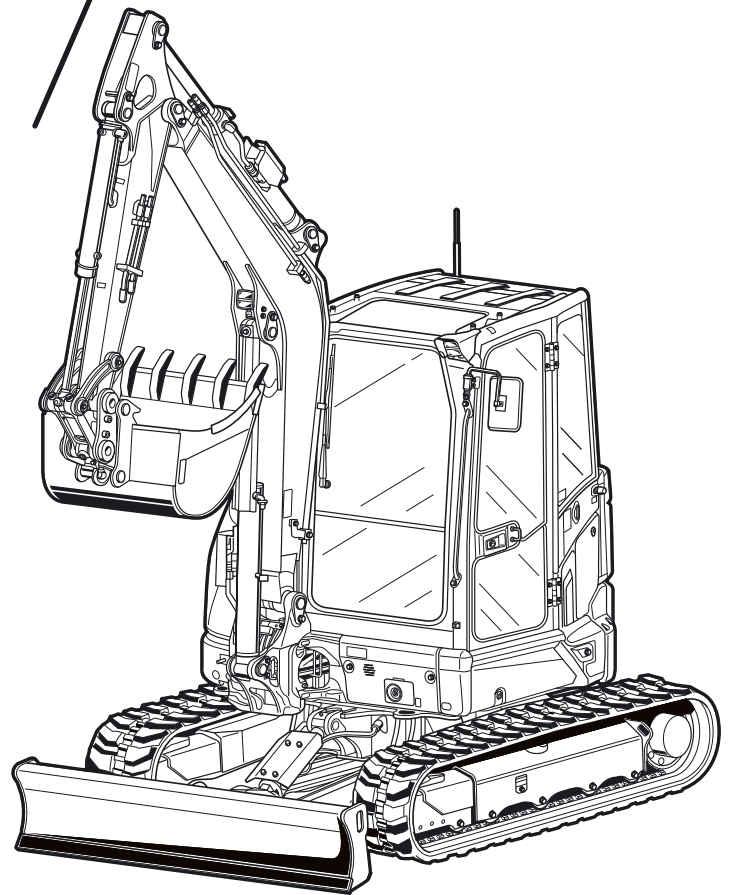


Kubota

COMPACT EXCAVATOR

GB

MODEL
U50-5



OPERATING INSTRUCTIONS

Dear valued customer,

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

Type:

Year of construction:

Product identification number:

Shipment date:

These operating instructions only apply to the KUBOTA excavator U50-5, which comply with the following EC declaration of conformity (page 9).

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

U50-5 - Valid as of product identification number KBCDZ47BEL3C10001

Please contact your KUBOTA dealer for any additional information or troubleshooting procedures not mentioned in these operating instructions.

We also point out that the contents of these operating instructions are not part of an earlier existing agreement, promise or legal relationship or amend this. All responsibilities arise of the respective sales contract containing the complete and exclusively valid contractual warranty, refer to the "Duties, liability and warranty" section (page 13). This documentation neither extends nor restricts the contractual warranty.

KUBOTA Baumaschinen GmbH reserves the right to change the information contained in this document with respect to future technical development without altering the basic characteristics of the machines described herein and without amending this document.

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

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Abbreviations

1/min	revolutions per minute	kg	kilogramme
%	percent	km/h	kilometre per hour
°	degrees	kN	kilonewton
°C	degree Celsius	kV	kilovolt
A	Ampere	kW	kilowatt
acc.	according	l	litre
API	American Petroleum Institute	l/min	litres per minute
approx.	approximately	LpA	sound pressure level operator's place
ASTM	American Society for Testing and Materials	LwA	sound power level
bar	Bar	m	metre
CECE	Committee for European Construction Equipment	m/s ²	metre per square second
CO ₂	carbon dioxide	m ³	cubic metre
dB	decibel	max.	maximum
DIN	Deutsches Institut für Normung (German Institute for Standards)	MIL	Military Standards
DPF	Diesel particulate filter	mm	millimetre
e.g.	for example	MPa	Megapascal
EMC	electromagnetic compatibility	N	Newton
EN	Europäische Norm (European standard)	resp.	respectively
FOPS	Falling-Object Protective Structure	RMS	Root Mean Square (square root of mean square)
GL	Ground level	ROPS	Roll-Over Protective Structure
h	Hour	s	second
incl.	including	SAE	Society of Automotive Engineers
ISO	International Organization for Standardization	t	ton
		V	Volt

General symbols

	Warning light		Swivel boom (left)
	Fuel indicator		Swivel boom (right)
	Engine oil pressure indicator		Dozer up
	Charge indicator		Dozer down
	Glow indicator		Control lever direction
	Hydraulic oil		Control lever direction
	Fast speed		Beacon
	Slow speed		Auxiliary port enable switch
	Forward travel		Working lights
	Backward travel		AUTO IDLE switch
	Raise boom		AUTO IDLE indicator
	Lower boom		Fan
	Arm dump		Menu switch
	Arm crowd		Overload warning switch
	Bucket crowd		Information
	Bucket dump		Set clock indicator
	Coolant temperature indicator		Overvoltage indicator
	Service interval indicator		Anti-theft system fault indicator

	Insert key indicator		Dozer in floating position
	Pull out key indicator		Overload warning indicator
	Lower control lever lock indicator		Raise control lever lock indicator
	Auxiliary port indicator		Start engine indicator
	Horn		Controller Area Network indicator
	Please read the operating manual		Return switch
	Wiper switch		Acknowledge
	Washer switch		Cancel
	Diesel fuel		Water separator filter
	Lock		Seatbelt indicator
	Unlock		Hydraulic oil temperature indicator
	Engine stop display		Log record
	Particle filter regeneration		Language setup
	Increase engine speed		Display brightness
	Particle filter regeneration locked		Work light turn-off delay
	Travel alarm cancel		Camera

GENERAL INFORMATION

Foreword

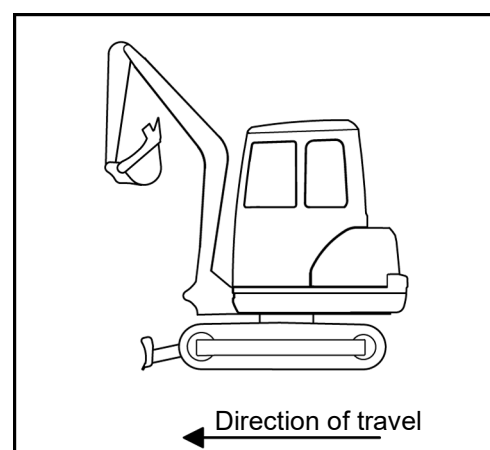
Safety instructions, the rules and regulations for the use of machines given in these operating instructions apply to the machines mentioned in this documentation.

It is the responsibility of the owner(s):

- to ensure local, regional and national regulations are observed,
- to observe the bodies of rules (laws, regulations, guidelines, etc.) stated in the operating instructions to ensure safe handling of the equipment,
- to ensure that the operating instructions are always available for the operating personnel and the information, such as notes, warnings and safety rules and regulations, are followed in all points.

The data in the operating instructions apply for all models. Information applying only optional equipment is highlighted e.g. (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 is at the front when driving forwards as shown in the figure.



The symbols for operating and safety instructions are listed under "Safety symbols" (page 15).

EC Declaration of Conformity

Your copy of the EC declaration of conformity is delivered with the machine. Keep the EC declaration of conformity in a safe place and show it, if requested, to the responsible authorities. Should the EC declaration of conformity be lost, contact your local KUBOTA dealer.

The CE marking is 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 EC declaration of conformity invalid.

Content of the EC DECLARATION OF CONFORMITY:



ORIGINAL EC DECLARATION OF CONFORMITY

Manufacturer: **KUBOTA CORPORATION**

Trade name: **KUBOTA**

Type: **Compact excavator**

Model: **U50-5**

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, 2014/30/EU, (EU) 2016/1628**

Conformity assessment according to the directive 2000/14/EC, annex VI.

Model	Rated speed	Nominal output (ISO 14396)	Measured sound power level	Guaranteed sound power level
U50-5	2200 1/min	29.7 kW	94.3 dB (A)	96 dB (A)

Referred standards: EN 474-1:2006+A6:2019 except Annex G,
EN 474-5:2006+A3:2013

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 authorized representative: KUBOTA Baumaschinen GmbH
Steinhauser Str. 100
D-66482 Zweibrücken, Germany

Name and address of the person responsible for the technical documentation: Mikio Taguchi, President,
KUBOTA Baumaschinen GmbH
Steinhauser Str. 100,
D-66482 Zweibrücken, Germany

EC declaration of conformity radio equipment-manufacturer

Hereby, ASAHI DENSO CO., LTD. declares that the radio equipment type [CZ106] is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address:
<http://en.ad-asahidenso.co.jp/euro-compliance/>

Date of issue of the operating instructions

The date of issue of the operating instructions is printed on the bottom right of the front page of the book.

Operating personnel

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

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

Operator

According to industrial safety regulations, only persons who were instructed in the operation of the machine, 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 machine independently.

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

Trained personnel

Trained personnel are skilled persons with a technical qualification who are able to determine damages to the machine and perform repairs in their area of qualification (e.g. hydraulic or electrical engineering).

Only trained and instructed personnel are allowed to work on the machine.

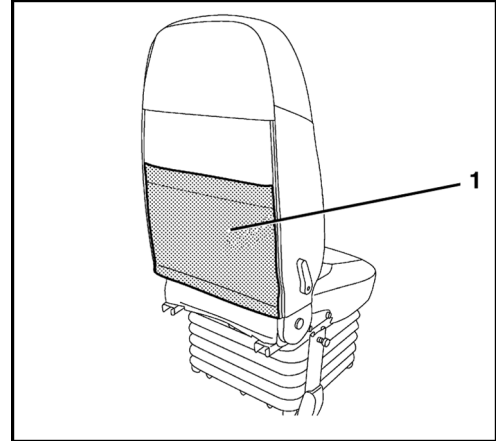
Qualified personnel

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 safe condition of the machine.

Location of the operating instructions

The operating instructions must always be kept on the machine. If the operating instructions have become illegible due to continuous use, the owner (operator) must order a replacement from the manufacturer.

There is a compartment (1) for the operating instructions behind the backrest of the operator's seat.



Spare parts

When ordering spare parts, please always provide the following information:

- Machine's product identification number and year of construction (see type plate)
- Designation/type of spare part (see original KUBOTA spare parts catalogue)
- Part number of the spare part (see original KUBOTA spare parts catalogue)
- Quantity required
- Customer number

For written orders, please provide this information exactly, or for telephone orders, please have this information ready before calling. This makes the process easier for us and for you, and prevents errors and incorrect orders or deliveries.

Please place your order with your KUBOTA dealer.

SAFETY RULES

Basic safety instructions

- The EC machine utilization directive (2009/104/EC) dated 16/09/2009 applies for the operation of the aforementioned machine.
- The information in these operating instructions applies for maintenance and repairs.
- National rules and regulations apply where applicable.

Duties, liability and warranty

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

These operating instructions, in particular the safety instructions, must be followed by all persons working near or with the machine. Above and beyond this, the safety rules and regulations applicable for the site must also be observed.

Hazards occurring during the handling of the machine:

- The machines are manufactured according to the state of technology and the recognized safety rules. Nevertheless, danger to the life and limbs of the operator or a third party, or damage to the machine or to other property can occur. The machine(s) may only be used
 - for the approved use and
 - in a completely safe operating state.

Malfunctions which can reduce safety must be repaired immediately.

Warranty and liability

The scope, period and form of the warranty are set forth in the sales and delivery conditions of the manufacturer. The operating instructions valid at the time of delivery shall be the basis for any warranty claims arising from errors in the documentation, see the date of issue of the operating instructions (page 11). 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 machine,
- improper starting, operation and maintenance of the machine,
- operation of the machine with defective safety devices or improperly installed or non-operational safety and protective devices,
- ignorance or non-observance of these operating instructions,
- insufficiently qualified or insufficiently instructed operating personnel,
- improperly performed repairs,
- unauthorised engineering changes to the machine,
- poor surveillance of machine parts subject to wear,
- catastrophes caused by the effect of foreign objects or an act of God.

The owner must ensure at his own responsibility that

- the safety rules are observed (page 13),
- unapproved use (page 16) and unauthorised operation are excluded and
- the approved use (page 16) is ensured and the machine is operated in accordance with the contractual conditions of use.

Safety symbols

The following terms and hazard symbols are used in these operating instructions:



Identifies important operating procedure information which may not be immediately evident to the operator.



Identifies operating procedures which must be followed exactly to prevent damage to the machine or other property.



Identifies operating procedures which must be followed exactly to prevent danger to persons.



Identifies possible hazards in the handling of batteries.



Identifies possible hazards from caustic materials (battery acid).



Identifies possible hazards from explosive materials.



Prohibits the use of fire, ignition sources, and smoking.



Prohibits the spraying of water.



Identifies operating procedures for the proper disposal and storage of ensuing waste materials.

Approved use

The machines specified in this operator's manual may only be used for to loose the ground, excavating, picking up, transporting and dumping soils, rocks and other materials, for work with the dozer or with a breaker. The load may be transported largely without driving the machine. Do not exceed the maximum lifting capacity.

Approved use also includes:

- observation of all notes in these operating instructions,
- regular servicing,
- regular safety inspections.

Unapproved use

Any improper use – i.e. any deviation from the information in the "Approved use" section (page 16) of the machine documented in these operating instructions – is considered an unapproved use. This also applies to the non-observance of the standards and guidelines listed in these operating instructions.

Hazards can occur in case of improper use. Such improper uses include:

- Using the machine to lift loads without proper equipment for lifting operations,
- using the machine in contaminated environments,
- using the machine in closed rooms without sufficient ventilation,
- using the machine under conditions of extreme temperatures (extreme heat or cold),
- using the machine for underground works,
- using the machine to transport people (e.g. by means of attachments),
- using the machine for demolition work, with the danger of falling objects (e. g. tearing down walls),
- using the machine with log grab.

Special duties of the owner

Owner of the machine in the sense of these operating instructions is any person or company which uses the machine itself or on whose order it is used. In special cases (e.g. leasing, rental), the owner is the person who must perform the duties arising from operation according to the conditions of the contract between owner and user of the machine.

The owner must ensure that the machine 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 are 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 these operating instructions.

Persons who work with or on the machine must be provided by the operator with, and where applicable use suitable personal protective equipment (PPE), for example suitable working clothes, safety shoes, safety helmets, eye protection, ear protection and air-filter masks. 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 questions about the correct disposal or storage of refuse and toxic waste, contact your KUBOTA dealer or a local waste management contractor.

Noise emission and vibration

The values specified in this manual have been identified in the test cycle at an identical machine and are valid for a standard equipment machine. The determined values are shown in the Technical Data (page 46).

Noise emission

The noise levels were determined using the method of determining the guaranteed sound pressure level of ISO 4871 based on directive 2000/14/EC, appendix VI.

The noise levels shown 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 necessary personal protective equipment to the operator (ear protection).



*Noise of a noise level of more than 85 dB (A) can cause hearing damage.
From a noise level of 80 dB (A), the use of an ear protection is recommended.
From a noise level of 85 dB (A), the operator must wear an ear protection.*

Vibrations

The vibrations at the machine have been determined at 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 directive 2002/44/ EC in order to consider individual magnitudes of influence.

Safety labels on the machine

Care of safety labels

- Keep safety labels clean and free from interfering objects.
- Clean safety labels with soap and water and dry with a soft, clean cloth.
- Replace damaged or missing safety labels with new ones from your KUBOTA dealer.
- If a component with glued-on safety labels is replaced with a new part, make sure that the new labels are affixed to the same location as the replaced component.
- Safety labels should be stuck only on clean and dry surfaces. Press any air bubbles into the outer edge of the sticker.

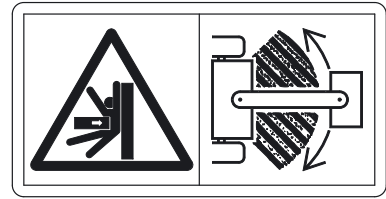
The positioning of the safety labels is illustrated in the following figures.

- 1) Code #: 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 remain within the swinging range of the boom.
- Ensure safe distance to obstacles and sufficient freedom of movement.



- 2) Code #: RB456-5789-0

Danger in the danger zone of the front attachments!

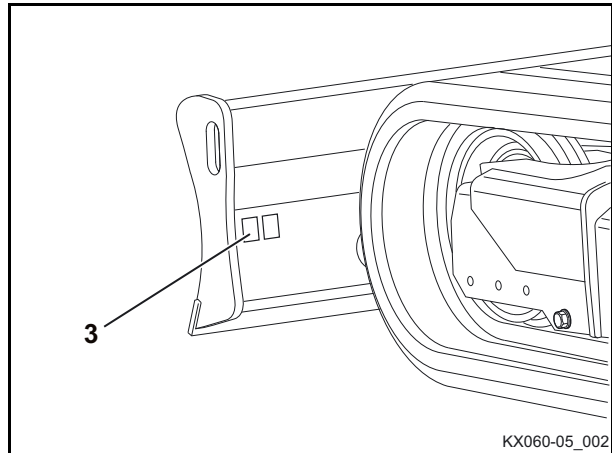
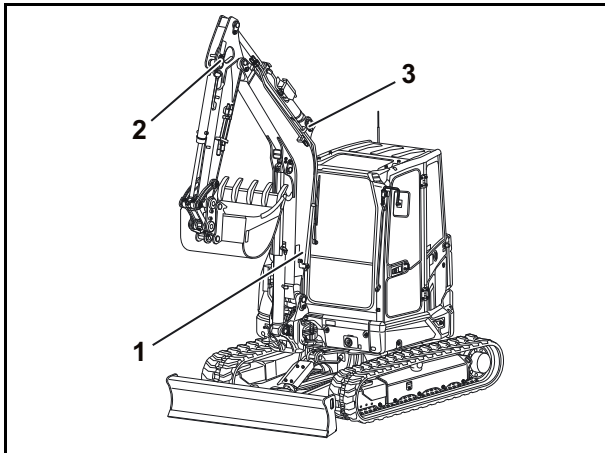
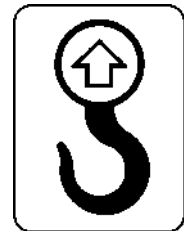
Standing in the danger zone while the front attachments are moving suddenly can lead to severe injury or even death.

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



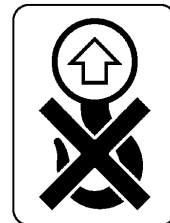
- 3) Code #: RC108-5796-0

Attachment point for lifting gear



KX060-05_002

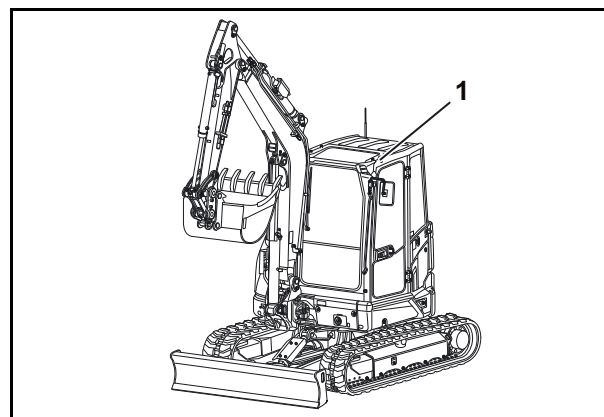
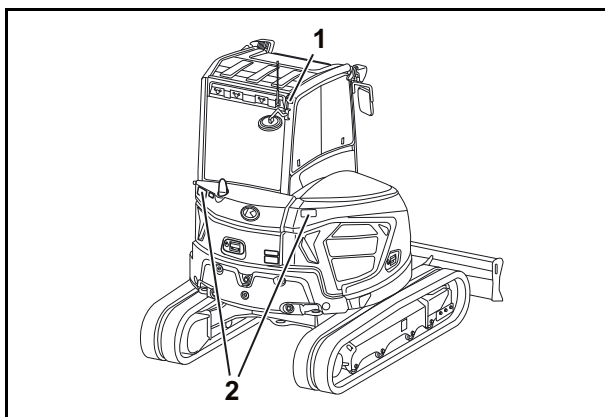
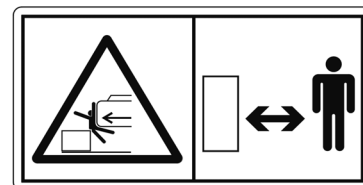
- 1) Code #: RB419-5796-0
Not an attachment point for lifting gear.



- 2) Code #: RC788-5725-0
Mortal danger by crushing!

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

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



1) Code #: RD579-5738-0

Risk of burns from hot components!

Surfaces can be hot and lead to burns.

- Do not touch hot parts, such as exhaust muffler, etc.

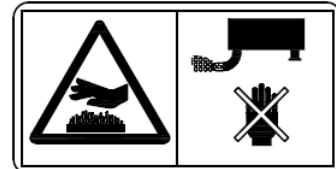


2) Code #: RD579-5745-0

Risk of burns from hot components!

Surfaces can be hot and lead to burns.

- Do not touch hot parts, such as exhaust muffler, etc.



3) Code #: 6C090-4958-0

Danger of cutting and crushing through rotating parts!

The rotating fans can cut into limbs and the rotating belt drive can pull in and crush limbs.

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

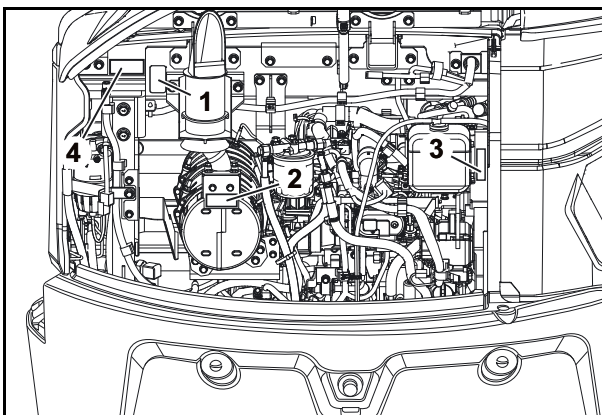


4) Code #: RD579-5727-0

Danger of injury from liquids under pressure!

In the case of improper removing the plug of the air bleed hose for hydraulic pump, hydraulic oil can squirt out and lead to penetration into the skin.

- Before removing the plug of the air bleed hose for hydraulic pump, please read the operating instructions!

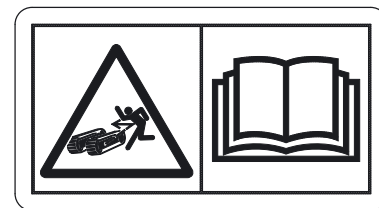


- 1) Code #: RB456-5795-0

Danger of injury from components under pressure!

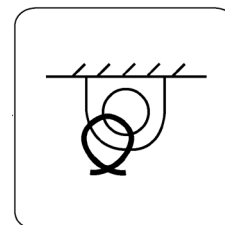
In the case of improper operating of the crawler tensioner, grease or the pressure valve can splash out under high pressure and lead to injury.

- Before working on the crawler tensioner, please read the operating instructions!



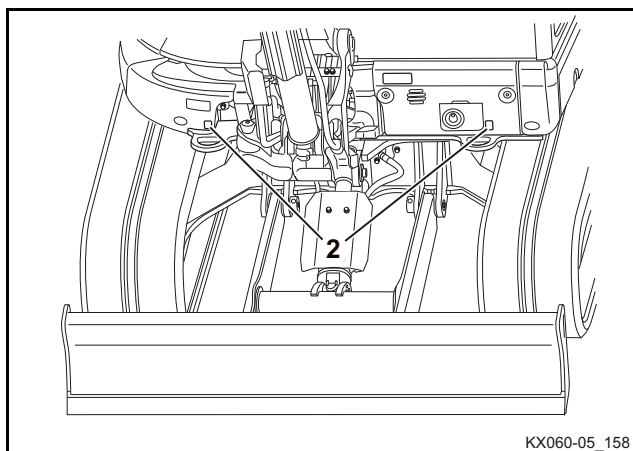
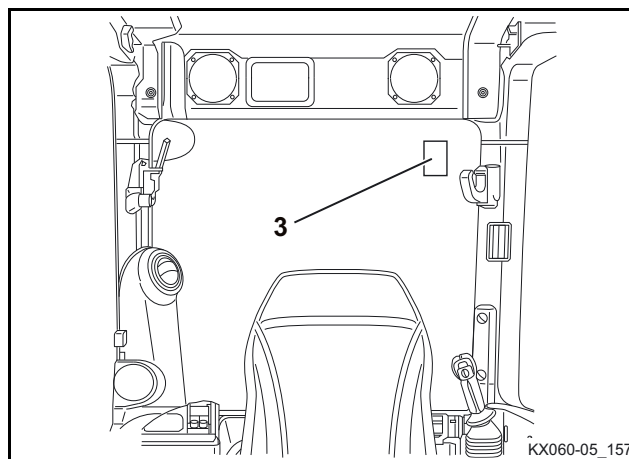
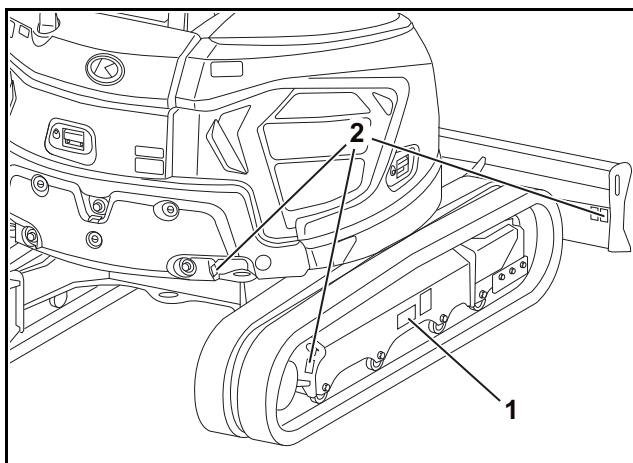
- 2) Code #: RD809-5733-0

Tie down eye - Use only for lashing the machine!



- 3) Code #: RD809-5714-0

Emergency exit

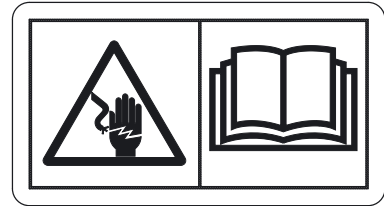


1) Code #: RB456-5786-0

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, please read the operating instructions!



2) Code #: 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.

Surfaces can be hot and lead to burns.

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

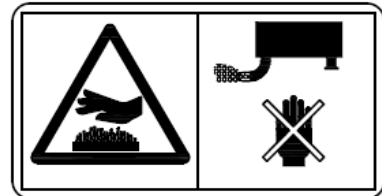


3) Code #: RD579-5725-0

Risk of burns from hot components!

Surfaces can be hot and lead to burns.

- Do not touch hot parts, such as exhaust muffler, etc.



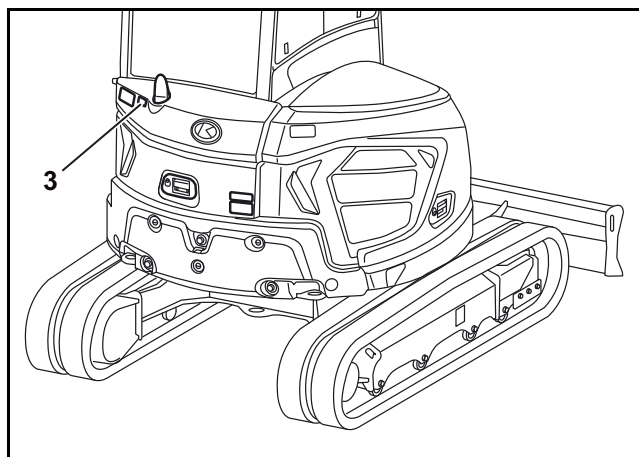
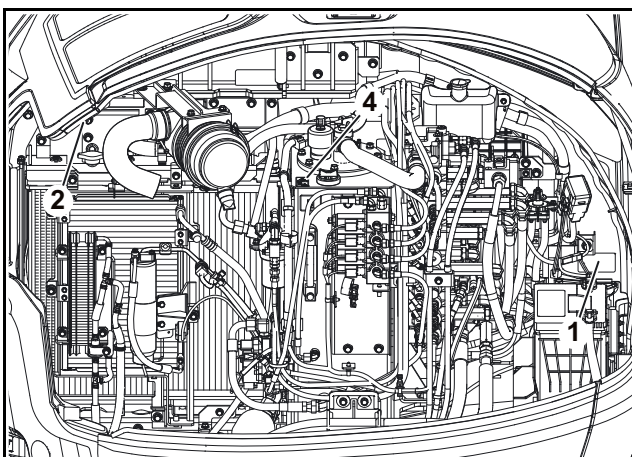
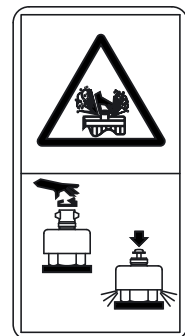
4) Code #: RD579-5724-0

Danger of injury from liquids under pressure!

The hydraulic oil may squirt because of internal pressure.

Hot oil may get you burned.

- Before opening any hot component, wait until the hydraulic oil temperature has dropped enough.
- Stop the engine first and then release the internal pressure.



1) Code #: RD458-5738-0

Danger of cutting and crushing through rotating parts!

The rotating fans can cut into limbs and the rotating belt drive can pull in and crush limbs.

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

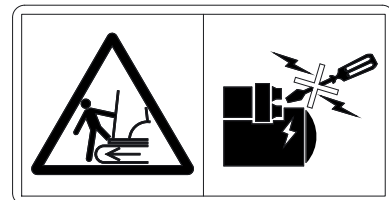


2) Code #: RD579-5739-0

Mortal danger from moving machine!

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

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

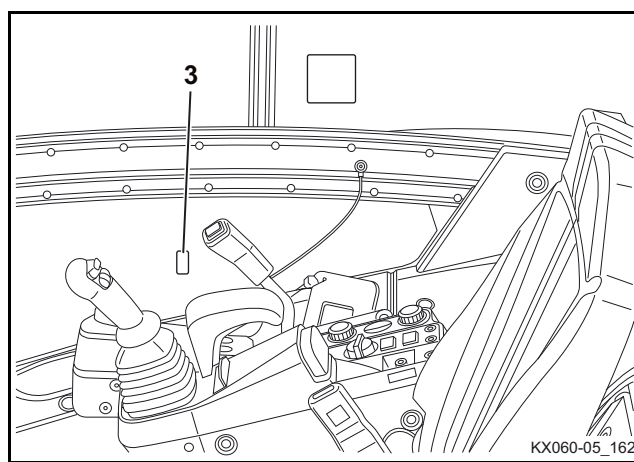
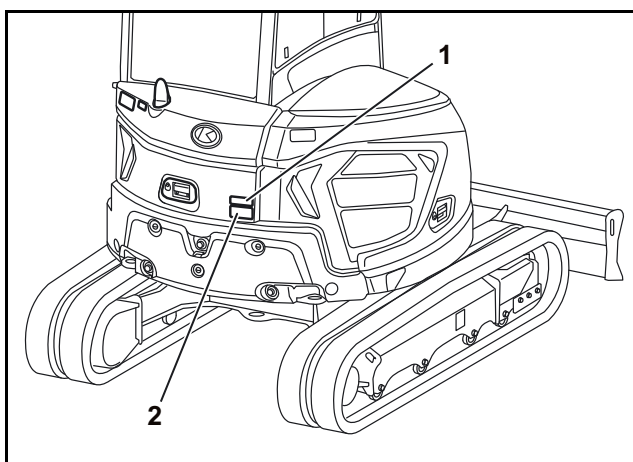


3) Code #: RD559-5749-0

Risk of accidents if the load is too heavy during lifting operations!

An acoustic signal sounds and a warning light flashes if the rated load is exceeded.

- Switch on overload warning system before using the lifting equipment!

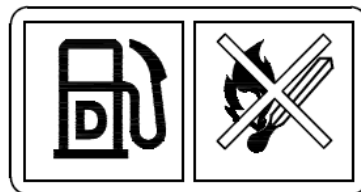


- 1) Code #: RD579-5736-0

Risk of fire from inflammable diesel fuel!

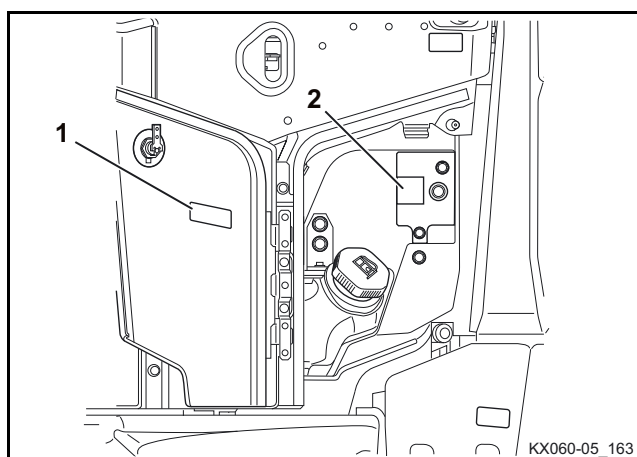
Inflammatory vapours can occur in the fuel tank, which may go up in flames as a result of an ignition source.

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



- 2) Code #: RD451-5748-0

Fill level monitor when refuelling

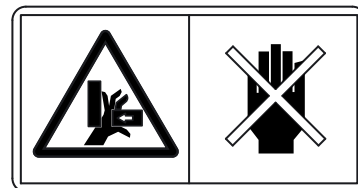


1) Code #: RD579-5755-0

Risk of being crushed due to narrow gap!

The gap between the door and the counterweight is narrow. When fastening the cab door to the door stop or to the counterweight, there is a danger of the hands or fingers being crushed in the door crack. When moving down the unload lever, your hands and fingers may get jammed in between the right console and seat bracket.

- Only open and close the cabin door using the grips intended for that purpose.
- Never put your hands and fingers in the gap between them.

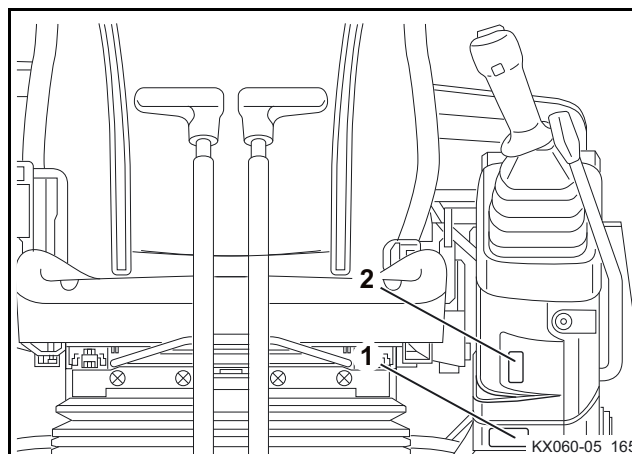
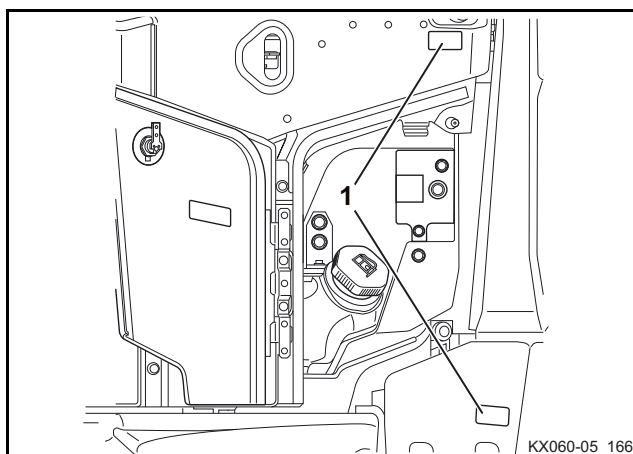


2) Code #: RD579-5783-0

Mortal danger by crushing!

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

- Before leaving the machine, lower bucket to the ground.
- Lift the control lever lock, turn the starter switch to the STOP position and remove the key.

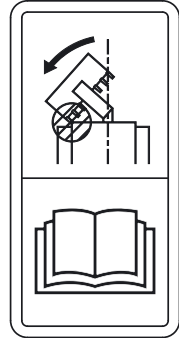


- 1) Code #: RD839-5739-0

Caution! Risk of component damage!

When using a wider or deeper bucket, take good care when swinging or retracting the front attachments to make sure that the bucket does not hit the cab.

- Read the Operating Instructions for the attachment.

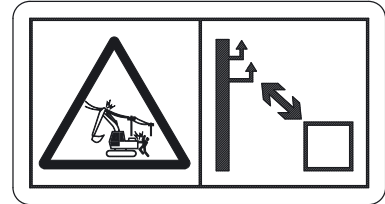


- 2) Code #: RB456-5788-0

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.



- 3) Code #: RD579-5793-0

Risk of injury from falling front window!

If the front window has been pushed up and not is properly bolted, there is a risk that the front window will close automatically and hit the operator in the head.

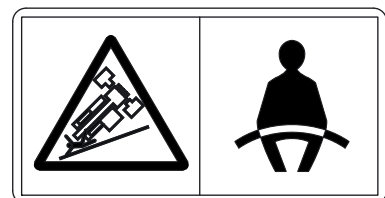
- Always lock front window securely.



- 4) Code #: RD579-5743-0

Risk of personal injury!

- Always buckle up.

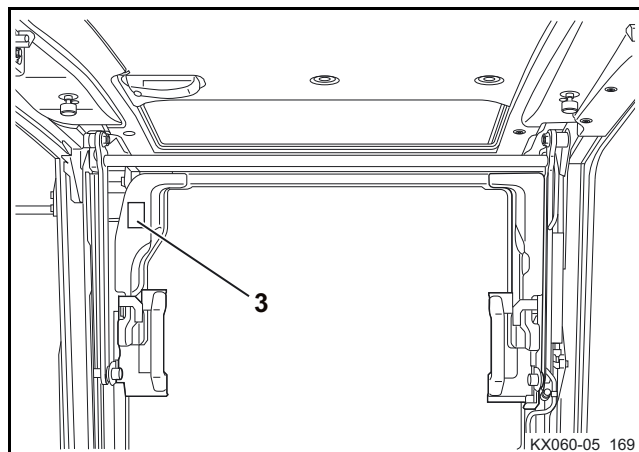
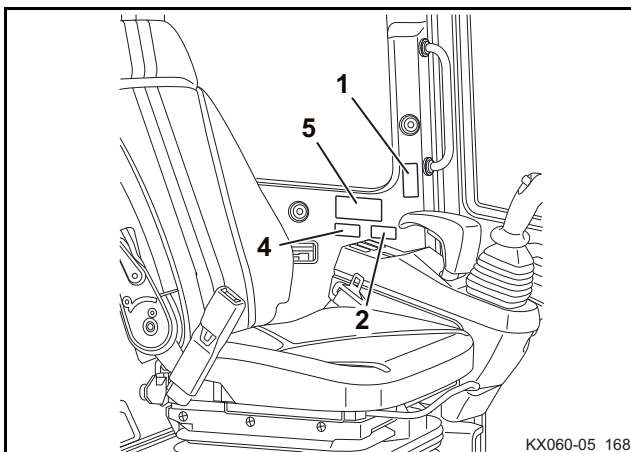
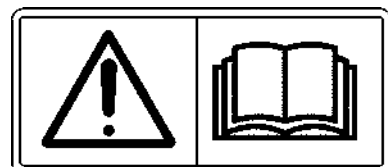


- 5) Code #: 69198-5784-0

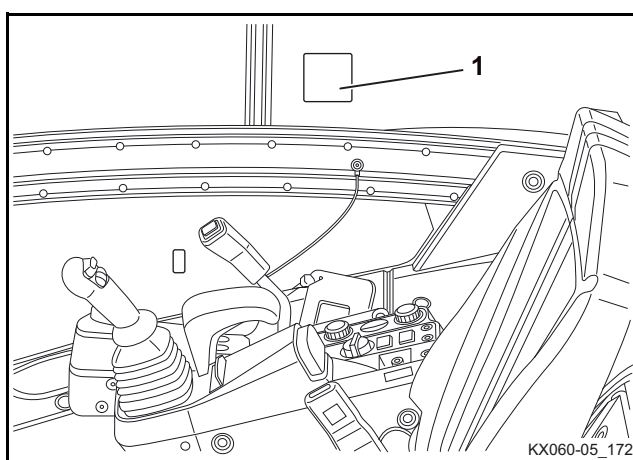
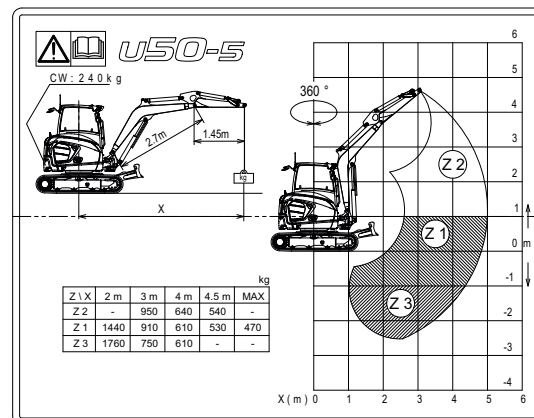
Risk of accidents due to incorrect operation!

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

- Please read the operating instructions before commissioning.



- 1) Code #: RD479-5747-0
Max. lifting load during swivel operation is 360°



Safety devices

Before starting the machine, all safety devices must be installed properly and operational. Manipulating the safety devices is prohibited.

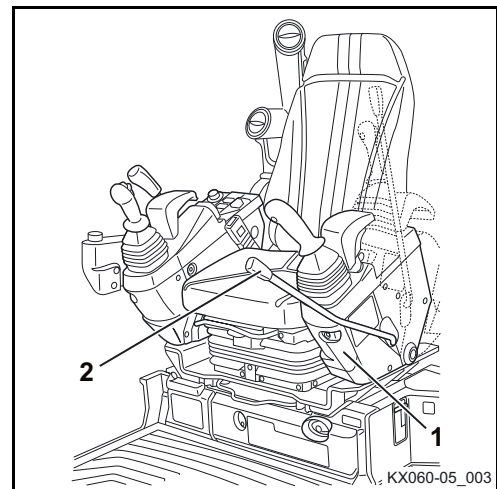
Protective devices may only be removed after

- the machine is standing still and the engine is stopped
- and secured against restarting (starter switch in STOP position and key removed).

Locking the controls

If the left control console (1) is completely raised with the control lever lock (2), the hydraulic functions of the control lever, the drive lever, the boom swing pedal, the dozer control lever and the auxiliary port are locked. This circumstance allows safe getting on and off.

- To unlock the hydraulic functions, lower the control console completely using the control lever lock.



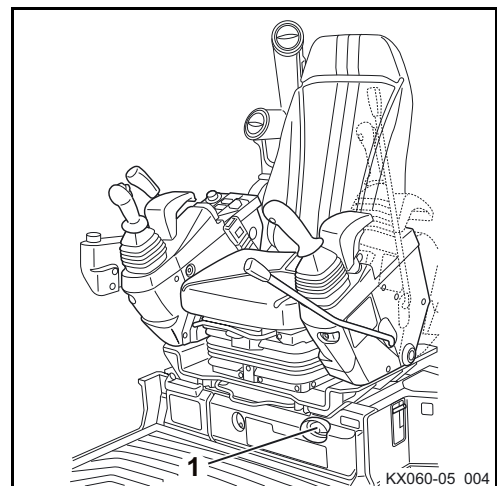
Engine emergency stop

The engine is stopped when the main key switch is turned to the STOP position.

If the engine cannot be turned off, please operate the engine emergency stop knob in order to turn off the engine.

To stop the engine:

- Pull the knob (1) until the engine stops.
- After the engine has stopped, push in the knob.



Protective structure cab



The machine is equipped with a protective structure that protects the operator from severe injury or death if the machine falls over or overturns and in the case of falling objects.

Cab was constructed in accordance with current safety standards and tested for verification as:

Roll-over protection

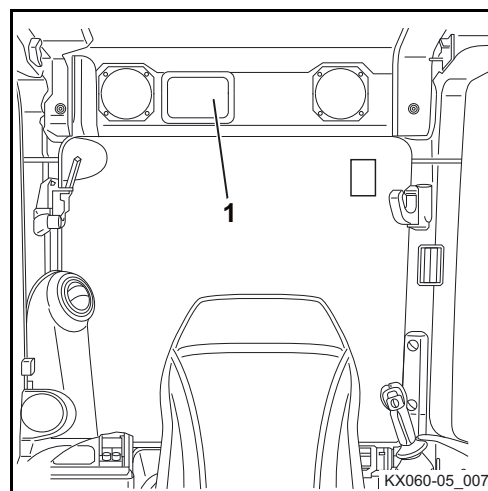
ROPS (Roll-Over Protective Structure)

Protective structure against falling objects

FOPS (Falling-Object Protective Structure)

To ensure greatest protection by means of this protective structure, the following applies:

- Never operate the machine with a higher operating weight than the maximum permissible total weight indicated on the ROPS identification plate (1).
- The seat belt must be fastened while the machine is being operated.
- Do not make any structural changes to the protective structure.
- In the event of damage, please contact your KUBOTA dealer. (Do not repair!)
- Never operate the machine without the protective structure.



When using a hydraulic hammer or other attachment for demolition work where material (e.g. asphalt) is removed and can uncontrollably sputter away, a gravel guard is recommended for protection.



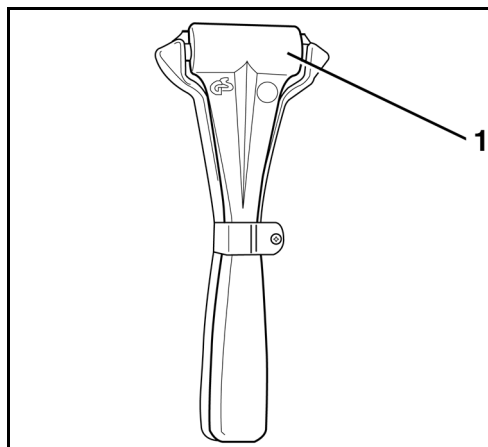
If a front protective grille or a roof protective grille is required, a KUBOTA gravel guard (optional) can be installed.

Emergency hammer

In case of an accident where the machine cab door and windows can not be opened, the operator can break the window panes with the emergency hammer (1).



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

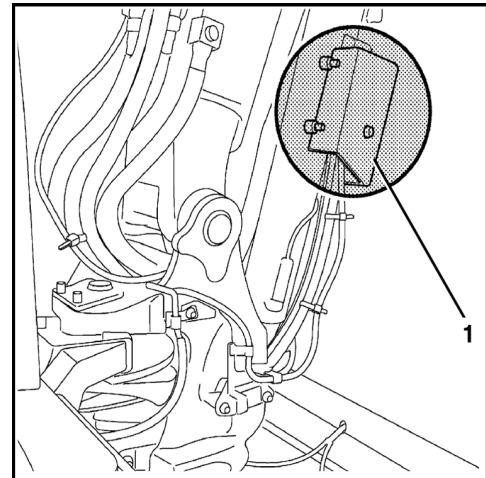


Pipe safety valve

The pipe safety valve prevents the load from suddenly lowering during lifting operations in the event a pipe or hose bursts.

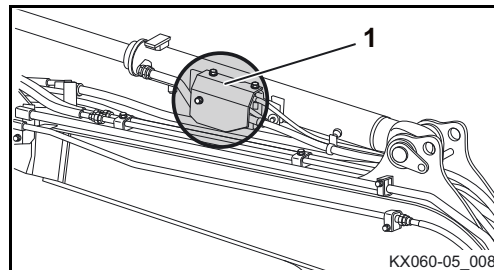
A pipe safety valve (1) is located on the hydraulic port of the boom cylinder and arm cylinder, respectively. Additionally, a pipe safety valve can be mounted to the hydraulic port of the dozer cylinder.

Machines that will be used for lifting operations must be equipped with at least one pipe safety valve on the boom and arm, together with an overload warning system (page 33) according to EN 474-5. 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.



To acquire the proper equipment for your machine, please contact your KUBOTA dealer.

The pipe safety valve is adjusted in the factory on the particular machine. Manipulating the pipe safety valve will void the warranty.



Any manipulation can result in substantial personal injuries, even death, and is therefore strictly prohibited.

The manipulation and repair of the pipe safety valves is prohibited. They may only be replaced by your KUBOTA dealer as a kit.

Overload warning system

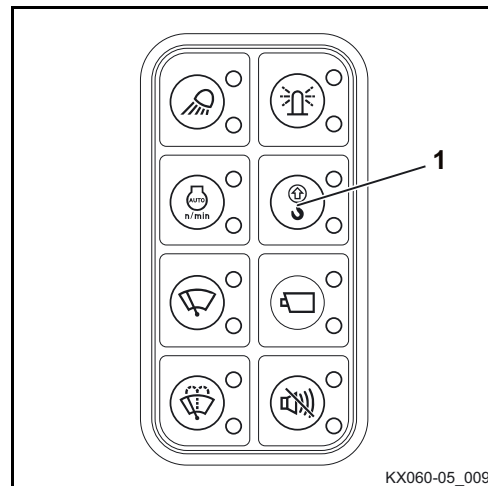
An overload warning function informs the operator immediately if there is an overload. The warning system is controlled by the pressure switch at the pipe safety valve. The load is measured by the pressure at the base of the cylinder.

The warning device is activated with the overload warning switch (1). In the event of an overload, an acoustic signal sounds and "Rated load exceeded" appears in the display.



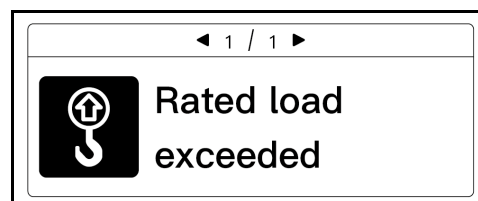
When turn the starter switch to the RUN position, an acoustic signal sounds. Before activating overload warning, make sure that you hear an acoustic signal. If you cannot hear it, machine must not be used for lifting operation. Please contact your KUBOTA dealer immediately.

An overload warning function is only available if the machine is equipped for lifting operations. To acquire the proper equipment for your machine, please contact your KUBOTA dealer.



Machines used for lifting operations must be equipped with at least one pipe safety valve on the boom and arm, together with an overload warning device in accordance with EN 474-5.

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.



When changing from rubber crawlers to steel crawlers, or from steel crawlers to rubber crawlers, or when modifying the length of the arm, please contact your KUBOTA dealer.



The overload warning function must be enabled during any lifting operation to prevent personal injuries and damage to equipment.

Hazards coming from the hydraulic system

If hydraulic oil gets into the eyes, rinse them immediately with clear water and subsequently seek medical aid.

Do not allow hydraulic oil to contact the skin or clothing. Skin parts which may have come in contact with hydraulic oil must be washed with water and soap immediately, if possible.

Immediately take off any clothes dirtied or soaked with hydraulic oil.

Persons who have inhaled hydraulic oil vapours (mist) should be taken to a doctor immediately.

If leaks have occurred in the hydraulic system, the machine may not be taken into operation or, if in operation, operation must cease at once.

Do not use the naked hand to search for leaks; always use a piece of wood or cardboard. Protective clothing (eye protection and gloves) must be worn when seeking leaks.

Leaking hydraulic oil must be bound immediately with an oil binding agent. The contaminated oil binding agent must be stored in suitable containers and in accordance with the valid regulations.

Fire protection



The machine components and attachments (in particular the engine and the exhaust system) reach high temperatures even at normal working conditions. An electric installation which is damaged or not properly serviced may lead to flashovers and/or electric arcs. The following Fire Protection Guidelines may help you ensure the maintenance and efficiency of your equipment and minimize fire hazards.

- Remove any accumulated dirt adjacent to hot components, e.g. engine, DPF muffler, exhaust manifold/tubes, etc. If the machine is being used to full capacity, the cleaning procedure should be performed more frequently.
- Accumulated residues from plants and trees, or any other flammable materials, should be removed from the machine. This must be observed in particular in the proximity of the engine and the exhaust system, but also at the swivel frame, the track frame, and the boom.
- Check the condition and wear of all fuel lines and hydraulic hoses. Any worn or damaged parts should be replaced immediately in order to avoid leakage.
- Electric cables and connections must be checked regularly for signs of damage. Damaged components and lines must be replaced or repaired before starting up the machine. All electric connections must be kept clean and tight.
- Exhaust pipes and mufflers must be checked daily for leaks, damage and any loose or missing joints. Leaking or damaged exhaust system components must be replaced or repaired before starting up the machine.
- Always keep a multipurpose fire extinguisher at or close to the machine. Make yourself familiar with the operation of the fire extinguisher. In the event of fire in the electrical or hydraulic system, use a CO₂ fire extinguisher to combat the fire.

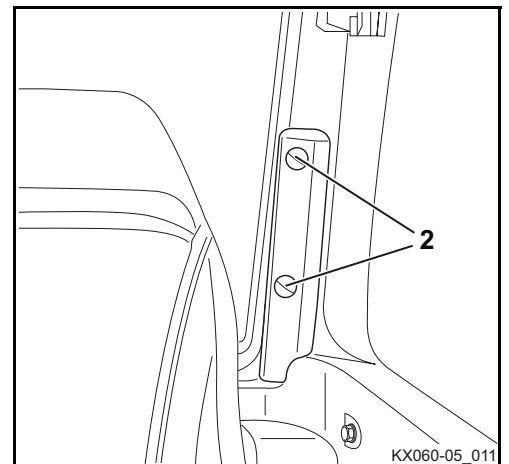
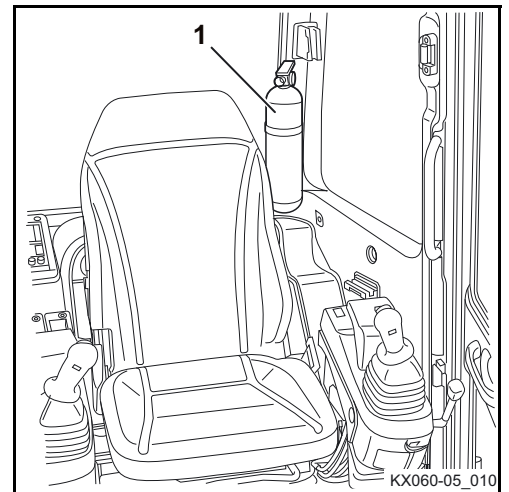
Safety rules

- For attaching a fire extinguisher (1) two threads (2) have been inserted in the cab construction on the left side behind the driver's seat.



A fire extinguisher is not included in the basic equipment of the machine.

A fire extinguisher, including its mounting bracket, can be mounted on board, if they weigh less than 10 kg.



RECOVERY, LOADING AND TRANSPORT

Safety rules for recovery

- For recovery of the machine, a towing vehicle of at least the same weight class as the machine must be used.
- A tow bar must be used for the recovery. If a tow rope is used, an additional vehicle to brake the machine must also be attached. The tow bar or tow rope must be suitable for the recovery of the machine in respect of 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 machine is used as the towing or recovery vehicle.
- Observe the admissible values for the towed load and the maximum pressing load vertical down on the towing eye during recovery, see „Specifications“ (page 46).

Safety rules while loading with a crane

- Crane and lifting gear must be suited for the absorption of the load to be lifted and be approved.
- Before the use of the crane and the lifting gear, make sure that the specified safety inspections at regular intervals have been carried out and that the crane and lifting gear are in good working order and impeccable condition.
- The machine may only be lifted at the points provided. Lifting from the cab roof is prohibited as this can cause severe damage.
- Never attach a crane hook to the lower edge of the dozer! The crane hook can slip off sideways while lifting and the machine may fall off.
- Always adhere to the valid safety regulations for the lifting of loads.
- The machine must be secured with a holding rope when it is being lifted.
- The crane operator is responsible for the observance of these safety rules.

Safety rules for transport



*Risk of accidents due to defective load safety device!
The following safety rules must be observed.*



*Risk of accidents due to unapproved use of the machine!
Driving the machine onto the transport vehicle without using ramps and with the help of the boom is prohibited!*

- Check whether the transport vehicle is designed for carrying the machine. Only transport the machine on a transport vehicle with sufficient load-bearing capacity.
- Engage the hand brake on the transport vehicle and secure the front and rear wheels using chocks to prevent the vehicle from rolling away.
- Make sure the ramps to be used have sufficient load-bearing capacity to carry the operating weight of the machine.
- Only use ramps with sufficient load-bearing capacity. They must be wider than the machine's chains and have footboards on the sides.
- Position the ramps on the transport vehicle so that the centre line of the transport vehicle is aligned with the centre line of the machine to be loaded.
- Securely fasten the ramps to prevent them from sliding.
- In order to prevent the transport vehicle from tilting when driving the machine onto it, brace the rear of the transport vehicle with adequately dimensioned supports.
- Before driving the machine onto the transport vehicle, clean the loading area and chains of the machine in order to ensure as much friction as possible between the chains and the loading area.
- Assign a guide for driving the machine up and down the ramp. The guide is responsible for ensuring safe loading.
- Only move the machine when instructed to do so by the guide. The operator and guide must maintain constant eye contact. If the operator cannot see the guide, stop the machine immediately.
- Secure the machine on the transport surface to prevent it from sliding, e.g. using anti-slip materials, wooden beams, wedges or wooden structures. This auxiliary equipment must be secured to prevent it from coming loose and becoming lost, e.g. by using tacks on a wooden transport surface.
- In order to ensure the machine's stability during transport, lash down the machine appropriately using the determined preload force on the transport vehicle.
- Only use approved and labelled lashing material, such as lashing straps or sling chains that are suited for the machine's weight.
- The driver of the transport vehicle is responsible for securely fastening the machine onto the vehicle.
- When transporting the machine, always maintain a distance of 1.0 m from overhead power lines. The permitted dimensions for the transport vehicle including the loaded machine must be observed in accordance with the applicable traffic rules and regulations.

Recovery

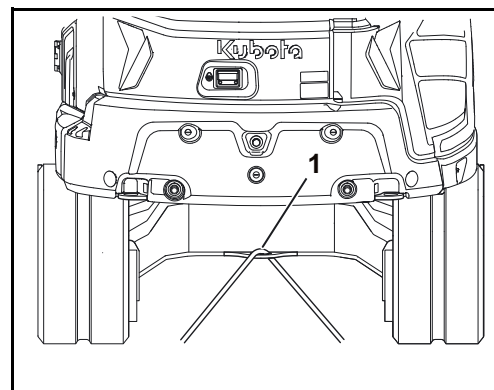


Adhere to the safety rules (page 13) and the safety rules for recovery (page 37).



A recovery is only allowed over a short distance and at walking speed (0.5 m/s ~ 1.0 m/s).

- Attach the tow bar or tow rope to the attachment point (1) on the machine and to the towing vehicle.
- If the attachment point of 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 loads.

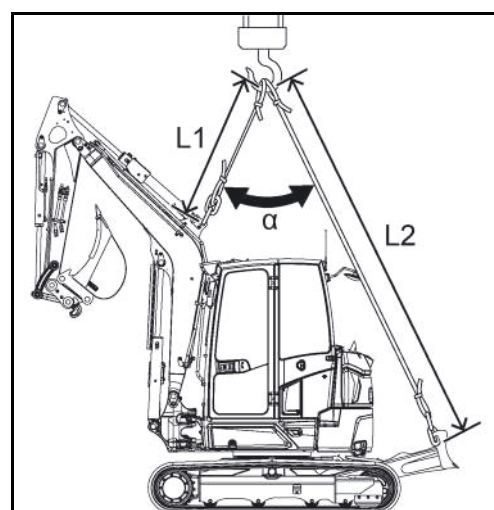


Hoisting the machine with a crane



Adhere to the safety rules (page 13) and the safety rules for hoisting the machine with a crane (page 37).

- Bring the machine to the lifting position (see figure) on level ground.
- Lift the dozer until the dozer cylinders are fully retracted. Also see the "Excavation work (operating the controls)" section (page 117).
- Bring the boom in line with the longitudinal axis of the swivel frame.
- Completely extend the boom cylinder, arm cylinder and bucket cylinder.
- Swivel the swivel frame so that the dozer is located at the rear.
- Close and lock the door and covers.

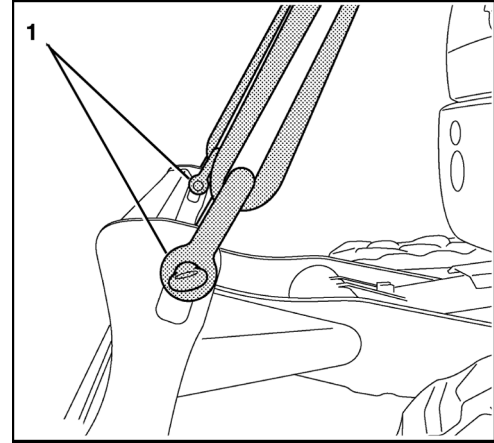


α (°)	L 1 (mm)	L 2 (mm)
< 68	1330	3680

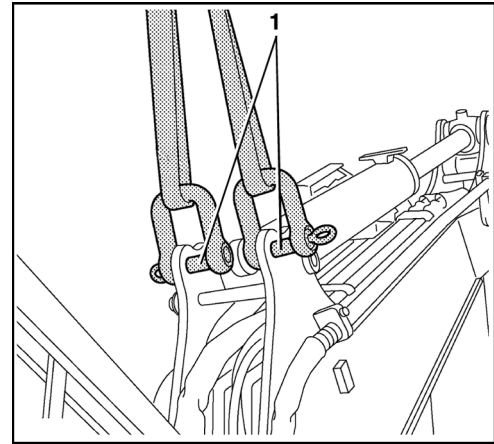


The machine may only be lifted at the points provided. Lifting from any other points is prohibited as this can cause serve damage.

- Attach the lifting gear with shackles to the lifting eyes (1) on each side of the dozer.



- Attach the lifting gear with shackles to the lifting eyes (1) on each side of the boom.



- As soon as the lifting gear is attached to the machine, press cloths between lifting gear and machine to protect the machine.
- Always keep the machine level. Be sure that the centre line of the crane hook is aligned as exactly as possible with the centre line of the machine and that the lifting angle is as specified. Lift the machine.



Risk of accidents!

Lifting the machine from unapproved lifting points can cause the machine to fall.

- Only lift the machine from the intended lifting points.
- Lifting from the cab roof is prohibited!

Be careful not to allow the optional rotary beacon, if attached, to come into contact with the lifting gear.

Transport on a flat bed trailer



Adhere to the „Safety rules“ chapter (page 13) and the „Safety rules for transport“ section (page 38).



Mortal danger by crushing!

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, e.g. when driving onto the ramp or when rotating the swivel frame.

- Guides must maintain a safe distance from the machine.



Risk of accidents due to machine falling down!

When changing the direction of travel or when manoeuvring the machine, it can slip and fall off the ramp or loading area.

- Do not turn or steer when driving up the ramps.
- If the machine cannot be driven safely and in straight line onto the loading area, drive the machine back down, realign it and drive straight ahead onto the area.
- Only work with a guide.



Caution when rotating the swivel frame!

The front attachments can hit the transport vehicle. This can damage the transport vehicle and the machine.

- Only work with a guide.

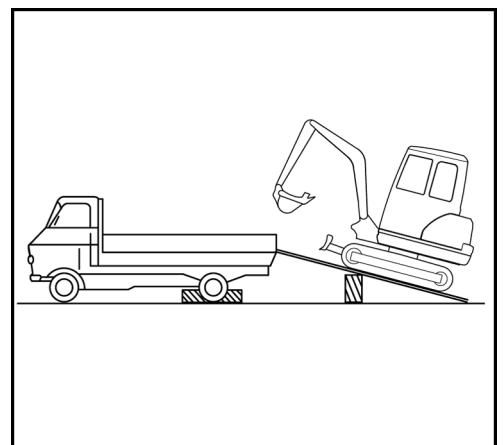


Risk of accidents due to malfunction in transport safety device!

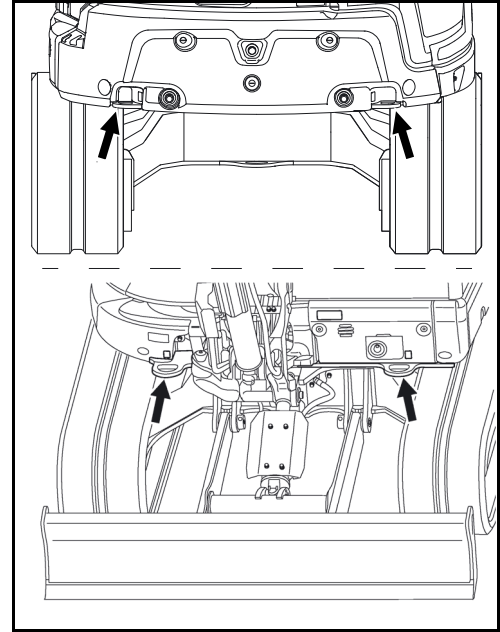
The machine's lashing points are designed and constructed to secure the machine safely. If fastening points other than the lashing points described here are used, the transport safety device could malfunction and the machine could slip or fall from the transport vehicle while being transported.

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

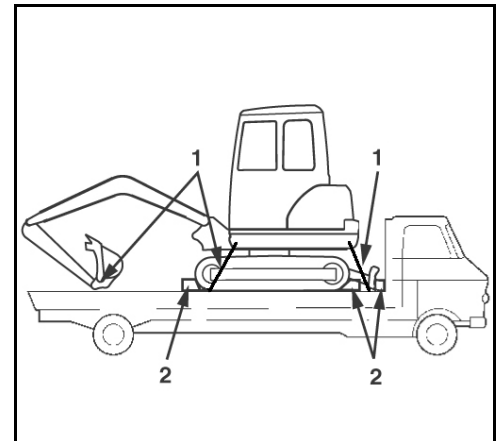
- Provide approved and labelled lashing material, such as lashing straps or sling chains, that are appropriate for the machine's weight (page 46).
- Place the loading ramps on the transport vehicle at an angle of 10° to 15°. When doing so, take into account the track width of the machine.
- Fasten the ramps to the transport vehicle in such a way that they do not slide when driving the machine onto it.
- Align the machine with the centre of the ramps and drive it straight onto the loading area until it has reached the parking space.
- Lower the dozer onto the loading area.
- Rotate the swivel frame 180° until the front attachments face the rear of the transport vehicle.
- Completely retract the arm and bucket. Lower the boom until the bucket linkages touch the loading area.



- To secure the vehicle, use the tie-down points as illustrated in the figure.



- Secure the machine in front of and behind the chains and the dozer to prevent it from slipping, e.g. using wooden beams (2). Secure the machine using appropriate and labelled lashing material (1).
- After loading and securing the machine, tightly close all of its covers and doors.

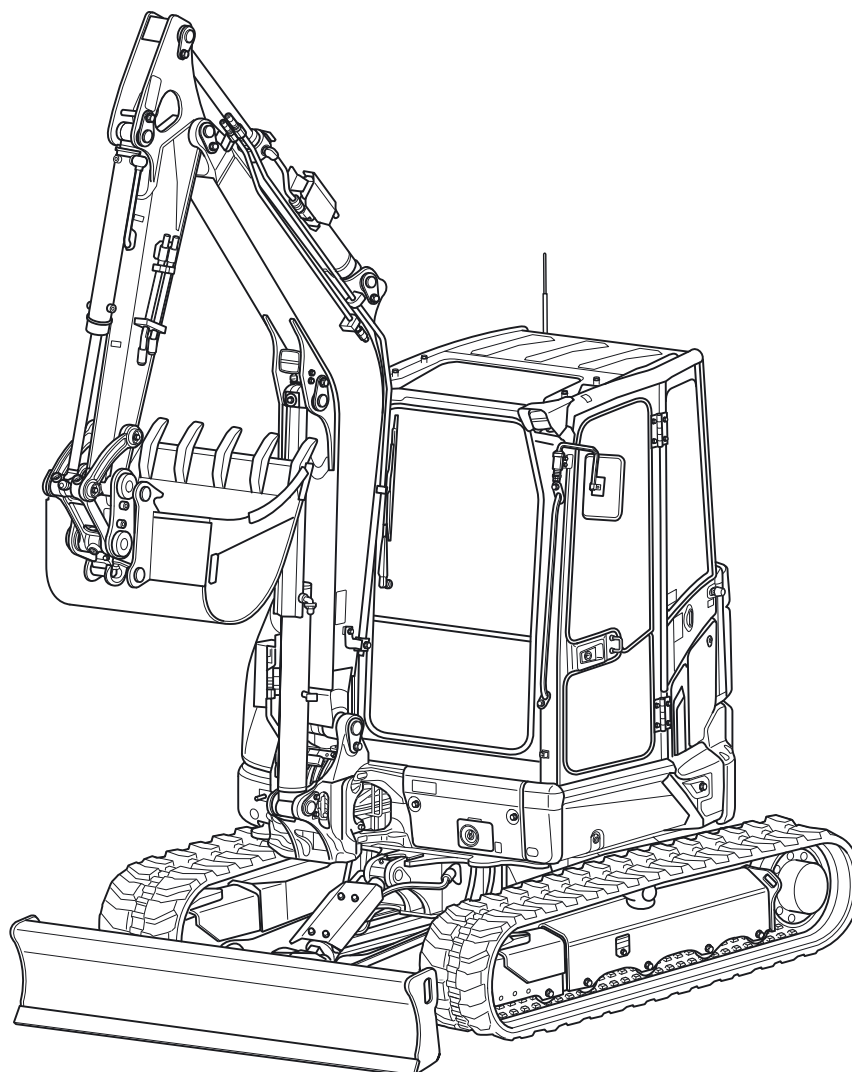


DESCRIPTION OF THE MACHINE

Model overview

The excavator is available in the model series U50-5.

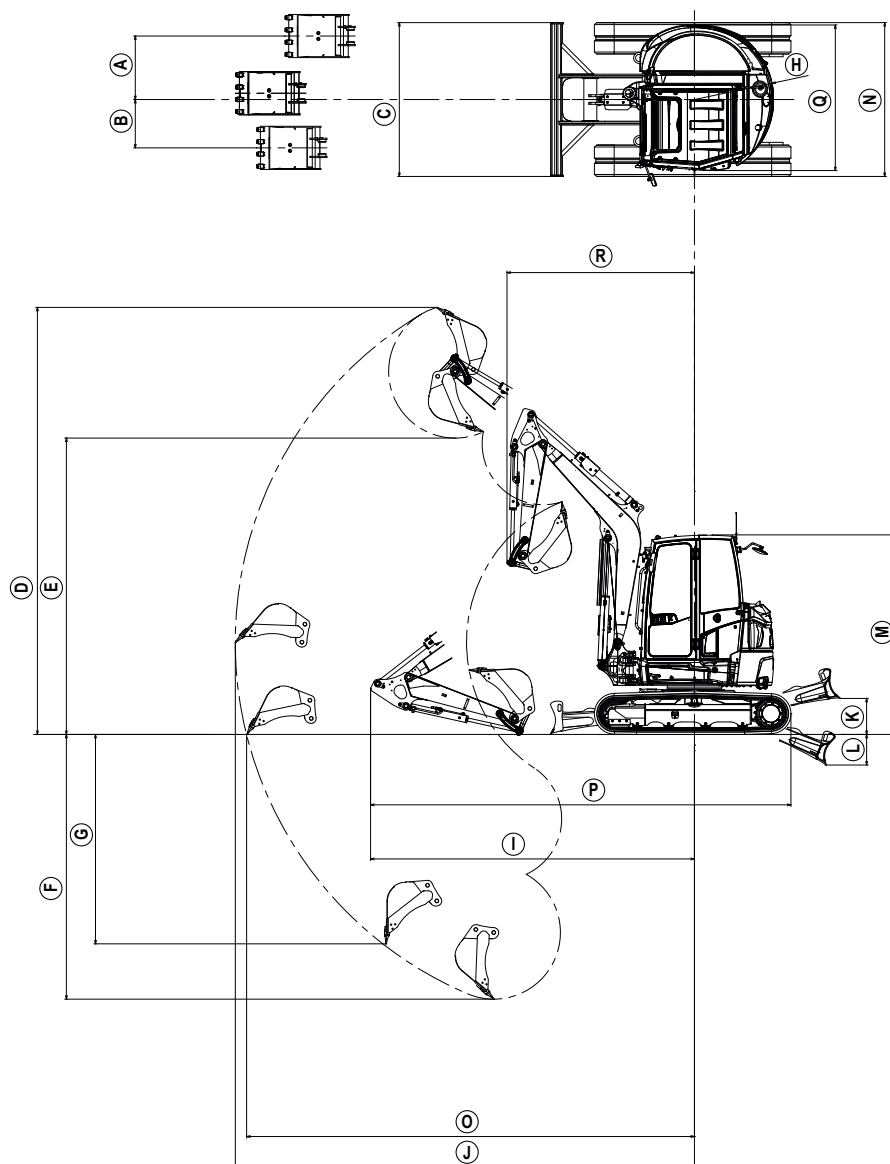
Model U50-5



Dimensions

The dimensions of the model U50-5 can be found in the following illustrations including tables.

Dimensions U50-5

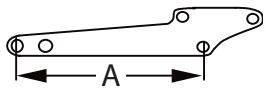


Description of the machine



A	B	C	D	E	F	G	H	I	J
810	620	1960	5440	3775	3370	2670	1010	4125	5850
K	L	M	N	O	P	Q	R		
440	405	2550	1960	5705	5355	1855	2400		

Arm version

Name	Type	
Arm 1450 mm		A = 1450 mm

All dimensions in mm with original KUBOTA bucket and rubber crawlers.
Subject to technical changes.

Specifications

Following are the specifications for these series.

			KUBOTA Excavator
Model name			U50-5
Type			Cab
			Rubber crawler
Machine weight*		kg	4890
Operating weight**		kg	4965
Bucket (KUBOTA)	Volume (CECE)	m ³	0.13
	Width with teeth	mm	595
Engine	Type		Vertical, water cooled 4-cycle diesel engine
	Model name		D1803-CR-TE5-BH
	Displacement		cm ³ 1826
	Engine performance (ISO 14396)		kW 29.7
	Rated speed		1/min 2200
	CO ₂ emission*** (Engine family KKBXL01.8E1D)	Non-road transient test cycle	g/kWh 798.1
		Non-road steady-state test circle	g/kWh 776.7
Performance	Swivel frame swivel speed		1/min 9.2
	Vehicle speed	Fast speed	km/h 4.9
		Slow speed	km/h 2.8
	Ground pressure (without operator)		kPa 28.0
	Climbing performance		% (degrees) 36 (20)
	Max. lateral sway		% (degrees) 27 (15)
Dozer	(width x height)		mm 1960 x 410
Swing angle of the boom	Left	degrees	70
	Right	degrees	53
AUX port 1	Max. flow rate (theoretical)	l/min	65
	Max. pressure	MPa (bar)	20.6 (206)
AUX port 2	Max. flow rate (theoretical)	l/min	37
	Max. pressure	MPa (bar)	20.6 (206)
Fuel tank capacity			l 66
Pulling capacity at the towing eyes			N 74900
Vertical load at the towing eyes			N 13000
Noise level	LpA	dB (A)	71
	LwA (2000/14/EC)	dB (A)	96

Description of the machine

Vibration ****	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	< 0.5
		Idling	m/s ² RMS	< 0.5

* Prepared for operation with original KUBOTA bucket 119 kg.

** Machine weight, incl. operator 75 kg.

*** This CO₂ measurement results from testing over a fixed test cycle under laboratory conditions a(n) (parent) engine representative of the engine type (engine family) and shall not imply or express any guarantee of the performance of a particular engine.

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

			KUBOTA Excavator			
Model name			U50-5			
Type			Cab			
			Steel crawler			
Machine weight*			kg	5020		
Operating weight**			kg	5095		
Bucket (KUBOTA)	Volume (CECE)			m³	0.13	
	Width with teeth			mm	595	
Engine	Type		Vertical, water cooled 4-cycle diesel engine			
	Model name		D1803-CR-TE5-BH			
	Displacement		cm³	1826		
	Engine performance (ISO 14396)		kW	29.7		
	Rated speed		1/min	2200		
	CO₂emission*** (Engine family KKBXL01.8E1D)	Non-road transient test cycle		g/kWh	798.1	
		Non-road steady-state test circle		g/kWh	776.7	
Performance	Swivel frame swivel speed		1/min	9.2		
	Vehicle speed		Fast speed km/h	4.9		
			Slow speed km/h	2.8		
	Ground pressure (without operator)		kPa	28.7		
	Climbing performance		% (degrees)	36 (20)		
	Max. lateral sway		% (degrees)	27 (15)		
Dozer	(width x height)		mm	1960 x 410		
Swing angle of the boom	Left	degrees		70		
	Right	degrees		53		
AUX port 1	Max. flow rate (theoretical)	l/min		65		
	Max. pressure	MPa (bar)		20.6 (206)		
AUX port 2	Max. flow rate (theoretical)	l/min		37		
	Max. pressure	MPa (bar)		20.6 (206)		
Fuel tank capacity			l	66		
Pulling capacity at the towing eyes			N	74900		
Vertical load at the towing eyes			N	13000		
Noise level	LpA	dB (A)		71		
	LwA (2000/14/EC)	dB (A)		96		

Description of the machine

Vibration ****	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	< 0.5
		Idling	m/s ² RMS	< 0.5

* Prepared for operation with original KUBOTA bucket 119 kg.

** Machine weight, incl. operator 75 kg.

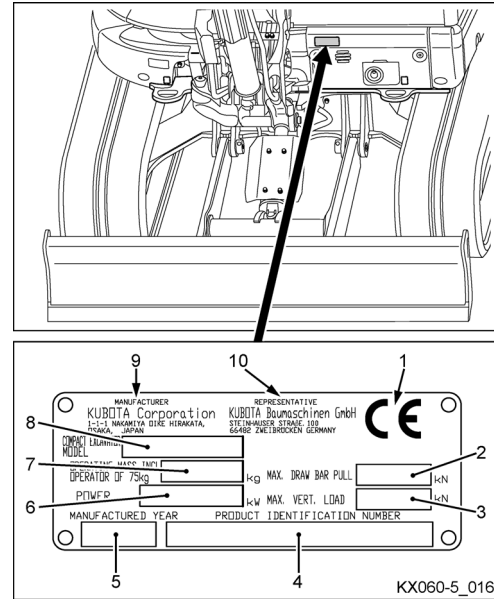
*** This CO₂ measurement results from testing over a fixed test cycle under laboratory conditions a(n) (parent) engine representative of the engine type (engine family) and shall not imply or express any guarantee of the performance of a particular engine.

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

Identification of the machine

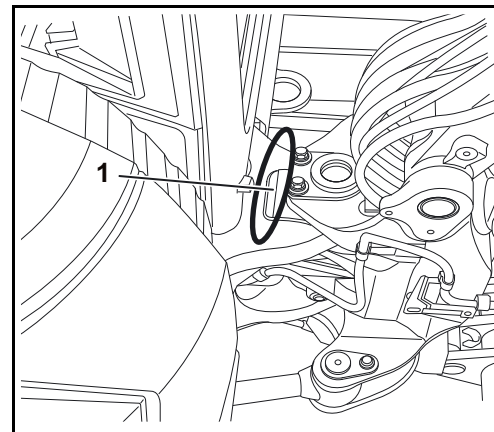
The type plate of the machine is located at the front of the swivel frame. The owner should enter the stamped data in the field on the back of the front cover.

1. CE label
2. Max. pulling capacity at the towing eyes
3. Max. vertical load at the towing eyes
4. Product identification number
5. Year of construction
6. Engine performance
7. Operating weight
8. Model name
9. Manufacturer
10. Representative



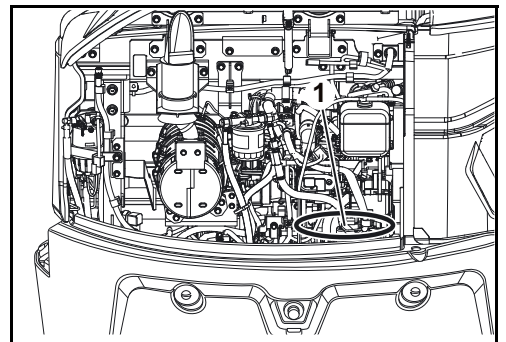
Product identification number

The machine's product identification number (1) is stamped on the swivel frame near the swing bracket.



Engine number

The engine number (1) is affixed to the engine block.



Standard equipment

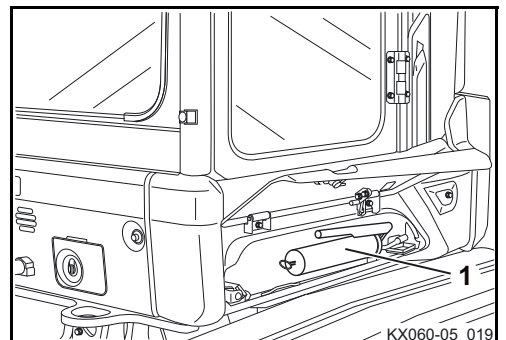
This model has the following standard equipment:

- Operating instructions with protective cover
- Spare parts catalogue
- Filter wrench
- Grease gun
- Spare fuses (30 A, 50 A, 80 A)
- Guarantee

Stow the filter wrench and other tools in the tool compartment (page 63).

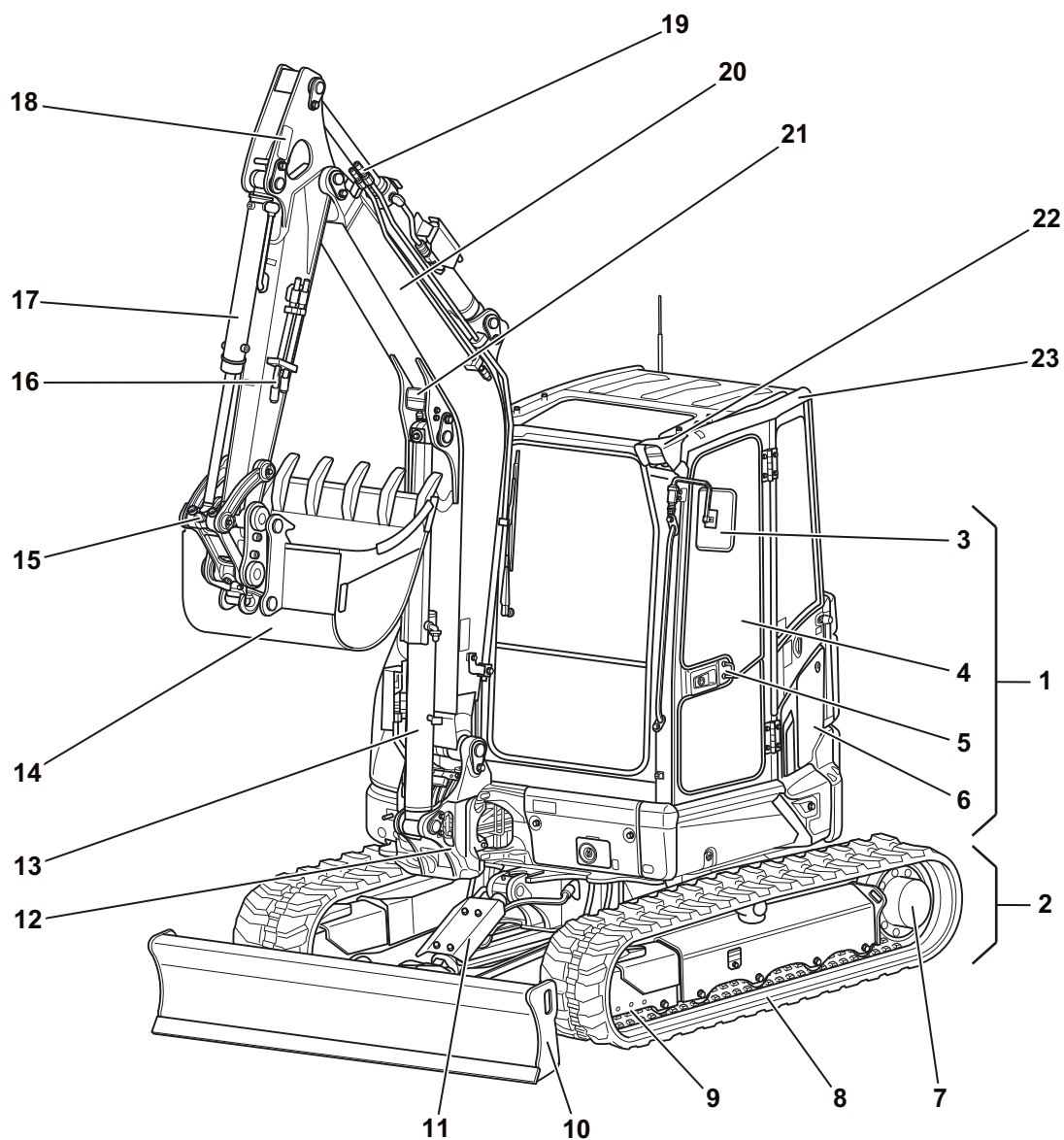
The spare parts catalogue, guarantee and spare fuses can be stowed together with the operating instructions (page 12).

Stow the grease gun (1) under the left swivel cover.



ASSEMBLY AND FUNCTIONS

Component overview

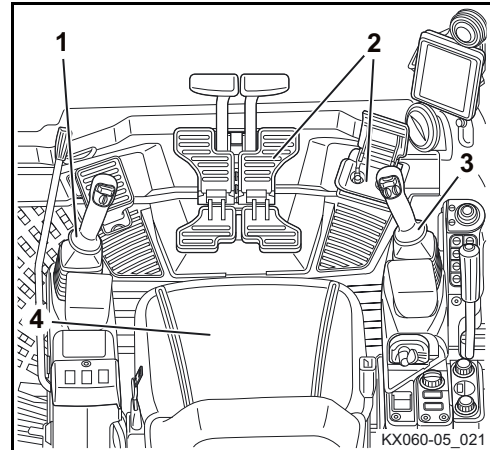


- | | |
|---------------------|-------------------------------|
| 1. Swivel frame | 13. Boom cylinder |
| 2. Track frame | 14. Bucket |
| 3. Rear view mirror | 15. Bucket linkage |
| 4. Operator's place | 16. Auxiliary port connectors |
| 5. Cab door | 17. Bucket cylinder |
| 6. tank filler neck | 18. Arm |
| 7. Drive sprocket | 19. Arm cylinder |
| 8. Crawler | 20. Boom |
| 9. Front idler | 21. Working light (boom) |
| 10. Dozer | 22. Working lights (cab) |
| 11. Dozer cylinder | 23. Cab |
| 12. Swing block | |

Operator's place

The operator's place is located in the middle of the cab. It includes the following control elements:

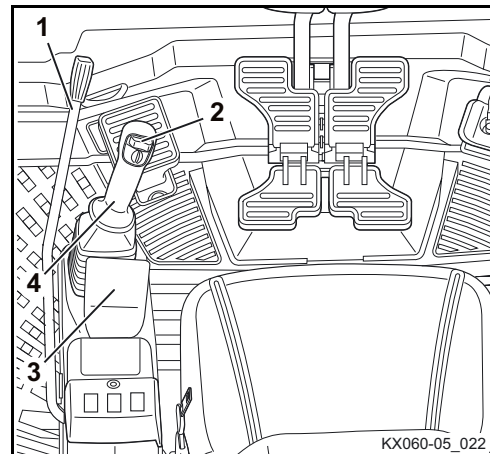
1. Left control console
2. Drive levers and control pedals
3. Right control console
4. Operator's seat



Left control console

The left control console includes the following components:

1. Control lever lock
2. Rocker switch for auxiliary port 2 (optional)
3. Wrist rest
4. Left control lever



Description of the components of the left control console

1. Control lever lock

To enter and leave the cab, the console must be raised by pulling up the control lever lock. The engine can only be started if the console is raised. The hydraulic functions of the control lever, the drive lever, the boom swing pedal, the dozer control lever and the auxiliary port are locked.

2. Rocker switch for auxiliary port 2 (optional)

The rocker switch for auxiliary port 2 controls the oil flow to auxiliary port 2. Turning the rocker switch to the left causes the oil to flow towards the connector on the left-hand side of the arm. Turning the rocker switch to the right causes the oil to flow towards the connector on the right-hand side of the arm. Auxiliary port 2 can be controlled proportionally (infinitely variable).

3. Wrist rest

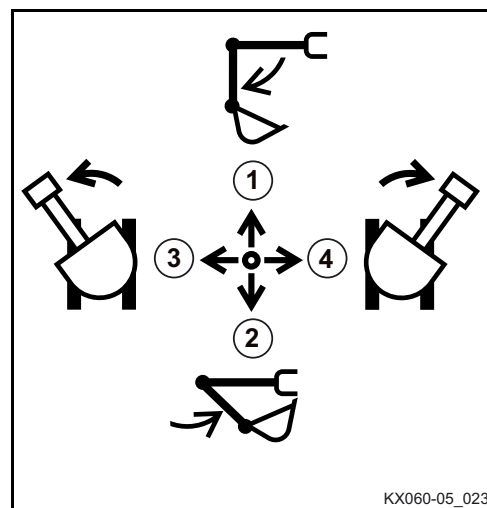
The wrist rest allows fatigue-free operation of the control lever.

4. Left control lever

The left control lever is used to move the swivel frame and the arm.

The figure, in conjunction with the following table, shows the functions of the left control lever.

Position of control lever	Movement
1	Arm dump
2	Arm crowd
3	Swivel frame to the left
4	Swivel frame to the right



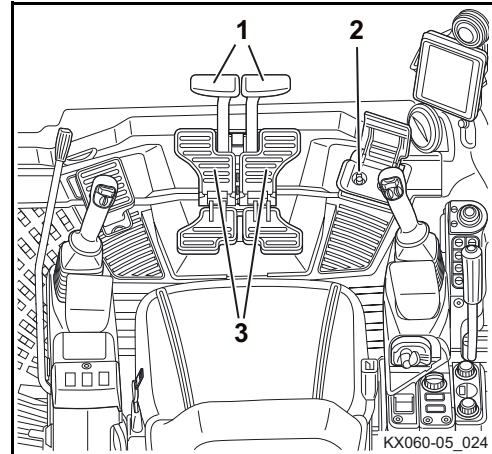
Drive levers and control pedals

Drive levers and control pedals include the following components:

1. Left and right drive levers
2. Boom swing pedal
3. Pedals for the left and right crawler

Drive levers and control pedals – description

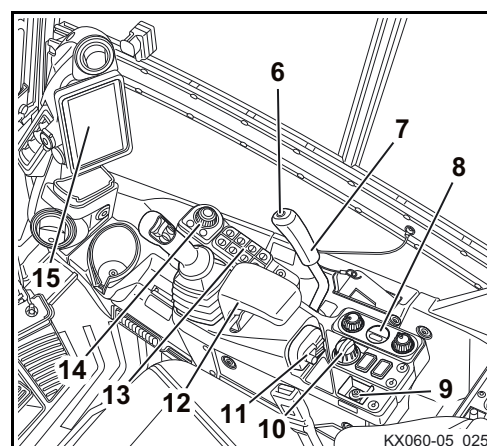
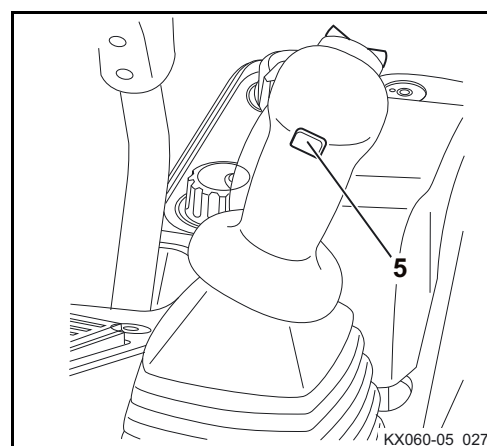
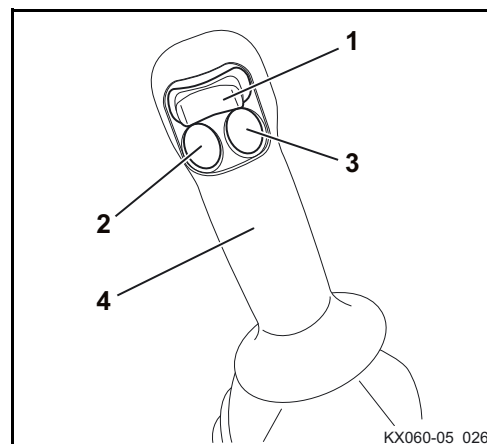
- 1. Left and right drive levers**
With the drive levers the machine can be driven forwards and backwards and also turned. The left drive lever controls the left track and the right drive lever controls the right track.
- 2. Boom swing pedal**
This pedal is used to swing the boom right and left.
- 3. Pedals for the left and right crawler**
The pedals allow the operator to foot-control the drive levers.



Right control console

The right-hand control console contains the following components:

1. Rocker switch for the auxiliary port 1
2. Horn switch
3. Auxiliary port enable switch
4. Right control lever
5. One way hold switch
6. Travel speed switch
7. Dozer control lever
8. Heating and air-conditioner control (optional)
9. Inhibit switch
10. Potentiometer for the adjustment of the engine speed
11. Starter switch
12. Wrist rest
13. Keypad switch
14. Dial switch
15. Display



Description of the components of the right control console

1. Rocker switch for the auxiliary port 1

The rocker switch for auxiliary port 1 controls the oil flow to auxiliary port 1. Turning the rocker switch to the left causes the oil to flow towards the connector on the left-hand side of the arm. Turning the rocker switch to the right causes the oil to flow towards the connector on the right-hand side of the arm. Auxiliary port 1 can be controlled proportionally (infinitely variable).

2. Horn switch

Depressing the horn switch activates the horn.

3. Auxiliary port enable switch

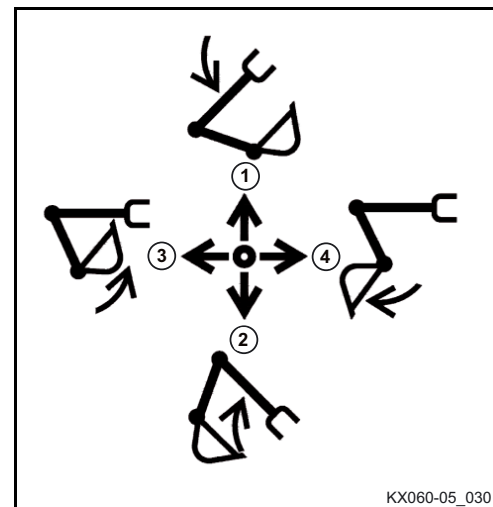
The auxiliary port enable switch activates the auxiliary port function.

4. Right control lever

The right control lever is used to move the boom and the bucket.

The figure, in conjunction with the following table, shows the functions of the right control lever.

Position of control lever	Movement
1	Lower boom
2	Raise boom
3	Bucket crowd
4	Bucket dump



5. One way hold switch

Operating the one way hold switch results in a continuous oil flow to the auxiliary port connector to the left of the arm. When you operate it again, the oil flow discontinues. You can therefore operate an attachment without having to continuously hold down the button.



The attachment can move in an uncontrolled and sudden manner, there is a danger to life in the working area!

When using accessories that are not suitable for continuous oil flows (e.g. Powertilt), using the one-way hold switch poses a danger to life!

The auxiliary port cannot be operated proportionally with the one-way hold switch. The flow volume is adjusted to the highest level in the factory.

- *Before using the one-way hold switch, check that the accessory is suitable for use with continuous oil flows.*
- *Before using the one-way hold switch, make sure that nobody is in the working area.*
- *The flow volume of the auxiliary port must be adapted to the accessory.*

6. Travel speed switch

Switches the travel speed mode on and off.

7. Dozer control lever

The dozer control lever is used to raise or lower the dozer. Pushing the lever forward lowers the dozer and pulling it back raises it. Pushing the lever forward through the noticeable resistance moves the dozer into floating position.

8. Heating and air-conditioner control (optional)

Operate the heater and the air-conditioner using the heating and air-conditioner control (optional).

9. Inhibit switch

The inhibit switch (DPF = diesel particle filter) is used to lock and release the automatic particle filter regeneration. The particle filter regeneration must be locked under certain working conditions. For example, when working close to people, animals, plants and/or flammable materials, the particle filter regeneration should be locked.

10. Potentiometer for the adjustment of the engine speed

The operator can use this potentiometer to set the engine RPM to any desired speed.

11. Starter switch

The starter switch serves as the master switch for the entire machine and as switch for preglowing and starting the engine.

12. Wrist rest

The wrist rest allows fatigue-free operation of the control lever.

13. Keypad switch

The functions of the keypad switch are described in the "Keypad switch - description" section (page 60).

14. Dial switch

The switch is used to select the on-screen display and to change settings.

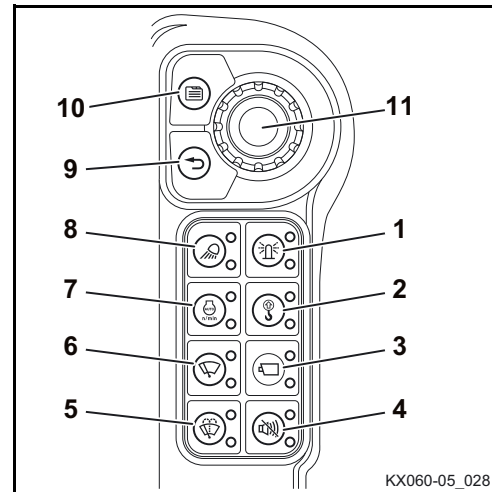
15. Display

The functions of the display are described in the "Description of the display" section (page 61).

Keypad switch

The keypad switch and the dial switch contains the following switches:

1. Rotary beacon switch
2. Overload warning switch
3. Camera switch
4. Travel alarm cancel switch
5. Washer switch
6. Wiper switch
7. AUTO IDLE switch
8. Working light switch
9. Return switch
10. Menu switch
11. Jog dial and Enter key



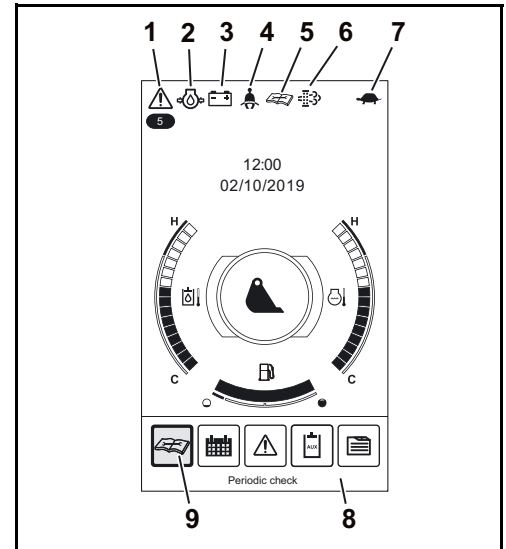
Keypad switch description

- 1. Rotary beacon switch**
This switch activates and deactivates the rotary beacon (optional).
- 2. Overload warning switch**
The overload warning switch activates the overload warning system.
- 3. Camera switch**
Displays image of camera (optional) on the display.
- 4. Travel alarm cancel switch**
Cancels travel alarm (optional).
- 5. Washer switch**
Switches the washer system.
- 6. Wiper switch**
Switches on the wiper for the front window.
- 7. AUTO IDLE switch**
Using the switch you can switch the AUTO IDLE control on or off. The AUTO IDLE control makes sure that the engine speed pre-selected with the potentiometer drops down to idle speed after approx. 4 seconds - provided that no control is being used. Immediately upon activating a control, the engine speed will be immediately set to the preselected speed. When the AUTO IDLE control is activated the indicator inside the switch lights up.
- 8. Working light switch**
Switches the working lights on and off.
- 9. Return switch**
The current display gets interrupted and goes back to the previous one.
- 10. Menu switch**
The menu bar gets displayed.
- 11. Jog dial and Enter key**
An item gets selected and saved through display operation.

Display

The display contains the following displays and indicators:

1. Warning light
2. Engine oil pressure indicator
3. Charge indicator
4. Seat belt indicator
5. Maintenance indicator
6. DPF-related indicator
7. Travel speed indicator
8. Menu bar
9. Cursor



Description of the display

The display is multifunctional. You will find detailed descriptions of the individual functions in the respective chapters.

1. Warning light

The warning light flashes red when a system fault or technical malfunction occurs. The warning light flashes yellow when the system issues a warning.



Operations must cease immediately when the warning light flashes red.

2. Engine oil pressure indicator

The engine oil pressure indicator lights up when the oil pressure is below the reference value.

3. Charge indicator

The charge indicator lights up when the charging circuit voltage is too low.

4. Seat belt indicator

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

5. Maintenance indicator

The maintenance indicator lights up when a service period is due.

6. DPF-related indicator

Depending on situations, the DPF-related regeneration status, rpm boost command or regeneration disable indications are displayed.

7. Travel speed indicator

Travel speed mode is displayed.

8. Menu bar

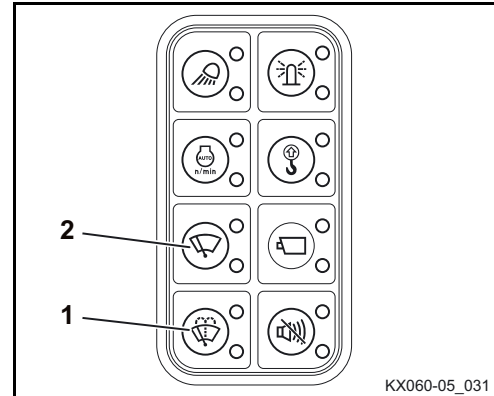
Move the cursor (9) to the desired icon and press the enter key. The desired setting will appear.

Other equipment to be found at the machine

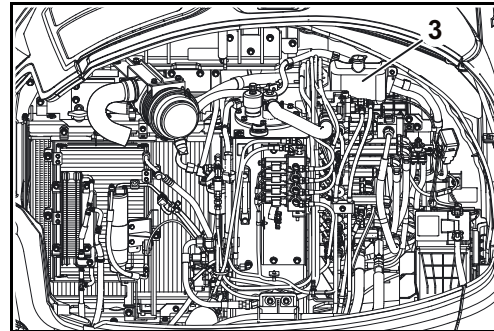
Other equipment located at and around the machine is described below.

Wiper/washer system

The front window is provided with a wiper/washer system. The system is operated with the washer switch (1) and wiper switch (2).

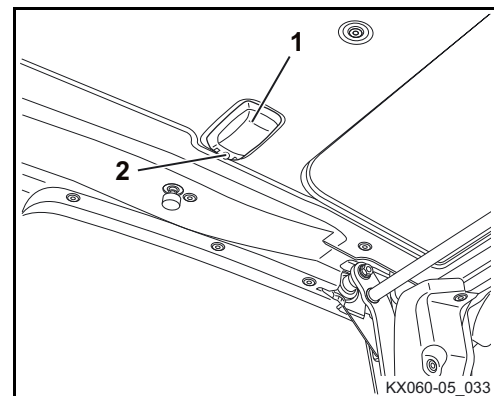


The washer system reservoir (3) is located on the right vehicle side under the side cover.



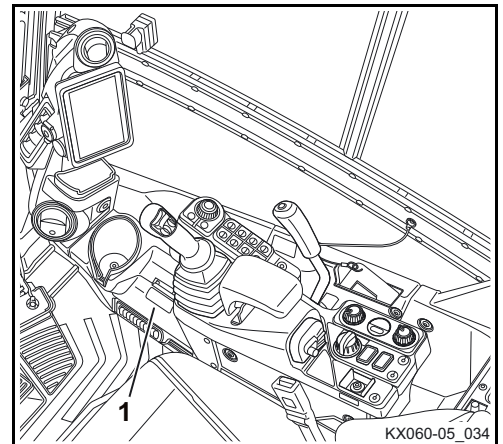
Interior lighting

An interior light (1) is located on the left side of the cab roof. It is turned on and off with the switch (2).



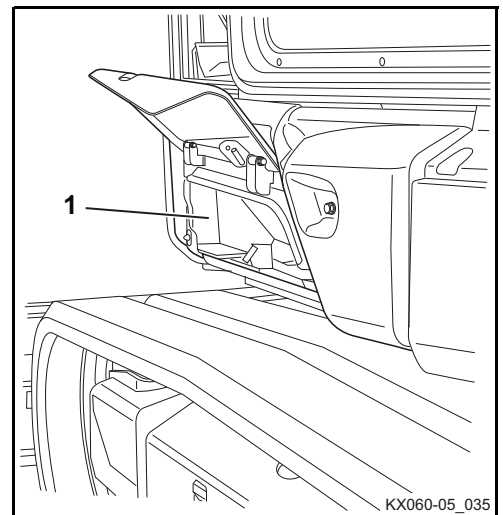
Fuse box

The fuse box (1) is located behind the right-side cover in the cabin.



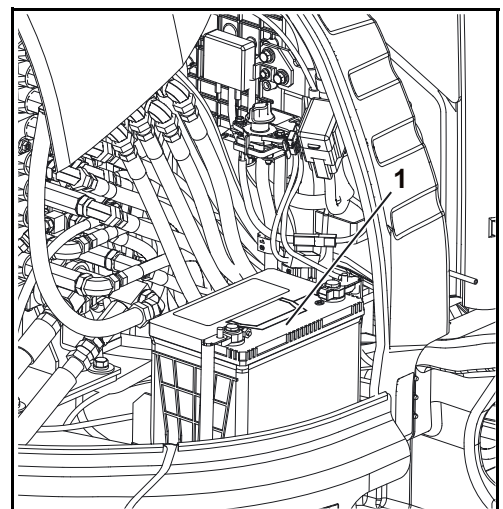
Tool compartment

The tool compartment (1) is located behind the left swivel cover.



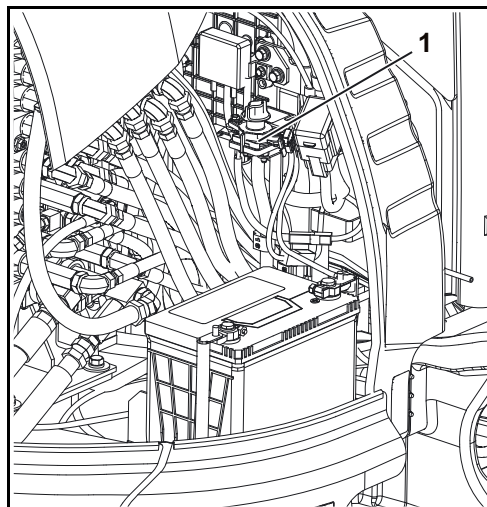
Main battery

The main battery (1) is located on the right side of the vehicle under the side cover.



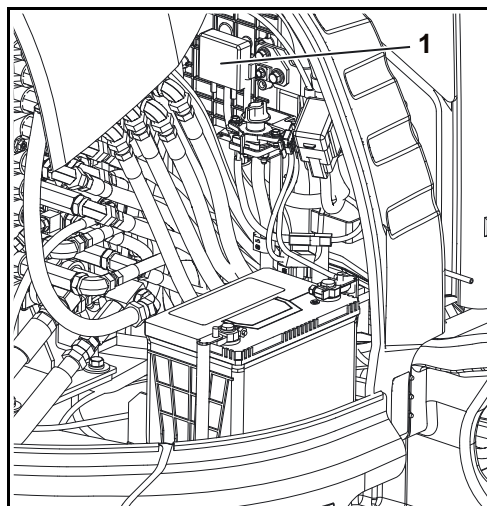
Battery isolator

The battery isolator (1) can be used to cut off the main power circuit. The battery isolator is located on the right vehicle side under the side cover.



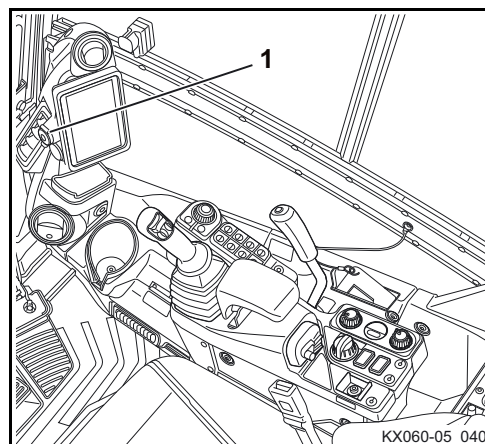
Main fuses

The main fuses (1) of the machine are situated above the battery.



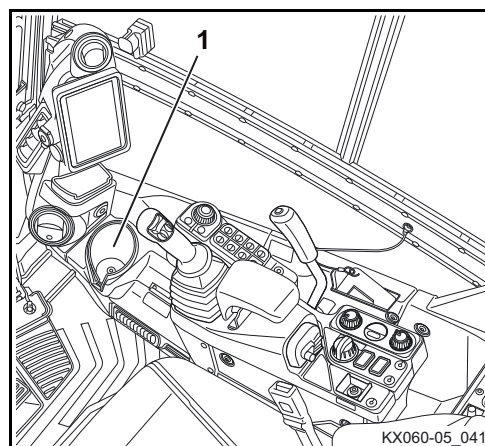
12-V electrical outlet

A 12-V electrical outlet (1) for the connection of an external electric device is located on the right front inside the cabin.



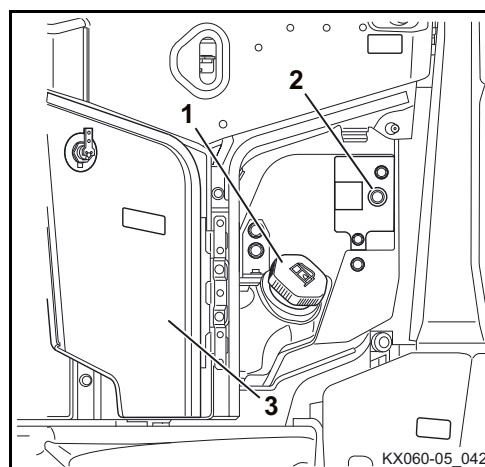
Cup holder

The cup holder is located on the right side in the cabin.



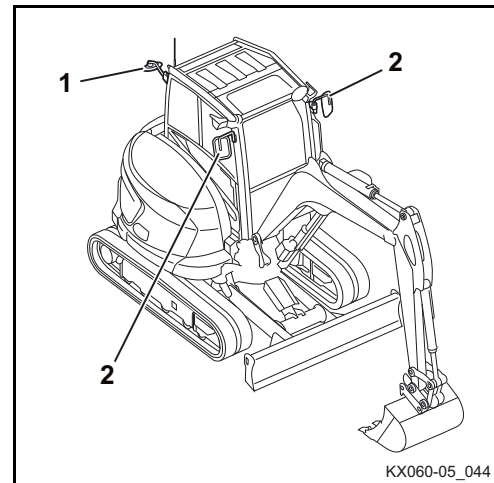
Tank filler neck and fill level monitor

The tank filler neck (1) and the fill level monitor (2) are located below the left service cover (3).



Rear view mirror

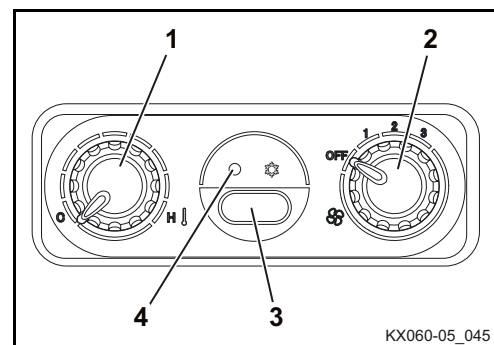
The rear view mirror (1) allows visibility down towards the rear of the machine. The front rear view mirrors (2) allows visibility to the rear. The rear view mirrors can be adjusted for optimum visibility of the respective areas.



Heating and air-conditioning system (optional)

The heating controls are on the right control console. The control panel includes the following components:

1. Temperature control
2. Blower switch
3. Air-conditioner switch (optional)
4. Indicator (optional)



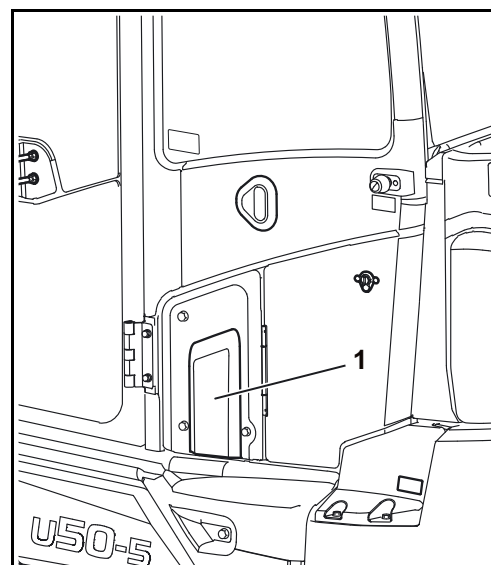
Using the air-conditioner switch, you can switch on the air-conditioner when the starter switch is in the RUN position and the fan is switched on. Operation of the air-conditioner system (optional) is indicated by the indicator.

Using the temperature control, you can set the air temperature to the desired value.

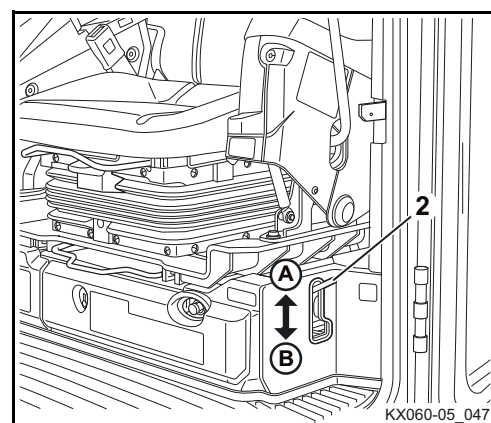
Using the blower switch, you can control the air flow in three stages, with stage 3 having the maximum air flow.

Assembly and functions

The air is drawn in through an interior air filter, either as fresh air via the intake (1) to the left of the cab or as re-circulated air in the cab.



The lever (2) can be used to switch the air intake between re-circulated air (A) and fresh air (B).

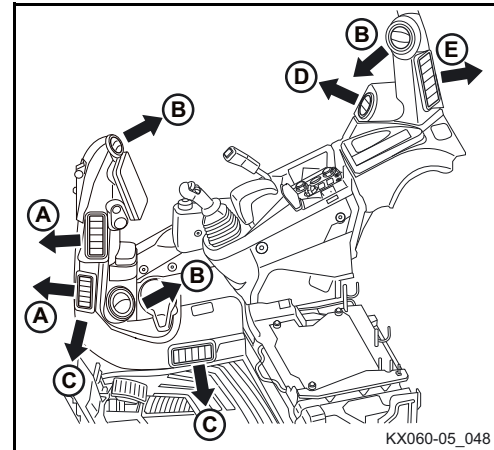


To make sure the air gets sucked in properly from the cab, do not obstruct the interior air filter with objects (such as bags or clothes).

The air is conducted via the heat exchanger and/or the evaporator of the air-conditioner assembly (optional) to the air nozzles.

A → Windshield
 B → Operator
 C → Leg room
 D → Side window
 E → Rear window

- Be careful not to allow foreign substances to come into the blower fan of the air-conditioning/heater unit.
- Do not get the register's temperature fuse short-circuited.
- Do not get the blower motor's fuse short-circuited.
- The air-conditioning/heater unit proper is not waterproof.

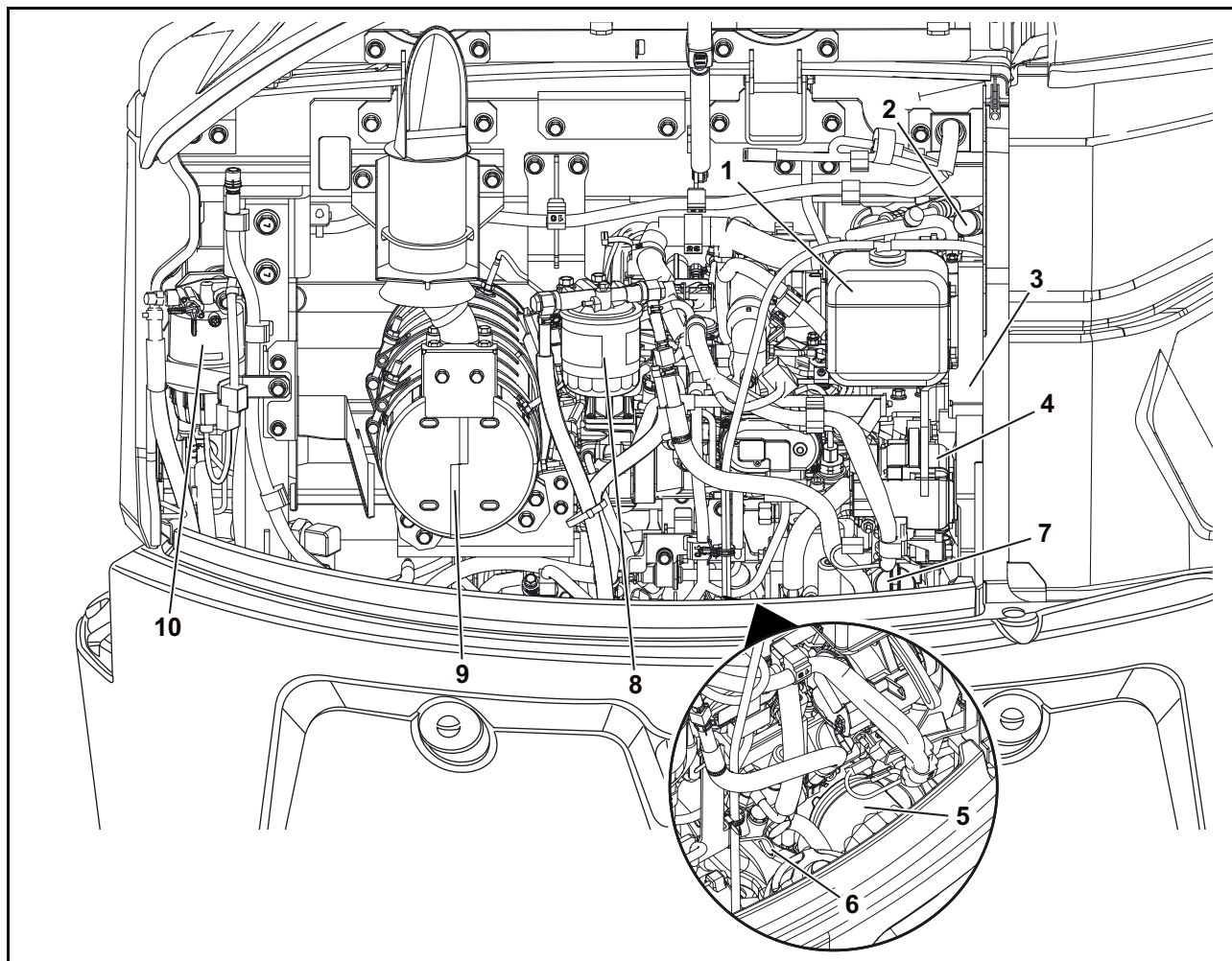


In the following cases, pay attention not to get the air-conditioning/heater unit exposed to water.

- Drinking water or the like has spilt over the seat mount.
- The cabin window(s) is (are) kept open in the rain.
- Before cleaning the floor/seat mount.
- After maintenance, do not forget to reinstall the air-conditioner filter in position.

Engine compartment

The engine compartment (figure below) is positioned at the rear of the swivel frame; it is covered by a lockable hinged cover.



1. Coolant expansion reservoir
2. Filter indicator
3. V-belt cover
4. Alternator
5. Oil filter

6. Oil dipstick
7. Oil filler opening
8. Fuel filter
9. Muffler / particle filter
10. Water separator

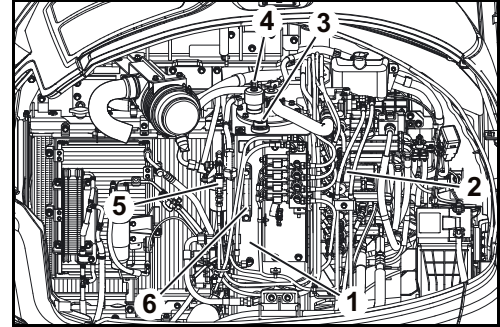
Hydraulic system

All controls enable the functions via a hydraulic oil pilot control circuit.

The accumulator allows the boom and the arm to be lowered in case of an engine failure.

The hydraulic oil tank contains the suction filter and the return filter.

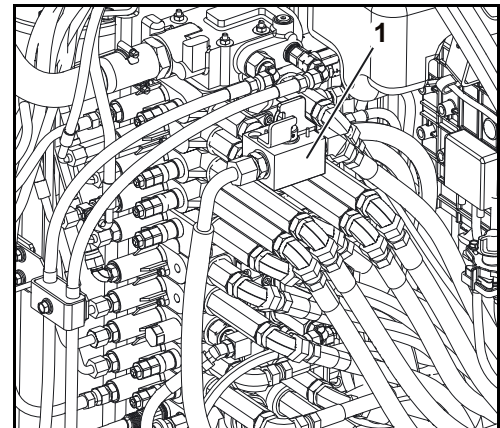
1. Hydraulic oil tank
2. Control valve
3. Plug
4. Air breather
5. Pilot circuit filter
6. Sight glass for hydraulic oil level



Return change valve for direct return flow

According to the mode of operation of a given attachment, the return flow of the hydraulic oil must occur either via the control valve (indirect return flow) or directly to the hydraulic oil tank (direct return flow).

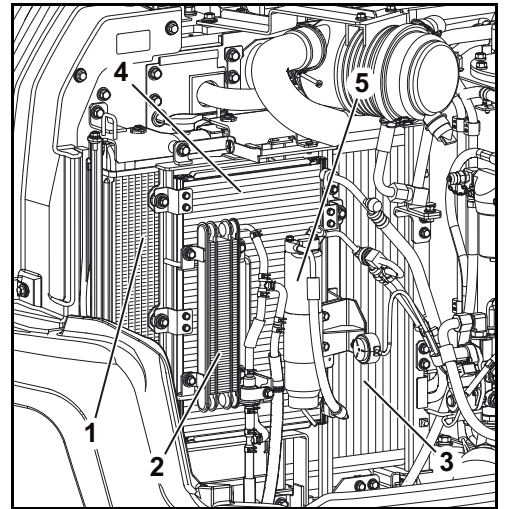
The change valve direct return flow (1) is used to toggle the setting between „indirect return flow“ and „direct return flow“. The return change valve for direct return flow (1) is located under the valve chamber on the right-hand side of the vehicle.



Radiator and condenser

The radiator and condenser for the cooling circuits and the air-conditioner system are under the right side cover.

1. Coolant radiator
2. Fuel cooler
3. Hydraulic oil radiator
4. Condenser (air-conditioner)
5. Liquid reservoir and dryer (air-conditioner)



OPERATION

Safety rules for operation

- The safety instructions (page 13) must be followed.
- The machine may only be operated according to its approved use (page 16).
- The machine may only be operated by instructed or trained personnel (page 11).
- Do not operate the machine when under the influence of drugs, medication or alcohol. Stop operation when getting tired. The operator must be physically capable of operating the machine safely.
- The machine should only be operated if all protective devices are fully operational.
- Before starting or working with the machine, make sure that there is no danger for any person nearby.
- Before starting the machine, it must be checked for external damage and operability, and the pre-start checks must be carried out. If failures are detected, the machine should only be taken into operation after the failures have been repaired.
- Wear tightly fitting working clothes in accordance with the trade association regulations.
- During the operation of the machine, nobody except the operator is allowed to be inside the cab or get on the machine.
- For getting on and off, the swivel frame should be positioned in an angle which allows the operator to use the crawler or the step (if applicable) to enter the cab.
- Always stop the engine when leaving the cab. In exceptional cases, e.g. for troubleshooting, the cab can also be left with the engine running. The operator must make sure that the left control console remains in an upright position. The controls may only be used while the operator is sitting on the operator's seat.
- During operation, it is forbidden to stretch any part of the body out of the window or cab door, such as arms, legs, or the body.
- Prior to leaving the machine (e.g. for breaks or at the end of work) if at all possible park the machine on a firm, flat and level ground, lower the attachment to the ground, place all control levers into neutral, switch off the engine, set the parking brake, and prevent the machine from being restarted by taking the key.
- Whenever work is interrupted, the bucket must always be lowered to the ground.
- Do not allow the engine to run indoors, unless the room is equipped with an exhaust gas extraction system or otherwise well ventilated. The exhaust gas contains carbon monoxide, a colourless, odourless, and lethal gas.
- Never crawl under the machine before the engine is stopped, the key is removed and the machine is secured against moving.
- Never crawl under the machine if it is only raised with the bucket or the dozer. Always use suitable supports.
- To increase the machine's stability, we recommend lowering the bulldozer blade onto the ground. The dozer may only be used to increase stability if the dozer cylinder is equipped with a pipe safety valve.
- The dozer control lever must not be moved into floating position in the process. The machine's stability is not increased by the dozer while in the floating position.

Safety for children



Children are normally attracted to machines and their normal operation. If children are in the vicinity of the machine and are not at a suitable distance and in the field of vision of the operator, this can lead to serious accidents or even death of the children.

Always observe the following rules of conduct:

- Never assume that children will remain where you last saw them.
- Keep children far away from the working area and always under the supervision of other responsible adults.
- Be vigilant and switch the machine off when children enter the working area.
- Never let children drive with you on your machine, there is no safe place for passengers. Children could fall off the machine and be run over or affect the control of the machine.
- Children must never operate the machine, even under supervision of an adult.
- Never let children play on the machine or attachments.
- Be particularly careful when manoeuvring. Look behind and down below on the machine and ensure that there are no children in the manoeuvring area.
- Before leaving the machine, park it so that it cannot move. When leaving the machine (e.g. for breaks or at the end of work), stop the engine, remove the key and close the cab door, if present.

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 the necessary signals.
- The guide's position must be clearly visible by the operator.
- The operator must stop the machine immediately if the eye contact to the guide is interrupted.
→ As a rule, either the machine or the guide may move, never both at once!

Working in the vicinity of overhead power lines

When working with the machine in the vicinity of overhead power lines and tram lines, a minimum distance as specified in the following table must be maintained between the machine and its attachments and the power line. The owner of the machine or the person responsible for the work must ensure local, regional and national regulations are observed.

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

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

When approaching overhead power lines, any possible movements of the machine must be taken into consideration.

Unevenness of the ground or sloping the machine can reduce the safe distance.

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

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

Working in the vicinity of underground power lines

Before starting with excavation work, the owner of the machine or the person responsible for the 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 be determined.

If power lines are encountered or accidentally damaged, the operator must stop working immediately and inform the responsible person.

Initial operation

Before initial operation, the machine 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 (page 171).
- For a description of all operation features refer to the "Operating the machine" section (page 83) as well as the following sections.

If failures are detected, please inform your dealer immediately.

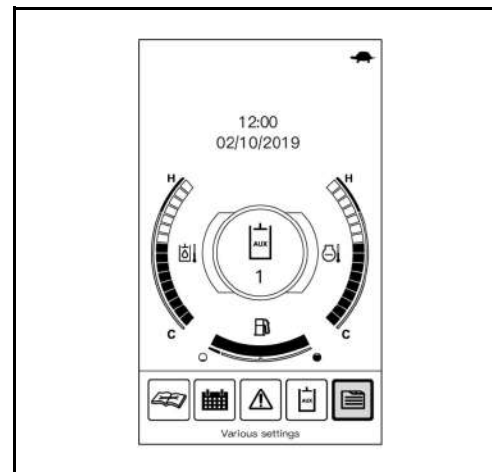
Setting the display language

Messages in the display can be shown in 11 languages.

- Turn the starter switch to the RUN position.
- Press menu switch on dial switch.

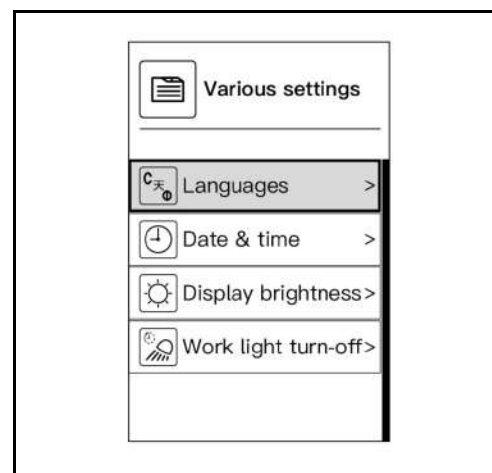
The menu bar appears in the display.

- Rotate jog dial to the right until "Various settings" is selected in the display.
- Press Jog dial (enter switch).



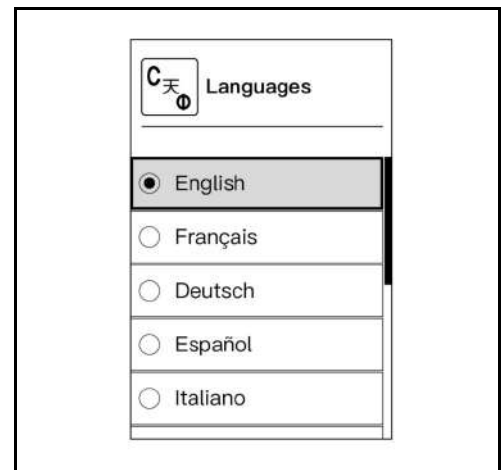
The Various settings appears in the display.
("Languages" is selected.)

- Press Jog dial (enter switch).



The list of available languages appears in the display.

- Rotate jog dial to the right or the left until the desired language is selected.
- Press jog dial (enter switch) to confirm.



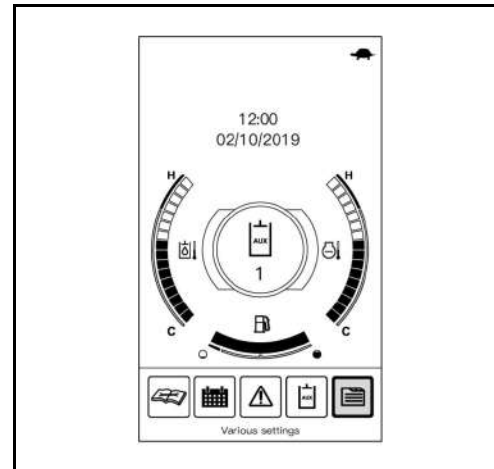
Setting the date/time

- Turn the starter switch to the RUN position.
- Press menu switch on dial switch.

The menu bar appears in the display.

- Rotate jog dial to the right until "Various settings" is selected in the display.
- Press Jog dial (enter switch).

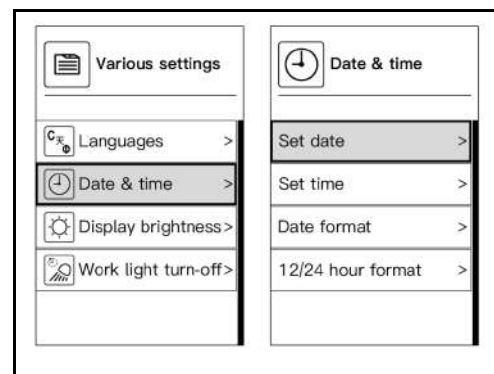
The Various settings appears in the display.



- Rotate jog dial to the right until "Date & time" is selected in the display.
- Press Jog dial (enter switch).

The "Date & time" menu appears in the display.

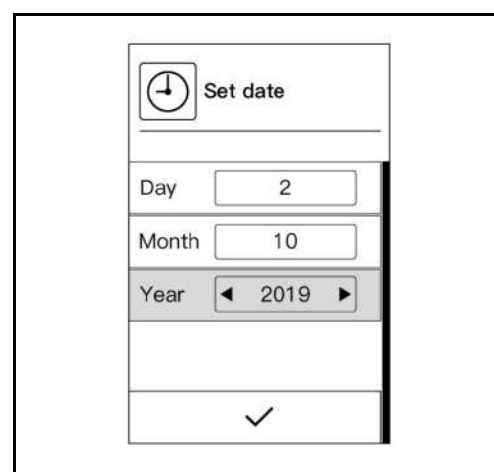
- Rotate jog dial to the right or the left until "Set date" / "Set time" is selected.
- Press Jog dial (enter switch).
- "Set date" / "Set time" screen appears in the display.
- Rotate jog dial to the right or the left until the desired unit is selected.
- Press Jog dial (enter switch).
- Rotate jog dial to the right or the left to decrease or increase the numerical value.
- Press jog dial (enter switch) to confirm the desired unit.
- Rotate jog dial to the right or the left until ✓ (icon of acknowledge) is selected in the display.
- Press jog dial (enter switch) to complete "Set date" / "Set time".



Input can be cancelled at any time. Changes are then not saved.

- To cancel your input, press return switch.

The display returns to its previous display mode.



Date and time display format

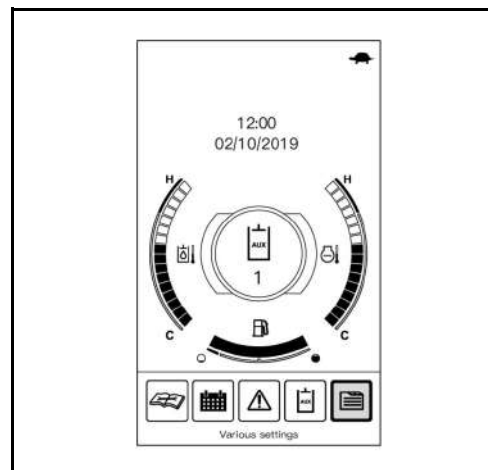
Time can be displayed in the 12- or 24-hour format, while the date format can be changed to day, month, year.

- Turn the starter switch to the RUN position.
- Press menu switch on dial switch.

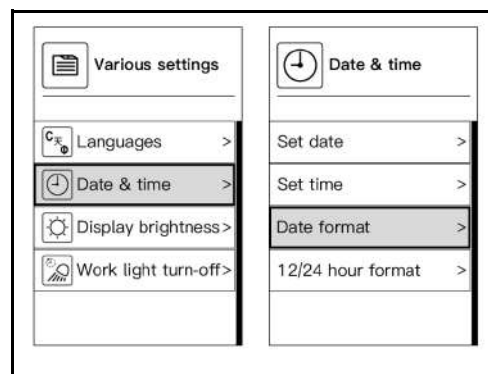
The menu bar appears in the display.

- Rotate jog dial to the right until “Various settings” is selected in the display.

Press Jog dial (enter switch).

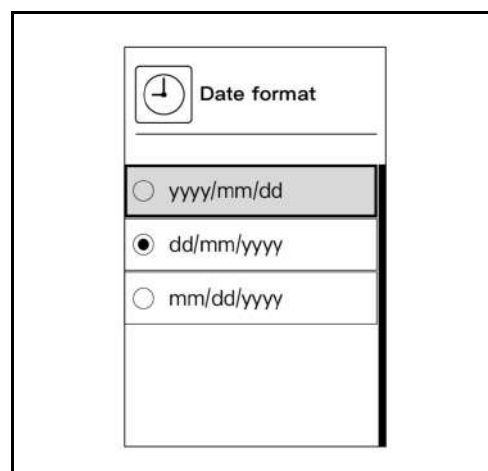


- The Various settings appears in the display.
- Rotate jog dial to the right until “Date & time” is selected in the display.
- Press Jog dial (enter switch).
- The “Date & time” menu appears in the display.
- Rotate jog dial to the right or the left until “Date format” / “12/24 hour format” is selected.
- Press Jog dial (enter switch).



“Date format” / “12/24 hour format” setting screen appears in the display.

- Rotate jog dial to the right or the left until the desired format is selected.
- Press jog dial (enter switch) to confirm.



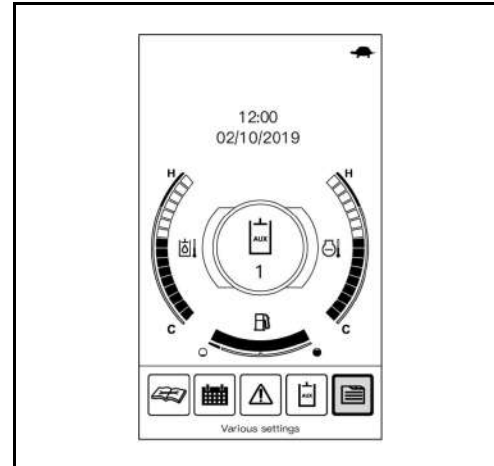
Setting the display brightness

The display brightness is presettable in 10 levels. This brightness setting can be made separately for the working light turn-on and turn-off states.

- Press menu switch on dial switch.

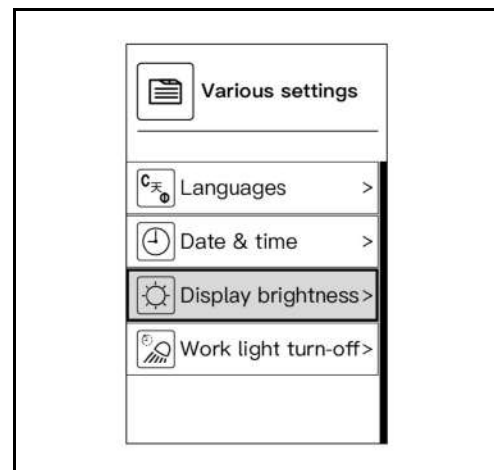
The menu bar appears in the display.

- Rotate jog dial to the right until “Various settings” is selected in the display.
- Press Jog dial (enter switch).



The Various settings appears in the display.

- Rotate jog dial to the right until “Display brightness” is selected in the display.
- Press Jog dial (enter switch).
- “Display brightness” setting screen appears in the display.
- Rotate jog dial to the right or the left until the desired mode is selected.



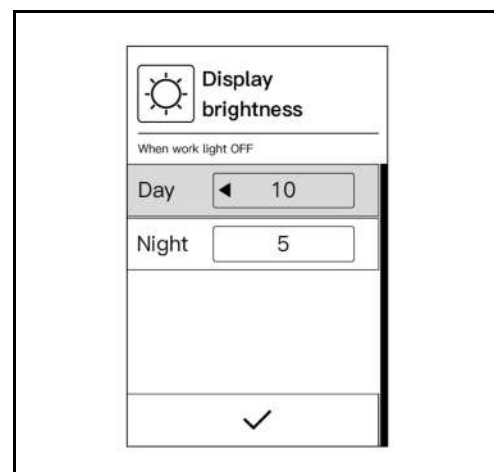
The “Day” brightness setting is for the working light turn-off state, and the “Night” one is for the working light turn-on state.

Default setting:

Day: 10

Night: 5

- Press Jog dial (enter switch).
- Rotate jog dial to the right or the left to increase or decrease the numerical value.
- Press jog dial (enter switch) to confirm the desired mode.
- Rotate jog dial to the right until ✓ (icon of acknowledge) is selected in the display.



- Press jog dial (enter switch) to complete “Display brightness” setting.



Input can be cancelled at any time. Changes are then not saved.

- To cancel your input, press return switch.

The display returns to its previous display mode.

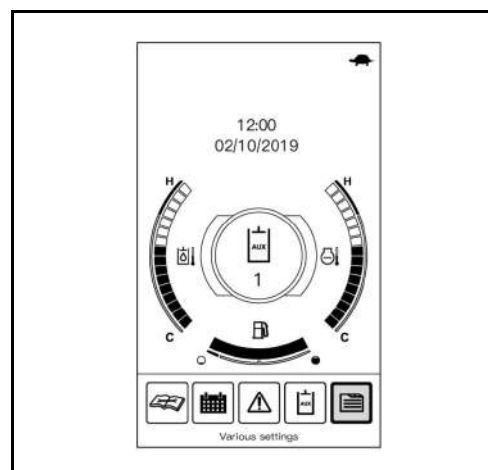
Setting the work light turn-off delay function

The working light turn-off can be delayed for a given time after turning off the key. To turn off the working light in preference to this turn-off delay function, you may use the working light switch.

- Press menu switch on dial switch.

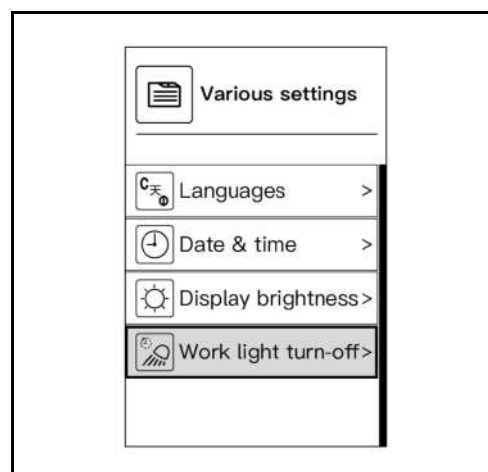
The menu bar appears in the display.

- Rotate jog dial to the right until “Various settings” is selected in the display.
- Press Jog dial (enter switch).



The Various settings appears in the display.

- Rotate jog dial to the right until “Work light turn-off delay” is selected in the display.
- Press Jog dial (enter switch).

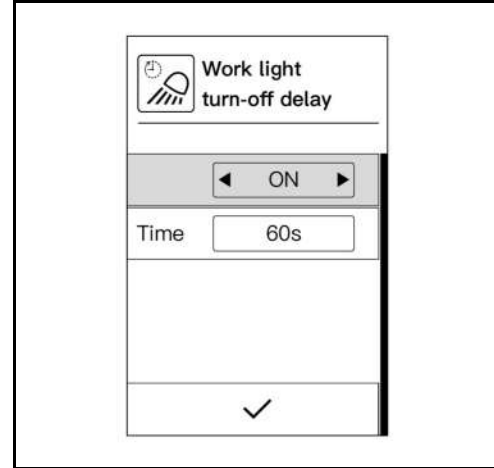


“Work light turn-off delay” setting screen appears in the display.

- Rotate jog dial to the right or the left until the desired item is selected.
- Rotate jog dial to the right or the left to select ON/OFF or the delay time.
- Press jog dial (enter switch) to confirm the desired item.



Before making a “Delay time” setting, enable the “Work light turn-off delay” function. The “Delay time” setting can be made in 30-second increments from 30 up to 120 seconds.



- Rotate jog dial to the right or the left until ✓ (icon of acknowledgment) is selected in the display.
- Press jog dial (enter switch) to complete “Work light turn-off delay” setting.



Input can be cancelled at any time. Changes are then not saved.

- To cancel your input, press return switch.

The display returns to its previous display mode.

Running-in of the machine

During the first 50 hours of operation, the following points should be adhered to in all cases:

- Warm up the machine at an average engine speed and with a low load; do not let it warm up at idling position.
- Do not overload the machine.

Special maintenance instructions



Damage to equipment due to contaminated grease!

The grease plays a particular and important role in the running-in of the machine. The movable components are not yet broken in and generate many fine particles in the initial hours of operation that drop into the grease. Changing the oil in due time removes the abraded metal particles, prevents damage to equipment and preserves the service life of the components.

- Observe and adhere to oil change intervals!

- Change the oil in the final drives after the first 50 service hours.

Operating the machine

For a safe machine operation, see the following sections.

Pre-operational services



For the performance of the services, the machine must be parked on level ground and the key must be removed.

- Open the side cover (page 155).
- Open the engine compartment cover (page 154).



Close all covers after the work has been done.

Walk-around inspection

- Check the machine for visible damage, loose nuts and screws and leaks.
- Check for any accumulated dirt adjacent to hot components, e.g. engine, DPF muffler, exhaust manifold/tubes and remove if necessary.

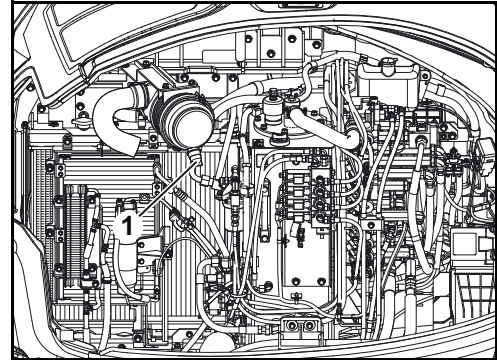


Check the hot parts for a buildup of flammable materials on and around them. It may lead to a fire.

- Check for accumulated residues from leaves, straw, pine needles, twigs, bark and other flammable materials and remove if necessary.
- Check the safety labels on the machine. They must be complete and legible (page 19).
- Ensure that the emergency hammer is present (page 31).

Dust valve - clean

- Empty the dust valve (1) by pressing it together several times.



Engine oil - check

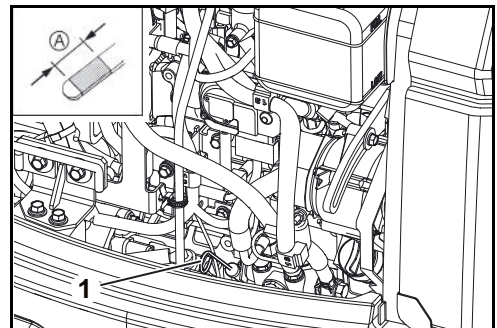
- Pull out the oil dipstick (1) and wipe it with a clean cloth.
- Insert the oil dipstick completely and pull it out again. The oil level should be in the "A" area. If the oil level is too low, add engine oil (page 189).



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



*Do not mix engine oils from different brands!
Before filling in a different brand of engine oil, drain the engine oil completely.*



Coolant level - check

- Check the level of the coolant in the expansion tank (1).
- The fluid level must be between FULL (A) and LOW (B).



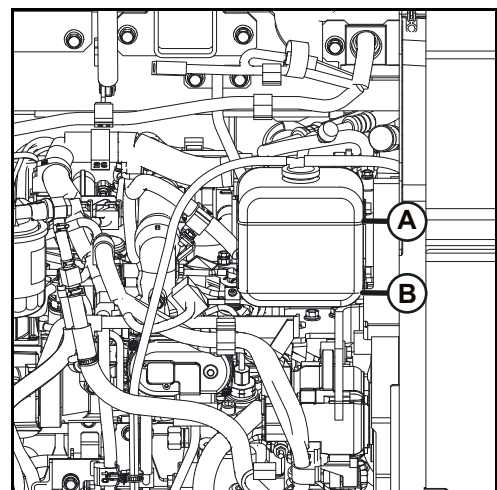
Do not open the radiator cap.



If the coolant level is below the LOW mark, refill coolant (page 182).



*Do not mix coolant from different brands!
Before filling in a different brand of coolant, drain the cooling system completely.*



If the coolant level is below the LOW mark a short time after adding coolant, the cooling system is leaky. The machine may only be started again after the fault is repaired.

Radiator and A/C condenser - check



Do not touch the hot radiators: risk of burning.

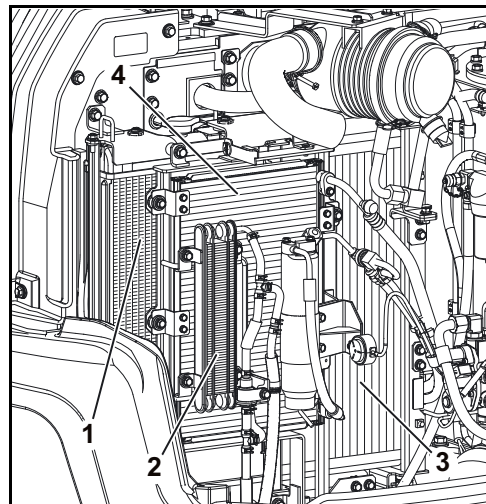
- Visually inspect the coolant radiator (1), fuel cooler (2), hydraulic oil cooler (3) and condenser (4) for leaks and accumulation of dirt and debris.

Radiator - clean

If there is any dirt or debris on the radiators or condenser:

- Clean the radiator from the engine side with a water jet or compressed air. Do not use high-pressure cleaners.
- Particular care must be devoted to the space between the radiators, because foliage often collect at this point.

After cleaning, inspect the radiators for damage.



V-belt - check

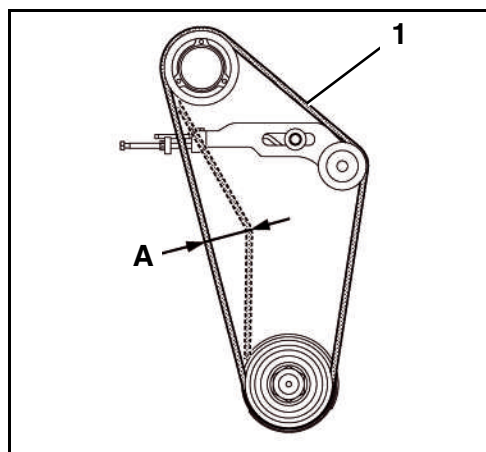


*The engine must be switched off and the key removed!
Do not attempt to grasp rotating or moving parts.*

Air conditioner V-belt (optional)

- Press in the V-belt (1) at position "A".

The V-belt must give way by approx. 12 to 15 mm (pressure: 7 kg).
Adjust the V-belts if necessary (page 185).

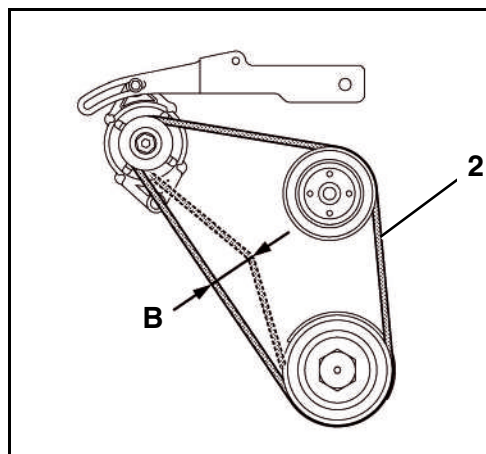


Fan/Alternator V-belt

- Press in the V-belt (2) at position "B".

The V-belt must give way by approx. 7 to 9 mm (pressure: 7 kg).
Adjust the V-belts if necessary (page 185).

- Check both V-belts for wear and tear. Replace the V-belts if necessary (page 185).



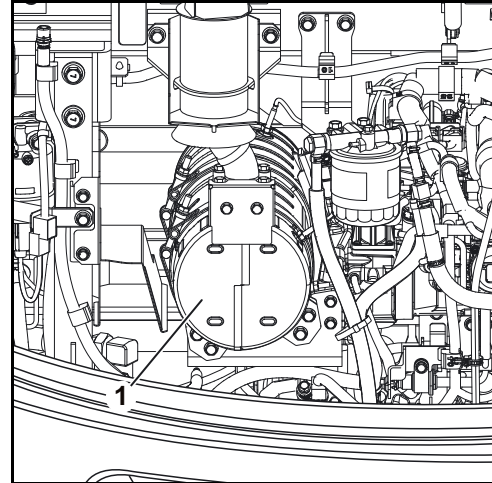
Exhaust system leakage - check



Risk of burns!

Make sure that the engine has stopped and the exhaust system has cooled down.

- Check the exhaust system for leaks and security (formation of cracks).
- If the exhaust system is leaky or loose, the machine may only be taken into operation after the failure have been repaired.
- Check the exhaust system and the area surrounding the particle filter (1) for flammable materials such as oil deposits, cloth, leaves, etc. and clean if necessary.

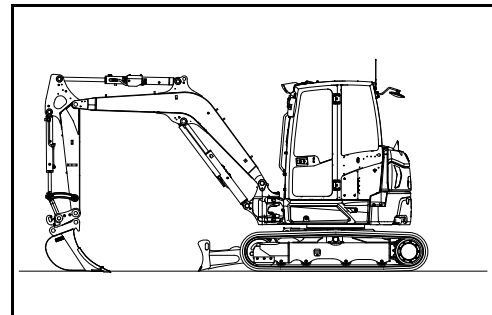


Hydraulic oil level - check



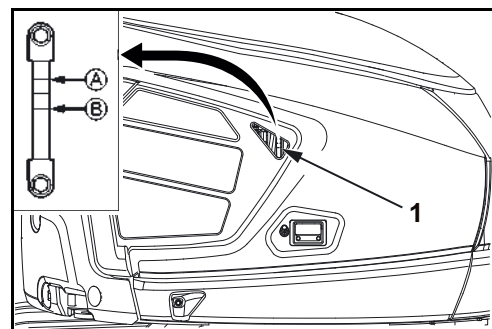
In order to determine the exact hydraulic oil level, all hydraulic cylinders must be extended as follows (see right-hand side figure):

<i>Boom:</i>	half-extended
<i>Arm:</i>	half-extended
<i>Bucket:</i>	half-extended
<i>Dozer:</i>	Completely lowered
<i>Swing mechanism:</i>	Halfway towards left



Check the oil level in the sight glass (1). The oil level should be half way up the sight glass. Carefully check the position of the hydraulic cylinders before topping up the oil. For more information see the "Topping up/changing the hydraulic oil" section (page 202).

A: Upper limit
B: Lower limit



Do not mix hydraulic oils from different brands!

Before filling in a different brand of hydraulic oil, drain the hydraulic oil system completely.



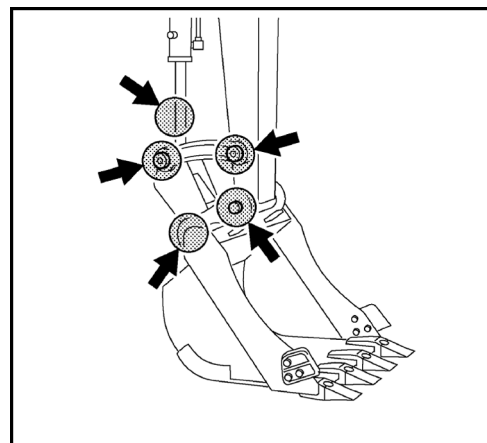
Always remove spilled hydraulic oil immediately.

Bucket bolt and linkage bolt - grease

- Start the engine (page 96).
- Position the arm and bucket as shown in the figure. See the "Operating the controls during excavation work" section (page 117).
- Stop the engine (page 99).
- Lubricate all greasing points (see figure to the right) – see the "Operating materials" section (page 180) – by injecting grease until fresh grease emerges.



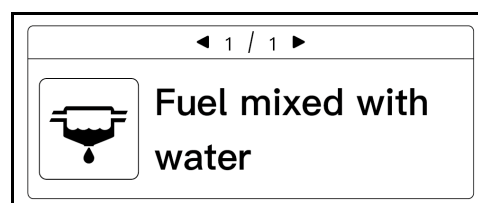
Wipe emerged grease off immediately and store dirty cleaning cloths in the containers provided for disposal.



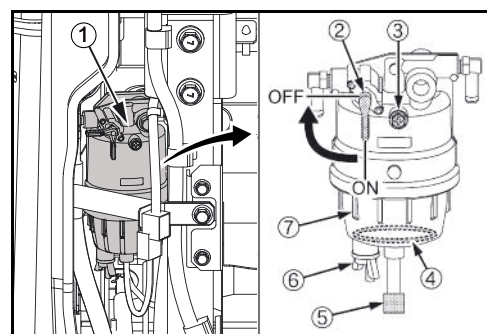
Water separator - check



Water and impurities in the fuel settle in the water separator. The water separator is equipped with a sensor that checks the fill level. If any such deposits form, a message will appear on the display as shown in figure on the right.



- Visual inspection of the water separator (1) for water and sediments.
- If the water separator is contaminated, empty the water separator (page 192)
- Make sure that the sensor cable plug (5) is connected.
- Switch the shutoff-valve to the ON position.



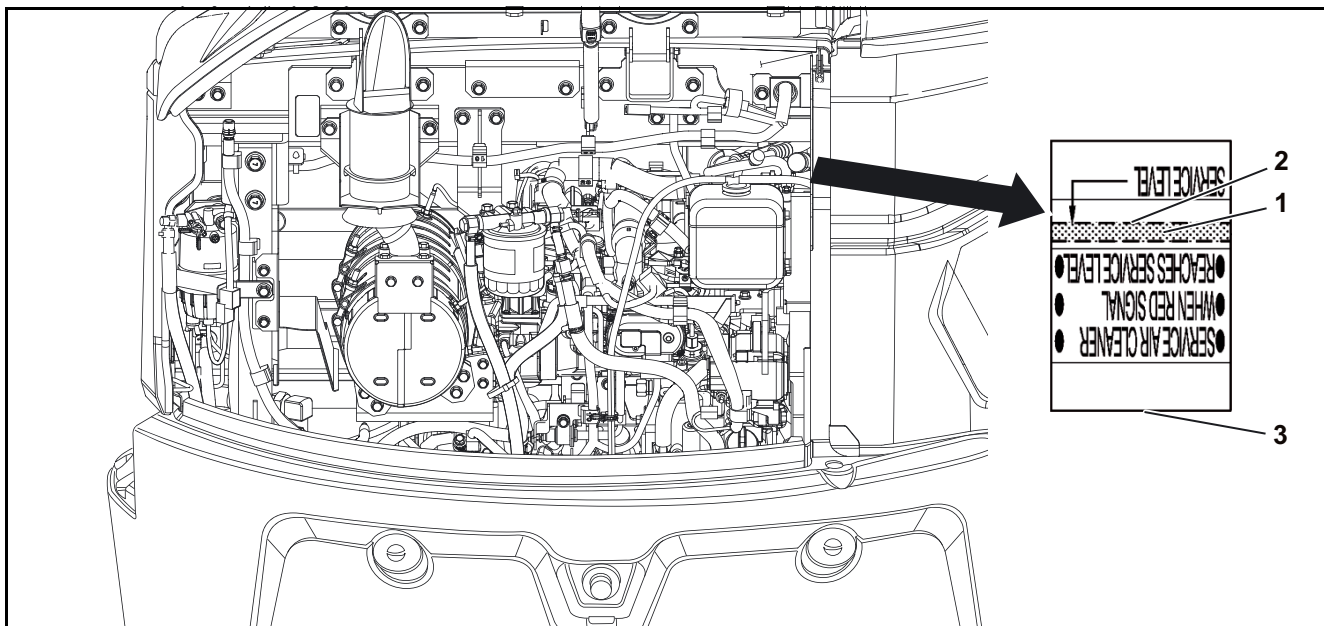
Electrical instrumentation - check

- Check the function of the interior light (page 62)
- Check the function of the working light (page 143)
- Check the function of the rotary beacon (optional) (page 138)
- Check the function of the ventilation fan of the heater and air conditioner (optional) (page 134)
- Check the function of the washer system (page 137)
- Check all accessible electric cables, connectors and connections for condition and tightness.
- Repair or replace damaged parts.
- Check the fuse box and fuse holders for oxidation and dirt, clean if necessary.

Filter indicator - check

If the red signal on the filter indicator (1) reaches the service level (2), clean the air filter element (page 190) immediately.

Reset the red signal by pushing a "RESET" button (3) after cleaning.

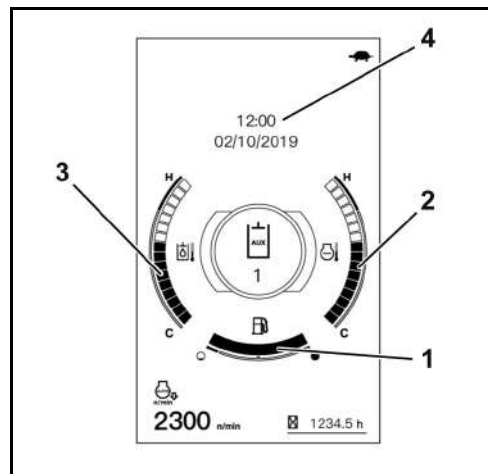


Fuel level, coolant temperature, hydraulic oil temperature date and time - check



The following function can be carried out when the key is not in the starter switch.

The display shows the fuel level (1), the date and time (4), the hydraulic oil temperature (3) and the coolant temperature (2).



Setting up the workplace

Please refer to the "Opening and closing the cab door" section (page 139).

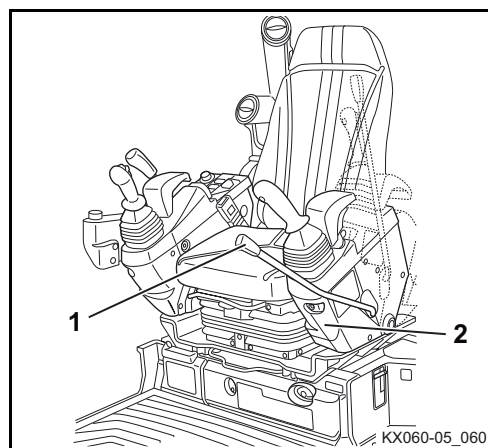
Getting on the machine

- Move the left control console (2) up as far as possible by pulling the control lever lock (1) up.



The control console must remain in this position until the engine is started, as the engine can only be started in this position.

- Get on the machine by using the crawler or step as a stepping aid.
- Sit down on the operator's seat.



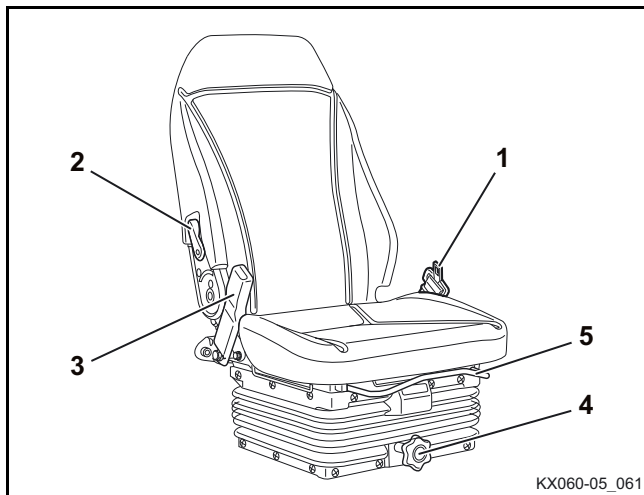
Adjusting the operator's seat



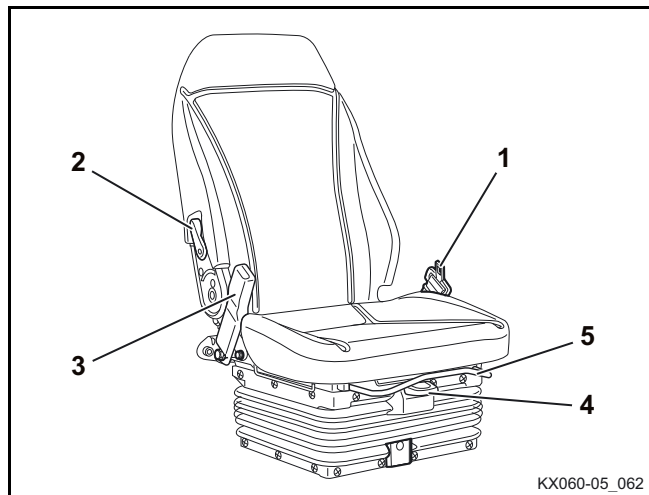
Adjust the operator's seat so that fatigue-free and comfortable working is possible. It should be possible to operate all controls safely.

Horizontal seat adjustment (seat stand-off)

Pull the horizontal seat adjustment lever (5) up and move the seat to the desired position by moving it forward or back, then release the lever.



Mechanical suspension seat



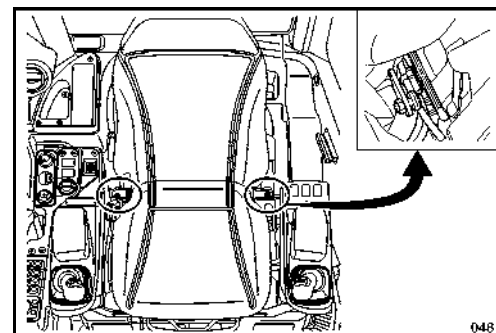
Air suspension seat (optional)



Check that the seat is locked into place.



In adjusting the seat horizontal position, be careful not to get your hands caught between the seat stoppers at the seat's rear corners and the stoppers at the wall behind the seat.



Seat height adjustment for mechanical suspension seat (knee height)

The seat height can be adjusted to three stop positions. To adjust the seat height, slowly raise the seat until it automatically engages in the next stop. When the seat is raised over the highest stop, it will be lowered automatically to the lowest position again.



Adjust the seat height in relation to its horizontal position so that the foot controls can be operated safely.

- To raise: Raise the seat to the desired position and engage it.
- To lower: Raise the seat to the highest position, lower it fully and engage it.



Make sure that the seat adjuster is engaged.

Spring adjustment for mechanical suspension seat (operator's weight)

- The seat can be set to the weight of the operator with the rotary knob (figure above, position 4).
- Turning the grip clockwise increases spring tension (heavier operator), turning the grip anticlockwise reduces spring tension (lighter operator).
- Adjust the seat so that a comfortable cushioning is achieved.

Seat height adjustment (knee height and operator's weight) for air suspension seat

To adjust the height and spring (operator's weight) of the air suspension seat, use the switch (4). This switch works for both the adjustments.

The seat height is adjustable step-less.

Take the following procedure to achieve a comfortable cushioning effect.

Raising the seat for a heavier operator:

- Turn on the key and pull up the switch (4).

While holding down the switch (4), the seat keeps moving up to its highest position.

Lowering the seat for a lighter operator:

- Pull down the switch (4).

While holding down the switch (4), the seat keeps moving down to its lowest position.

* The seat can be moved down even if the key is off.



Do not hold up the switch (4) longer than 30 seconds. The air suspension may get damaged. The operator is supposed to weigh less than 150 kg.

Adjusting the console

- Pull up the console adjust lever (6) vertically and move it back and forth to adjust the horizontal position of the console. Then release the lever.

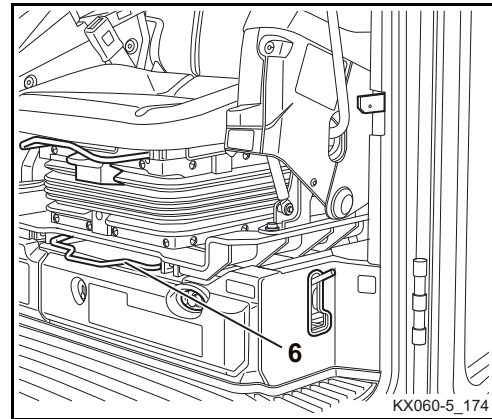


With the console in a desired position, make sure the adjust lever is locked.

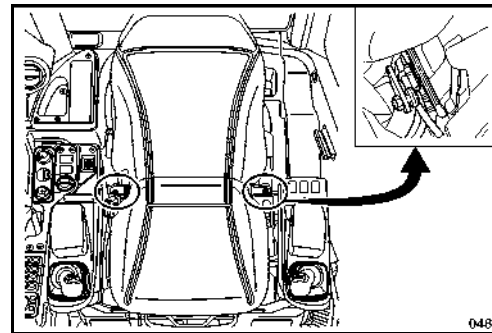


Do not step on the console adjust lever nor force it to move up.

Otherwise the console adjust lever may get deformed, causing a trouble.



In adjusting the console horizontal position, be careful not to get your hands caught between the seat stoppers at the seat's rear corners and the stoppers at the wall behind the seat.



Backrest adjustment

- Take the load off the backrest and pull the backrest adjustment lever (figure above, position 2). Set the backrest to the desired sitting position and release the lever. The backrest should be adjusted so that the operator can safely operate the control levers with the back resting completely on the backrest.



In moving the lever, be careful not to get your hands caught between the seat and the stoppers at the wall behind the seat.

Seat belt



Risk of accidents!

Operating the machine without wearing the seat belt is prohibited!

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.

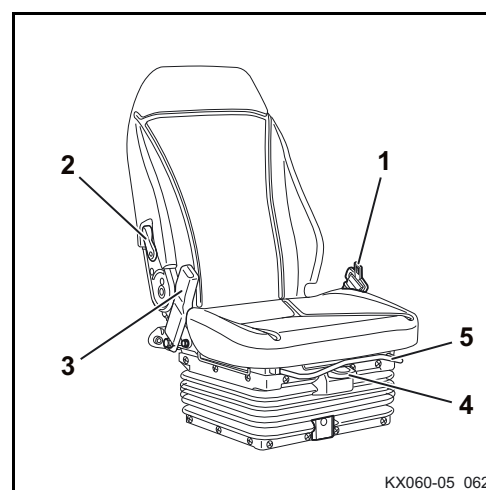
If the engine starts and the seat belt is not latched inside the buckle, a warning message appears on the display.

- *Only operate the machine with the seat belt fastened.*

- Pull the seat belt (1) out of the belt retractor, wrap it around your waist and latch it in the buckle (3).
- Make sure the seat belt is fastened tightly and the retractor is engaged.
- To release the seat belt, press the red button on the buckle and slowly guide the belt back into the belt retractor.



When removing the seat belt, store the belt straight. If you store the belt without straightening it, the belt lock in the belt retractor may not work properly.

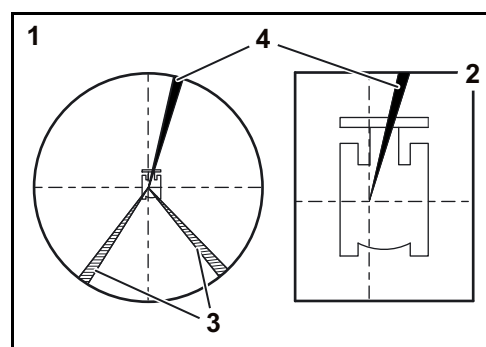


Field of view

When the operator is sitting in the driver's seat, the field of view is partially impaired by the machine as some areas are obscured. It is important to be familiar with and understand the visibility conditions when operating the machine. Within the machine's immediate radius of action, this helps to detect hazards that may cause accidents early on and thus prevent them.

The illustration shows the field of view and the areas that are not visible. The field of view varies from operator to operator and depending on the position of the seat.

1. Field of view within a radius of 12 m
2. Field of view in the immediate area
3. Indirect field of view (visible using mirrors)
4. Obscured areas



- Take a seat in the operator's seat and adjust the seat (page 90).
- Check obscured areas (4) and indirect field of view (3) shown in the illustration from the seated position.
- In order to familiarise yourself with the obscured areas, check the field of view (1 and 2) for a clear line of sight.

- In order to see the indirect field of view (3), adjust the rear view mirrors (page 94).



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 these operating instructions as a reference for the new risk assessment.

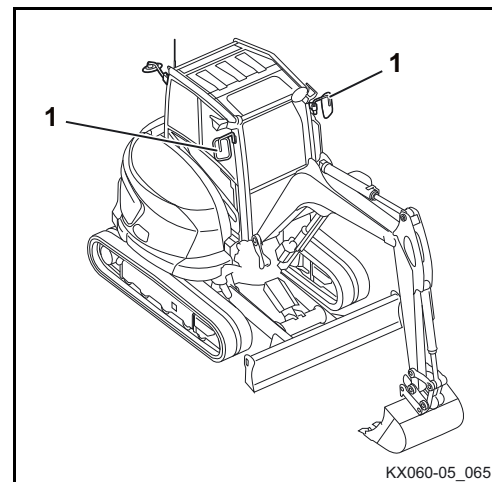
Adjusting the rear view mirrors



Risk of accidents!

Adjust the rear view mirrors while the machine is standing still and the engine is switched off.

- Check whether the area behind the machine is obscured from view.
- Check the adjustment of the rear view mirrors (1).
- If necessary, adjust the rear view mirrors in order to ensure a clear view of the rear and of the obscured areas.



Cleaning and maintaining the rear view mirrors

- If the rear view mirrors are dirty or steamed up, wash and wipe them dry.
- Replace lost, damaged, tarnished or warped rear view mirrors immediately with new rear view mirrors.
- If the rear view mirrors can no longer be adjusted, repair the adjustment mechanism, or replace the rear view mirrors if necessary.

Safety instructions for starting the engine



The machine is equipped with an anti-theft system (page 158).



When starting the machine for the first time on a work day, carry out the pre-operational services (page 83).



Make sure that there are no persons within the machine's working area. It is essential to warn persons in the vicinity of the machine by briefly honking the horn.



Make sure that all operational controls are in the neutral position.



Starting the machine is only allowed when the operator is sitting on the operator's seat.



Before starting the engine, make the necessary operator station adjustments (page 89).



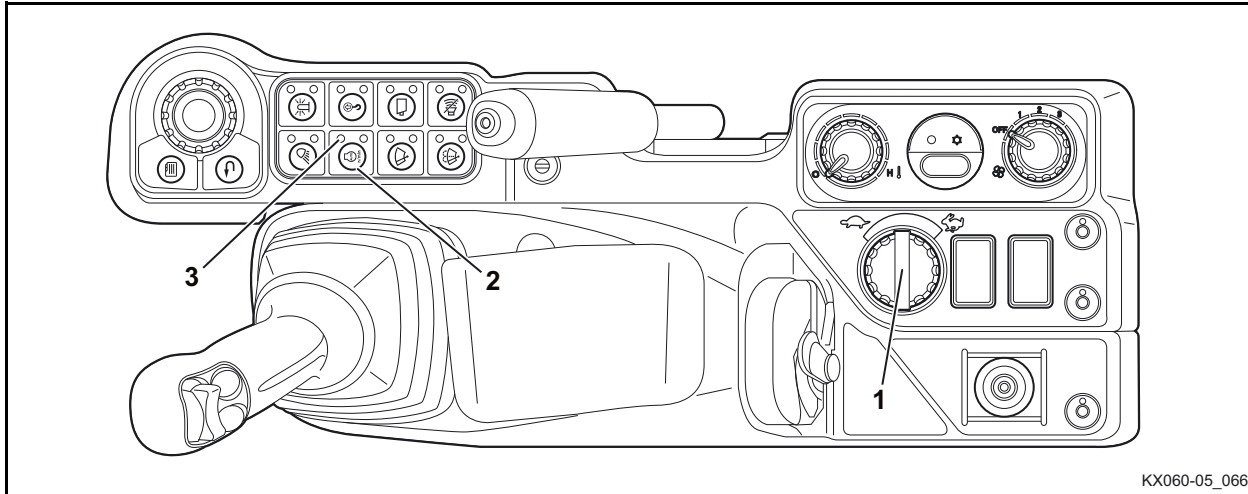
If the engine does not start immediately, cease the starting procedure. Wait a short time before re-attempting a start. If the engine does not start after several attempts, contact skilled personnel. If the battery is discharged, jump-start the machine (page 145).



Do not use Start Pilot or similar substances as a starting aid.

Starting the engine

- Place the potentiometer (1) to the centre position between  and . The AUTO IDLE switch (2) is switched off. The indicator (3) does not light up.



KX060-05_066

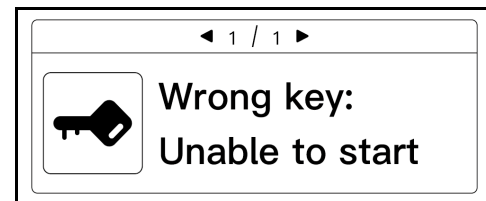
- Insert the key into the starter switch and turn it to the RUN position.



Before starting the engine, make sure that the dozer control lever is not at the floating position (page 118).

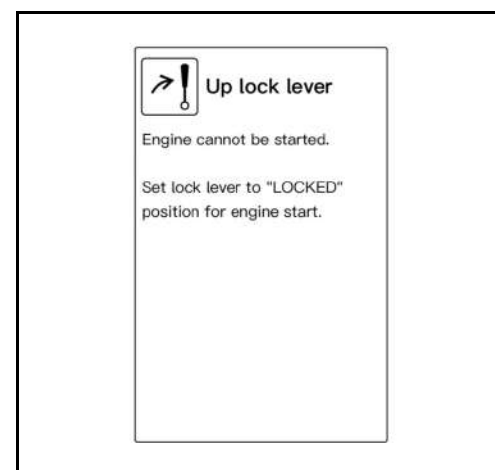


The machine is equipped with an anti-theft system. If someone tries to start the machine with the wrong key, the display message as in the figure on the right appears.



If the bunch of keys contains metal parts, such as key rings or other keys, the engine might fail to start.

If the control lever lock is not raised, the display message as in the figure on the right appears.



The display message as in the figure on the right appears for a short period of time. The engine can be started after it disappears.

The engine oil pressure indicator (2) lights up, then goes out again after the engine has started.

The charge indicator (3) lights up, then goes out again after the engine has started.

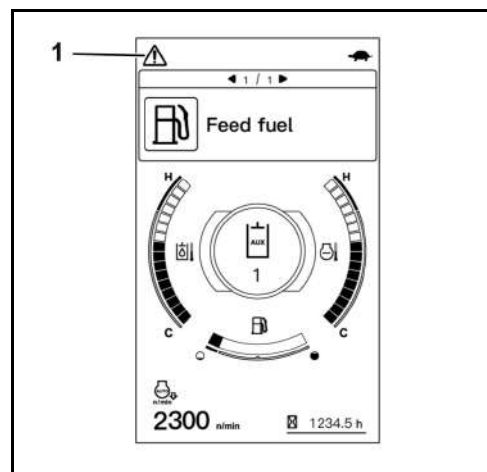
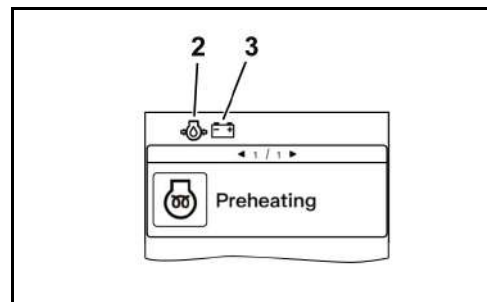
If the indicators do not light up when the starter switch is in the RUN position, remove the key and contact suitably qualified personnel.

If the message "Feed Fuel" appears in the display and the warning light (1) flashes yellow, there is very little fuel left in the tank. Refuel the machine (page 147).

- Turn the starter switch to the START position and hold it there until the engine has started. Release the starter switch.
- If the engine does not start within 10 seconds, turn the starter switch to STOP, then wait for 20 seconds and repeat the start procedure.

When the engine starts, the display indicators may turn off briefly and an audible signal may sound. This does not constitute a failure.

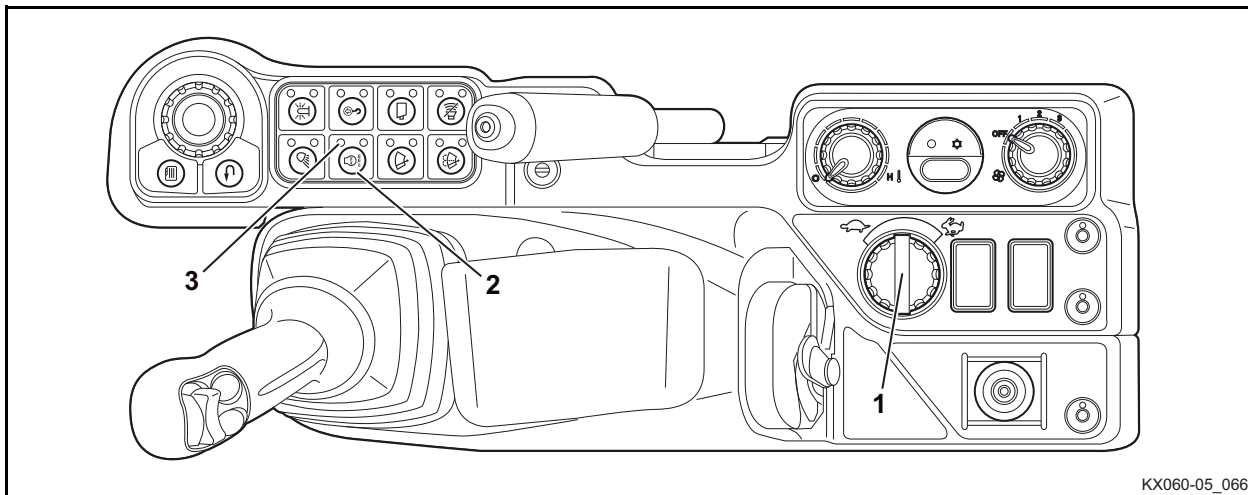
- Lower the left control console and make sure that the control lever lock engages.
- Let the engine run at middle speed until the operating temperature has been reached.



After the engine has reached its operating temperature, set the engine speed required for operation:

- Turn the potentiometer (1) towards  or  until the required speed is reached.
- Turn on AUTO IDLE control (2).

The indicator (3) lights up when the AUTO IDLE control is enabled. The AUTO IDLE control makes sure that the pre-selected engine speed drops down to idle speed after approx. 4 seconds - provided that no control lever is being used.



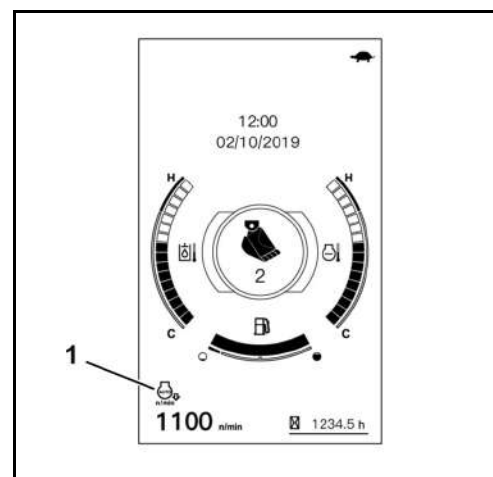
KX060-05_066



When the hydraulic oil is cold (i. e. in cold-weather conditions), the AUTO IDLE control may experience problems during the warm-up phase. This does not constitute a failure.

When AUTO IDLE control turn on, the AUTO IDLE indicator (1) comes up.

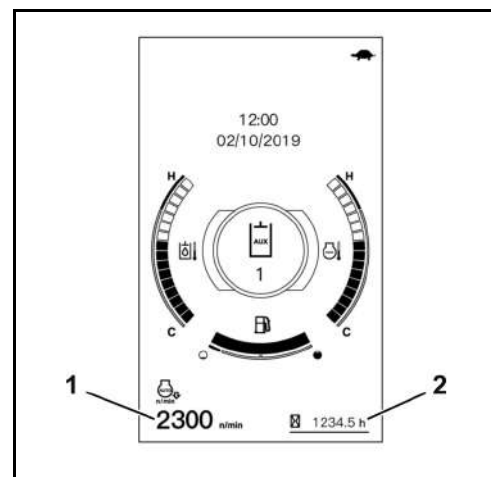
When engine speed drops down to idle speed by AUTO IDLE control, the auto idle indicator (1) flash.



Numeric (1) displays of the engine speed show the engine's current number of revolutions per minute.

The time meter (2) shows the actual hours of operation of the machine (independent from the engine speed).

Keep an eye on the displays and indicators during operation (page 100).



Start the engine in Cold-Weather Conditions

- Turn the potentiometer to the  position.
- The AUTO IDLE switch is switched off.
- Insert the key into the starter switch and turn it to the RUN position.
- The preglowing indicator lights up for a short period of time. The engine can be started after it disappears.
- Turn the starter switch to the START position and hold it there until the engine has started. Release the starter switch.

If the engine does not start, turn the starter switch to STOP and then repeat the start procedure.

Stopping the engine



If the engine is to be stopped to take the machine out of operation, the services for placing the machine out of operation (page 133) must be carried out.

- Turn the starter switch to the STOP position and remove the key.



*Do not stop the engine by shutting down the battery power directly with a battery switch or by other means.
Doing so may cause failure or malfunction.*

Observation of the displays after starting and during operation

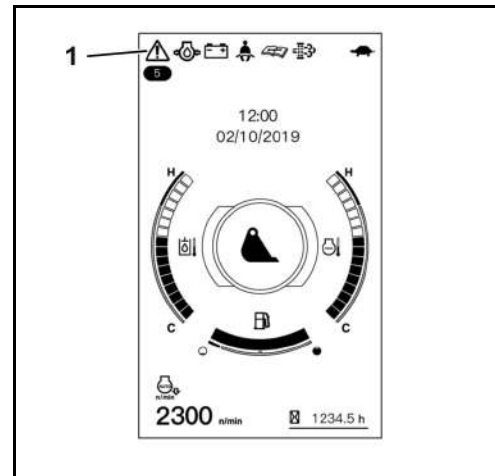
The operator must observe the display indicators and displays after starting and during operation.



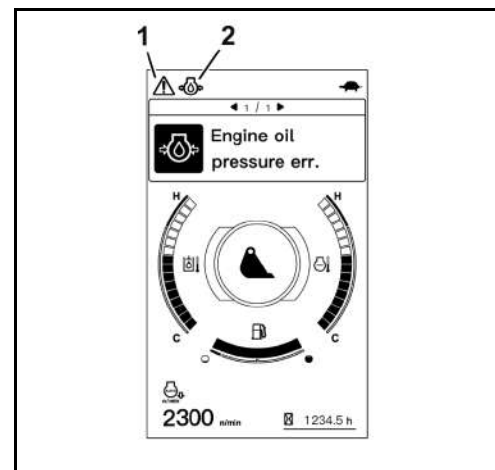
The warning light (1) flashes red when a system fault or technical malfunction occurs. Stop the engine immediately! The warning light flashes yellow when the system issues a warning. In addition to the messages that appear in the display, you will also hear an acoustic warning signal.



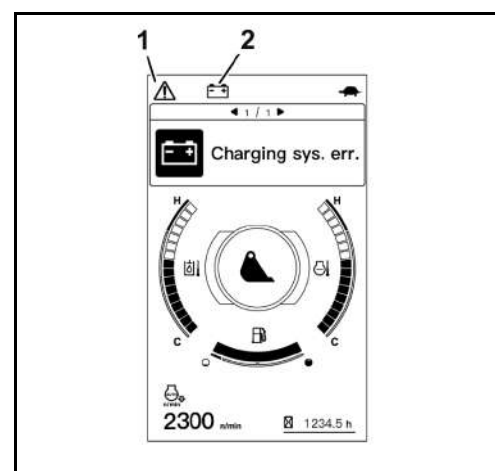
Clear the messages by taking appropriate steps, see "Troubleshooting: Display indications" (page 166), or contact qualified personnel if necessary.



If the engine oil pressure becomes too low during operation, the engine must be stopped immediately. The engine oil pressure indicator (2) lights up, the warning light (1) flashes red and the display message as in the figure on the right appears.

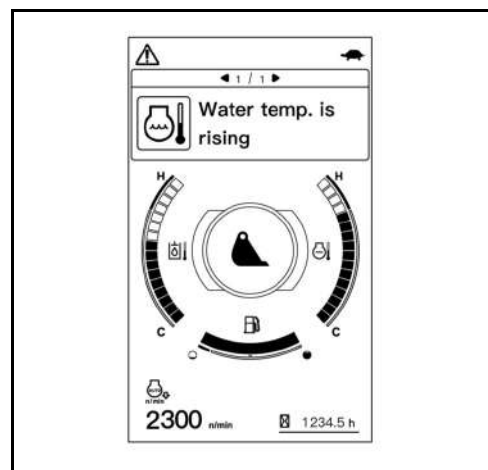


If a fault occurs in the charging system during operation, the engine must be stopped immediately. The charge indicator (2) lights up, the warning light (1) flashes red and the display message as in the figure on the right appears.



When the machine is being operated at or close to full capacity, the temperature of the coolant can rise a little higher than normal. The display message as in the figure on the right appears.

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



If the coolant temperature is too high, cool down the engine by changing into idle. The display message as in the figure on the right appears.



Allow the machine to idle for five minutes before switching off the engine!

- Check the level of the coolant in the expansion tank.



Do not open the radiator cap → risk of scalding.

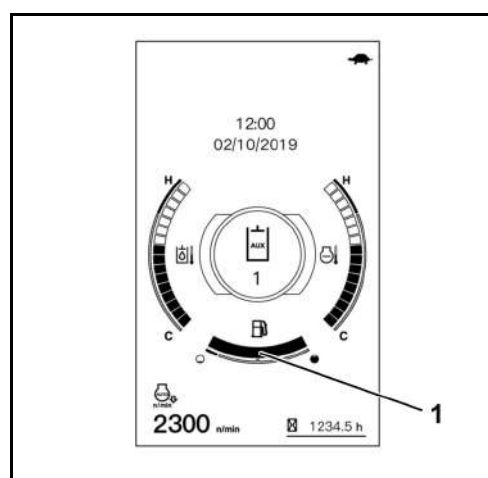
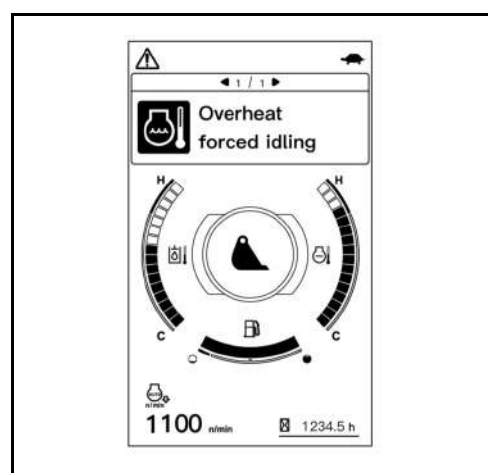
- If the water level is below the "LOW" mark, let the engine cool completely and add coolant (page 182).
- Check the cooling system for leaks; if necessary, contact skilled personnel.
- Check if the V-belt is very loose or broken; if necessary, contact skilled personnel.
- Check if the air intake in the right side panel, the radiator, and the condenser are very dirty. If necessary, clean the radiator (page 183).
- Watch the fuel gauge (1).



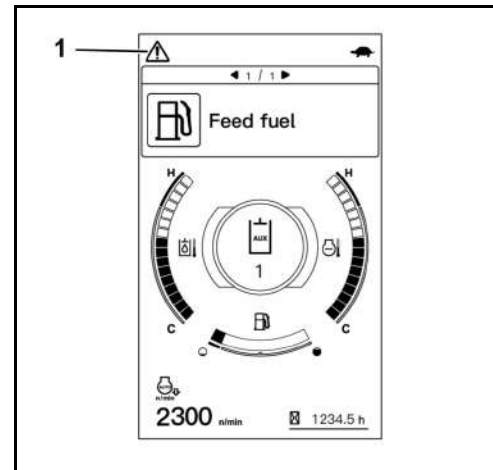
The bar indicates the amount of fuel remaining in the tank. The bar slowly becomes shorter as fuel is used up during operation.



When the fuel tank is empty, the machine cannot be operated. The machine must be refuelled and the fuel system bled.



If the message "Feed Fuel" appears in the display and the warning light (1) flashes yellow, there is very little fuel left in the tank. Refuel the machine (page 147).

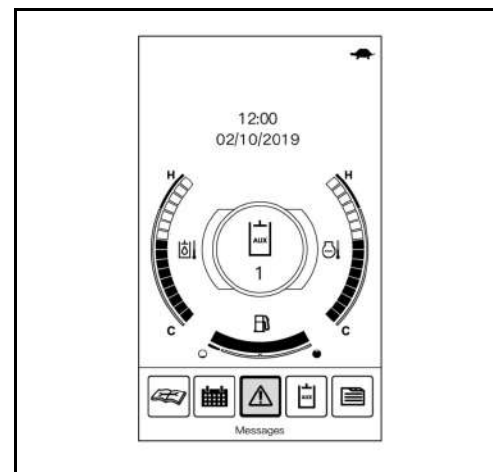


Checking error messages

- Press menu switch on dial switch.

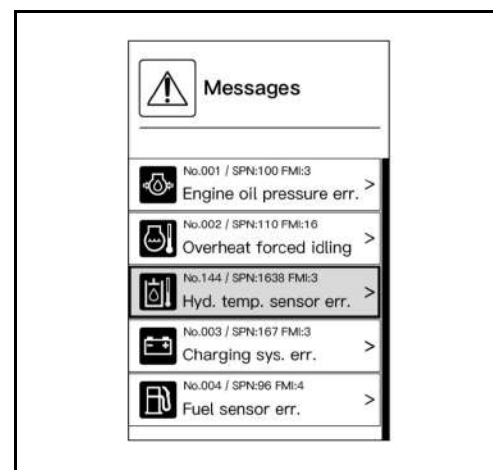
The menu bar appears in the display. ("Messages" is selected.)

- Press Jog dial (enter switch).



The list of messages appears in the display.

- Rotate jog dial to the right or the left until the desired item is selected.
- Press Jog dial (enter switch).



Also stop the engine immediately if

- the engine speed rises or drops suddenly,
- abnormal noises are heard,
- the mechanical equipment do not respond to the control lever as expected or
- the exhaust fumes are black or white. When the engine is still cold, white smoke for a short time is normal.

Particle filter regeneration

The machine has an exhaust system that is equipped with a diesel particle filter, which filters out carcinogenic soot particles from the exhaust gases.

The particle filter must be regenerated regularly in order to prevent the soot particles from clogging the particle filter rendering it useless. To do so, the exhaust temperature is increased automatically to incinerate the soot in the particle filter.

The particle filter is regenerated automatically. It can also be manually started or blocked.

General notes



Health hazard!

Soot particles from the exhaust gases are carcinogenic.

The regeneration should be done outdoors only.

Despite using a particle filter, there is still a risk of poisoning by inhaling the exhaust gases!

- Observe the safety regulations of TRGS 554 and any national regulations.



Risk of fire and injury!

During regeneration, the exhaust gas temperatures increase significantly, and the gases leaving the exhaust system are hotter than during normal operation.

There is a risk of fire and injury when people, animals, plants or flammable materials are close to the exhaust system!

- The exhaust system and the space around the exhaust system should be kept free of flammable materials.
- Stop the particle filter regeneration if there are any risks to the environment.
- Do not leave the machine unattended during particle filter regeneration.
- The particle filter should be regenerated only outdoors.



The particle filter regeneration may be disabled and released any time using the inhibit switch (1).

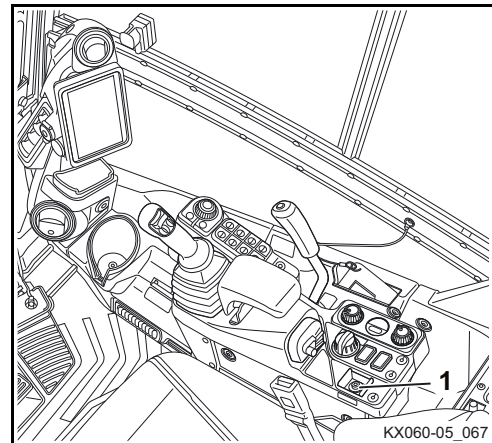
The particle filter regeneration lock will be displayed by the indicator and a related message on the display.



Risk of damage to the particle filter!

The particle filter can be damaged irreparably by the carbon particles if incorrect engine oil or incorrect diesel fuel is used.

- Use only engine oils with the specification "API CJ-4" or "API CK-4".
- Use only low-sulphur diesel fuels.
- Adhere to the list of operating materials.

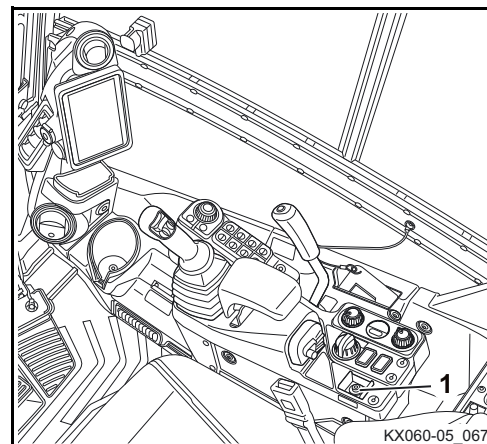


High engine speeds result in a higher temperature of the exhaust gas. This burns the particulate in the particle filter. This reduces the number of regeneration cycles required when compared to lesser load on the engine. The exhaust gas temperature is not high enough to burn the soot particles in the particle filter in idling and part-load conditions. As a consequence, the number of regeneration cycles increases. Hence, it is advisable not to operate the engine in idle condition frequently.

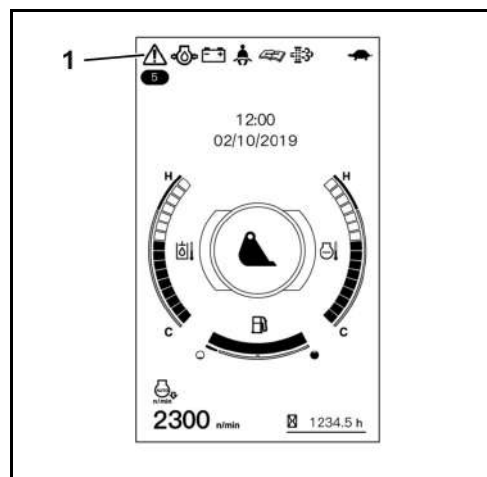
Automatic particle filter regeneration - Procedure

The following conditions have to be met for carrying out automatic regeneration.

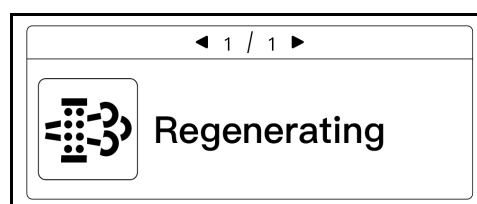
1. The automatic particle filter regeneration is released (1).
2. The engine coolant should be at operating temperature.
3. The engine speed should be the speed such the “Raise engine speed” indicator and message disappear.



Various messages are shown in the display during the regeneration process. In addition, the yellow or red warning light (1) flashes depending on the relevance of the message.



When the particle filter regeneration starts, a message appears in the display as shown in the figure on the right. In addition, the yellow warning light flashes and an audible signal is emitted every 60 seconds.

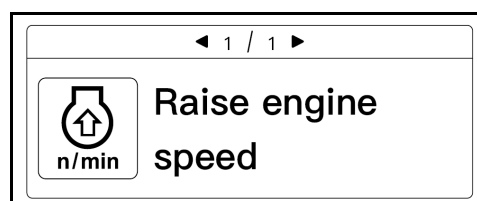


The exhaust temperature will increase significantly during particle filter regeneration. However, the machine can continue to be operated.

- Make sure that no people, animals, plants and/or flammable materials are within the immediate working area!

If the engine speed is too low, the message in the display changes every 3 seconds, as shown in the figure on the right. In addition, the yellow warning light flashes and an audible signal is emitted every 60 seconds.

- Raise the engine speed until the “Raise engine speed” indicator and message disappear.



The particle filter is regenerated.



If the particle filter is regenerated frequently and incompletely, the degree of saturation increases in the particle filter. The engine power is reduced to 50 % to prevent damages to the particle filter.

If the degree of saturation increases, the message in the display changes every 3 seconds, as shown in the figure on the right. In addition, the yellow warning light flashes and an audible signal is emitted every 60 seconds.

The particle filter is regenerated. But the engine power is restricted to 50 %.

If the engine speed is too low, the message in the display changes every 3 seconds, as shown in the figure on the right. In addition, the red warning light flashes and an audible signal is emitted at brief intervals.

- Raise the engine speed until the “Raise engine speed” indicator and message disappear.

The particle filter is regenerated. But the engine power is restricted to 50 %.

The display message as in the figure on the right appears. In addition, the red warning light flashes and an audible signal is emitted at intervals.

The engine switches off automatically. Restarting and raise the engine speed until the “Raise engine speed” indicator and message disappear.

- Turn the starter switch to the STOP position.
- Start engine.
- Raise the engine speed until the “Raise engine speed” indicator and message disappear.

The particle filter is regenerated. But the engine power is restricted to 50 %.

If the degree of saturation is very high, the particle filter has to be reconditioned by your KUBOTA dealer.

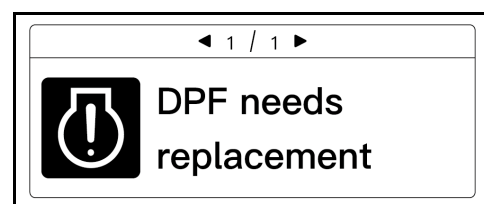
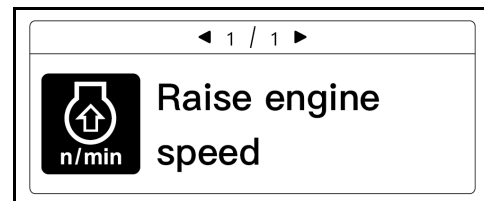
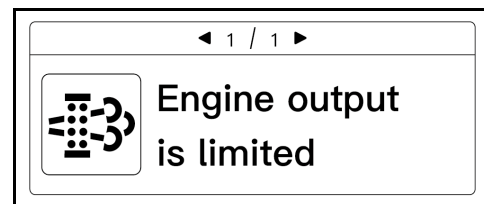
The display message as in the figure on the right appears. In addition, the red warning light flashes and an audible signal is emitted at intervals.

- Inform your KUBOTA dealer immediately.

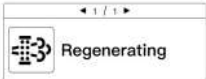
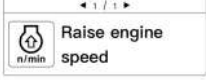
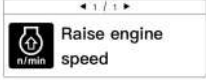
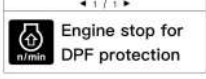
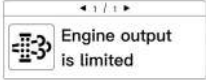
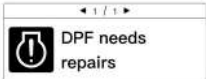
If the particle filter is clogged and damaged, then the particle filter needs to be replaced by the KUBOTA dealer.

The display message as in the figure on the right appears. In addition, the red warning light flashes and an audible signal is emitted continuously.

- Inform your KUBOTA dealer immediately



Automatic particle filter regeneration - Overview

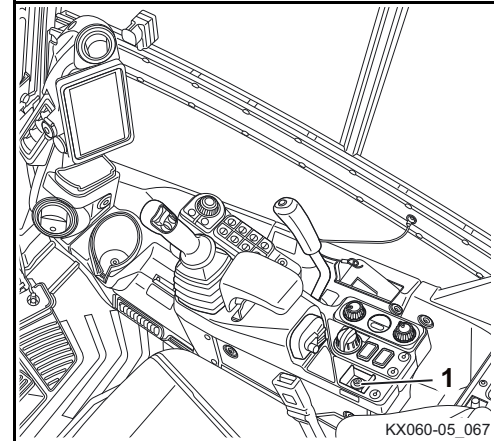
Warning light	indicator	Explanation	Measure
 flashing (yellow)	 Regenerating  Raise engine speed	Automatic regeneration process starts. If the message "Raise engine speed" is shown in the display, then the operator has to create the conditions necessary for regenerating the particle filter.	Make sure that no people, animals, plants and/or flammable materials are within the immediate working area. Raise the engine speed until the "Raise engine speed" indicator and message disappear. The automatic particle regeneration starts. All the functions and auxiliary ports 1 and 2 continue to be available during the regeneration.
 flashing (red)	 Raise engine speed	If the message "Raise engine speed" is shown in the display, then the operator has to create the conditions necessary for regenerating the particle filter. The particle filter is clogged if the message "Engine output is limited" is shown in the display. The engine power is reduced to protect the particle filter. When the control lever lock is lifted, the engine switches off after 60 seconds to protect the particle filter.	Make sure that no people, animals, plants and/or flammable materials are within the immediate working area. Raise the engine speed until the "Raise engine speed" indicator and message disappear. The automatic particle regeneration starts. All the functions and auxiliary ports 1 and 2 continue to be available.
 flashing (red)	 Engine stop for DPF protection	When the control lever lock is lifted, the engine switches off after 60 seconds to protect the particle filter. If the control lever lock is lowered, the engine speed is limited.	Raise the engine speed until the "Raise engine speed" indicator and message disappear. Inform your KUBOTA dealer if the regeneration does not start automatically.
 flashing (yellow)	 Engine output is limited	The particle filter is clogged if the message "Engine output is limited" is shown in the display. The engine power is reduced to protect the particle filter.	Keep raising engine speed and finish DPF regen. process. Make sure that no people, animals, plants and/or flammable materials are within the immediate working area.
 flashing (red)	 DPF needs repairs	The particle filter is clogged with soot particles and the particle filter regeneration can no longer start. The particle filter must be repaired. The engine power is reduced to protect the particle filter.	Inform your KUBOTA dealer immediately.
 flashing (red)	 DPF needs replacement	The particle filter has to be replaced. The engine power has to be limited to protect the particle filter.	Inform your KUBOTA dealer immediately.

Blocking and releasing the particle filter regeneration - Procedure

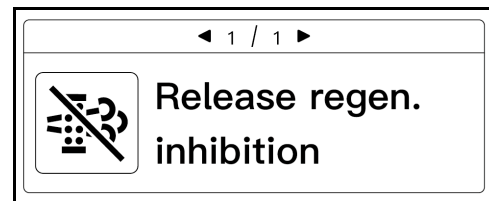
- Press the inhibit switch (1).

The automatic particle filter regeneration is locked and the indicator lights up on the display.

The particle filter regeneration must be performed in certain intervals. If the automatic particle filter regeneration has been locked and the particle filter is fully saturated with soot, the operator is prompted to enable particle filter regeneration.



The display message as in the figure on the right appears. In addition, the yellow warning light flashes and an audible signal is emitted at brief intervals.

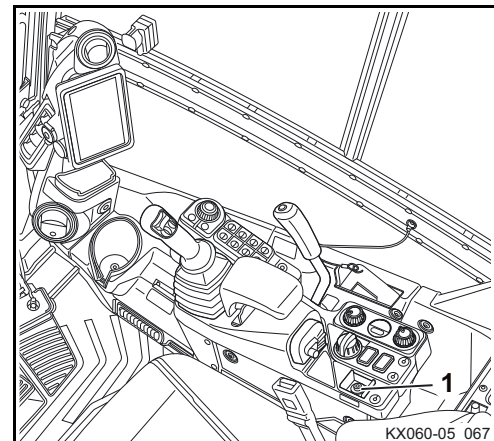


- Press the inhibit switch (1).

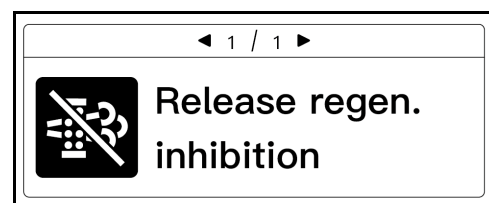
The indicator goes out and regeneration starts.

If the particle filter regeneration is not released using the switch, the degree of saturation in the particle filter continues to increase.

The engine power of the machine is reduced to prevent damage to the particle filter.



The display message as in the figure on the right appears. In addition, the red warning light flashes and an audible signal is emitted at intervals.



- Press the inhibit switch (1).
- Raise engine speed.
- Continue the operation.

The indicator in the switch stops glowing. The particle filter is regenerated. But the engine power is restricted to 50 %.

- Make sure that the regeneration process is shown on the display and that it proceeds until the display message disappears.

The display message as in the figure on the right appears. In addition, the red warning light flashes and an audible signal is emitted at intervals.

The engine switches off automatically. Restarting and raise the engine speed until the “Raise engine speed” indicator and message disappear.

- Turn the starter switch to the STOP position.
- Start engine.
- Raise the engine speed until the “Raise engine speed” indicator and message disappear.

The particle filter is regenerated. But the engine power is restricted to 50 %.

If the particle filter regeneration was locked permanently, the particle filter must be reconditioned by your KUBOTA dealer.

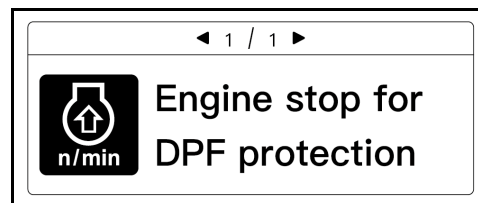
The display message as in the figure on the right appears. In addition, the red warning light flashes and an audible signal is emitted at intervals.

- Inform your KUBOTA dealer immediately.

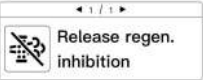
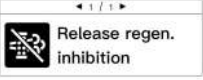
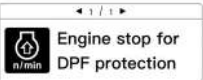
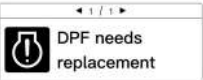
If the particle filter is clogged and damaged, then the particle filter needs to be replaced by the KUBOTA dealer.

The display message as in the figure on the right appears. In addition, the red warning light flashes and an audible signal is emitted continuously.

Inform your KUBOTA dealer immediately



Blocking and releasing the particle filter regeneration - Overview

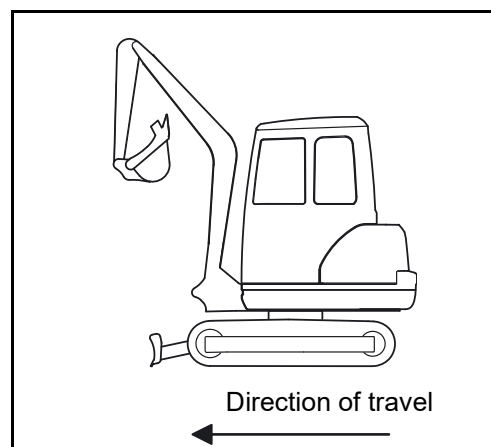
Inhibit indicator	Warning light	indicator	Explanation	Measure
 lights up (yellow)	 does not glow	-	Automatic regeneration process blocked. The state is before a required regeneration. If the lock switch starts flashing, then regeneration is required.	All the functions and auxiliary ports 1 and 2 continue to be available.
 flashing (yellow)	 flashing (yellow)		Automatic regeneration process blocked. The operator has to make the necessary preparations for regenerating the particle filter.	Make sure that no people, animals, plants and/or flammable materials are within the immediate working area. Release the particle filter regeneration using the inhibit switch. Raise the engine speed until the "Raise engine speed" indicator and message disappear. The automatic particle regeneration starts. All the functions and auxiliary ports 1 and 2 continue to be available.
 flashing (yellow)	 flashing (red)	 	Automatic regeneration process blocked. The operator has to make the necessary preparations for regenerating the particle filter. The particle filter is clogged if the message "Engine output is limited" is shown in the display. The engine power is reduced to protect the particle filter. When the control lever lock is lifted, the engine switches off after 60 seconds to protect the particle filter. If the control lever lock is lowered, then the engine is not switched off.	Make sure that no people, animals, plants and/or flammable materials are within the immediate working area. Release the particle filter regeneration using the inhibit switch. Raise the engine speed until the "Raise engine speed" indicator and message disappear. The automatic particle regeneration starts. All the functions and auxiliary ports 1 and 2 continue to be available.
 flashing (yellow)	 flashing (red)		The particle filter is clogged with soot particles and the particle filter regeneration can no longer start. The particle filter must be repaired. The engine power is reduced to protect the particle filter.	Inform your KUBOTA dealer immediately.
 flashing (yellow)	 flashing (red)		The particle filter has to be replaced. The engine power has to be limited to protect the particle filter.	Inform your KUBOTA dealer immediately.

Driving the machine

- Adhere to the general safety rules (page 13) and the safety rules for operation (page 73).
- Carry out the pre-operational services (page 83).
- Start the engine (page 96).
- Observe the displays and indicators (page 100).



Ensure that the boom and the dozer are in the direction of travel as shown in the figure.



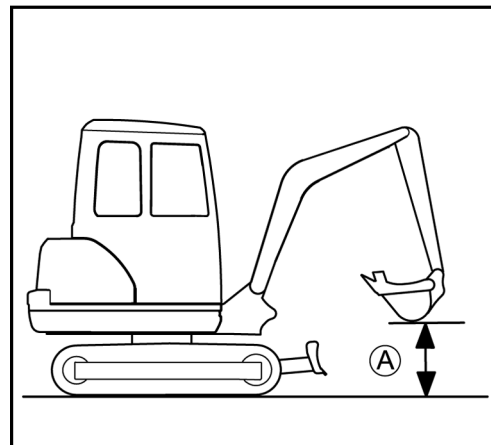
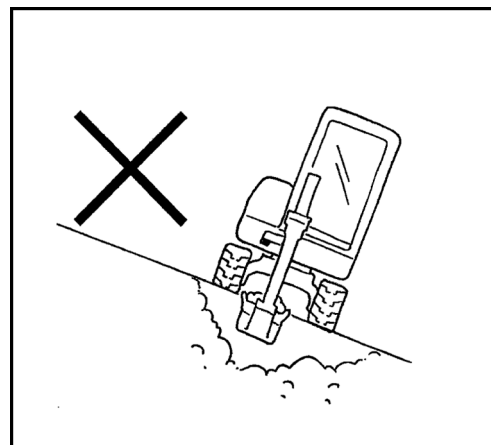
When driving with the machine, always observe the following safety instructions.

When working on slopes, observe the tilt of the machine.

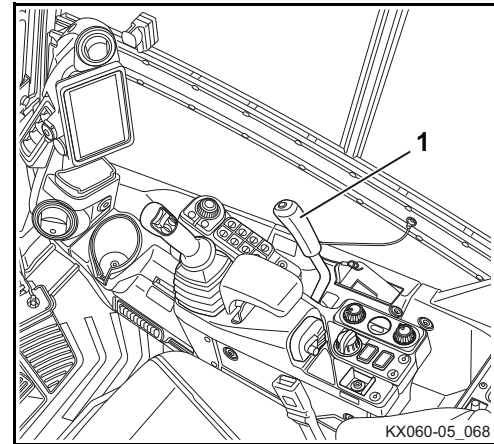
Max. lateral sway → 27 % resp. 15°

Climbing performance → 36 % resp. 20°

- Keep the bucket as low as possible when driving.
- Check the ground for stability, and verify if there are holes or other potential obstacles.
- Approach overhangs and edges of ditches carefully as they could cave in.
- Drive slowly downhill, do not allow the vehicle speed to increase uncontrollably.
- Close the cab door.
- When driving, the bucket should be approx. 200 to 400 mm (A) over the ground (see figure).



- Raise the dozer to the top position by pulling back the dozer lever (1).
- Select an appropriate engine speed.



Driving

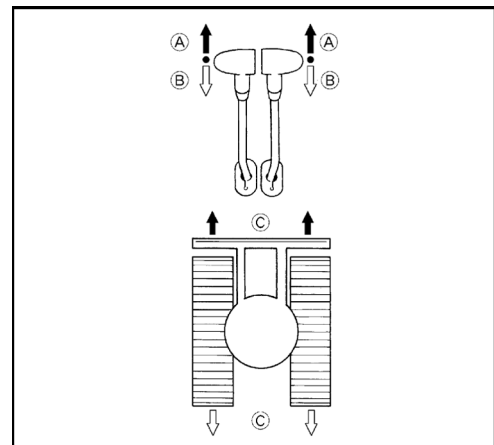
- Push both drive levers forward simultaneously to drive the machine straight ahead. Releasing the drive levers stops the machine immediately. To reverse the machine, pull both drive levers back simultaneously.

- (A) Forward
- (B) Reverse
- (C) Straight ahead



If the dozer is not at the front, as shown in the figure, but at the rear, the operation of the drive levers is exactly opposite. Drive lever forwards:

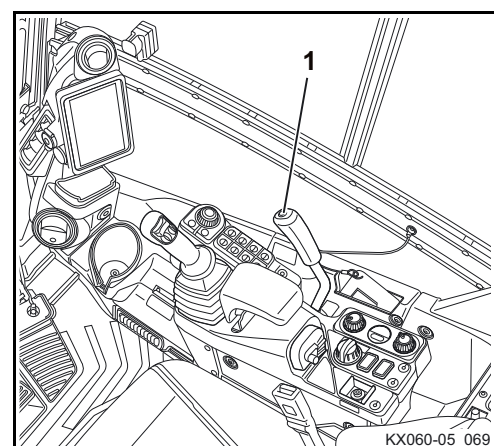
→ The machine backs up.



- To drive faster, press the travel speed button (1).



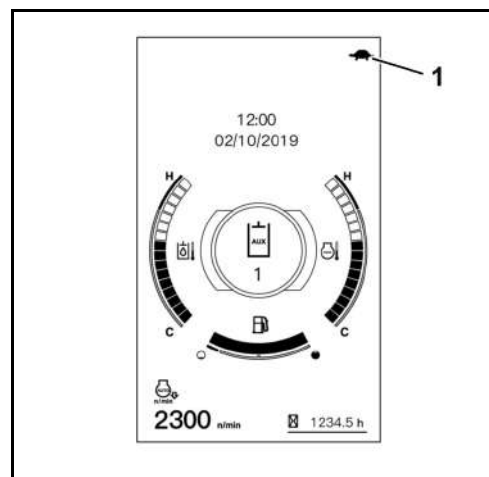
If the driving resistance increases when driving with travel speed (due to a slope or obstacle), the machine automatically switches to low speed. If the driving resistance decreases after a while, the machine switches automatically back to travel speed.



Two audible signals will sound and the indicator (1) will change to the icon of fast speed. Pressing the travel speed button again switches back to normal speed and only one signal will sound.



Do not drive fast on muddy or uneven terrain, also if another control is operated (e.g. turning the swivel frame).



Turning



Turns are described for the forward direction of travel with the dozer at the front. If the dozer is positioned at the rear, the steering movements should be in the opposite direction.

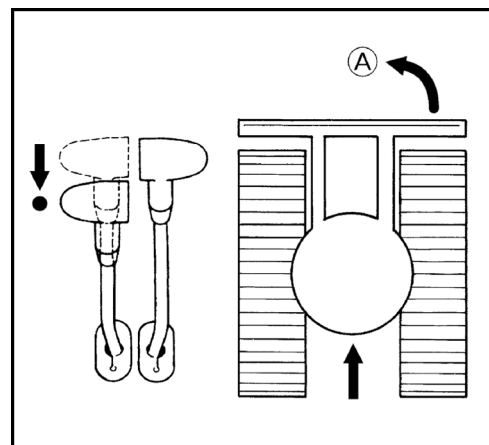


When making turns, be sure nobody is standing within the swing area of the machine.

During driving

- Pull the left drive lever to neutral, leave the right drive lever pushed forward.

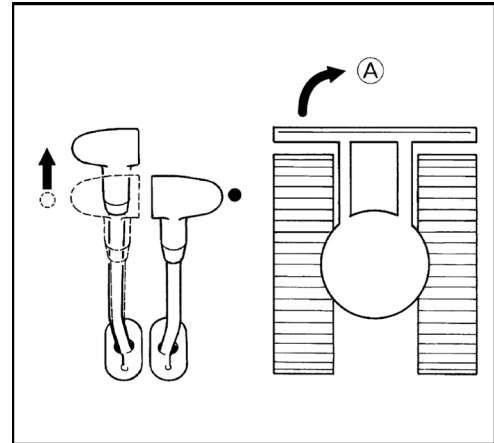
(A) The machine makes a left turn.



From a standing position

- Leave the right drive lever in neutral, push the left drive lever forward. In this case, the turning radius is determined by the right track.

(A) The machine makes a right turn.



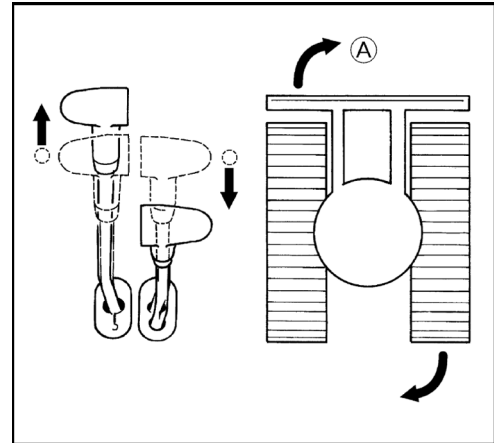
Turning on the spot



Do not make a turn on the spot with the travel speed button actuated.

- Move the drive levers in opposite directions. The tracks will turn in opposite directions. The centre of the vehicle is its vertical axis.

(A) Turning on the spot to the right.

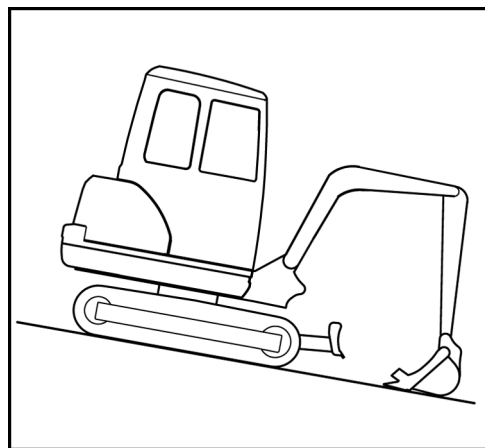
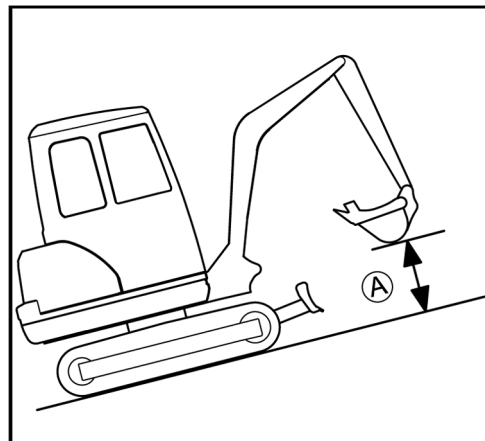


Driving uphill and downhill



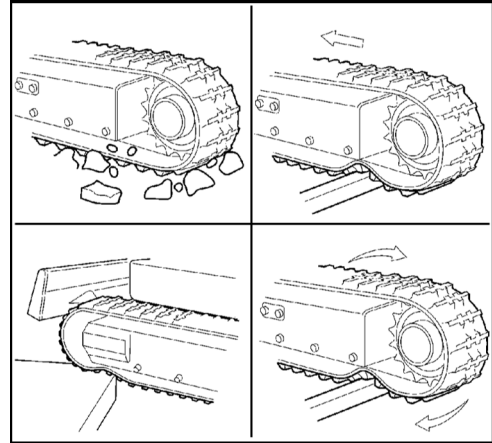
Exercise extreme caution when driving up and down a slope. Do not use the travel speed button.

- When driving on gradients, raise the bucket approx. 200 to 400 mm (A) above the ground (see figure).
- When driving on gradients, let the bucket slide over the ground if the terrain allows it.



Notes for rubber crawler operation

- Driving or turning on sharp objects or over steps causes excessive wear on the rubber crawlers and will lead to 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.

Making sharp turns

- Do not make sharp turns on streets with a high-friction tarmac, e. g. concrete.

Protecting the crawler against salt

- Do not work with the machine on the seashore. (The salt will cause the steel insert to corrode.)