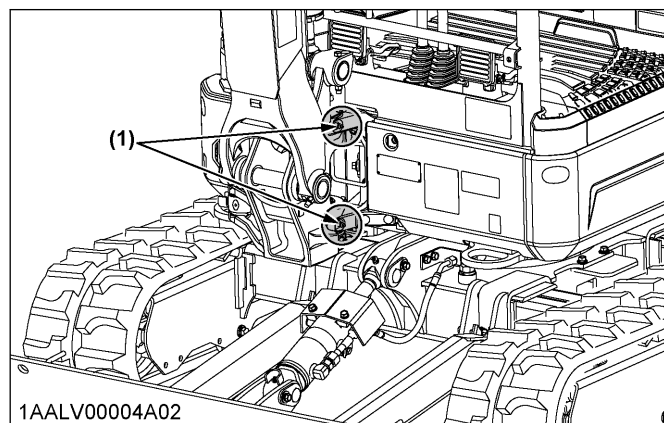
To avoid personal injury or death:

- First lower all attachment to the ground then stop the engine and remove the key.
- While greasing, take caution not to step on the bucket teeth.

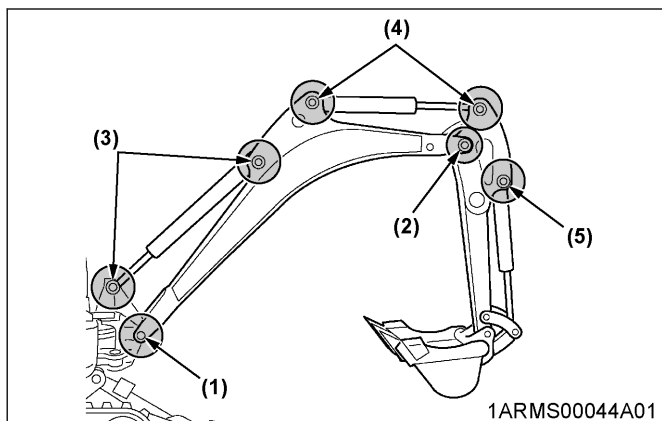
IMPORTANT :

- When doing excavation work in water, generously grease the following points. After ending work, grease again.

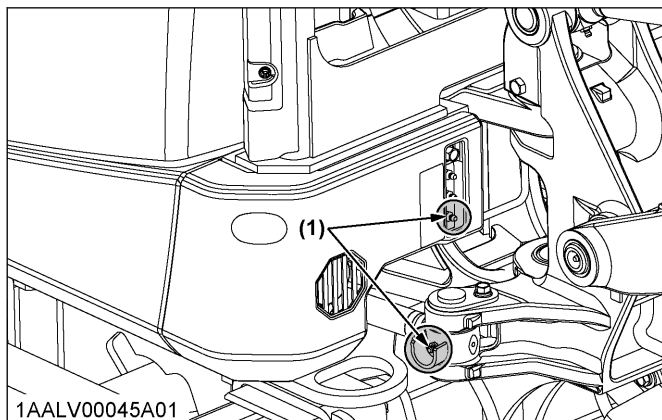
- Apply grease to the grease fittings marked in the following illustrations.



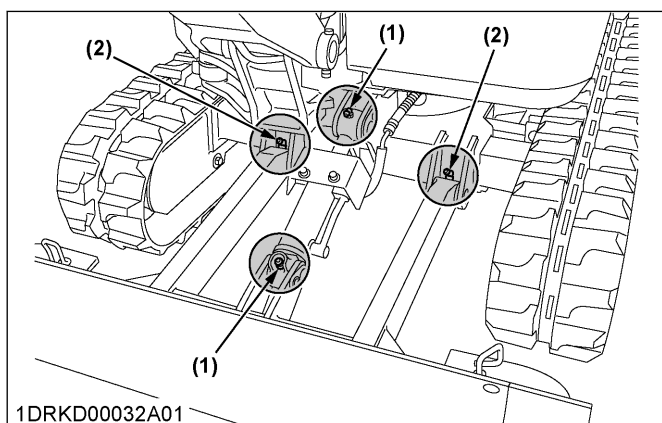
- (1) Swing bracket (2 places)



- (1) Boom bottom linkage (1 place)
- (2) Arm bottom linkage (1 place)
- (3) Boom cylinder boss (2 places)
- (4) Arm cylinder boss (2 places)
- (5) Bucket cylinder boss (1 place)



- (1) Swing cylinder boss (2 places)



- (1) Dozer cylinder boss (2 places)
- (2) Dozer linkage pin (2 places)

10.1 Greasing the bucket bolt and bucket linkage bolt



WARNING

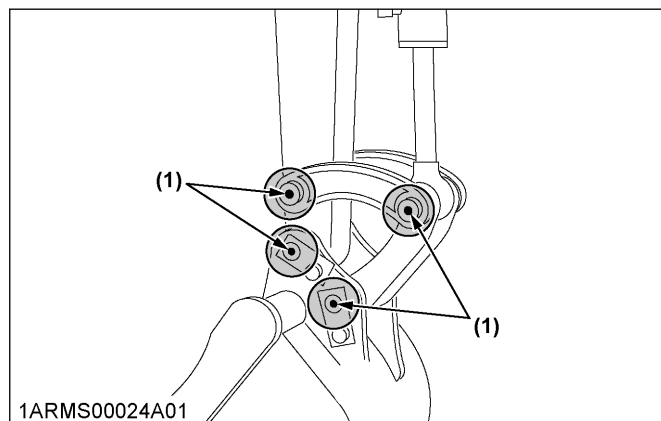
To avoid personal injury or death:

- First lower all attachment to the ground then stop the engine and remove the key.
- While greasing, take caution not to step on the bucket teeth.

IMPORTANT :

- When doing excavation work in water, generously grease the following points. After ending work, grease again.

1. Apply grease to the grease fittings marked in the following illustration.



- (1) Bucket bolt and linkage bolt (4 places)

11. Checking the fuel level



WARNING

To avoid personal injury or death:

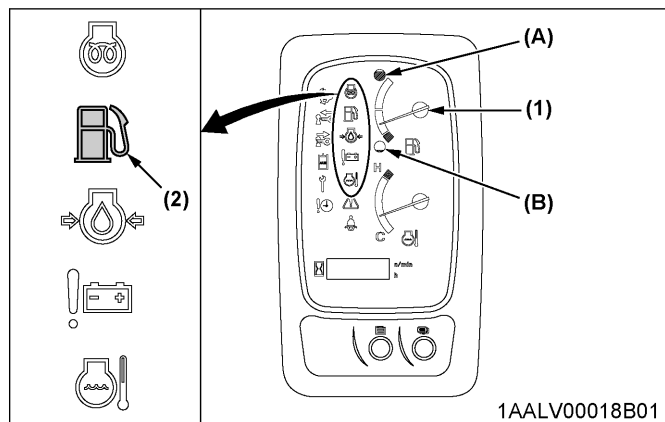
- Stop the engine and remove the key before fuelling.
- When refuelling the excavator, smoking, an open flame, or other sources of ignition are not allowed. The danger zone has to be clearly marked with signs. A fire extinguisher must be kept at hand in the danger zone.
- Tighten the fuel cap after refuelling.
- Spilled fuel must be bound immediately with an oil binding agent. The contaminated oil binding agent must be disposed of in accordance with the applicable environmental regulations.
- If no pumping station is available, the diesel fuel must be stored in approved canisters.

IMPORTANT :

- For all seasons, use EN 590 diesel fuel.
- Make sure that the fuel tank is not run empty. Air will enter the fuel system, and must be purged before restarting. (See PURGING THE FUEL SYSTEM on page 130.)
- To prevent condensation (water) accumulations in the fuel tank, fill the fuel into the tank before parking overnight.

- **Always fill up the fuel after a day's work.**

1. Check the fuel level by looking at the fuel gauge. If the fuel in the tank goes below the prescribed level, the warning lamp flashes.



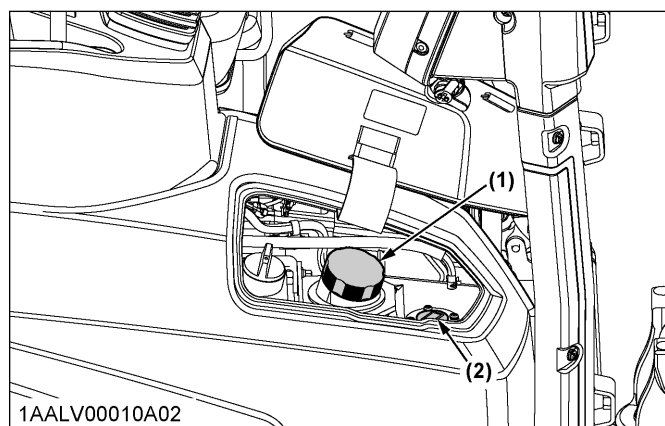
- (1) Fuel gauge (A) FULL
(2) Remaining fuel warning lamp (B) EMPTY

2. If necessary, open the tank cap with the starter key, and add fuel.

(See Opening and closing the fuel tank cover on page 107.)

If the warning lamp flashes during operation, refuel as soon as possible.

Fuel tank capacity	20 L
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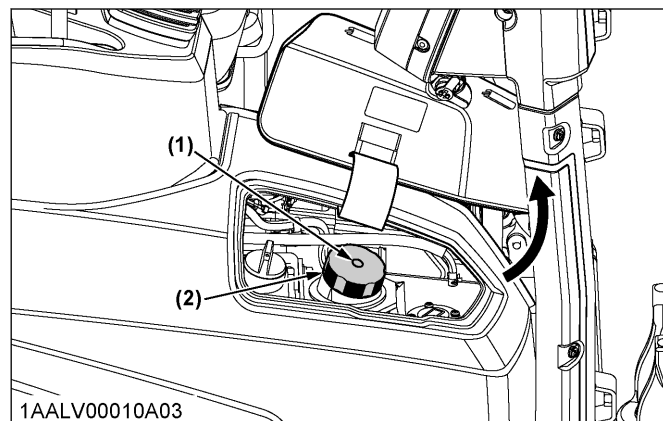
- (1) Fuel tank cap
(2) Gauge

NOTE :

- The gauge is located next to the oil filling port. When the fuel tank gets nearly full (about 2 litres away from being full), the gauge needle starts moving up to "FULL" mark. Use this gauge to avoid an overflow.

IMPORTANT :

- The fuel tank cap has an air breather. Make sure to clean the air breather when filling up fuel. If the air breather is clogged with mud, this will create a vacuum in the fuel tank as fuel is used.



- (1) Air breather
(2) Tank cap

12. Checking the electrical equipment

1. Check the function of the working light.
2. Check the function of the rotary beacon (optional equipment).

13. Checking the seat belt

1. Check the seat belt, the socket, and the metal fittings for dirt or damage.
If any of them are found to be damaged or deformed, they need to be replaced. Contact your local Kubota dealer.

14. Checking and cleaning the engine and electrical wiring

! WARNING

To avoid personal injury or death:

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

1. Check the battery, the cables and wiring, the muffler, and the engine, and thoroughly remove any flammable substances which have gathered in these places.
2. Check the electrical circuitry for disconnections, shorts, or loose terminals.

15. Checking the ROPS canopy

! WARNING

To avoid personal injury or death:

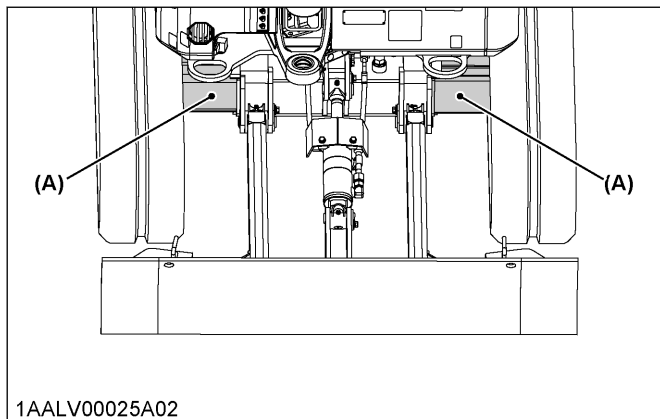
- Never remove the ROPS canopy, as doing so impairs the functionality of the ROPS.

1. Check all of the bolts to make sure that none of them have come loose.
2. Check the ROPS canopy for damage. If it is found to be damaged or deformed, it needs to be replaced. Contact your local Kubota dealer.

16. Greasing the track frame telescopic beams

NOTE :

- If there are any obstructions or other such objects that impede the telescopic movement of the adjustable tracks, either remove the obstructions, or move the machine to a flat and level surface. If the tracks still don't move freely, use the front attachments and the blade to lift the tracks off the ground before adjusting the track width. Additionally, if the telescopic beams are clogged, remove any mud or other such foreign substances.
1. Push the control lever forward, and set the tracks to completely extended width (1300 mm).
 2. Remove any dirt or debris from the telescopic beams.
 3. Apply grease evenly across the entire surface of each of the square pipes (4 locations: 1 on each side, front and back).
 4. Switch the track width between standard width and narrow width several times to allow the grease to spread evenly throughout the parts.



(A) Grease location

REGULAR CHECKS AND MAINTENANCE WORK

WARNING

To avoid personal injury or death:

- When operating, keep hands and body inside the ROPS and OPG (top guard level I).
- Do not touch the control levers and the pedals from outside the ROPS and OPG (top guard level I) while the engine is running.

EVERY 50 SERVICE HOURS

1. Draining water from the fuel tank

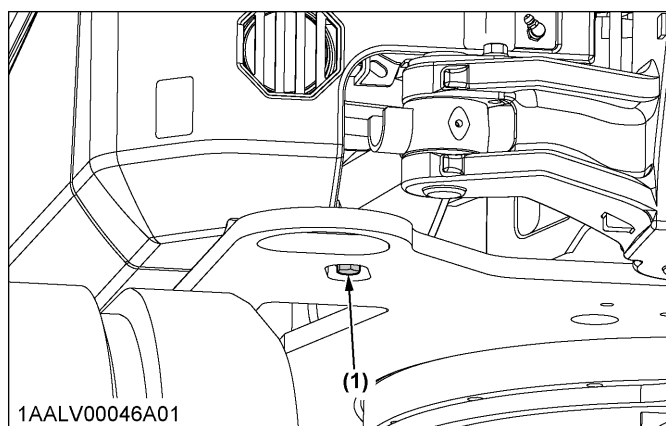
WARNING

To avoid personal injury or death:

- Before draining the water from the fuel tank, stop the engine and remove the key.
- Smoking, open flames, and any other sources of ignition are not allowed during inspection.

1. Swivel the machine to the left.
2. Place a container with a minimum capacity of 25 litres under the drain plug.
3. Remove the drain plug, open the drain valve, and drain the water.
4. Close the drain valve, and re-tighten the drain plug.

Tightening torque	48.1 N·m to 55.9 N·m
-------------------	----------------------



(1) Drain plug

2. Checking the battery condition

DANGER

To avoid the possibility of a battery explosion:

For refillable type battery, follow the following instructions.

- Do not use or charge the refillable type battery if the fluid level is below the [LOWER] (lower limit level) mark. Otherwise, the 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.

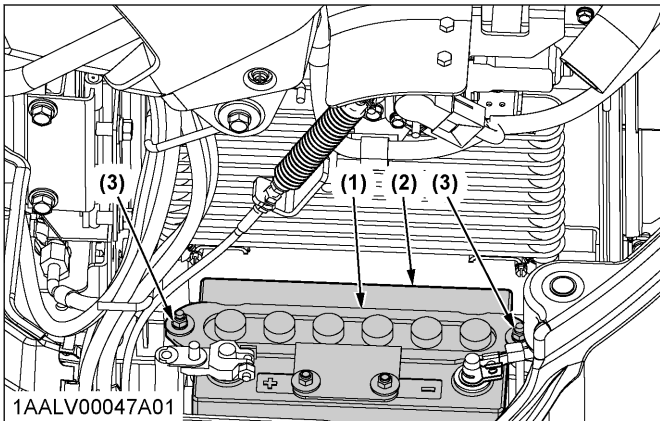
WARNING

To avoid personal injury or death:

- Never remove the vent caps while the engine is running.
- Keep electrolyte away from eyes, hands, and clothes. If the electrolyte spatters on human body, wash it away completely with water immediately and get medical attention.
- Wear eye protection and rubber gloves when working around the battery.
- Before inspecting or dismantling the battery, turn the starter switch to the [STOP] position and disconnect the earthing cable.
- When removing the battery, always disconnect the earthing cable first. When installing a battery, always connect the earthing cable last. This prevents a possible explosion caused by sparks.

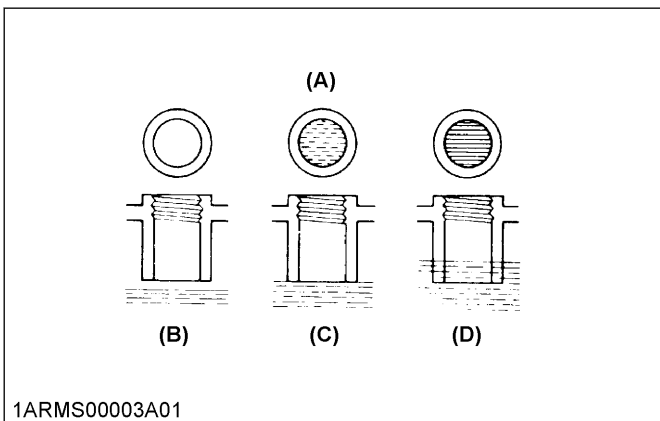
NOTE :

- When filling battery fluid or distilled water, clean waste, dust, and other substances off the top of battery before opening the battery cap.



- (1) Clamp
(2) Battery
(3) Bolt

1. Open the side cover, check the battery fluid level and add distilled water if necessary.



- (A) Battery fluid level
(B) Too low
(C) Correct
(D) Too high

2. If battery fluid has spilled, fill with sulphuric acid solution of the same concentration.
3. Clean the battery caps (ventilation holes) also.

2.1 Charging the battery

WARNING

To avoid personal injury or death:

- When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.
- When charging battery, make sure that battery vent plugs are secured.
- 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.

- Do not check battery charge by placing a metal object across the terminals. Use a voltmeter or hydrometer.

IMPORTANT :

- Make sure that each electrolyte level is to the bottom of vent wells. If necessary, add distilled water in a well-ventilated area.
- The water in the electrolyte evaporates during recharging. Liquid shortage damages the battery. Excess liquid spillage damages the machine.

NOTE :

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

1. To slow-charge the battery, connect the battery positive terminal to the charge positive terminal and the negative to the negative.
2. Charge the battery in the standard fashion until the specific gravity of electrolyte falls between 1.27 and 1.29, meaning that the charge is complete.

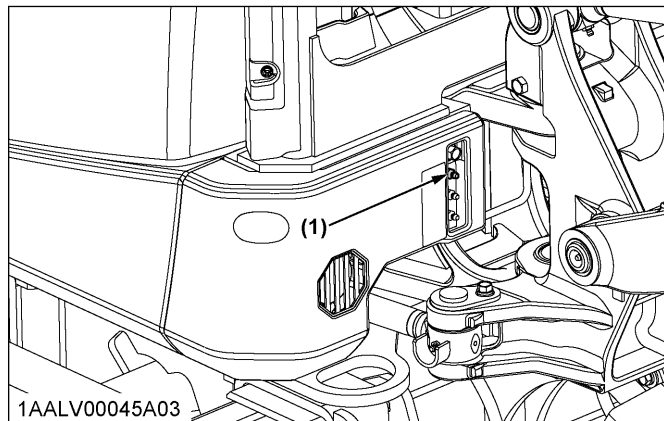
3. Greasing the swivel gear

1. Pump grease with the grease gun through the grease fitting.

2. Grease the fitting at each 90° position of the swivel frame.

NOTE :

- Fill with approximately 50 g of grease, meaning approximately 20 to 30 pumps with the grease gun at each position.
- Distribute the grease over the teeth.



(1) Grease fitting

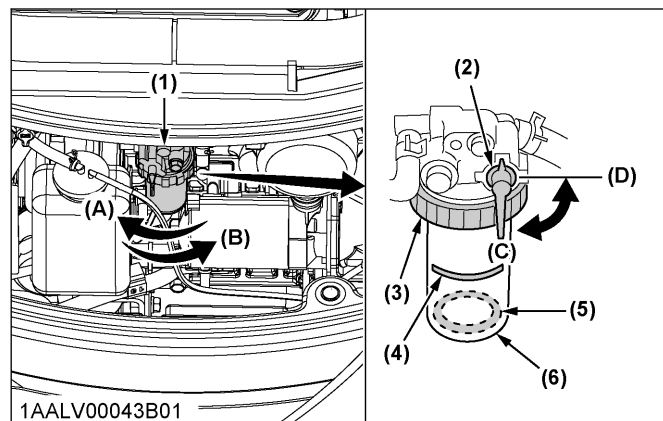
4. Checking the crawler tension

1. Check the crawler tension every 50 hours.
(See ADJUSTING THE CRAWLERS on page 130.)

5. Cleaning the water separator

IMPORTANT :

- When reattaching the water separator, make sure that no dust or dirt gets into the cup or other surrounding parts.
- Purge the fuel system before restarting the machine.
(See PURGING THE FUEL SYSTEM on page 130.)



- | | |
|----------------------------|-------------|
| (1) Water separator | (A) Loosen |
| (2) Water separator handle | (B) Tighten |
| (3) Retainer ring | (C) ON |
| (4) Line | (D) OFF |
| (5) Float | |
| (6) Cup | |

Water and dirt contained in the fuel settle in the water separator. When deposits of such foreign substances build up, clean the water separator as follows.

1. Open the engine bonnet.
(See Opening and closing the engine bonnet on page 105.)
2. Place a drip sheet under the water separator to prevent fuel from running onto the ground.
3. Set the water separator handle to the **[OFF]** so that no fuel can run out.
4. Loosen the retainer ring and remove the cup.
5. Pour out all of the water in the cup, and clean the inside of the cup with diesel fuel.
6. Reattach the cup, tighten the retainer ring, and set the water separator handle to the **[ON]** position.
7. Close the engine bonnet.

EVERY 200 SERVICE HOURS

Carry out all 50 hours servicing at the same time.

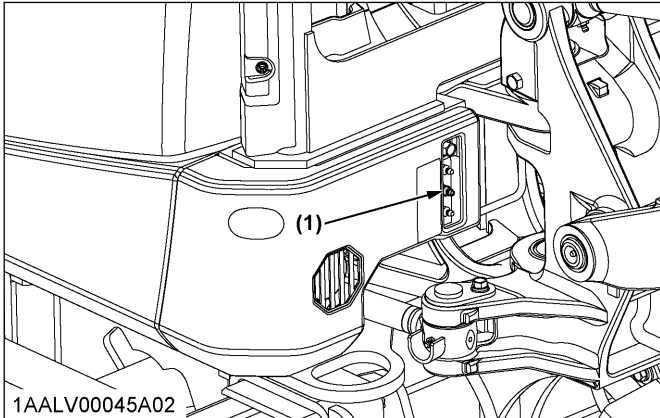
1. Greasing the swivel bearing

1. Pump grease with a grease gun through the grease fitting indicated in the following illustration.

- Grease at each 90° position of the swivel frame.

NOTE :

- Apply 5 shots with a grease gun at each position.



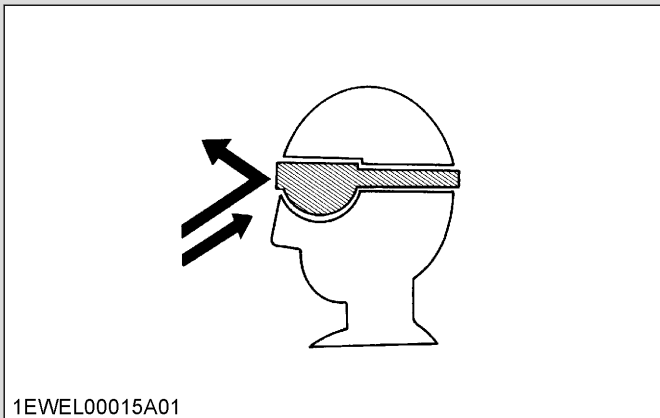
(1) Grease fitting

2. Inspecting and cleaning the air filter element

CAUTION

To avoid personal injury:

- Wear eye protection when cleaning the air filter element.



IMPORTANT :

- If the machine is used in extremely dusty areas, the air filter element must be inspected and cleaned more frequently than instructed in the specified maintenance periods.
- The air filter has a dry element so keep it free from oil.
- Do not run the engine without the air filter.

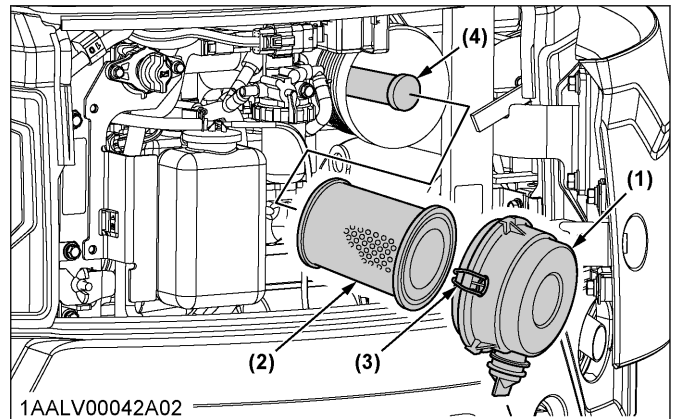
NOTE :

- The quickest and safest method of maintenance is to replace the paper cartridge with a new one.

- Open the engine bonnet and remove the dust cover.
(See Opening and closing the engine bonnet on page 105.)
- Remove only the outer element.

NOTE :

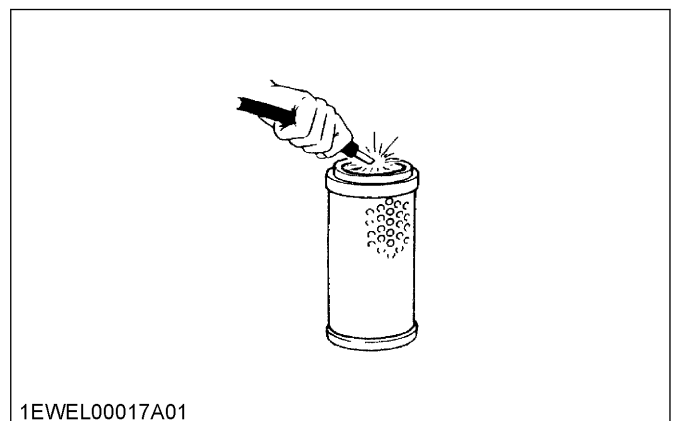
- Do not remove the inner element.



- Dust cover
- Outer element
- Clamp
- Inner element

- Clean the interior of the element case as follows:
 - Blow off any dust attached to the outside of the cartridge using compressed air.
 - Blow the cartridge clean from inside to outside until the dust deposits are noticeably reduced.

Air pressure	205 kPa (2.1 kgf/cm ²) or less
--------------	--



IMPORTANT :

- If the air suction is still inadequate, or the colour of the exhaust gases is abnormal even after the cleaning, the air filter cartridge must be replaced.

- Reassemble the element and install the dust cover so that the "TOP" mark (arrow) points upwards.

3. Checking the fuel lines and rubber hoses of the intake air line

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

EVERY 250 SERVICE HOURS

Carry out all 50 hour servicings at the same time.

1. Checking the coolant hoses and hose clamps

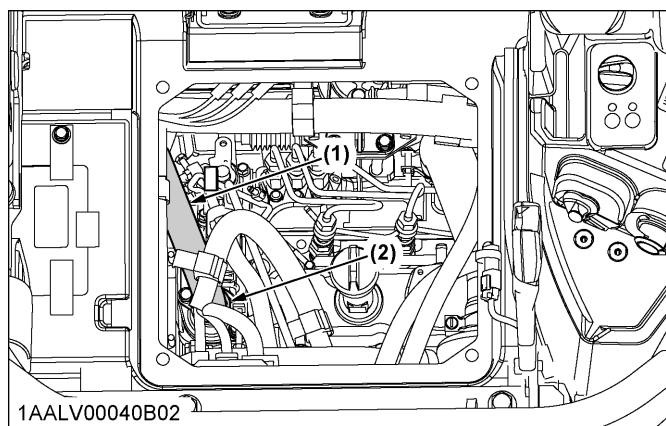
Check the coolant hoses and clamps every 250 hours or every 6 months, whichever comes first.



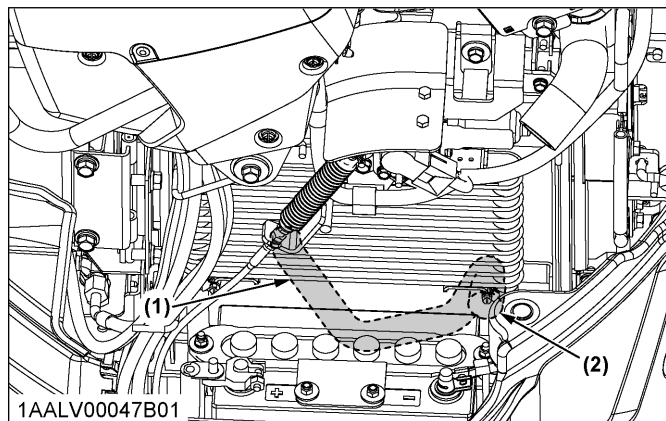
WARNING

To avoid personal injury or death:

- Wait long enough for the radiator coolant to cool down.



- (1) Upper coolant hose
- (2) Hose clamp



- (1) Lower coolant hose
- (2) Hose clamp

1. Check the coolant hoses for proper connection.
2. If the hose clamps become loose or if coolant leaks, tighten the hose clamps properly.

3. If the coolant hoses become swollen, worn out, or cracked, they must be replaced and the hose clamps must be tightened again properly.

2. Checking and adjusting the V-belt tension



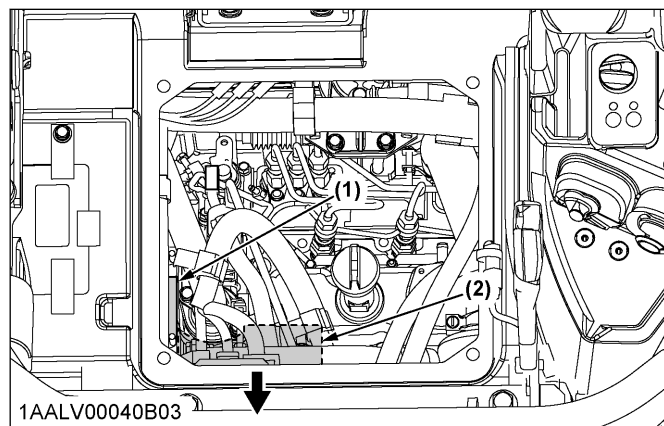
WARNING

To avoid personal injury or death:

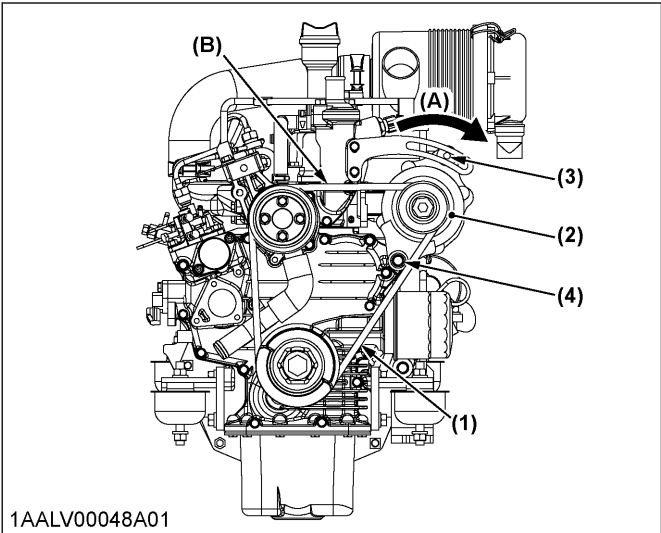
- First stop the engine and remove the key.
- After servicing, make sure to replace the belt cover in its original position.

IMPORTANT :

- If the engine is run with a loose V-belt, the belt could slip and cause overheating of the engine or insufficient battery charging. Check V-belt tension regularly.
- Should the V-belt break or jump off, the indicator light for battery charge will light up. Stop the engine and remove the key immediately.



- (1) V-belt
- (2) Alternator



- (1) V-belt
- (2) Alternator
- (3) Bolt (M8 x 30)
- (4) Bolt (M8 x 60)
- (A) Tighten
- (B) Middle of V-belt

Checking

- Press the V-belt (1) down in the middle, with a force of approximately 98 N (10 kgf). The belt tension is correct if it deflects about 8 mm.
- Inspect the condition of the V-belt, and replace the V-belt if it is worn out, cracked, or torn.

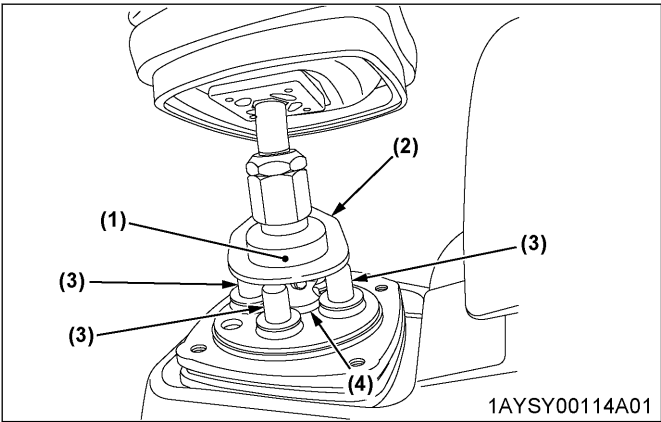
Adjusting

If the belt tension is not correct, perform the following procedure:

- Loosen the bolts.
- Shift the alternator (2) in the direction shown by the arrow.
- Check the tension again.

3. Greasing the pilot valve linkage

- Apply grease to the pushrods, the contact surface of the plate, and the universal joint.



- (1) Pilot valve
- (2) Plate
- (3) Pushrod
- (4) Universal joint

NOTE :

- Apply grease to both the left and right pilot valves.

EVERY 500 SERVICE HOURS

Carry out all the 50 and 250 hour servicings at the same time.

1. Changing the engine oil and the engine oil filter

Change the engine oil and the engine oil filter every 500 hours or every year, whichever comes first.

Changing the engine oil

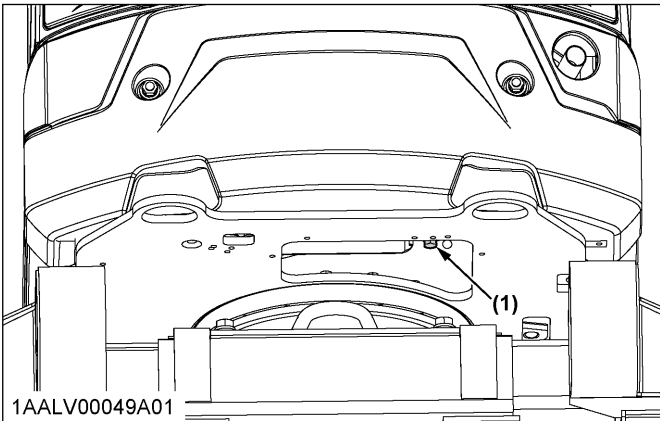
WARNING

To avoid personal injury:

- Stop the engine, remove the key, and wait long enough for the oil to cool down.

- Place an oil pan with a capacity of approximately 15 litres under the engine oil drain. Do not allow the engine oil to seep into the soil. It must be discarded like the oil filter in accordance with the applicable environmental protection regulations.
- Remove the drain plug on the underside of the engine and drain all oil.
- Re-tighten the drain plug.

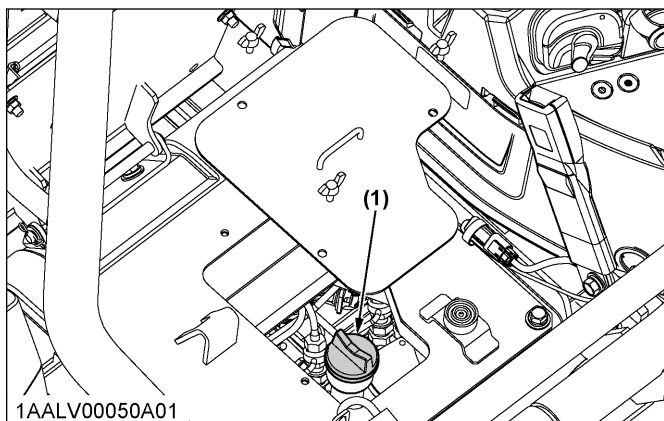
Tightening torque	196.1 N·m to 225.6 N·m
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- (1) Drain plug

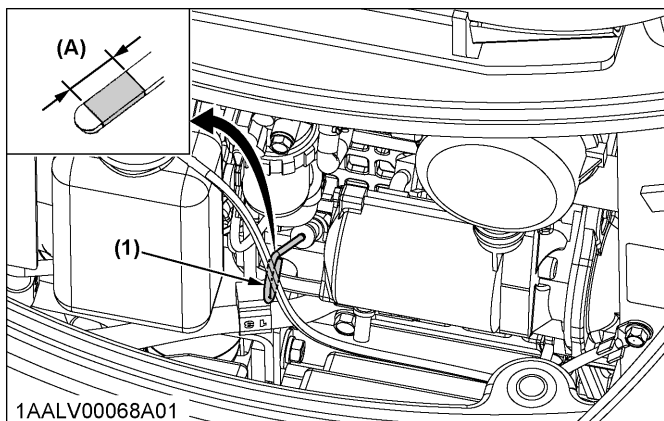
- Fill through the filling port up to the specified level.

Engine oil volume (with engine oil filter)	Approximately 3.6 L
--	---------------------



(1) Oil filling port

5. Let the engine idle for approximately 5 minutes.
6. Check the engine oil level by inserting the engine oil dipstick completely into the respective port opening and then pulling the dipstick out. If the oil level lies between the two markings, do not add any additional oil.



(1) Engine oil dipstick

(A) Oil level is acceptable within this range.

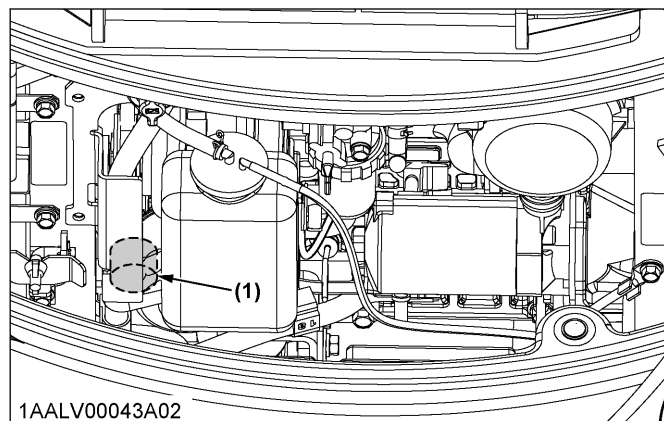
IMPORTANT :

- If the oil level is too high or too low, the engine might become damaged during operation.

Changing the engine oil filter**IMPORTANT :**

- Always check the oil level after changing the filter.

1. Place an oil pan with a capacity of approximately 15 litres under the engine oil drain. Do not allow the engine oil to seep into the soil. It must be discarded like the oil filter in accordance with the applicable environmental protection regulations.
2. Remove the oil filter with the supplied filter wrench.



(1) Oil filter

3. Oil the O-ring of the new oil filter lightly. Then tighten the oil filter by hand.
4. Fill engine oil to the specified level.

Engine oil volume (with engine oil filter)	Approximately 3.6 L
---	---------------------

5. Let the engine run for approximately 5 minutes and make sure that the engine oil indicator lamp does not light up.
6. Check the engine oil level by inserting the engine oil dipstick completely into the respective port opening and then pulling the dipstick out. If the oil level lies between the 2 markings, do not add any additional oil.
7. As the engine oil level is reduced by the amount of the filter capacity after the engine is started, add oil as necessary.

2. Changing the drive unit oil

Change the drive unit oil every 500 hours or every year, whichever comes first.

The first oil change is after 50 service hours.

! WARNING

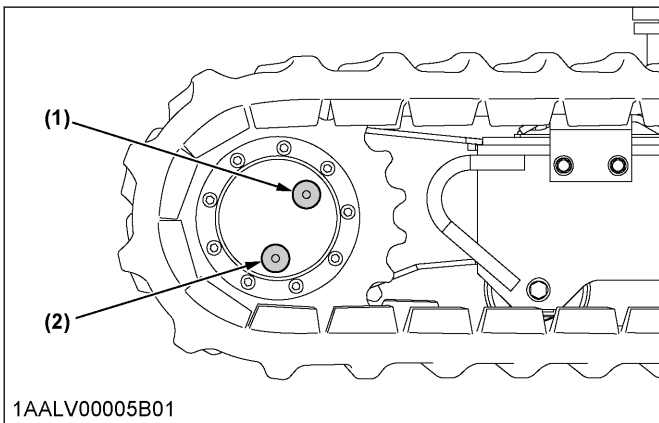
To avoid personal injury or death:

- Lower all attachments to the ground, stop the engine, and remove the key before undertaking the oil change.

1. Rotate the crawler so that the drain plug of the drive unit is in the bottom position.
2. Place an oil drain pan with a minimum capacity of 2 litres under the drain plug.
3. Remove the drain plug to let the oil run out.
4. Screw in and tighten the drain plug again with a new O-ring on it.
5. Remove the oil check port plug and fill gear oil.

Gear oil volume	Approximately 0.3 L
-----------------	---------------------

6. Fill oil until it overflows from the oil check port.



- (1) Oil check port (also serves as oil filling port)
(2) Drain plug

7. Screw in and tighten the oil check port plug again with a new O-ring on it.

Tightening torque	49.0 N·m to 53.9 N·m
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NOTE :

- Use prescribed gear oil SAE 90.
- Perform the same service on both drive units.

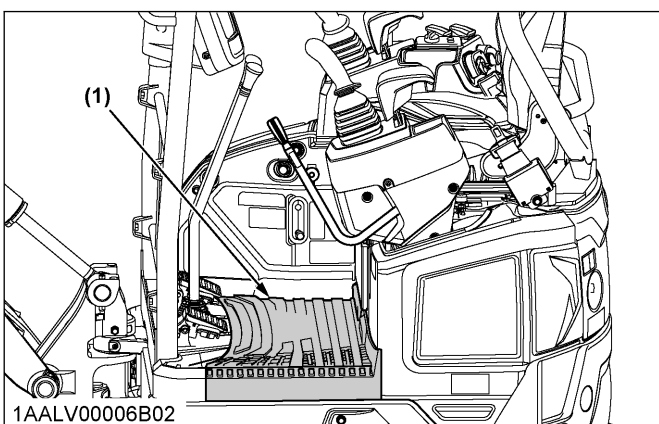
3. Changing the fuel filter

! WARNING

To avoid personal injury or death:

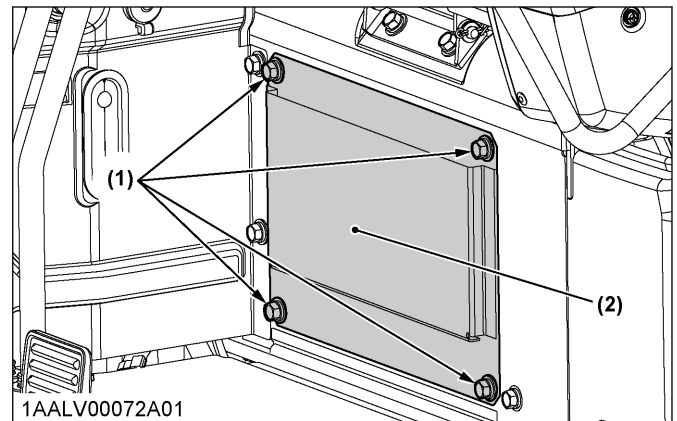
- Open flames may ignite fuel. Keep flames away while working on the fuel system.

1. Remove the rubber mat in front of the seat console.



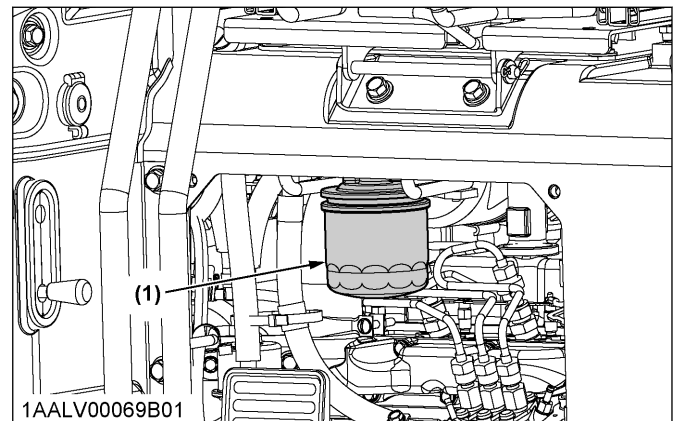
- (1) Rubber mat

2. Remove the 4 bolts, and remove the cover on the front of the seat console.



- (1) Bolt
(2) Cover

3. Place a drip sheet under the fuel filter to prevent fuel from spilling onto the ground.
4. Set the water separator handle to the **[OFF]** position.
5. Remove the fuel filter with the supplied filter wrench.



- (1) Fuel filter

6. Add fuel to a new filter before installing.
7. Apply a light film of fuel to the seal of the new filter and turn in tightly by hand.
8. Set the water separator handle to the **[ON]** position.
9. After exchanging the filter, purge the fuel system of air.

4. Changing the return filter

The first change is after 250 service hours.

! WARNING

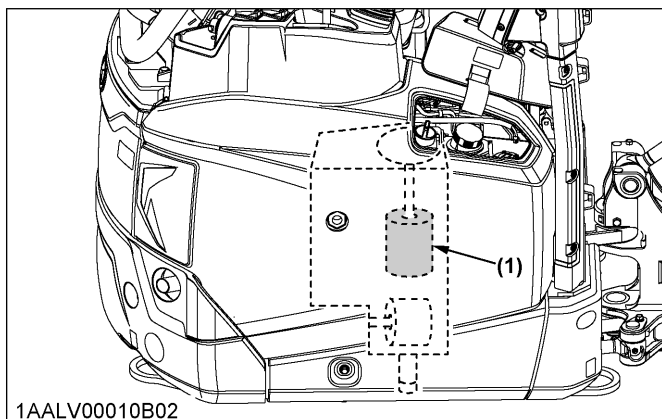
To avoid personal injury or death:

- Remove the oil filter only after the oil in the hydraulic oil tank has cooled down.

IMPORTANT :

- Always check the oil level after replacing the filter.

- Be careful to maintain the utmost cleanliness when servicing the hydraulic system.



(1) Return filter

1. Remove the cover of the hydraulic oil tank.
2. Pull out the filter support by the top plate from the hydraulic oil tank.
3. Remove the return filter from the filter support with a fork wrench.
4. Check the condition of the O-ring on the cover of the hydraulic oil tank, and change it if necessary.
5. Fit the new return filter and screw it tightly onto the filter support.

Tightening torque	19.6 N·m to 29.4 N·m
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5. Changing the breather filter

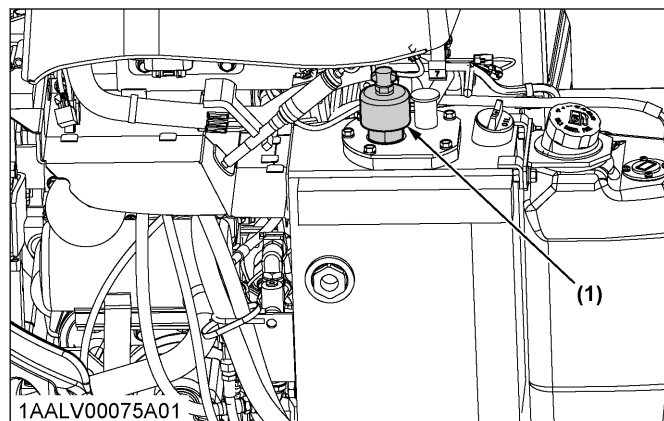
WARNING

To avoid personal injury or death:

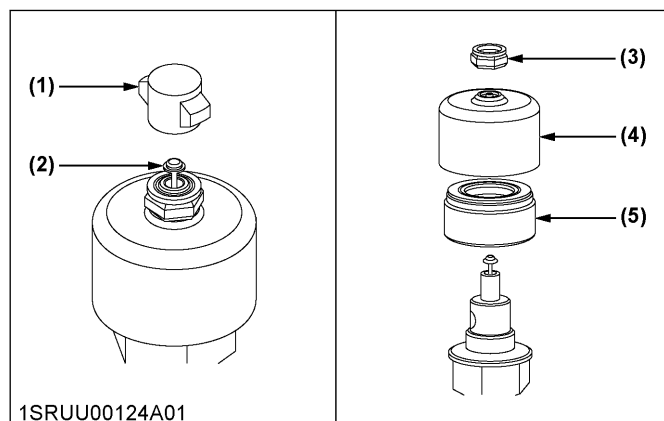
- There is a risk of being injured by hot pressurised hydraulic oil. Make sure that the oil has cooled down sufficiently, and then release the pressure before performing this service.

IMPORTANT :

- Be careful to maintain the utmost cleanliness when servicing the hydraulic system.



(1) Breather filter



- (1) Cap nut
(2) Button
(3) Nut
(4) Cover
(5) Breather filter

1. Remove the cover of the hydraulic oil tank.
2. Unscrew the cap nut.
3. Push the button to release the pressure.
4. Unscrew the nut and remove the cover.
5. Take out the breather filter and replace it with a new one.

NOTE :

- Dispose of drip sheets and the old filter element in accordance with applicable environmental protection regulations.
6. Tighten the cover and the nut and install the cap nut.

EVERY 750 SERVICE HOURS

Carry out all the 50 and 250 hour servicings at the same time.

1. Checking the engine valve clearance

Contact your local Kubota dealer for this service.

EVERY 1000 SERVICE HOURS

Carry out all the 50, 200, 250, and 500 hour servicings at the same time.

1. Changing the hydraulic oil and the suction filter

**WARNING**

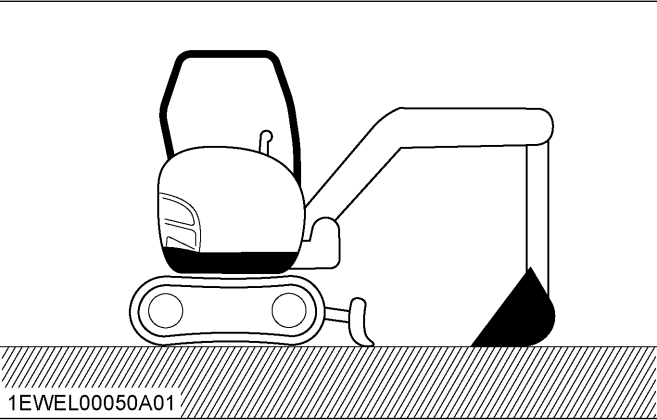
To avoid personal injury or death:

- Wait long enough for the hydraulic fluid to cool down. Then begin with the change of the hydraulic fluid.

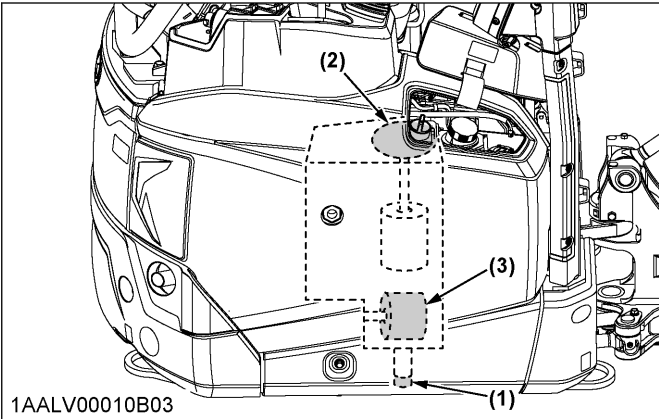
IMPORTANT :

- Should dirt deposits be in the hydraulic oil tank, remove with the help of a clean cloth and light oil.
- Be careful to maintain the utmost cleanliness when servicing the hydraulic system.

1. Increase the track width to completely extended width (1300 mm).
2. Park the machine on a firm, flat and level surface. Adjust the swing angle to the centre. Lower the attachment and dozer blade to the ground and stop the engine.



3. Place a container with a minimum capacity of 25 litres under the hydraulic oil drain plug.
4. Remove the drain plug on the underside of the hydraulic oil tank and drain the oil.



- (1) Drain plug
- (2) Cover
- (3) Suction filter

5. Remove the cover of the hydraulic oil tank.
6. With an open-end spanner or similar, remove and replace the suction filter with a new one.

Tightening torque	58.8 N·m to 63.7 N·m
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7. Retighten the drain plug.

Tightening torque	196.1 N·m to 225.6 N·m
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8. Insert a clean funnel with a strainer into the filler port.
9. Fill oil through the oil filling opening on the top side of the tank.
10. Let the engine run for approximately 5 minutes and check the oil level again.

Hydraulic oil volume

Hydraulic oil tank	13 L
Total oil volume	21.8 L

1.1 Hydraulic oil checks (hydraulic breaker operation)

Hydraulic oil change after 1000 hours of operation is based on the normal machine work using the bucket only.
When using hydraulic breakers, follow the inspection measures below instead.

Changing and filling up of hydraulic oil

- The hydraulic oil must be changed more often when breakers are used because the machine is subject to harder conditions than normal excavating work.
- Use only the recommended oils mentioned in the operator's manual when changing or filling with oil.
- When filling up oil, never mix oils from different makers.

Changing the return filter and oil

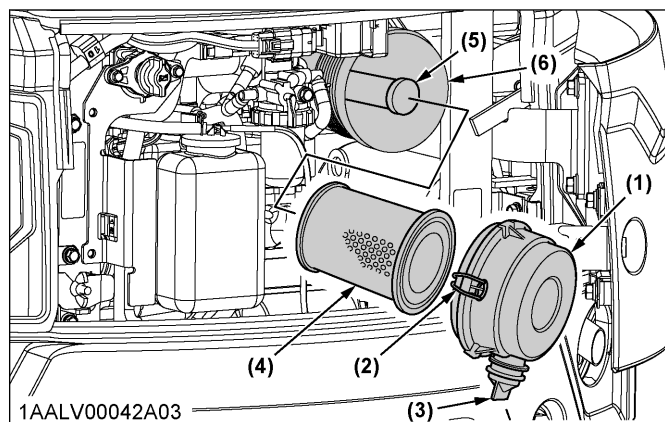
- The filter must be changed more often because of contamination resulting from the frequent assembly and disassembly of the hoses.
- Use the correct replacement filter.
- Change oil according to operating hours.

		Hydraulic oil	Return filter
Normal machine work		Every 1000 hours	Every 500 hours
Breaker work portion	20 %	Every 800 hours	Every 200 hours
	40 %	Every 400 hours	
	60 %	Every 300 hours	Every 100 hours
	More	Every 200 hours	

2. Changing the air filter element

IMPORTANT :

- Shorten the replacement period if the machine is used in dusty or sandy areas.
- The inner filter element must remain installed while cleaning the air filter case. Otherwise, particles of dirt could enter the air intake duct while cleaning and damage parts of the injection system and engine.



- (1) Dust cover
- (2) Clamp
- (3) Dust valve
- (4) Outer element
- (5) Inner element
- (6) Air filter case

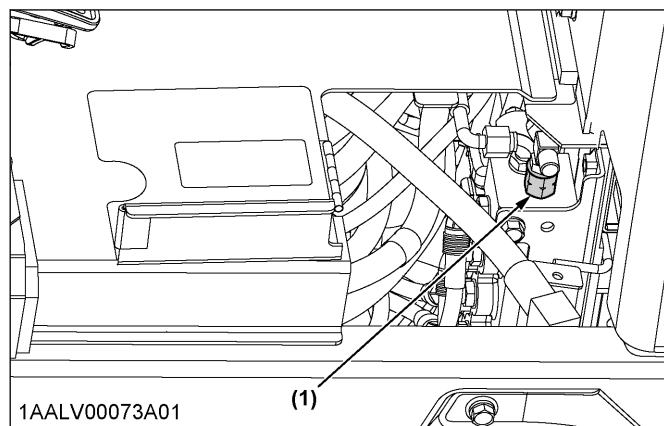
1. Open the engine bonnet.
2. Open the clamps and remove the dust cover.
3. Clean the dust cover and the dust valve.
4. Pull the outer filter element out of the air filter case.
5. Clean the air filter case without removing the inner filter element.
6. Remove the inner filter element after cleaning the air filter case and immediately insert the new filter element.
7. Insert the new outer filter element.

8. Close the cover with the "TOP" mark facing up, and then lock the clamps.
9. Close the engine bonnet.

3. Changing the auxiliary circular valve filter

IMPORTANT :

- Be careful to maintain the utmost cleanliness when servicing the hydraulic system.
- The hydraulic devices and oil are extremely hot. Handle with care during preparation, measurement, and reassembly.
- Before disconnecting the hydraulic hoses, release the residual pressure first.



(1) Auxiliary circular valve filter

1. Put drip sheets in the working area under the auxiliary circular valve.
2. Depressurise the hydraulic system. (See **RELEASING PRESSURE TRAPPED IN THE HYDRAULIC SYSTEM** on page 84.)
3. Remove the rubber mat.
4. Open the partial cover on the step.
5. Disconnect the hydraulic hose from the auxiliary circular valve.
6. Replace the auxiliary valve filter.
7. Connect the hydraulic hose to the auxiliary circular valve.

4. Cleaning the pilot line filter

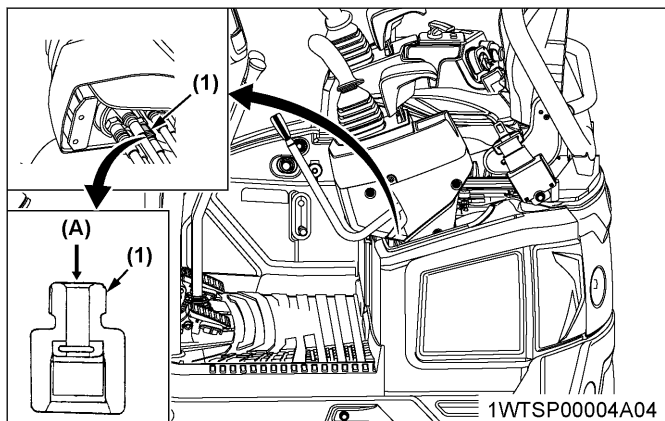
Dust and dirt collect on the concave side of the filter.

IMPORTANT :

- To avoid oil leakage, do not reuse removed O-rings during reassembly.

1. Clean the pilot line filter by bleeding the cleaning fluid from the salient side.

- Clean the pilot line filter on the other side in the same manner.



(1) Pilot line filter

(A) Direction of bleeding the cleaning fluid

EVERY 1500 SERVICE HOURS

Carry out all the 50, 250, and 500 hour servicing at the same time.

1. Checking the fuel injection nozzle - Injection pressure

Consult your local Kubota dealer for this service.

EVERY 2000 SERVICE HOURS

Carry out all the 50, 200, 250, 500, and 1000 hour servicings at the same time.

1. Changing the oil in the idler and the track roller

Contact your local Kubota dealer for this service.

2. Checking the alternator and starter motor

Contact your local Kubota dealer for this service.

EVERY 3000 SERVICE HOURS

Carry out all the 50, 200, 250, 500, 1000, and 1500 hour servicings at the same time.

1. Checking the fuel injection pump

Contact your local Kubota dealer for this service.

ANNUAL SERVICING

1. Checking the electric lines and connections

- Check the terminals periodically for proper connections.

NOTE :

- Loose wiring or damaged cables can cause improper functioning or short-circuiting of the electrical system.

- Check the wiring and replace any damaged components immediately.

NOTE :

- If a fuse blows out soon after being replaced, contact your local Kubota dealer.
- Never use a fuse other than the specified type.

EVERY 2 YEARS

1. Changing the coolant hoses and hose clamps

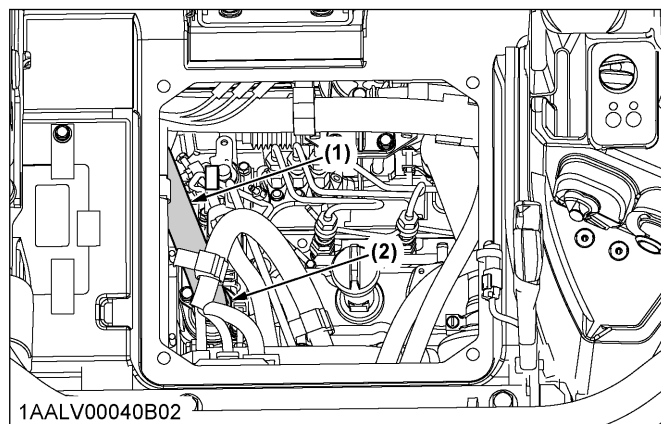


WARNING

To avoid personal injury or death:

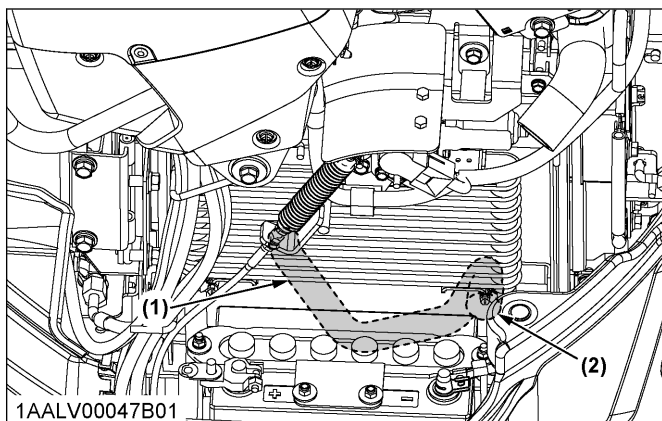
- Do not loosen the radiator cap before the radiator has cooled down sufficiently. Loosen the cap only after allowing enough time for the pressure in the system to be reduced.

- Change the coolant hoses and hose clamps every 2 years.
- If the hoses or pipes become swollen, hard, or cracked before 2 years has passed, replace them immediately.
- Contact your local Kubota dealer for this service.



(1) Upper coolant hose

(2) Hose clamp



(1) Lower coolant hose
(2) Hose clamp

2. Changing the radiator coolant

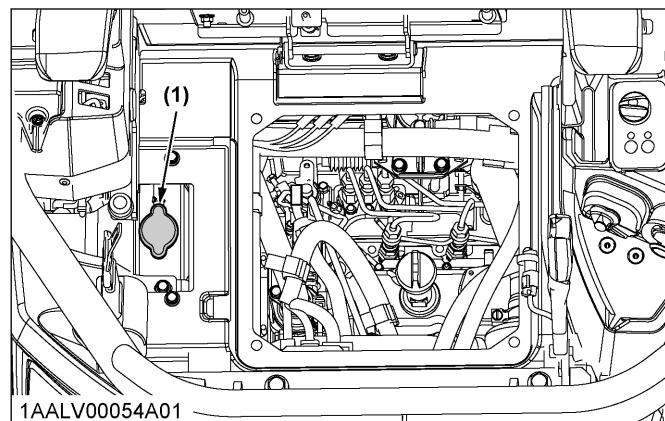


WARNING

To avoid personal injury or death:

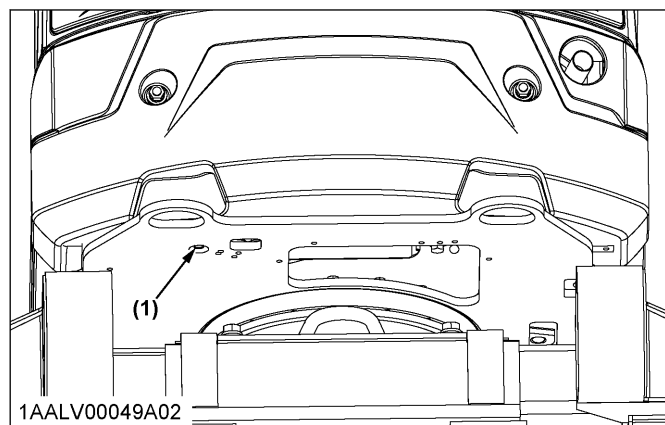
- When using antifreeze, use protective clothing such as rubber gloves.
- If swallowed, antifreeze is poisonous to people, animals, and birds.
- If you accidentally swallowed antifreeze, seek medical attention immediately.
- When antifreeze comes in contact with the skin or clothing, wash it off immediately.
- Do not mix different types of antifreeze. The mixture can produce a chemical reaction resulting in harmful substances.
- Antifreeze is extremely flammable and explosive under certain conditions. Keep antifreeze away from fire and children.
- When draining fluids from the engine, use a container underneath the engine body to catch the fluids.
- 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.

1. Stop the engine, remove the starter key and then wait until the engine has cooled down completely.
2. Open the radiator cap.



(1) Radiator cap

3. Open the drain plug at the bottom of the radiator and drain the coolant completely. Should a recovery tank be equipped, disconnect the line from the tank floor and then open the drain plug.



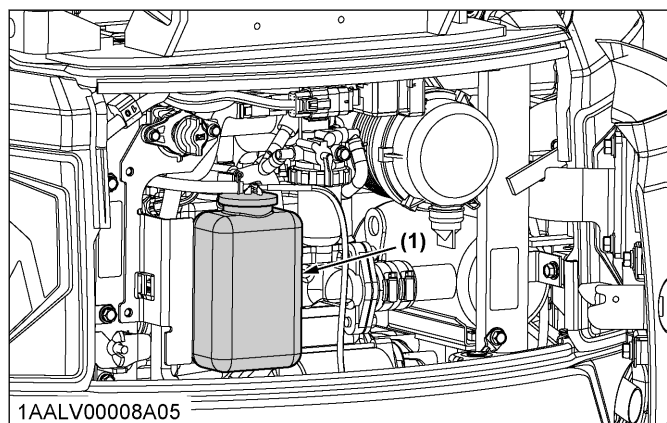
(1) Drain plug

4. Drain water while pouring water from the radiator water inlet.
5. Continue until clean water comes out of the outlet.
6. Close the drain plug.

Tightening torque	48.1 N·m to 55.9 N·m
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7. Fill the radiator and the recovery tank with coolant fluid.
8. Close the radiator cap.
9. Let the engine idle for about 5 minutes.
10. Stop the engine and remove the starter key.

11. Check the coolant level of the recovery tank and add coolant if necessary.



(1) Recovery tank

Coolant volumes	
Radiator	Approximately 2.6 L
Recovery tank	Approximately 0.6 L

NOTE :

- The shipped machine has been filled with 50 % antifreeze solution.

IMPORTANT :

- Do not operate the engine without coolant.
- To fill the radiator system and the recovery tank, use distilled water and antifreeze fluid.
- When the antifreeze is mixed with water, the antifreeze mixing ratio must be less than 50 %.
- Tighten the radiator cap properly. If the cap is loose or not properly fitted, it can cause engine overheating due to the loss of coolant fluid.

3. Changing the rubber hoses of the intake air line

Contact your local Kubota dealer for this service.

4. Changing the fuel lines

Contact your local Kubota dealer for this service.

5. Changing the hydraulic hoses

Contact your local Kubota dealer for this service.

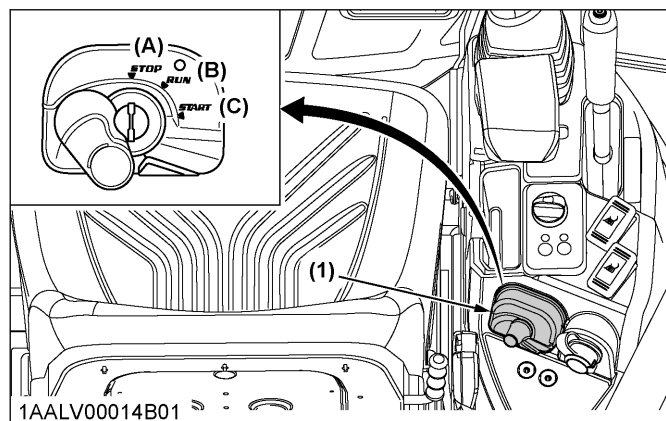
SAFETY INSPECTION

- All safety inspections are based on the national worker's protection regulations, safety regulations and technical specifications applicable to the country where the machine is deployed.
- The owner should arrange for the safety inspections to be performed at specified intervals according to national rules and regulations.
- Based on their technical training and experience, the qualified personnel should have sufficient knowledge in the domain of the machine described here and be familiar with the applicable national work safety regulations, accident prevention regulations and the generally accepted technical rules so that they can assess the safe condition of the machine.
- The qualified person must keep his or her appraisal and evaluation neutral and must not be influenced by personal, economic or operational interests. The inspection is a visual and functional check of all components for condition and completeness and of the effectiveness of the safety devices.
- The performance of the inspection must be documented as an inspection report containing at least the following information:
 - Date and scope of the inspection indicating all pending checks
 - Result of the inspection with a report of the determined faults
 - Assessment with respect to starting or continuing operation
 - Information on necessary follow-up inspections
 - Name, address and signature of the inspector
- The owner or employer (company) is responsible for the observance of the inspection intervals. The acknowledgment and the elimination of the determined faults must be confirmed by the owner or employer in writing, along with the date, in the inspection report.
- If the safety inspection is due while the vehicle has been taken out of service, the inspection must be performed before start-up.
- The inspection report must be kept on file at least until the next inspection.

OTHER ADJUSTMENTS AND REPLACEMENTS

PURGING THE FUEL SYSTEM

1. Fill up the fuel tank with fuel.
2. Turn the starter switch to the **[RUN]** position.
3. The air in the fuel system will automatically be purged within 1 minute.



(1) Starter switch

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

IMPORTANT :

- If the purging was insufficient, the engine stops right after starting. In this case, repeat steps 2 to 3.

ADJUSTING THE CRAWLERS

⚠ WARNING

To avoid personal injury or death:

- Make sure that no obstacles, such as stones are caught in the crawler. Remove such obstacles before adjusting the crawler tension.
- Do not loosen the grease fitting completely or too quickly. Otherwise, the pressure valve or grease under high pressure in the tension cylinder could shoot out.
- Do not crawl under the machine.

IMPORTANT :

- If the crawlers are too tight, wear is increased.
 - If the crawlers are too loose, the crawler pads may collide with the sprocket, wear is increased.
- The crawler may dislocate or come off.
- Clean the crawlers after every use.

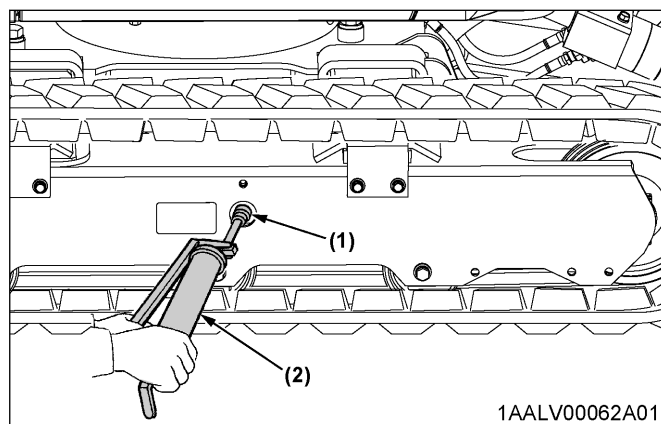
1. Adjusting rubber crawlers

IMPORTANT :

- Should the crawler tension be high due to sticking mud, lift the crawler with the help of the boom, arm and bucket, idle the engine and remove mud from the crawler by rotating it.
- Crawler seam
The ends of the rubber crawler are joined with a seam. When adjusting the crawlers, the seam must be positioned on the top centre between the idler and the sprocket.
If the seam is positioned incorrectly, the crawlers will be tensioned too loosely, and a further readjustment will be necessary.
- Rotate the crawler after adjustment 1 to 2 times to check the tension.
- Additionally following points are to be observed when adjusting rubber crawlers.
 - If the crawler slackens more than 50 mm, readjust them.
 - Check crawler tension 50 hours after initial use and readjust if necessary. Check and adjust thereafter every 50 service hours.

Tensioning

1. Apply grease to the grease fitting.



(1) Grease fitting
(2) Grease gun

2. Tension the crawler in the lifted position, so that the distance "A" (clearance between the track roller and the inside surface of the crawler) is 10 mm to 15 mm (see illustration).
In this case, the crawler seam is positioned on the top centre between the idler and the sprocket.

Clearance	10 mm to 15 mm
-----------	----------------

DANGER

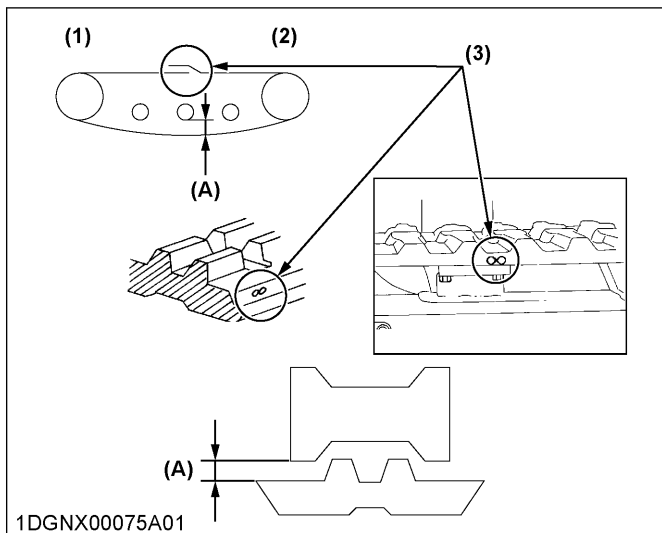
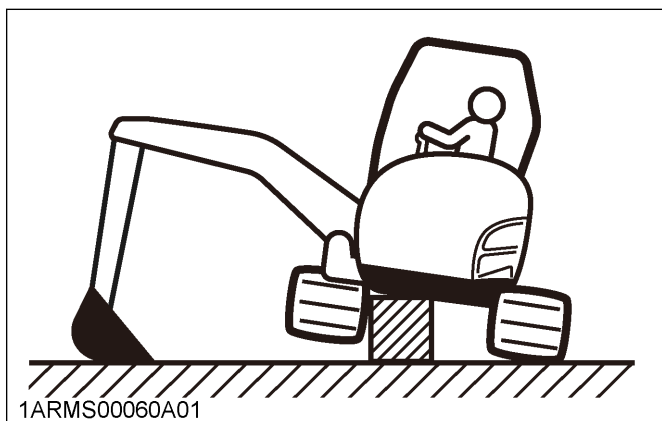
To avoid serious injury or death:

- Do not work under the machine in this condition.
- For your safety do not rely on hydraulically supported devices, they may leak down and suddenly drop or be accidentally lowered.

WARNING

To avoid personal injury or death:

- When lifting the machine itself with an attachment, place a safety block or safety post to prevent the machine from turning over. Keep the pilot control lock lever in the LOCK position.



(1) Drive sprocket

(2) Idler

(3) Seam (Marked [∞])

(A) 10 mm to 15 mm

Loosening

WARNING

To avoid personal injury or death:

- Do not loosen the grease fitting completely or too quickly.

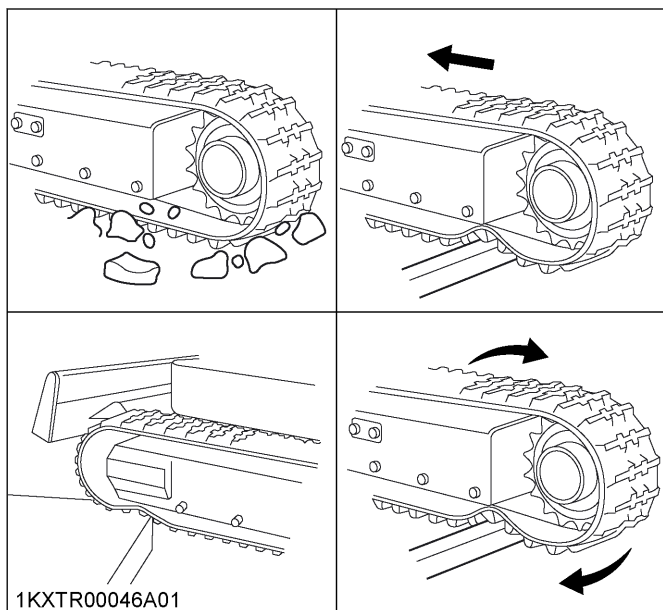
Otherwise grease under high pressure in the tension cylinder could squirt out.

1. Using a socket wrench, loosen the grease fitting a few turns.
2. When grease oozes out from the thread, rotate the crawler and loosen the crawler in the lifted position.
3. After adjustment is completed, tighten the grease fitting using a socket wrench.

Tightening torque must be between 98 N·m to 108 N·m.

1.1 Special information regarding the use rubber crawlers

- When turning, make a slow swivel turn. Avoid spin turns to decrease lug wear and entry of dirt. Do not make sharp turns on streets with a high-friction tarmac, such as concrete.
- The relief valve may be activated if too much dirt and sand clog the crawlers. In this case move the machine for a short distance straight backwards to let the earth and sand fall off, then a turn can be made.
- Avoid using rubber crawlers on riverbeds, stony underground, ferro-concrete and on iron plates. The rubber can damage as well as increase wear on the crawlers.
- Protect the crawlers against salt. Do not work with the machine on the seashore. Otherwise, the salt will cause the steel insert to corrode.
- Driving or turning on sharp objects or over steps causes excessive wear on the rubber crawlers and will lead to the breaking of the rubber crawler or cause the crawler running surface and the steel inserts to be cut.
- Make sure that no foreign objects get stuck in the rubber crawler. Foreign objects lead to excessive crawler wear and can cause it to break.
- Keep oil products away from the rubber crawlers.
- Remove any fuel or hydraulic oil spilled on the rubber crawlers.



CHANGING THE BUCKET

WARNING

To avoid personal injury or death:

- Two people are required to replace the bucket. One person operates the excavator, and the other one mounts the bucket. The person who mounts the bucket must command and guide the movements of the front end attachments. The operator should move the front end attachments only according to the commands of the person who mounts the bucket. Continuous visibility between both persons is indispensable. If there is no visibility, stop working immediately.
- When replacing the bucket, wear eye protection, a helmet, and protective gloves.
- During attaching and detaching, chippings and burrs may occur at the bolts or bushings. These may cause severe injuries.
- Never use your fingers for the alignment of the components (linkage, bucket, and arm). The components may sever your fingers due to the uncontrolled movements.
- When other attachments are installed instead of a Kubota specified bucket, read the manual of the attachment to do a correct operation safely.

CAUTION

To avoid personal injury:

- When attaching the bucket or other attachments, O-rings and spacers are required. They are supplied with the machine. Please contact your Kubota dealer if spacers with different dimensions are required.

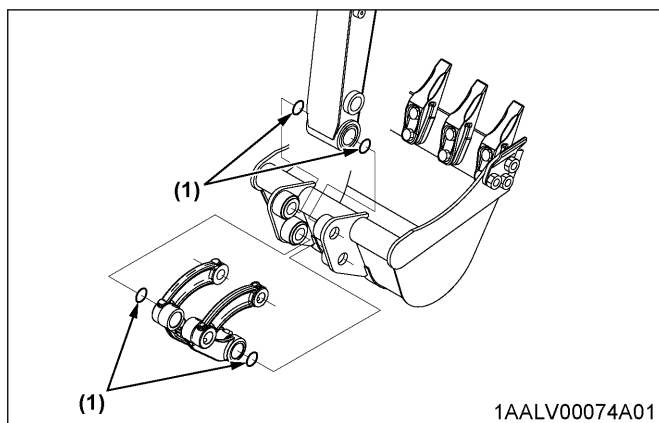
IMPORTANT :

- Ensure that the pulled-out pins are carefully kept free from sand and mud.
- The dust seals are attached at both ends of the bushing. When drawing out the pins, be careful not to damage these seals.

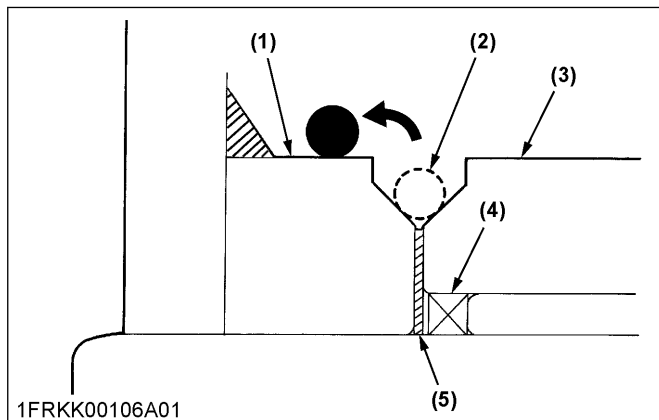
To change the bucket, conduct the following procedure.

Detaching the bucket

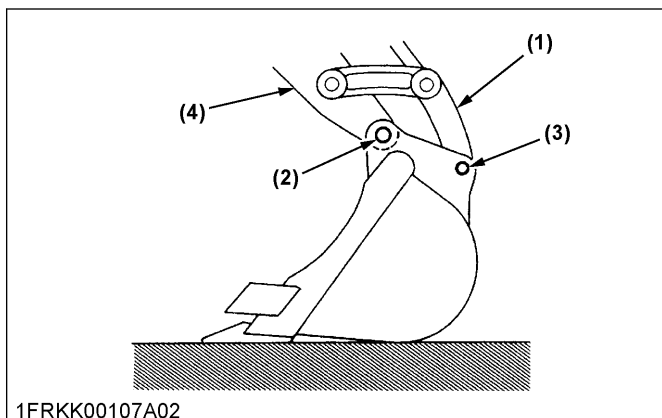
1. Place the bucket on a flat, level spot.
2. Stop the engine and relieve the pressure out of the hydraulic system.
3. Remove the O-ring out of the groove, and draw the pins out of the holes A and B.



(1) O-ring



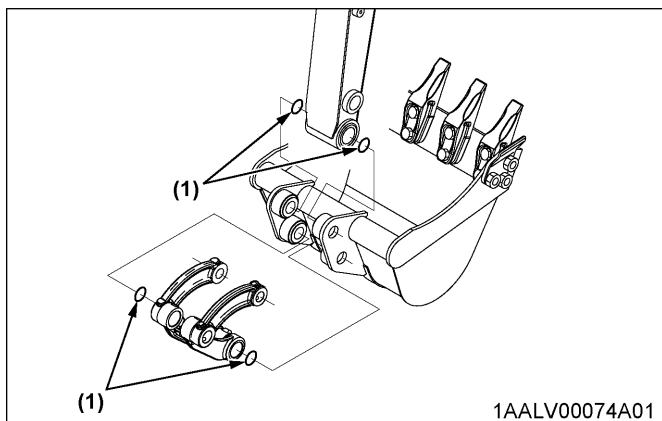
(1) Bucket
(2) O-ring
(3) Arm (or link)
(4) Dust seal
(5) Shim



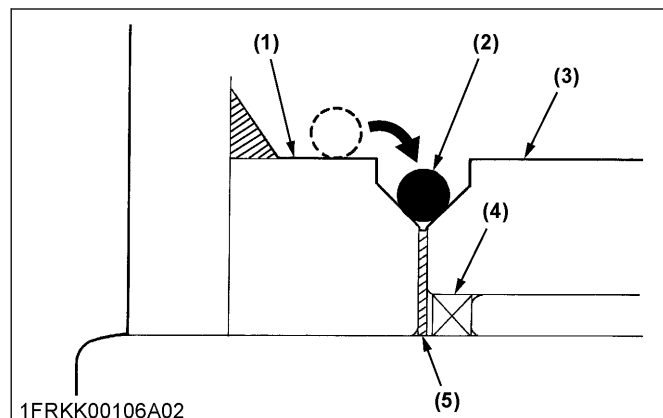
- (1) Link
(2) Hole A
(3) Hole B
(4) Arm

Attaching the bucket

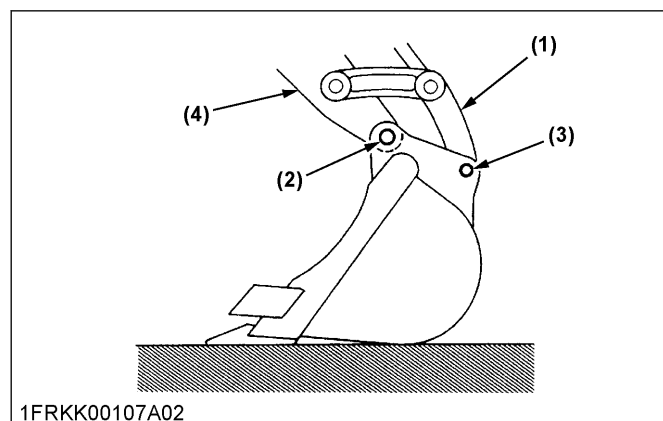
1. Install the O-ring on the bucket boss.
2. Fit the arm into hole A, insert the shims into both ends of the arm, and couple them with the pins.
3. Fit the link into hole B, insert the shims into both ends of the link, and couple them with the pins.
4. Install and tighten up the lock bolts to secure the pins in position.
5. Install the O-ring into the groove.



- (1) O-ring



- (1) Bucket
(2) O-ring
(3) Arm (or link)
(4) Dust seal
(5) Shim



- (1) Link
(2) Hole A
(3) Hole B
(4) Arm

6. Apply grease to the pins.

FUSES



WARNING

To avoid personal injury or death:

- When changing fuses, stop the engine and turn the key to [STOP] position. Keep the pilot control lock lever in the LOCK position.

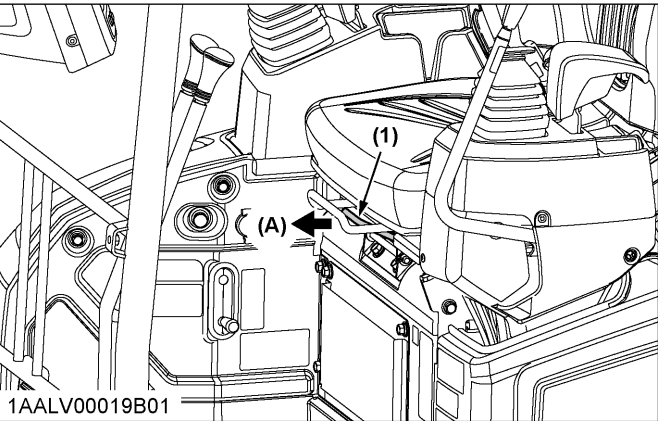
1. Replacing fuses

IMPORTANT :

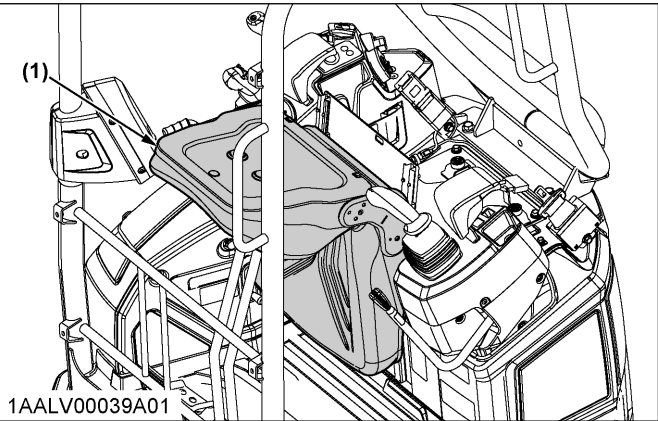
- The bypassing of fuses, for example with a wire, is not allowed.
- If the malfunction cannot be remedied by replacing the fuse, or if the fuse blows again when starting, contact skilled personnel.

Fuse box

- 1. Pull the seat lock lever, and collapse the operator's seat forward.

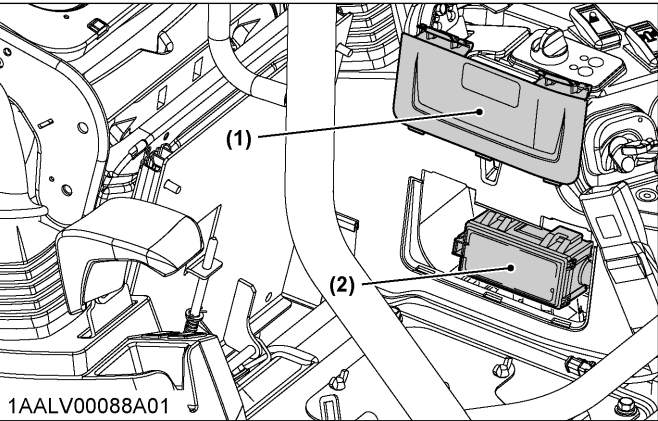


(1) Seat lock lever (A) Pull



(1) Seat

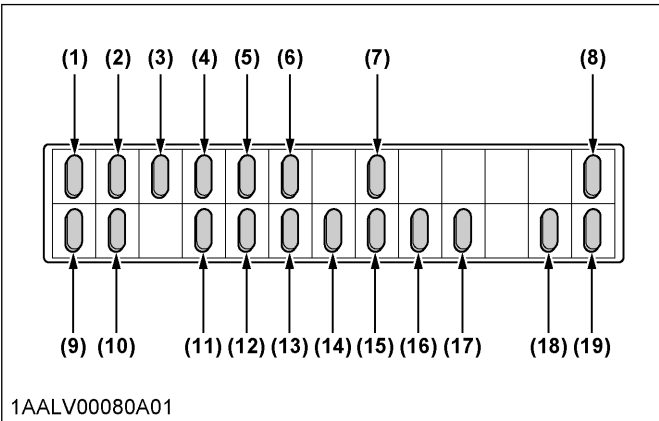
- 2. Remove the cover on the side of the right control console.
- 3. Remove the cover of the fuse box.
- 4. Replace the burnt out fuse with a fuse which has the same capacity.



(1) Cover (2) Fuse box

- 5. Reattach the covers and return the seat to its original position.

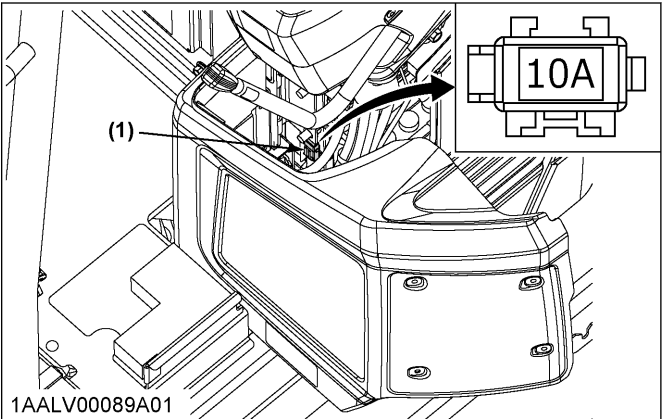
Fuse capacities and circuits



No.	Capacity	Circuit
(1)	10 A	Meter (+B)
(2)	5 A	Horn sw
(3)	30 A	Engine cut off switch
(4)	10 A	Horn main
(5)	15 A	Work lights
(6)	15 A	Beacon
(7)	5 A	Auxiliary 1 (+B)
(8)	30 A	ECU Main
(9)	10 A	Alternator
(10)	5 A	Lever lock
(11)	10 A	ECU (AC)
(12)	5 A	Relay
(13)	5 A	Fuel pump
(14)	5 A	Starter
(15)	5 A	KT system
(16)	15 A	Electrical outlet
(17)	15 A	Auxiliary (AC)
(18)	15 A	Power outlet
(19)	15 A	Auxiliary 2 (+B)

ECU main (+B) fuse

- 1. Open the side cover.
(See Opening and closing the side cover on page 105.)
- 2. Remove the burnt out fuse from the front of the left control console, and replace it with a fuse which has the same capacity.

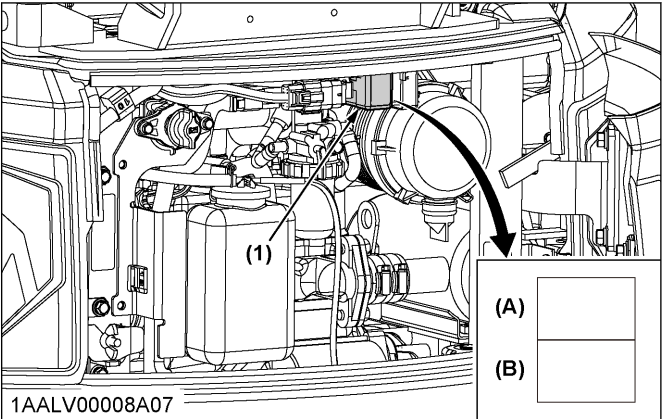


No.	Capacity	Circuit
(1)	10 A	ECU Main (+B)

3. Close the side cover.

2. Slow blow fuse

Slow blow fuse is provided to protect the electrical circuits. If the fusible link is blown, check the electrical circuits for trouble and then replace with a new compatible slow blow fuse.



(1) Slow blow fuse (50 A, 60 A, 1 piece each)

(A)	60 A	Alternator
(B)	50 A	Main power

TROUBLESHOOTING

The troubleshooting section includes malfunctions and incorrect operations, which according to the maintenance chart must either be remedied by the operator or by skilled personnel. Any other malfunctions may only be resolved by trained personnel. The troubleshooting must be performed with the aid of the troubleshooting table. In order to locate a malfunction, first look in the “*Malfunction*” column for the corresponding excavator malfunction. In the “*Possible cause*” column you will find the possible causes for the malfunction. The “*Countermeasure*” column indicates the required remedial measure. If the failure cannot be remedied by the measure indicated in the “*Countermeasure*” column, contact your local Kubota dealer.

SAFETY RULES WHEN TROUBLESHOOTING

- Adhere to the safety rules described in this manual.
(See SAFE OPERATION on page 13.)
- The operator is not allowed to open the electrical and hydraulic system. These services are reserved for trained personnel.
- During troubleshooting, the safety on and around the excavator must always be ensured.
- If troubleshooting of the excavator calls for the bucket to be raised, the operator may not stand in the area of the front attachments unless the front attachments are secured against inadvertent lowering by suitable measures.

TROUBLESHOOTING BEFORE OPERATION

Malfunction	Possible cause	Countermeasure
No function available when the starter switch is turned to the [RUN] position.	The main fuse is blown.	Replace the main fuse. (See Slow blow fuse on page 135.)
Indicator lights do not come on as expected when the starter switch is turned to the [RUN] position.	A fuse is blown.	Replace the fuse. (See Replacing fuses on page 133.)
The starter does not turn when the starter switch is turned to the [START] position.	The battery is drained.	- Charge the battery. (See Charging the battery on page 116.) - Jump-start the excavator. (See STARTING WITH AN AUXILIARY BATTERY on page 59.)
	Pilot control lock lever is in the UN-LOCK position.	Raise the pilot control lock lever into the LOCK position.
The engine does not start when the starter switch is turned to the [START] position, but the starter turns.	There is air in the fuel system.	- Check the fuel drain plug for leaks. (See Checking the fuel lines and rubber hoses of the intake air line on page 119.) - Bleed the fuel system. (See PURGING THE FUEL SYSTEM on page 130.)
	There is water in the fuel system.	Check the water content of the water separator, and clean if necessary. (See Checking the water separator on page 111.)
	The fuel is too viscous or dirty.	Check the fuel tank and the fuel filter. Remove any contamination and water, and replace the fuel filter if necessary.
Engine runs sluggishly during winter time.	The oil viscosity is too high.	Warm up the radiator (for example, by pouring hot water on it).

TROUBLESHOOTING DURING OPERATION

Malfunction	Possible cause	Countermeasure
There is insufficient engine power.	The air filter is restricted.	Check, clean, and replace the air filter. (See Inspecting and cleaning the air filter element on page 118.)
	The fuel filter is restricted or there is water in the fuel system.	Check the water content in the water separator. If necessary, clean the water separator and replace the fuel filter. (See Checking the water separator on page 111 and Changing the fuel filter on page 122.)
There is no hydraulic function in the drive unit, the swing mechanism, and the front attachments.	Pilot control lock lever is in the LOCK position.	Lower the pilot control lock lever into the UNLOCK position.
The power of the hydraulic functions is too low or intermittent.	The hydraulic oil level is too low.	Check the hydraulic oil level, and add hydraulic oil as necessary. (See Checking the hydraulic oil level on page 110.)
	The suction filter is restricted.	Change the suction filter in the hydraulic oil tank. (See Changing the hydraulic oil and the suction filter on page 124.)
The travel speed switch does not work.	A fuse in the fuse box is blown.	Replace the fuse. (See Replacing fuses on page 133.)
The horn does not function.	A fuse in the fuse box is blown.	Replace the fuse. (See Replacing fuses on page 133.)
The working lights do not function.	A fuse in the fuse box is blown.	Replace the fuse. (See Replacing fuses on page 133.)
The coolant temperature is too high.	The coolant is mixed with rust from the cylinder head or crankshaft housing.	Change the coolant and add corrosion inhibitor.
	The V-belt is damaged or very loose.	Replace and/or tension the V-belt (See Checking and adjusting the V-belt tension on page 119.)
	The machine has been continuously operated under full load.	Operate the machine only with reduced loads until the temperature is normal again.
	The coolant level is too low.	Refill the coolant. (See Checking the coolant level on page 109.)
	The cooling system components are leaky.	Check the cooling system for leaks. (See Checking the coolant level on page 109.)

(Continued)

Malfunction	Possible cause	Countermeasure
The coolant temperature is too high.	The radiator is dirty.	Clean the radiator. (See Checking the coolant radiator and oil cooler on page 109.)
	The radiator cap (venting) is damaged.	Replace the radiator cap. Contact your local Kubota dealer if necessary.
	The engine oil level is too low.	Check the engine oil level, and add engine oil as necessary. (See Checking the engine oil level on page 108.)
	The fuel quality is low.	Use fuel according to EN 590 or ASTM D975.
The exhaust gas is black in colour.	The fuel quality is low.	Use fuel according to EN 590 or ASTM D975.
	The engine oil level is too high.	Check engine oil level, drain engine oil down to specified level if necessary.
	The air filter is restricted.	Check, clean, and replace the air filter. (See Inspecting and cleaning the air filter element on page 118.)
The engine stops suddenly.	There is not enough fuel.	Check the fuel level. Refuel and bleed if necessary.
	The fuel filter is clogged.	Replace the fuel filter if necessary.
There is some deviation in the driving direction of the excavator.	The crawler tension has been adjusted incorrectly	Check the crawler tension, and adjust if necessary (See ADJUSTING THE CRAWLERS on page 130.)
	Stones or other foreign objects are stuck in the drive system.	Remove the foreign objects from the drive system.

ERROR CODES

If an error occurs with the machine, one of the following error codes is displayed on the LCD.
In case of a trouble, immediately contact your local dealer for inspection and repair.

No.	LCD	LED	Problem/Malfunction	Preliminary measure	Solution
1	CAN system error 		The Controller Area Network (CAN) has developed a fault. Measured values may be incorrect and switches may not function.	The machine can be started and driven. Do not perform any work with the machine.	Inform your Kubota dealer immediately.
2	Feed fuel "No display item"		This message appears when the fuel level is low and prompts the operator to refuel.	—	Refuel the machine.
3	Periodic check soon (Notice) "No display item"		This message appears 10 hours before the periodic check interval. This message means that the regular service is due shortly.	Operate the machine as usual.	Ask your Kubota dealer about the relevant parts. Run the maintenance procedure.
4	Periodic check passed (Warning) "No display item"		This message means that the regular service is due.	The machine can be operated but service must be carried out urgently.	Ask your Kubota dealer about the relevant parts. Run the maintenance procedure.
5	Water temperature rising 		The temperature of the coolant is higher than normal.	Operate the machine only with reduced loads until the temperature is normal again.	—
6	—	—	—	—	—
7	Wrong key, unable to start "No display item"		The machine cannot be started because the wrong key has been inserted.	Use the correct key.	—
8	Red registration key, unable to start "No display item"		The machine cannot be started because the wrong key (the red registration key) has been inserted.	Use the correct key.	—
9	Clock setting request "No display item"		Power was interrupted and the clock has to be set again.	In order to set the clock, press the user setting switch.	—
10	—	—	—	—	—
11	Raise the control lever lock "No display item"	 (yellow)	When an operating process is incorrect, a caution lamp lights up without displaying any error code.	Raise the lock lever (unload lever). The indicator will go out.	—
12	Pull out the key "No display item"		The key must be pulled out.	Pull out the key.	—
13	Lower the control lever lock "No display item"	 (yellow)	This message indicates a step in a procedure.	Lower the lock lever (unload lever). The indicator will go out.	—

(Continued)

No.	LCD	LED	Problem/Malfunction	Preliminary measure	Solution
14	Oil pressure too low E: 014	 (red) + 	The engine oil pressure is too low.	Stop the engine immediately. The engine may have developed a fault.	Inform your Kubota dealer immediately.
15	Overheat E: 015		The machine is overheated and must cool off by idling.	Allow the machine to cool off by idling. Do not switch the engine off as the coolant could then boil over.	Clean the radiator and check the coolant. Refill the radiator with coolant by its boiled-over amount. Unclog the radiator and other components before use again. Check also the hydraulic system for oil leak and other troubles. If an oil leak is found, immediately contact your local dealer for repair.
16	Charging system error E: 016	 (red) + 	The charging system has developed a fault.	Check the V-belt. When the V-belt is OK, let the engine run until the indicator goes out.	If the indicator does not go out, inform your Kubota dealer immediately.
17	Fuel sensor error E: 017	 (red)	The fuel sensor has developed a fault. The fuel gauge does not appear on the display.	Press the display selector switch to return to the default display.	Inform your Kubota dealer immediately.
18	Coolant temperature sensor error E: 018	 (red)	The coolant temperature sensor has developed a fault. The coolant temperature gauge does not appear on the display.	Press the display selector switch to return to the default display. The functions of the machine are stable but overheating cannot be excluded.	Inform your Kubota dealer immediately.
19	—	—	—	—	—
20	Lever lock system error E: 020	 (red)	The electrical system in the pilot control lock lever has developed a fault.	The engine can be started but the machine cannot be set in motion.	Inform your Kubota dealer immediately.
21	Travel 2 speed switching system error E: 021	 (red)	The travel 2 speed switching system has developed a fault.	The machine can only be set in motion at low speed.	Inform your Kubota dealer immediately.
22	Versatile operating switch system error E: 022	 (red)	The multifunctional switch has developed a system fault.	The machine can be operated but the auxiliary port will not function.	Inform your Kubota dealer immediately.

(Continued)

TROUBLESHOOTING

No.	LCD	LED	Problem/Malfunction	Preliminary measure	Solution
23	Auxiliary port 1 system error E: 023	 (red)	Auxiliary port 1 has developed a fault.	The machine can be operated but auxiliary port 1 will not function.	Inform your Kubota dealer immediately.
24	Auxiliary port 2 system error E: 024	 (red)	Auxiliary port 2 has developed a fault.	The machine can be operated but auxiliary port 2 will not function.	Inform your Kubota dealer immediately.
25	Overvoltage E: 025	 (red)	This is a warning that a higher voltage (from a 24-V battery for example) is being applied to the electric circuit, or that there is a problem with the alternator.	Switch the engine off immediately and check the battery and the alternator. Restart the engine.	If the warning lamp lights up again after restarting, inform your Kubota dealer immediately.
26	—	—	—	—	—
27	External 5-V system error E: 027	 (red)	The 5-V sensor supply line has developed a system fault. The main functions are not available.	The machine can be started and driven. Do not perform any work with the machine.	Inform your Kubota dealer immediately.
28	—	—	—	—	—
29	—	—	—	—	—
30	—	—	—	—	—
31	—	—	—	—	—
32	—	—	—	—	—
33	Governor sensor error E: 033	 (red)	Engine speed cannot be changed, or it remains at low idle when the engine is started.	Engine will be cut off.	Inform your Kubota dealer immediately.
34	Accelerator sensor error E: 034	 (red)	Engine speed cannot be changed, or it remains at low idle when the engine is started.	Engine will be cut off.	Inform your Kubota dealer immediately.
35	AI motor error E: 035	 (red)	Engine speed cannot be changed.	Engine will be cut off.	Inform your Kubota dealer immediately.
36	—	—	—	—	—
37	—	—	—	—	—
38	AUX2 knob switch error E: 038	 (red)	Auxiliary port 2 has developed a fault.	AUX mode is deactivated and doesn't work.	Inform your Kubota dealer immediately.
39	AUX2 RH solenoid valve error E: 039	 (red)	Auxiliary port 2 has developed a fault.	AUX mode is deactivated and doesn't work.	Inform your Kubota dealer immediately.

(Continued)

No.	LCD	LED	Problem/Malfunction	Preliminary measure	Solution
40	AUX2 LH solenoid valve error 	 (red)	Auxiliary port 2 has developed a fault.	AUX mode is deactivated and doesn't work.	Inform your Kubota dealer immediately.
41	Fasten seat belt error	 (yellow) + 	There is a risk of injury or death.	—	Fasten seat belt.

OPERATION IN COLD WEATHER

PREPARATION FOR WORK IN COLD WEATHER

WARNING

To avoid personal injury or death:

- **Be careful when getting on and off. The crawler could be slippery.**
- Replace engine oil and hydraulic oil with those of viscosities suitable for cold weather.
- In cold weather, battery power drops, and the battery fluid may freeze if the battery is not sufficiently charged. To prevent the battery fluid from freezing, keep the battery charged at least 75 % or more of its capacity after operation. So that the machine starts easily next time, it is recommended to keep the battery stored in closed or heated rooms. If the battery fluid level is too low, do not add after operation, but add with the engine running before the next operation.
- Add antifreeze to coolant in the radiator and recovery tank, if the ambient temperature is expected to drop below 0 °C. Mixing ratio of water and antifreeze depends on the expected ambient temperature.

Mixing ratio between water and antifreeze

Ambient temperature	°C	-5	-10	-15	-20	-25	-30	-35
Antifreeze	%	30	30	30	35	40	45	50
Water	%	70	70	70	65	60	55	50

IMPORTANT :

- Use permanent antifreeze or long-life coolant.
- Drain the coolant completely and clean the inside of the radiator, then fill with the water and antifreeze mixture.
- The antifreeze acts as an anti-corrosive, it is not necessary to add an additive to the water and antifreeze mixture.
- Details regarding the radiator fill volumes can be found in a different section.
(See Checking the coolant level on page 109.)

freeze if the temperature drops below the 0°C mark. Operation of the machine is then not possible.

- Store the machine in a dry place. If not possible, store on wooden planks or on mats. If the machine is kept on damp or muddy ground, the crawlers could freeze overnight. Operation of the machine is then not possible. Furthermore the drive unit may be damaged.
- The piston rods of the hydraulic cylinders must be rubbed dry. Otherwise severe damage could occur if dirty water seeps through the seals.

AFTER WORKING IN COLD WEATHER

- Clean the machine thoroughly after work and wipe dry. Otherwise mud and earth on the crawlers could

LONG-TERM STORAGE

WARNING

To avoid personal injury or death:

- Do not clean the machine while the engine is running.
- To avoid the danger of exhaust fume poisoning, do not operate the engine indoors without proper ventilation.
- When storing, remove the key from the starter switch to avoid unauthorised people from operating the machine and getting injured.
- Park the machine on a firm, flat, and level surface. Lower the attachments and dozer blade to the ground.
- If the excavator is taken out of service for up to 6 months, the measures before, during, and after taking it out of service must be carried out as described in the following section. If the vehicle is to be taken out of service for a period of over 6 months, contact the manufacturer for additional measures.

PREPARATIONS BEFORE LONG-TERM STORAGE

If the machine is to be stored for an extended period of time, observe the following procedures:

- Wash and clean the machine thoroughly, and touch up the paint finish to avoid rusting.
- Treat exposed parts with an anti-rust agent, lubricate the machine thoroughly and apply plenty of grease to unpainted surfaces such as lifting and tilting cylinders. Pull the pistons in the hydraulic cylinders in as far as possible (if appropriate).
- Do an oil change and fill the hydraulic oil tank and fuel tank to the maximum marks.
- Check the antifreeze properties and drain fluids as appropriate. If it is expected that the temperature will drop below 0 °C, add antifreeze or drain the coolant completely.
- Preferably, store the excavator indoors. If the excavator cannot be stored indoors and must be stored outdoors, arrange wooden planks on even ground, place the excavator on the planks and cover the excavator completely (especially the exhaust pipe).
- Prior to putting into long-term storage, the machine shall be inspected and the condition of preservation treatment, seals, and components shall be checked.

IMPORTANT :

- **Wash the excavator after stopping the engine.**
If you wash the excavator while the engine is running, water can splash and get into the air cleaner through its intake and cause engine damage.
Wash carefully and do not splash water over the air cleaner while the engine is running.

OPERATING THE MACHINE AFTER LONG-TERM STORAGE

1. Wipe off the grease from the hydraulic cylinder rods. When removing the rust inhibitor, follow the manufacturer's instructions.
2. Thoroughly inspect the machine and clean off any debris.
3. Inspect the seals to make sure that there are no oil or water leaks.
4. Turn on the engine. Operate the attachment and the drive mechanisms under no load in order to circulate the hydraulic oil.
If the machine is stored for longer than 1 month, carry out steps 1, 2, and 3 once every month.

LONG-TERM STORAGE

IMPORTANT :

- **After the long-term storage, check if a safety inspection is necessary.**
- **If the auxiliary port has not been used for a long period of time, dirt particles could have accumulated on the connectors of the conduits. Before installing an attachment, drain approximately 0.1 litre of hydraulic oil at each port.**

PERIODIC REPLACEMENT OF PARTS

To ensure safe operation, inspect and service the machine at regular intervals. For added safety, ask your Kubota dealer to replace the following important parts.

These parts are prone to material degradation or subject to wear and tear with time. It is difficult to judge how much they have been affected at a regular inspection. Therefore, it is necessary to replace them with new ones, regardless of whether wear is visible or not after a specified time of use.

If any of them are found worn even before the specified time of use, they must be repaired or replaced the same way as other parts.

If any of the hose clamps are found deformed or cracked, they must also be replaced.

For the hydraulic hoses other than the ones to be replaced periodically, inspect them for the following points. If found in an unusual condition, tighten them up or replace them.

When replacing the hydraulic hoses, change their O-rings and sealings with new ones.

For replacement of the important parts, contact your local Kubota dealer.

While performing the following periodic inspections, check the fuel hoses and hydraulic hoses also.

Inspection interval	Check points
Daily checks	Oil leak at fuel and hydraulic hose connections and points
Every month	Oil leak at fuel and hydraulic hose connections and points Damage at fuel and hydraulic hose (cracks, chafing)
Every year	Oil leak at fuel and hydraulic hose connections and points Interference, deformation, degradation, twist and other damage (cracks, chafing) of fuel and hydraulic hoses

List of important component parts

No.	Component parts	Period
1	Fuel hose (Fuel tank-Fuel filter)	Every 2 years or 4000 hours
2	Fuel hose (Fuel filter-Fuel pump)	
3	Fuel hose (Fuel pump-Fuel nozzle)	
4	Fuel hose (Fuel nozzle-Fuel tank)	
5	Fuel hose (Fuel tank-Fuel drain)	
6	Hydraulic hose (Main pump suction)	
7	Hydraulic hose (Main pump delivery)	
8	Hydraulic hose (Boom cylinder)	
9	Hydraulic hose (Arm cylinder)	
10	Hydraulic hose (Bucket cylinder)	
11	Hydraulic hose (Swing cylinder)	
12	Hydraulic hose (Dozer cylinder)	
13	Hydraulic hose (Auxiliary port)	

To prevent serious damage to the hydraulic system, use only a Kubota genuine hydraulic hose.

OPERATING MATERIALS

	Recommendation			Filled at the factory		Notes
	Ambient temperature conditions	Viscosity	Quality standard	Brand	Type	
Engine oil	In winter and/or in low ambient temperatures (below 0 °C)	SAE 10W-30	API CF*1 API CI-4 API CJ-4	JXTG	JASO DH2 SAE 10W-30	—
	In summer and/or in high ambient temperatures (above 25°C)					
	All-weather (0°C to 25°C)					
Coolant	—	—	SAE J1034 MB 325.0 ASTM D3306 / D4985	Kubota	LLC-N-50F mixing ratio 50 %	Always use distilled water to mix with anti-freeze. Always follow the recommendations of the coolant manufacturer for the mixing ratio. Do not mix with other coolants.
Grease (bolts, bushings, gear bushings)	—	NLGI-2	DIN 51825 KP2K-30	COSMO	Dynmax EP2	JCMAS GK verified NLGI-2 grease can also be used.*2
				IDEMITSU	Daphne Grease MP No. 2	
Hydraulic oil	In winter and/or in low ambient temperatures	ISO 32 ISO 46	—	Shell	Tellus S2 M 46*1 ISO VG 46	JCMAS HK verified oil can also be used.
	In summer and/or in high ambient temperatures	ISO 46 ISO 68	—			
Biodegradable hydraulic oil (Option)	—	—	ISO 15380	SHELL PANOLIN	S4 HLP SYNTH 46	Less than 2 % mineral oil remains in the system as per ISO 15380.
Gear oil	—	SAE 90	API GL-4	—	API GL-4 SAE 90	Do not mix with other oils.

(Continued)

	Recommendation			Filled at the factory		Notes
	Ambient temperature conditions	Viscosity	Quality standard	Brand	Type	
Fuel ^{*3}	—	—	EN 590	—	—	The fuel filled at the factory is not winter diesel. To prepare the machine for use in winter, fill the fuel tank with winter diesel and allow the engine to run for a few minutes.

*1 These lubricants are used by the manufacturer for the initial filling.

*2 Further information can be found on the Japan Lubricating Oil Society's website (JALOS).

*3 Only use fuels with a maximum sulphur content of 10 mg/kg (20 mg/kg at the last distribution point), a maximum cetane rating of 45 and a maximum share of 7 % fatty acid methyl ester (FAME).

BODIESEL FUEL (BDF)

IMPORTANT :

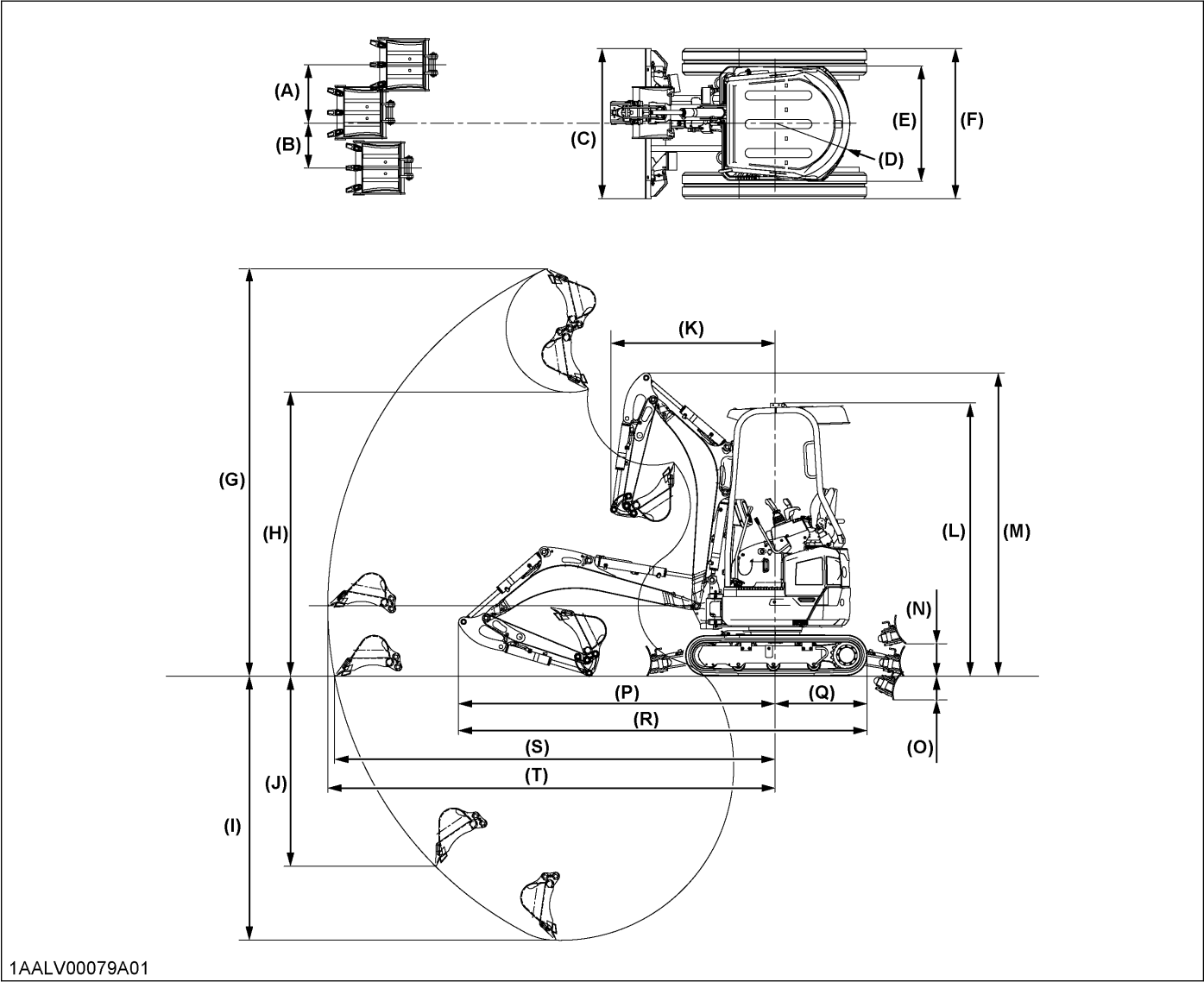
- **Refuelling and handling fuel should be done with caution in order to avoid contact with the fuel and spillage that could create a potential environmental or fire hazard. Wear appropriate protective equipment when refuelling.**
- Petroleum based fuel that is blended up to 7 % by volume with pure BDF (B100), namely B7, may be used.
- BDF may be blended in European diesel fuel according to the EN590 specification or American diesel fuel according to ASTM D975 specification.
BDF quality whether used as neat BDF (B100) or as a blend component must meet minimum requirements provided by EN14214 (EU Standard) or ASTM D6751 (US Standard). B7 blended fuel must also meet EN590 or ASTM D975 specification. Raw pressed vegetable oils are NOT acceptable for use in any concentration.
- B100 or B7 must be purchased from reliable manufacturers or suppliers. Kubota does not recommend local blending of such fuel since it is difficult to meet quality requirements explained above by BDF local blending.
- Users of Kubota Emission Certified Engines are responsible for obtaining any appropriate local, state and national exemptions required for the use of BDF.

Enhanced engine care might be required even if the fuel meets the said standards. Kubota Corporation has the following concerns and recommendations regarding the use of BDF.

- Keep fuel tanks as full as possible to prevent water vapour from collecting inside. Ensure all tank caps and covers are installed properly to prevent water from entering.
- Follow the standard Kubota oil change interval for the given engine along with checking the oil level daily prior to starting. Extended oil change interval can cause engine damage.
- Degradation of the fuel in the supply chain or in the vehicle:
 - Accelerated by the presence of oxygen, water, heat and impurities.
 - BDF should not be stored for more than 3 months in metal drum.
 - Prior to vehicle storage, the engine should be flushed for 30 minutes at least with conventional petroleum based diesel fuel.
- Biodiesel fuel has the following properties. It must be used with care based on the service interval instructed in the Kubota product's manual. Make sure that all the operations are done, such as the maintenance and cleaning of fuel system and replacement of fuel hoses. Furthermore, since the performance of the fuel filter decreases faster compared to mineral diesel fuel, replacement in half the specified period is recommended.
 - BDF is likely to cause the microbial growth and its contamination, which can cause premature corrosion in the fuel system or plugging on the fuel filter.
 - Cold weather conditions can lead to fuel system plugging, hard starting and other possible unanticipated failures.
 - BDF is likely to contain higher water content than conventional diesel fuels.
- When BDF refined from palm oil is used, fuel filter tends to be clogged compared to using canola oil especially in cold region. Because fluidity of palm oil in low temperature is lower than that of canola oil.
- When BDF is spilled on the painted surface, wipe it out immediately to avoid the damage for the painted surface.
- Don't use BDF with a higher consistent than B7. It can cause degraded power output and fuel consumption, corrosion in the brass or zinc parts in the fuel system and damage for the rubber or plastic parts.
 - The Kubota Warranty, as specified in the owner's warranty information guide, only covers defects in product materials and workmanship. Accordingly, any problems that may arise due to the use of poor quality fuels that fail to meet the above requirements, whether biodiesel or mineral oil based, are not covered by the Kubota Warranty.

APPENDICES

MAIN DIMENSIONS



Model	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)	(R)	(S)	(T)
U17-5	505	390	990/ 1300	650	1000	990/ 1300	3530	2460	2290	1650	1440	2370	2630	280	205	2760	795	3550	3830	3880
U18-5				670			3600	2530	2440	1750	1470								3950	4010

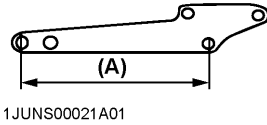
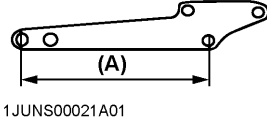
mm

NOTE :

- The dimensions are based on the machine with the Kubota original bucket and rubber crawlers.
- Specifications are subject to change without notice.

APPENDICES

Arm length

Model	Name	Type	
U17-5	Arm 950 mm		A = 950 mm
U18-5	Arm 1100 mm		A = 1100 mm

LIFTING CAPACITY

IMPORTANT INFORMATION

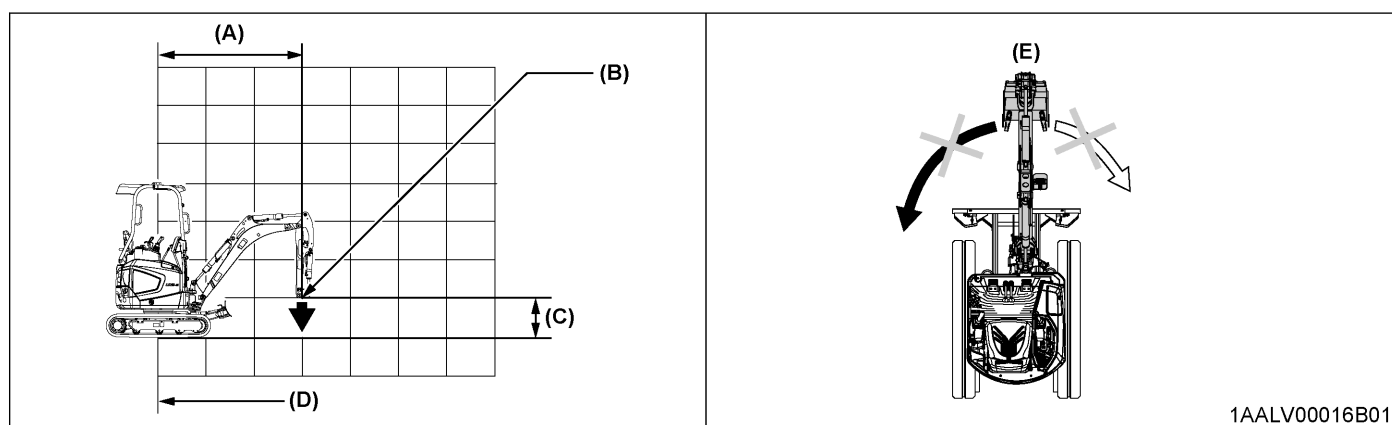


WARNING

To avoid personal injury or death:

- Do not lift loads greater than those values mentioned in the lifting capacity tables.
- The values mentioned in the tables are valid only on even, hard ground. When lifting on soft ground, the machine can tilt over due to the fact that the load is concentrated only on one side of the machine. The table values are calculated at the end of the arm without the bucket. In order to find the allowable loads for machines with bucket, the bucket weight must be subtracted from the values in the table.
- If optional equipment is fitted (such as a grapple kit or a quick coupler), the weight of the equipment must be subtracted from the lifting capacity. The target of excavation by bucket is assumed to be only earth and sand.
- Additional safety information regarding lifting operations can be found in a different section. (See Object handling operations on page 18.)

- The lifting capacities are based on ISO 10567 and do not exceed 75 % of the static tilt load of the machine or 80 % of the hydraulic lifting capacity of the machine.
- The lifting capacity is measured at the front bolt of the arm with the arm fully extended. The arm is fully in the dump position. The boom cylinder is the operating cylinder.
- The lifting conditions are as follows:
 - Over-front (blade up)
 - Over-front (blade down)
 - Swivel up to 360° (blade up and down)
- As well as the lifting conditions, the length of the arm also affects the permitted lifting capacities and the stability of the machine. Compare the dimensions of the machine arm with the details given in the lifting capacity tables, in order to use the correct lifting capacity table for your machine. The following illustration shows machine condition without the bucket and all the other conditions are according to standard regulations.
- Pay attention to the density of the material to be excavated. If you lift material with a higher density than earth and sand, it may exceed the rated lifting capacity, which could result in the machine tipping over.



- (A) Lift point radius
 (B) Lift point
 (C) Lift point height
 (D) Axis of rotation

(E) kg

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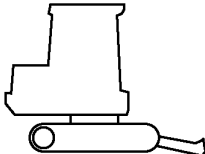
LIFTING CAPACITY

Information on inspecting lifting equipment in France

The test coefficients determined by Kubota and to be applied for the commissioning or recommissioning of machines equipped for lifting (article 10 et 11 de l'arrêté du 1 mars 2004 relatif aux vérifications des appareils et accessoires de levage) are 1.0 for static testing and 1.0 for dynamic testing.

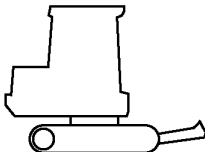
LIFTING CAPACITY

Lifting capacity over front end, dozer down (only with pipe safety valve on the dozer cylinder)

Model:		U17-5			Specification			Canopy version			
								Arm 950 mm			
Lift point height (mm)		Load radius (mm)									
			0	1000	1500	2000	2500	3000	Maximum		
GL	3000	 1JUNS00023A01									
	2500						2.5 (0.25)				
	2000					2.1 (0.21)	2.4 (0.24)				
	1500				3.5 (0.36)	3.0 (0.31)	2.7 (0.28)	2.4 (0.25)			
	1000					4.1 (0.42)	3.1 (0.31)	2.5 (0.26)			
	500						3.3 (0.33)	2.5 (0.26)	2.1 (0.22)		
	0						3.2 (0.32)	2.4 (0.25)			
	-500							2.1 (0.22)			
	-1000						2.4 (0.24)				
	-1500										

Unit=kN (t)

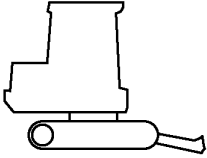
Lifting capacity over front end, dozer up

Model:		U17-5		Specification			Canopy version				
							Arm 950 mm				
Lift point height (mm)		Load radius (mm)									
			0	1000	1500	2000	2500	3000	Maximum		
GL	3000	 1JUNS00024A01									
	2500						2.5 (0.25)				
	2000					2.1 (0.21)	2.4 (0.24)				
	1500				3.5 (0.36)	3.0 (0.31)	2.7 (0.27)	2.0 (0.21)			
	1000					3.6 (0.37)	2.6 (0.27)	2.0 (0.20)			
	500					2.5 (0.26)	1.9 (0.20)	1.7 (0.17)			
	0					2.5 (0.25)	1.9 (0.19)				
	-500						1.9 (0.19)				
	-1000						2.4 (0.24)				
	-1500										

Unit=kN (t)

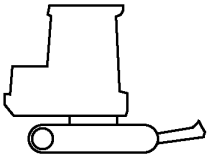
LIFTING CAPACITY

Lifting capacity over front end, dozer down (only with pipe safety valve on the dozer cylinder)

Model:		U18-5			Specification			Canopy version			
								Arm 1100 mm			
Lift point height (mm)		Load radius (mm)									
			0	1000	1500	2000	2500	3000	Maximum		
GL	3000	 1JUNS00023A01									
	2500						2.2 (0.23)				
	2000						2.2 (0.23)	2.4 (0.24)			
	1500					2.7 (0.27)	2.6 (0.27)	2.4 (0.25)			
	1000					4.0 (0.41)	3.1 (0.31)	2.6 (0.26)			
	500					3.4 (0.34)	2.6 (0.27)	2.1 (0.22)			
	0					3.4 (0.34)	2.6 (0.26)				
	-500						2.3 (0.24)				
	-1000						2.6 (0.27)				
	-1500										

Unit=kN (t)

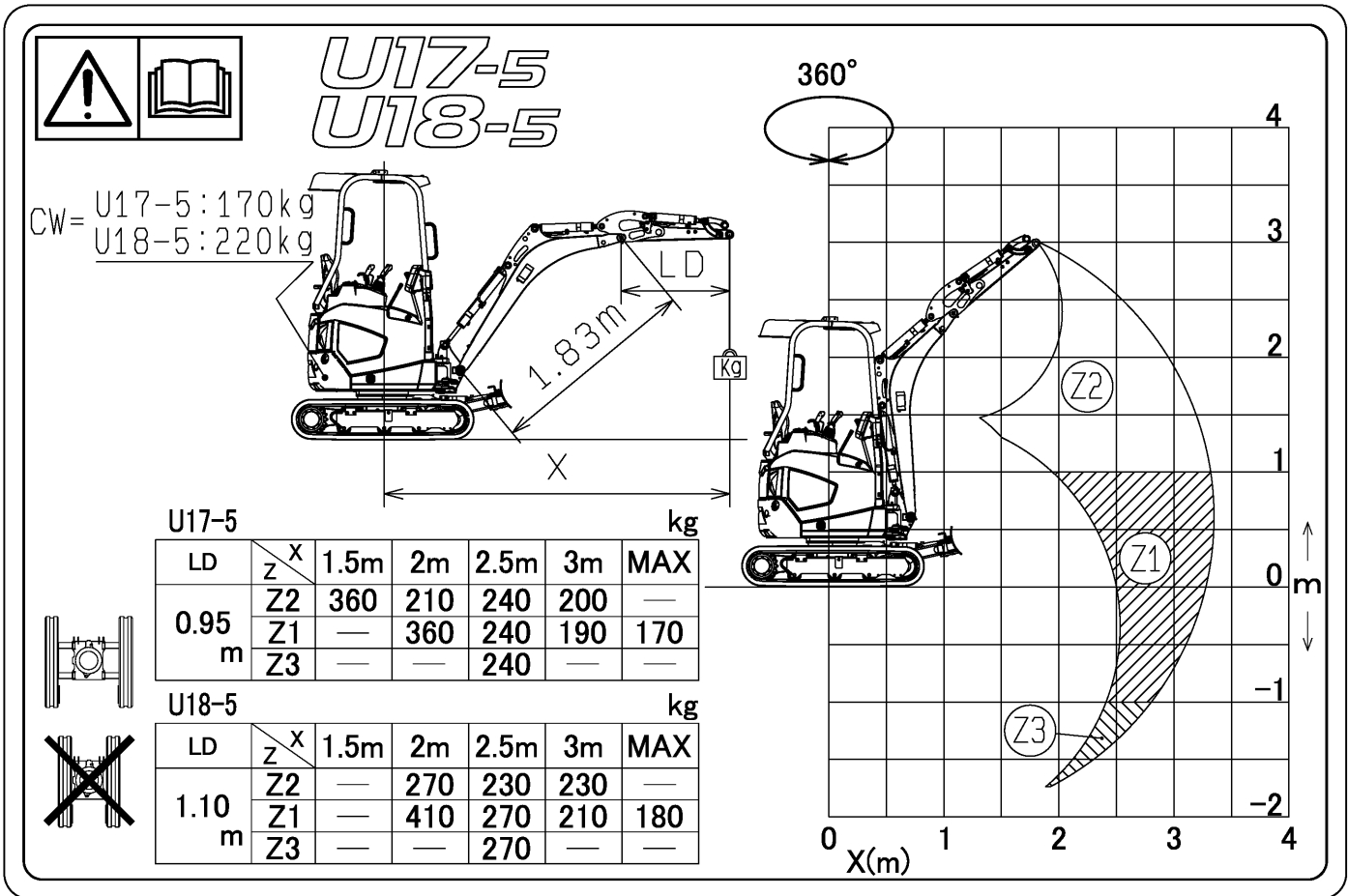
Lifting capacity over front end, dozer up

Model:		U18-5		Specification				Canopy version				
								Arm 1100 mm				
Lift point height (mm)		Load radius (mm)										
			0	1000	1500	2000	2500	3000	Maximum			
GL	3000	 1JUNS00024A01										
	2500						2.2 (0.23)					
	2000						2.2 (0.23)	2.3 (0.23)				
	1500					2.7 (0.27)	2.6 (0.27)	2.3 (0.23)				
	1000					4.0 (0.41)	2.9 (0.30)	2.2 (0.23)				
	500						2.8 (0.29)	2.2 (0.22)	1.8 (0.18)			
	0						2.7 (0.28)	2.1 (0.22)				
	-500							2.1 (0.22)				
	-1000						2.6 (0.27)					
	-1500											

Unit=kN (t)

MAXIMUM LIFTING CAPACITY WHEN ROTATING UP TO 360°

U17-5 and U18-5 (Canopy) / arm 950 mm and 1100 mm



1AALV00092A01

NOTE :

- The position of the dozer is not relevant to the maximum lifting capacity when swivelling up to 360°. The illustration on the label is representative of both states: dozer up and dozer down.

OPTIONAL EQUIPMENT

For information on optional equipment, please refer to AIM issued by Kubota Dealer.

DECLARATION OF CONFORMITY

Content of the EC Declaration of Conformity:



ORIGINAL EC DECLARATION OF CONFORMITY

Manufacturer: **KUBOTA CORPORATION**

Trade name: **KUBOTA**

Type: **Compact excavator**

Model: **U17-5 / U18-5**

Product identification number: >XXXXXXXXXXXXXXXXXX<

This machine fulfills all the relevant provisions of the Machinery Directive 2006/42/EC

**This machine fulfills all the relevant provisions of the directives and regulations:
2000/14/EC, 2005/88/EC, 2014/30/EU**

**Conformity assessment according to the directive 2000/14/EC, annex VI and amended by the
directive 2005/88/EC.**

Model	Rated speed	Nominal output (ISO 14396)	Measured sound power level	Guaranteed sound power level
U17-5 / U18-5	2300 1/min	11.8 kW	92.2 dB (A)	93 dB (A)

Referred standards: EN 474-1:2022
EN 474-5:2022

Notified body: TÜV SÜD Industrie Service GmbH
(Notified Body 0036 for EC Directive 2000/14/EC)
Westendstrasse 199, D-80686 Munich, Germany

Name and address of the
manufacturer: KUBOTA CORPORATION
1-1-1, NAKAMIYA OIKE HIRAKATA
OSAKA, 573-8573, JAPAN

Name and address of the
authorised representative: KUBOTA Baumaschinen GmbH
Steinhauser Str. 100
D-66482 Zweibrücken, Germany

Name and address of the
person authorised to compile
the technical file: KUBOTA Baumaschinen GmbH
Steinhauser Str. 100
D-66482 Zweibrücken, Germany

1AALV00082A01enGB

Economic operator of the product (based on the Regulation (EU) 2019/1020)

Name: Kubota Holdings Europe B.V.

Contact details: Hoofdweg 1264, 2153 LR Nieuw-Vennep, the Netherlands

Email: kbt_g.eu_market_surveillance@kubota.com

Content of the UK Declaration of Conformity:



ORIGINAL UK DECLARATION OF CONFORMITY

Manufacturer: **KUBOTA CORPORATION**

Trade name: **KUBOTA**

Type: **Compact excavator**

Model: **U17-5 / U18-5**

Product identification number: **>XXXXXXXXXXXXXXXXXX<**

This machine fulfills all the relevant provisions of the Supply of Machinery (Safety) Regulations 2008 (UK S.I. 2008 No. 1597)

**This machine fulfills all the relevant provisions of the directives and regulations:
Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001
(UK S.I. 2001 No. 1701) and amended by the regulation 2005 (UK S.I. 2005 No. 3525),
Electromagnetic Compatibility Regulations 2016 (UK S.I. 2016 No. 1091)**

**Conformity assessment according to the directive Noise Emission in the Environment by
Equipment for use Outdoors Regulations 2001 No. 1701, Schedule 9 and amended by the
Regulation 2005 No. 3525.**

Model	Rated speed	Nominal output (ISO 14396)	Measured sound power level	Guaranteed sound power level
U17-5 / U18-5	2300 1/min	11.8 kW	92.2 dB (A)	93 dB (A)

Referred standards: **BS EN 474-1:2022
BS EN 474-5:2022**

Approved body: **TUV SUD BABT
(Approved Body 0168 for the Regulation UK S.I. 2001 No. 1701)
Octagon House, Concorde Way, Segensworth
Fareham, Hampshire, PO15 5RL, U.K.**

Name and address of the manufacturer: **KUBOTA CORPORATION
1-1-1, NAKAMIYA OIKE HIRAKATA
OSAKA, 573-8573, JAPAN**

Name and address of the authorised representative: **KUBOTA (U.K.) LTD.
Dormer Road, Thame
Oxfordshire, OX9 3UN, U.K.**

Name and address of the person authorised to compile the technical file: **KUBOTA CORPORATION
1-1-1, NAKAMIYA OIKE HIRAKATA
OSAKA, 573-8573, JAPAN**

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