

OPERATION MANUAL

HYDRAULIC EXCAVATOR

ViO80-1A

YANMAR

Fill in the following information before starting the machine	
Model	
Machine serial number	
Serial number of the engine	
Year of manufacture	
Start-up date	
Your YANMAR dealer Address Telephone	

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Original manual

Language: EN
Issue: 2025-11
Manual code: MUB11ENMA00400

From serial number: XXXXXXXXXX

Yanmar Construction Equipment Europe S.A.S.
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www.yanmar.com

INTRODUCTION

This User Manual is designed to provide you with important information and the instructions you need for safe and effective use of the machine.

This document is an original manual.

Read the manual before you use the machine to familiarise yourself with the operation, verification and maintenance procedures and instructions.

A serious accident may be caused if you do not respect the precautions contained in this user manual or use any procedures that are not recommended. If the safety rules are not respected, injury may be caused or the equipment may be damaged.

⚠ DANGER

Incorrect use of the machine may cause serious injury or even death. Personnel involved in using and maintaining the machine must familiarise themselves with the content of this manual before carrying out a task.

⚠ WARNING

Never try to run, use, or repair the machine if you have not read and understood all the applicable warnings and user instructions contained in this manual and on the safety signs on the machine.

Injury may be caused if the safety messages are not respected.

Do not start the machine before you have familiarised yourself with the content of this manual.

The personnel responsible for using the machine must keep this manual within easy reach and consult it from time to time. To ensure that this manual remains available for other users, always put it back in its compartment when it is not being used.

If you lose or damage the manual, order a new one immediately from your dealer.

This manual must be considered as a permanent part of your machine and must not be separated from the machine when you sell it.

YANMAR provides its customers with products that conform to the regulations and industrial standards that apply in their respective countries. If you are using a YANMAR machine that you have bought from a foreign company, you should be aware that certain safety mechanisms may be missing from the machine. Consult your dealer to find out whether your machine complies with the regulations and industrial standards that apply in your country.

When the machine and its attachments are exported to another country, comply with the laws and regulations on export and trade control.

The important safety instructions are presented in this manual in sections:

- **1 Basic precautions, page 60**
- **2 Usage precautions, page 66**

⚠ WARNING

The operator of this machine must be competent and trained in its use.

The machine operator must take immediate action to correct any fault that could compromise safety.

If the machine is used in coordination with other people, vehicles, or machines, it is essential to apply the site organising rules.

⚠ WARNING

Never tamper with the electrical circuit.

Never modify the design of the machine or its engine.

Never remove or deactivate the protections or safety mechanisms installed.

Any unauthorised modification to the design or use of unauthorised attachments may cause physical damage.

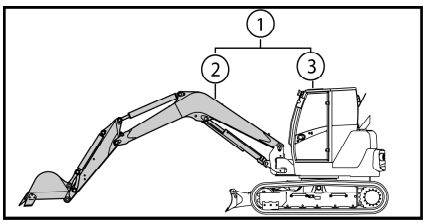
In addition, in that these actions would constitute an explicit violation of the terms of the YANMAR Product Warranty, the applicable warranty would also become null and void.

The warranty is a part of the YANMAR product support programme for customers who use and maintain their equipment as described in this manual. If the equipment has been used incorrectly or modifications have been made to transform its perfomances beyond the original factory specifications, the warranty expires and the improvements on site under warranty are rejected. The use of fuel beyond the specifications required or modifying the power of the machine's engine will void the warranty.

Only use metric equipment and tools.

The right and left hand sides are determined by facing the forward movement direction.

In this manual, the main product sections are designated as follows:



(1) **Machine** = whole product
(2) **Equipment** = part including the arm, the boom, the bucket or any other attachment
(3) **Basic machine** = part comprising the upper structure and the lower frame

All the information, illustrations and specifications contained in this manual are based on the latest product information available on publication.

YANMAR reserves the right to modify the information and illustrations in this manual without notice.

For any further information, please contact your approved YANMAR dealer.

The images that appear in this booklet are provided for information purposes and may vary according to each model.

Some of the machine's specifications may differ from those described in the manual because the machine's design and performances have been improved. If you have any comments to make concerning the content of the manual, do not hesitate to consult your dealer.

DECLARATION OF CONFORMITY

The undersigned YANMAR C.E. Europe SAS, 25 rue de la Tambourine, 52115 ST-Dizier FRANCE states that the designated machine:

Description - Generic name - Function - Model - Type - Serial number - Trade name

XXXXXXXXXXXXXXXXXXXX – VIO80-1A – HYDRAULIC EXCAVATOR – VIO80-1A – VIO – XXXXXXXXXXXXXXXX – VIO80-1A

Special equipment:

- XXXXXX
- XXXXXX

* complies with the provisions of the following European directives and the national legislations implementing them.

2006/42 EC

2014/30 EU

2000/14 EC + 2005/88 EC

Procedures applied for conformity assessment are:	NF EN ISO 3744 NF ISO 6395 EN ISO 4871
Notified Body:	CETIM Centre Technique des Industries Mécaniques 52, avenue Félix Louat -CS 80067- 60304 SENLIS Cedex FRANCE

Net power output : 39,3 kW * 1900 rpm

Measured sound power	97,7 dBA
Guaranteed sound power	98 dBA

*Name and address of the person established in the European community, authorized to compile the technical file and transmit it in whole or part to the public authorities in response to a reasonable request:

YANMAR C.E. Europe SAS – 25, rue de la Tambourine
52115 SAINT DIZIER CEDEX –FRANCE

* The following documents were used in the design of the machine:

- Harmonised standards:

EN 474–1; EN 474–5;

Done at Saint-Dizier, the XX/XX/XXXX

Xxxxxxxx Xxxxxxx, Xxxxxxx

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S.A.S. au Capital de 17 000 000 €
R.C.S. Chaumont 950 607 218
SIRET 950 607 218 000 19
EORI FR 950 607 218 000 19

Definition of target groups

The contents of these operating instructions are aimed at diverse groups of staff members. The target groups are as follows:

- Apprentice staff
- Operating personnel
- Maintenance personnel
- Electrical maintenance technicians
- Service personnel
- Carriers
- Guides
- Staff responsible for attaching loads
- Crane operators
- Waste disposal staff

This section defines the level of knowledge required for each of these target groups.

Apprentice staff must :

- have been instructed.

All the following target groups must:

- have read these operating instructions and understood their contents.
- have received first aid training and be able to put it into practice.
- be physically and mentally fit for the purpose of carrying out their tasks.
- display knowledge and understanding of national safety regulations for slinging, moving, and storing the goods encountered at the site of operation.
- be fully familiar with the risks posed by machinery and loads.
- be of the legal minimum age.

Operating staff must:

- have been instructed in the use of the machine.
- have proven their ability to operate the machine to the operating company.
- have been appointed by the operating company to operate the machine.
- be familiar with the country-specific accident-prevention regulations.
- be in possession of the relevant national permit for operating the machine.
- be fully familiar with the risks that arise when working with machinery and display knowledge and understanding of all safety-related instructions, sources of danger, and safety precautions.
- have received training and instruction concerning what to do in the event of a malfunction.
- have read through the entire documentation, in particular the operating instructions, and be capable of applying the information contained therein.
- be familiar with the hand signals for guiding machines.
- operate the machine in such a way that they remain fully in control of it even in the face of dynamic forces.

Maintenance staff must:

- fulfill all the same qualification criteria as the operating staff.
- know the maintenance points on the machine.
- have proven their ability to perform maintenance work on the machine to the operating company.
- have been appointed by the operating company to perform maintenance work on the machine.
- know the country-specific environmental regulations for the disposal of lubricants.
- Have completed a machine and task specific maintenance training by YANMAR or a person authorized by YANMAR.

Electrical maintenance technicians must imperatively:

- have the same qualifications as maintenance technicians.
- have a specific qualification for working on electric vehicles.
- have protective equipment: protective gloves, goggles, hearing protection, safety shoes, protective clothing, protective visor, voltage absence tester.

Service staff must:

- fulfill all the same qualification criteria as the operating staff.
- be fully familiar with the risks that arise in repair work with machines and display knowledge and understanding of all safety-related instructions, sources of danger, and safety precautions.
- have qualification and professional training.
- have been trained by YANMAR for service work on the machine.
- Have received training and instruction concerning what to do in the event of a malfunction.
- be qualified to carry out work on the mechanical, electrical, control, and hydraulic components of machines as demonstrated by a nationally recognized certificate.
- Have read and understood the service information provided by the manufacturer and be capable of applying it.
- Have completed a machine and task specific service training by YANMAR or a person authorized by YANMAR.
- remain in the operating staff’s field of vision.

Carriers must :

- Possess the relevant national heavy goods vehicle license.
- Possess the relevant national operating license for this machine (should they be required to drive it during loading).
- remain in the operating staff’s field of vision.

Guides must:

- Be easily recognizable (e.g. by means of reflective clothing).
- remain in the operating staff’s field of vision.
- not be given any other tasks while guiding the machines, as they may be distracted.
- Have the necessary knowledge and understanding to be able to assess situations correctly while they are guiding machines and to be able to respond appropriately.
- Know hand signals for guiding the machinery and have agreed on them with the machine operator.

Derrick operators must:

- know how to estimate the weight and position of the centre of gravity of loads to be moved.
- have knowledge of the selection, safe assembly/disassembly and maintenance of lashings.
- keep within the operators' field of vision.
- have knowledge of the lifting capacities corresponding to the use of lashings (number of slings, type of lashing, angle of inclination).
- know the hand signals for moving loads and agree on them with the operators,
- in accordance with national regulations, hold an appropriate certificate of aptitude.

Crane operators must:

- have the same qualifications as derrick operators.
- have the necessary knowledge and the relevant national licence to move heavy goods using a crane.

Those responsible for waste disposal must:

- belong to a company approved in accordance with national regulations.
- have the knowledge required to dispose of components safely and in an environmentally-friendly manner.
- be informed by the manufacturer's approved breakdown mechanics of the special features of the construction (stored energy).

SAFETY SIGNALS

The following signals are used in this manual to indicate the severity of the risks that may be encountered if the warnings concerning the product are not respected:

⚠ DANGER	Dangerous situation imminent that may cause death or serious injury.
⚠ WARNING	Potentially dangerous situation likely to cause death or serious injury.
⚠ CAUTION	Potentially dangerous situation likely to cause slight or medium-seriousness injury.
⚠ IMPORTANT	Remarks or instructions to be respected to ensure the completely safe operation and maintenance of the machine.

SYMBOLS USED IN THIS MANUAL

	Incorrect use or situation
	Correct use or situation
	Options
	Unlocked
	Locked
	Short arm
	Long arm
	Additional counterweights

ABBREVIATIONS USED IN THIS MANUAL

WLL : Working Load Limit
LC : Lashing Capacity
AUX / PTO : Auxiliary hydraulic circuit

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A DESCRIPTION AND ILLUSTRATION OF THE MACHINE

CHAPTER COVERED IN THIS PART:

1 Applications and regulations
2 Identification plates
3 Warning labels
4 General view of the machine
5 Description of the driving position
6 Operation of the air conditioning
7 Lifting Kit
8 Covers
9 Using the electric fuel filling pump
10 Options

1 APPLICATIONS AND REGULATIONS

1.1 Applications

The machine is designed to carry out the following tasks:

- Excavation
- Ground levelling
- Shovelling
- Trench digging and ridging
- Loading
- Lifting

⚠ CAUTION

The machine must not be used for any tasks that are not covered.

⚠ CAUTION

It is forbidden to transport or lift people with the machine.

Note

Other applications are possible depending on the attachment fitted to the machine. Refer to the attachments manual.

1.2 Warranty

All our products are carefully manufactured and have a long service life. In addition to the standard guarantee, we offer various "Guarantee Plus" options, enabling you to put together the guarantee package that best suits your needs.

Please contact your dealer at any time, who will be happy to offer you advice and various services.

1.3 Driving permits

Before using this machine, check the requirements applicable to its use concerning the driving permits. Respect all applicable laws.

See your dealer for questions about usage permits.

1.4 Lifting

- Using the machine as a hoist is subject to the Machinery Directive 2006/42/EC for members of the European Community, and to the legislations specific to each country for states outside the EC.

  YANMAR CONSTRUCTION EQUIPMENT EUROPE S.A.S.declines all responsibility for any use of the machine that does not respect the instructions in this regulation.
- Consult your YANMAR dealer for more information about the lifting function.

1.5 Environmental regulations

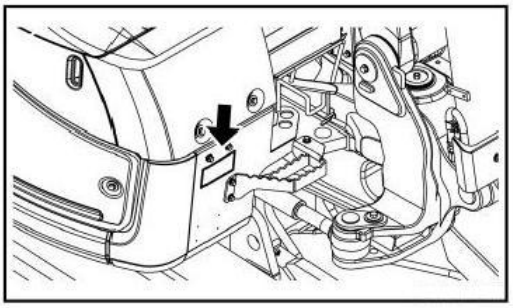
The safety of our products and the protection of the environment are important concerns for YANMAR CONSTRUCTION EQUIPMENT EUROPE S.A.S.

In accordance with Article 33 of the REACH Regulation EC/1907/2006 (Registration, Evaluation, Authorisation and Restriction of CHemicals), we inform you that our machines may contain substances included in the ECHA (European CHemicals Agency) candidate list.

For more information, please visit our website.

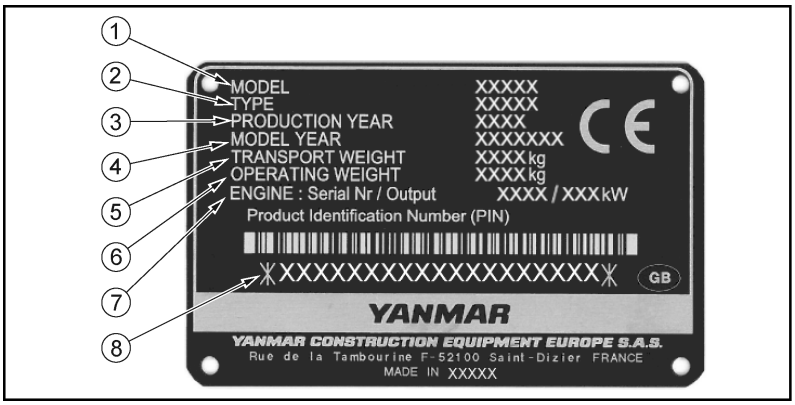
2 IDENTIFICATION PLATES

2.1 Machine serial number plate



The machine's serial number plate is located on the frame, as shown opposite.

Never remove this plate for any reason.



1 = Model name

2 = Type (Machine Category)

3 = Date of manufacture of the machine

4 = Model year

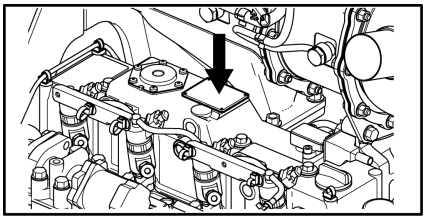
5 = Transport weight (Weight of the machine without bucket nor rapid attachment nor operator)

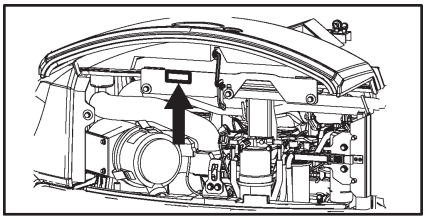
6 = Operating weight of the machine fitted with a standard bucket and standard rapid attachment (with operator +75 kg)

7 = Serial number and engine power

8 = Machine serial number

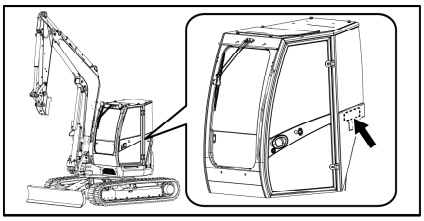
2.2 Engine serial number plate





The engine's serial number plate is located on the top of the cylinder head cover and on the adhesive label located inside the bonnet.

2.3 Safety structure plate

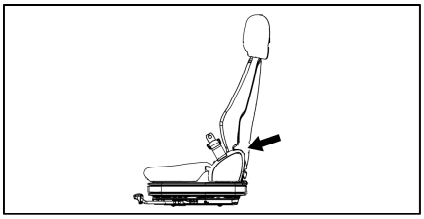


The safety structure plate is located inside the cockpit on the cab/canopy/safety structure.

Never remove this plate for any reason.

2.1.3 Check the safety structures, page 67

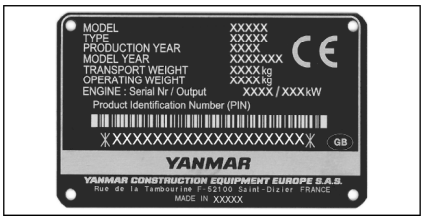
2.4 Seat identification

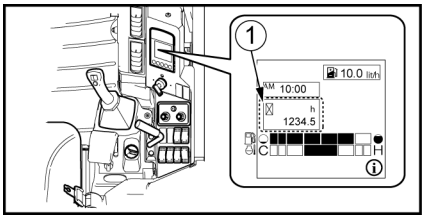


The seat identification is located behind the seat.

Never remove this plate for any reason.

2.5 Spare parts order and intervention request





When you order spare parts or call for an inervention, tell your dealer the model name, the serial number of the machine and the serial number of the engine and the number of hours displayed on the time counter.

1 = Time counter

3 WARNING LABELS

- Several safety messages are configured on the machine.

  The description and location of all the safety messages are provided in this chapter.

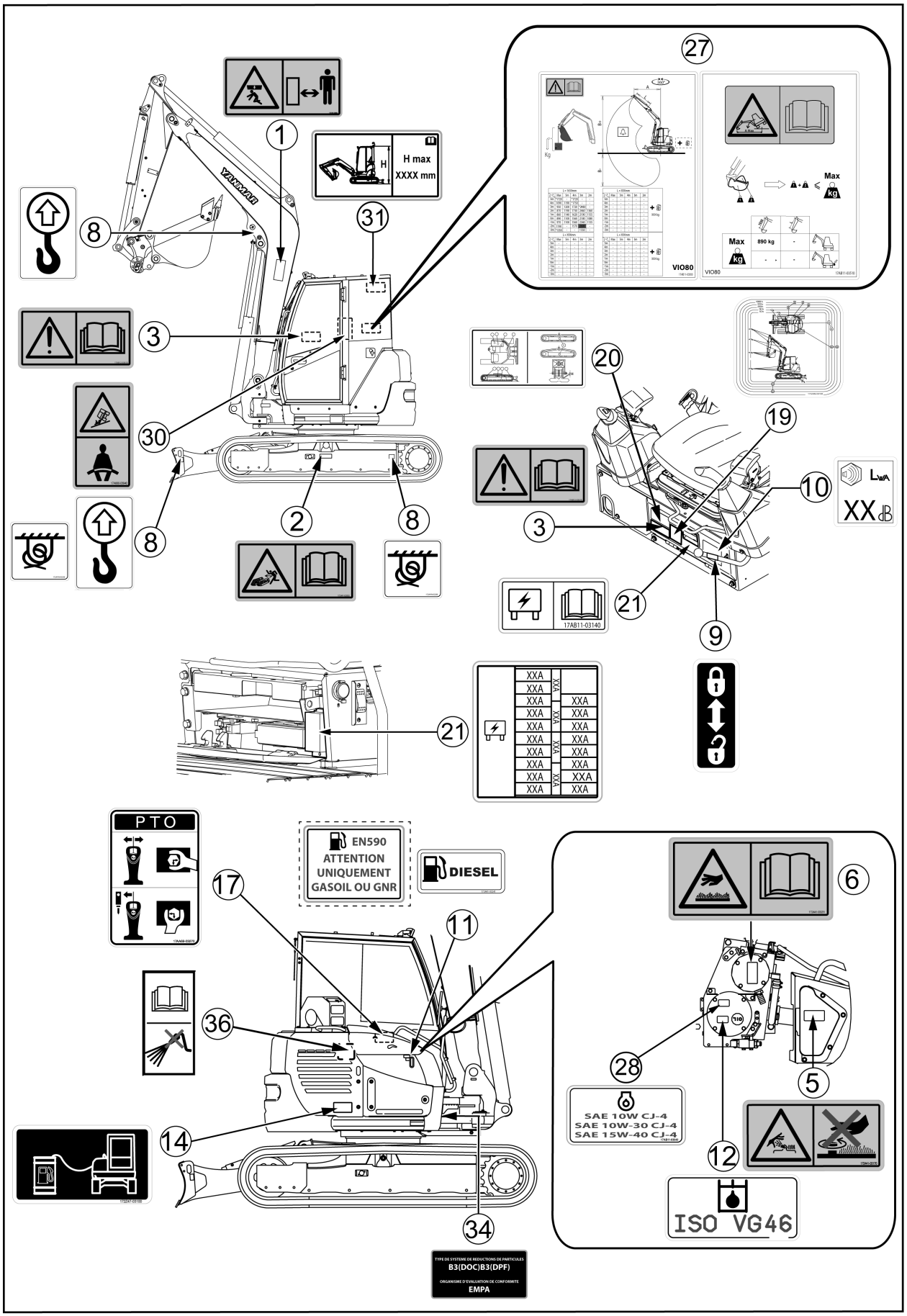
  Check regularly to see whether all the messages are in the correct location and are legible.
- If an adhesive label is missing, damaged or illegible, replace it straight away.

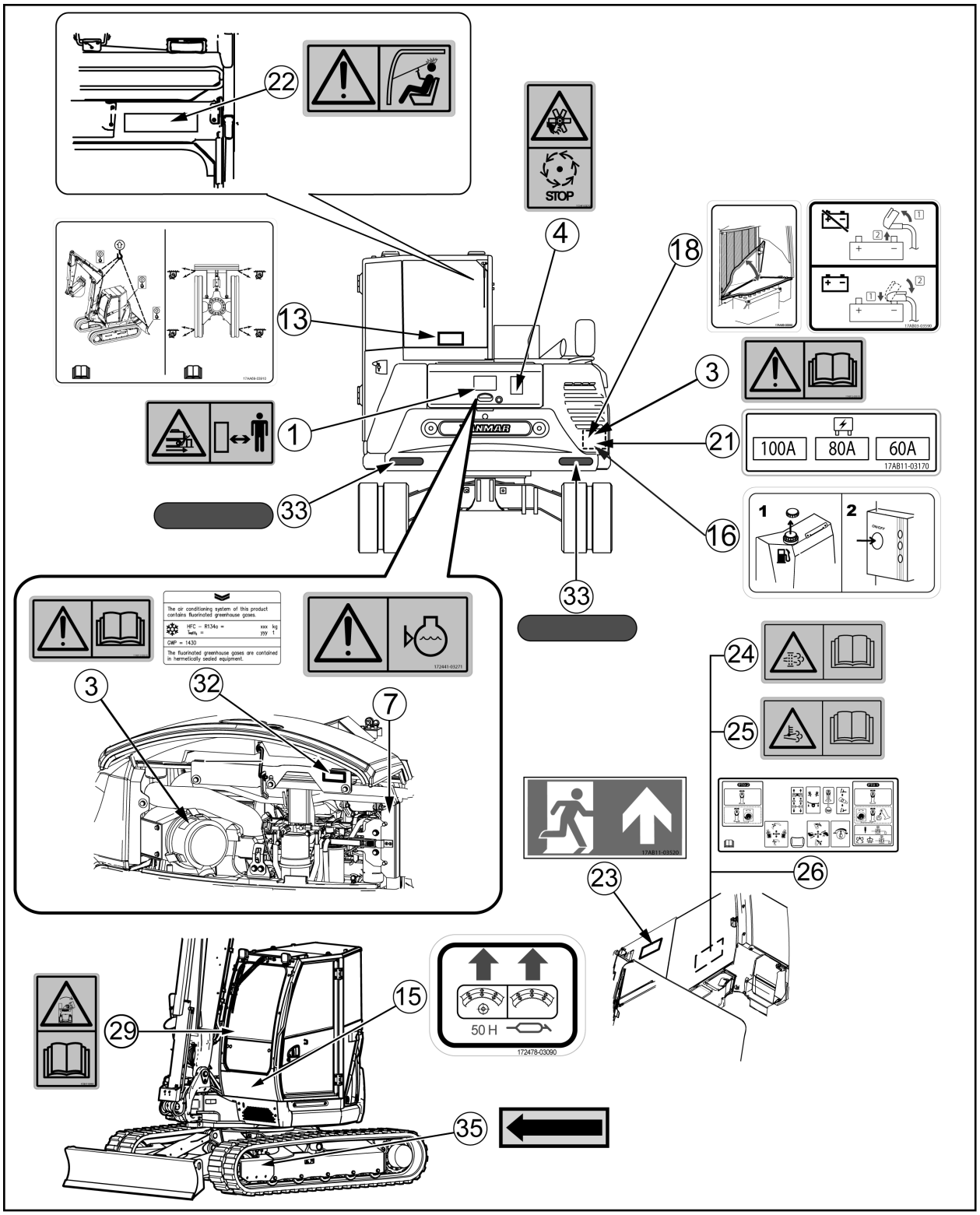
  In the same way, if an adhesive label is on a part that has been replaced, add a new adhesive label to the new part.
- Contact your YANMAR dealer to obtain new adhesive labels.

  The part code number is clearly indicated on each label.

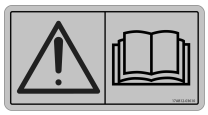
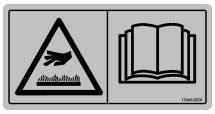
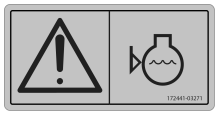
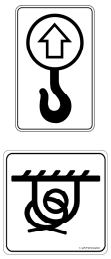
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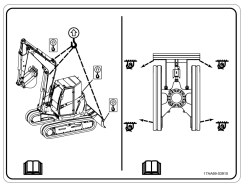
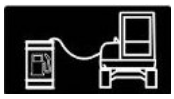
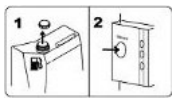
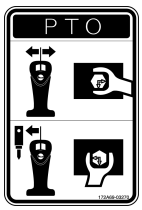
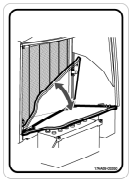
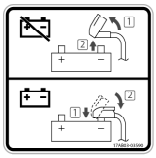
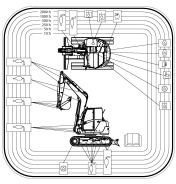
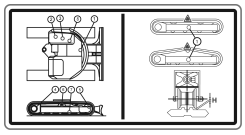
3.1 Location of the warning adhesive labels

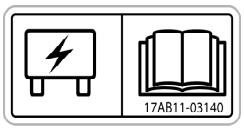
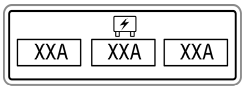
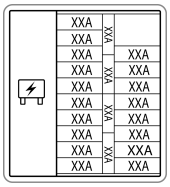
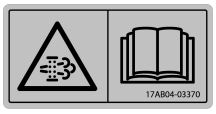
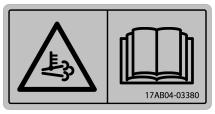
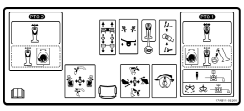
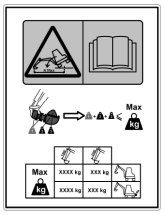
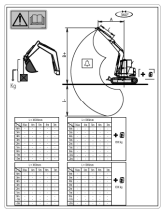
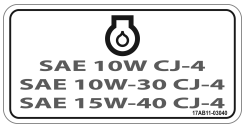
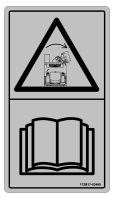


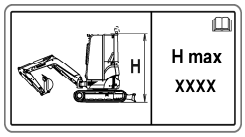
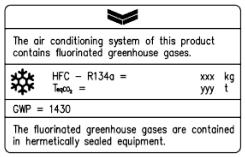

22
STOP
4
18
13
3
1
21
100A
80A
60A
17AB11-03170
33
16
33
1
2
ON/OFF
The air conditioning system of this product contains fluorinated greenhouse gases.
HFC – R134a =
xxx kg
yyy t
GWP = 1430
The fluorinated greenhouse gases are contained in hermetically sealed equipment.
172441-03271
3
32
7
24
25
17AB11-03520
26
23
29
15
50 H
172478-03090
35

3.2 Explanation of the warning adhesive labels

1		Machine's Danger Zone **2.2 Movement precautions, page 70** **1.2.4 Dismantling the attachment, page 126** **2.2.1 Machine's Danger Zone, page 70**
2		Pressurised product. Read the user manual. **4.1.5 Rubber track maintenance, page 137** **4.1.6 Steel track maintenance, page 142**
3		Read the user manual. **2.1.5 Accessing the machine, page 68** **2 Usage precautions, page 66**
4		Do not remove the protective casings while the machine is running. **1.2.9 Radiator ventilator, page 128**
5		Pressurised elements. Do not unscrew while the liquid is hot. **1.9 Avoid removing the caps when the temperatures are high, page 62**
6		Hot surfaces. **3.3 Checking and topping up the engine oil level, page 83**
7		Level of engine cooling fluid. **3.2 Checking and topping up the level of cooling fluid, page 83**
8		Transporting the machine **14.4 Slinging the machine, page 114** **14.3 Tying down the machine, page 112**
9		**5.3.1 Locking lever, page 22**
10		**3 Noise emitted by the machine, page 160**

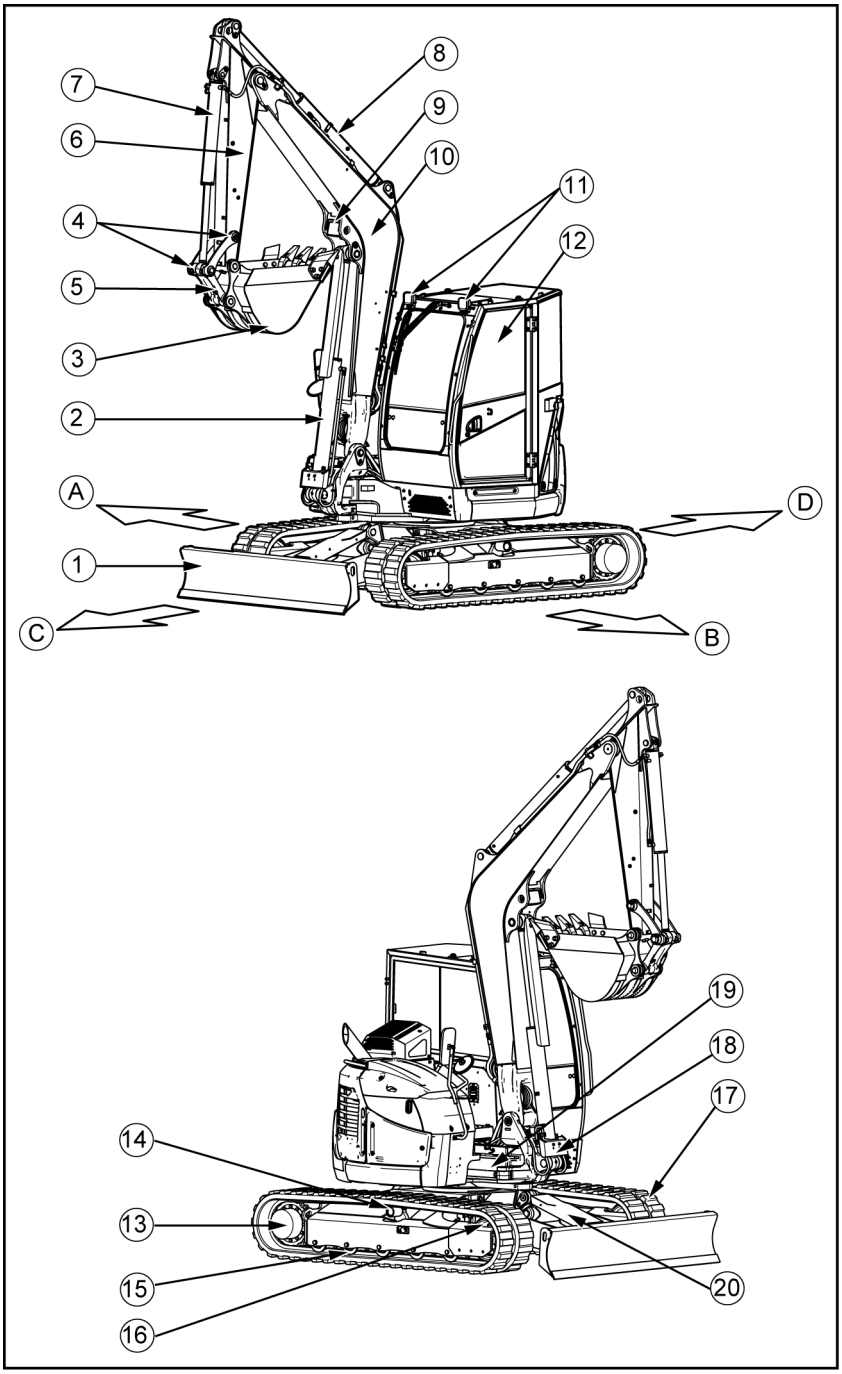
11	 	Fuel Diesel fuel with sulphur levels of 15 ppm or less shall be used as fuel. **3.4 Checking and topping up the fuel level, page 84** **13 Using the particle filter, page 108**
12		Hydraulic oil **2 Recommended greases and fluids, page 129** **3.5 Checking and topping up the hydraulic oil level, page 85**
13		Tie-down and slinging plans for the machine **14 Transporting the machine, page 111**
14		Using the electric fuel filling pump **9 Using the electric fuel filling pump, page 49**
15		**4.2.1 Greasing the pin and rotation crown, page 146**
16		Using the electric fuel filling pump **9 Using the electric fuel filling pump, page 49**
17		AUX1 circuit selector **12.2 AUX1 circuit selector, page 107**
18	 	The battery is located under the right cover. **2.7 Precautions for the battery, page 80** If the battery is discharged **16.1 Precautions for connecting and disconnecting the starter cables, page 119**
19		Scheduled maintenance points of the machine (lubrication, filters...) **3 Periodic inspections and upkeeps, page 132** **4.1.3 Greasing points, page 136**
20		Tension check **c. Tension check, page 139** **c. Tension check, page 142**

21	  	Fusebox **5.9 Fuses, page 33**
22		Opening of the upper part of the windscreen **5.10 Cabin, page 36**
23		Cabin's emergency exit **1.15 Cabin's emergency exit, page 64**
24		Manual regeneration of the dust particle filter (DPF) **13.4 Manual regeneration of the particulate filter, page 109**
25		Exhaust gas temperature icon **5.2.9 Information and error icons, page 19** **13 Using the particle filter, page 108**
26		Description of the driving position **5.3 Joysticks and pedals, page 21**
27	 	The maximum weight when in use in bucket mode or with attachments that ensures machine dynamic stability in use. It corresponds to the maximum weight allowed at the end of the empty arm. **9.1 Machine stability when using with a bucket or an attachment, page 99** Lifting capacities **F Lifting capacities, page 163**
28		A low ash oil must be used as engine oil. **13 Using the particle filter, page 108**
29		Interference between the bucket and the machine. **12.3 Precautions for using the attachment, page 107**

30		Always fasten your safety belt and adjust it before starting the machine. **2.1.6 Fasten your safety belt, page 68**
31		Before transporting the machine, check the total height of the load. **14.3 Tying down the machine, page 112**
32		The air conditioning system contains fluorinated greenhouse gases. **1.16 Air conditioning system, page 65**
33		Reflective strips make the machine more visible in the dark.
34		YANMAR engines are equipped with a continuous regeneration system which filters harmful substances using a DPF and to perform the regeneration without interrupting the operation of the machine. **13 Using the particle filter, page 108**
35		Check the position of the blade before operating the side movement levers. **2.1.4 Check the position of the blade, page 67**
36		Do not point the high-pressure cleaners at the components of the electrical circuit (battery, wiring harnesses, connectors, etc.). **1.1.4 Keep the machine clean, page 125**

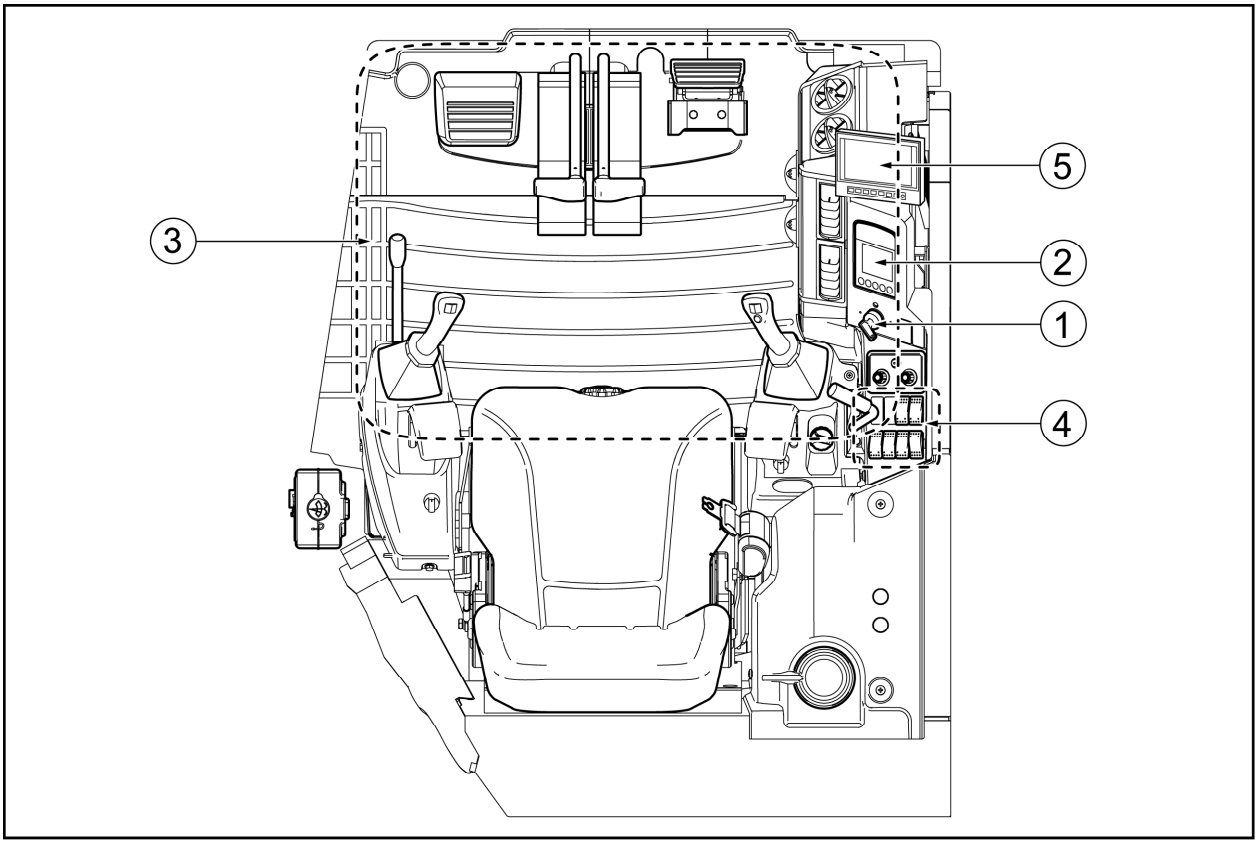
4 GENERAL VIEW OF THE MACHINE

A = Right
B = Left
C = Front
D = Rear
1 = Blade
2 = Boom cylinder
3 = Bucket
4 = Bucket pin
5 = Bucket link
6 = Arm
7 = Bucket cylinder
8 = Arm cylinder
9 = Boom headlamp
10 = Boom
11 = Cab headlight
12 = Cabin
13 = Sprocket wheel
14 = Support roller
15 = Track roller
16 = Idle wheel
17 = Track
18 = Boom base
19 = Boom rotation cylinder
20 = Blade cylinder



5 DESCRIPTION OF THE DRIVING POSITION

This section describes the different command mechanisms necessary to operate the machine. In order to work in complete safety and comfort, it is vital that you understand how to operate and use these mechanisms.



1 = Start key

2 = Operator display station

3 = Joysticks and pedals

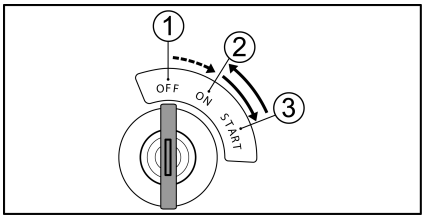
4 = Switches

5 = Camera screen

5.1 Start key

⚠ IMPORTANT
The machine is fitted with an electrical safety system. **If the locking levers are not in safety position, the engine cannot start.**

- Use this command to start and stop the engine.



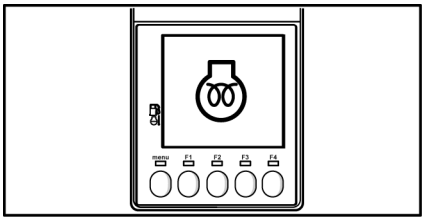
1 = OFF

2 = ON

3 = START

OFF position = shutdown	Turn the key to OFF position to switch off the engine and disconnect the electrical circuit.

ON position = operation



Turn the key to the ON position to turn on the power circuit and the charging circuit. Keep the key in this position while the engine is running.

When the start switch is in the ON position and preheat the symbol appears on the monitor screen, hold the key in the ON position until the symbol is no longer displayed.

START position = startup

Turn the key to START position to start the engine. Release the key after the engine starts and it will return itself to ON position.

⚠ WARNING

To protect the starter and battery :

• Do not keep the ignition key more than 10 seconds in the START position

• If the engine does not start, move the ignition key to the OFF position and wait 30 seconds before trying to start the engine.

Note

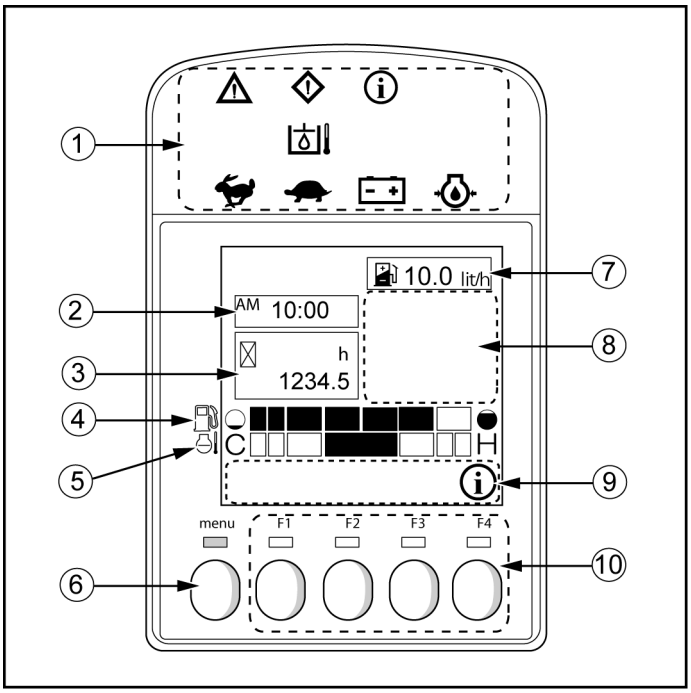
The ignition key can also be used to lock certain parts of the machine, such as bonnets or the cab (if the machine has one).

5.2 Operator display station

- When the starter key is in ON position, the lights come on and the alarm sounds. If one of the indicators does not light, its lamp is blown or its sensor faulty.
- All the lights go off after the engine is started. If a problem occurs when starting, a light comes on and the alarm sounds.

⚠ WARNING

When an indicator light comes on and the alarm sounds during operation, stop the engine immediately and follow the steps recommended in this manual.



1 = Lights
2 = Clock
3 = Time counter
4 = Diesel gauge
5 = Cooling fluid temperature indicator
6 = Menu change
7 = Fuel consumption
8 = Information and error icons
9 = Indication of functions
10 = Keys F1 to F4

For the advanced features on the operator display station:

6 Operator LCD display station interfaces, page 90

5.2.1 Lights

Warning light (red)	Alert light (orange)	Information symbol (blue)	
	Hydraulic oil temperature gauge (red)		
Increased speed (green)	Reduced speed (green)	Battery charge warning alert (red)	Engine oil pressure alert indicator (red)

a. Warning light

If the warning light flashes and the alarm sounds continuously, immediately stop using the machine. After stopping the machine, check the error details and take corrective measures.

b. Alert light

If the alert light blinks and the alarm sounds intermittently, stop the machine as soon as possible. After stopping the machine, take the necessary corrective measures.

c. Information symbol

The information indicator will flash to indicate the presence of information such as maintenance indications. Press F4 to view the details.

d. Hydraulic oil temperature gauge

This indicator lights only at startup and it does not have any function on this machine.

e. Travel speed indicator



Increased speed

This indicator shows that the 2nd gear is engaged.



Reduced speed

This indicator lights only at startup and it does not have any function on this machine.

f. Battery charge warning alert



- The warning light comes on when the battery charge level is too low.
- In this case, check the battery charge circuit.
- If you detect any faults, contact your dealer.

15.2.2 Electrical equipment, page 117

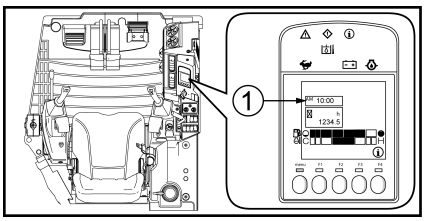
g. Engine oil pressure alert indicator



If the engine oil pressure falls below the normal level, the warning light comes on and the alarm sounds. In this case, shut down the engine.

15.2.1 Engine, page 116

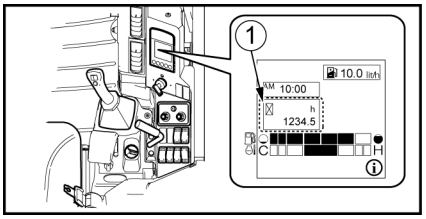
5.2.2 Clock



1 = Clock

- The clock displays the current time.
- The time can be displayed in 12-hour (AM/PM) or 24-hour format.

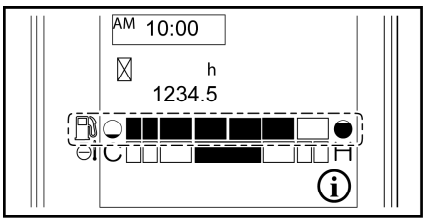
5.2.3 Time counter



1 = Time counter

- The time counter indicates the number of hours for which the machine has been working.
- Reading this time counter will help you define the intervals between maintenance operations.
- When the starter key is in ON position, the time counter permanently records the time even if the machine is not being used.
- The time counter records "1" for one hour without considering the engine rotation speed.
- The decimal to the far right records"1" for 0.1 hours (6 minutes).

5.2.4 Diesel gauge



● = Full

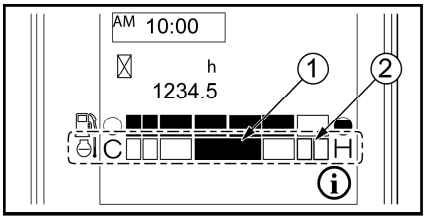
◒ = Empty

- The diesel gauge operates when the starter key is in ON position. It indicates the level of diesel in the tank.
- When the gauge reaches the two indicators near the symbol "Empty" (the leftmost cubes), fill up as soon as possible.

Note

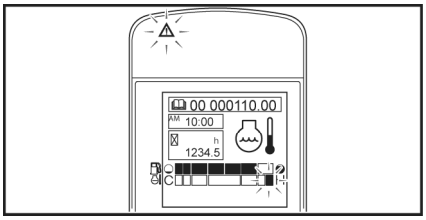
The gauge indication is affected by the level of machine tilt.

5.2.5 Cooling fluid temperature indicator



C = cold

H = hot

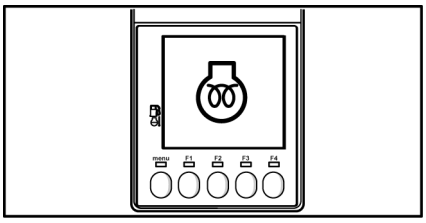


- It indicates the temperature of the engine cooling fluid. The normal temperature is close to zone (1) during normal operation.
- If the temperature of this coolant reaches the limit (2) during working, then slow the engine down and wait for it to return to normal.
- When the engine is cold, top up with cooling fluid following the procedure described in chapter

3.2 Checking and topping up the level of cooling fluid, page 83

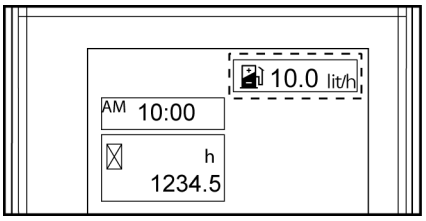
5.2.6 Preheating light

⚠ IMPORTANT
Do not leave the key in START position for over 10 seconds. **If the engine does not start, position the key at OFF. Wait 30 seconds then restart the engine.**



- When the start switch is in the ON position and preheat the symbol appears on the monitor screen, hold the key in the ON position until the symbol is no longer displayed.

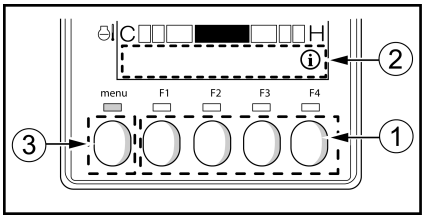
5.2.7 Displaying the fuel consumption



- The current fuel consumption is calculated from the amount of fuel used by the machine and is displayed on the operator display station.
- The display of fuel consumption can be stopped by changing the settings on the operator display station.

6 Operator LCD display station interfaces, page 90

5.2.8 Navigation keys



1 = Keys F1 to F4

2 = Indication of functions

3 = Menu change

Keys F1 to F4

- Use these buttons to launch the operations corresponding to the icons displayed above the function indicator bar.

6.1 Indication of functions, page 90

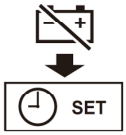
Menu change

- Press the "Menu Change" button to access the main menu.

6 Operator LCD display station interfaces, page 90

5.2.9 Information and error icons

Date and time setting indicator



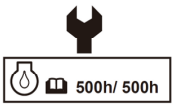
- The time and date must be set from the settings screen.

Note

If the battery in the machine is removed, the date and time settings will be reset.

6 Operator LCD display station interfaces, page 90

Maintenance notice



- This icon indicates on the basis of the machine's accumulated hours of use that the maintenance period for an maintenance object has been reached. Required maintenance must be performed after referring to the maintenance section of this manual.
- When the maintenance has been performed, the accumulation of maintenance time must be reset from the maintenance interface.

3 Periodic inspections and upkeeps, page 132

Exhaust gas temperature icon



- When launching the regeneration, an icon representing the temperature of the exhaust gas is displayed on the operator display station to warn of the emission of high temperature gas.

Note

This icon does not indicate a malfunction of the machine. It indicates that the temperature of the exhaust gas increases due to the regeneration of the DPF.

⚠ WARNING

Make sure there are no people and flammable items around the machine's exhaust.

Engine oil pressure alert indicator



- If the engine oil pressure is abnormal, the warning light comes on and the buzzer sounds. In this case, shut down the engine.

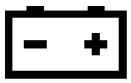
15.2.1 Engine, page 116

Fuel level



- This icon indicates a low fuel level in the tank.

Battery charge warning alert



- If the battery is not correctly charged, the warning light will come on.
- In this case, check the battery charge circuit.
- If you detect any faults, contact your dealer.

Water temperature alarm light



- When the starter key is in ON position, the light comes on and goes off a few seconds later.
- If the temperature rises abnormally during operation, the light comes on and the alarm sounds indicating that the engine is overheating.
  1. Slow the engine for a while then shut it down.
  2. When the engine is cold, top up with cooling fluid following the procedure described in chapter

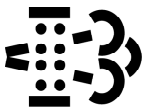
3.2 Checking and topping up the level of cooling fluid, page 83

Clogged air filter



- This icon indicates a clogged air filter. Stop the engine and are service the air filter.

Manual regeneration of the dust particle filter (DPF)



- This icon indicates that a manual regeneration of the DPF must be performed.

13.4 Manual regeneration of the particulate filter, page 109

Engine stop icon



- If the control panel displays this icon alternately with another icon, stop the engine immediately.

  Take the necessary corrective measures.

Error icon



- This icon indicates an error other than those described above.
- Contact your dealer and provide the error code displayed on the LCD.

Error NCD



- This symbol indicates that an error occurred in the diagnostics when checking the NOx emissions.
- Contact your dealer.

Error PCD

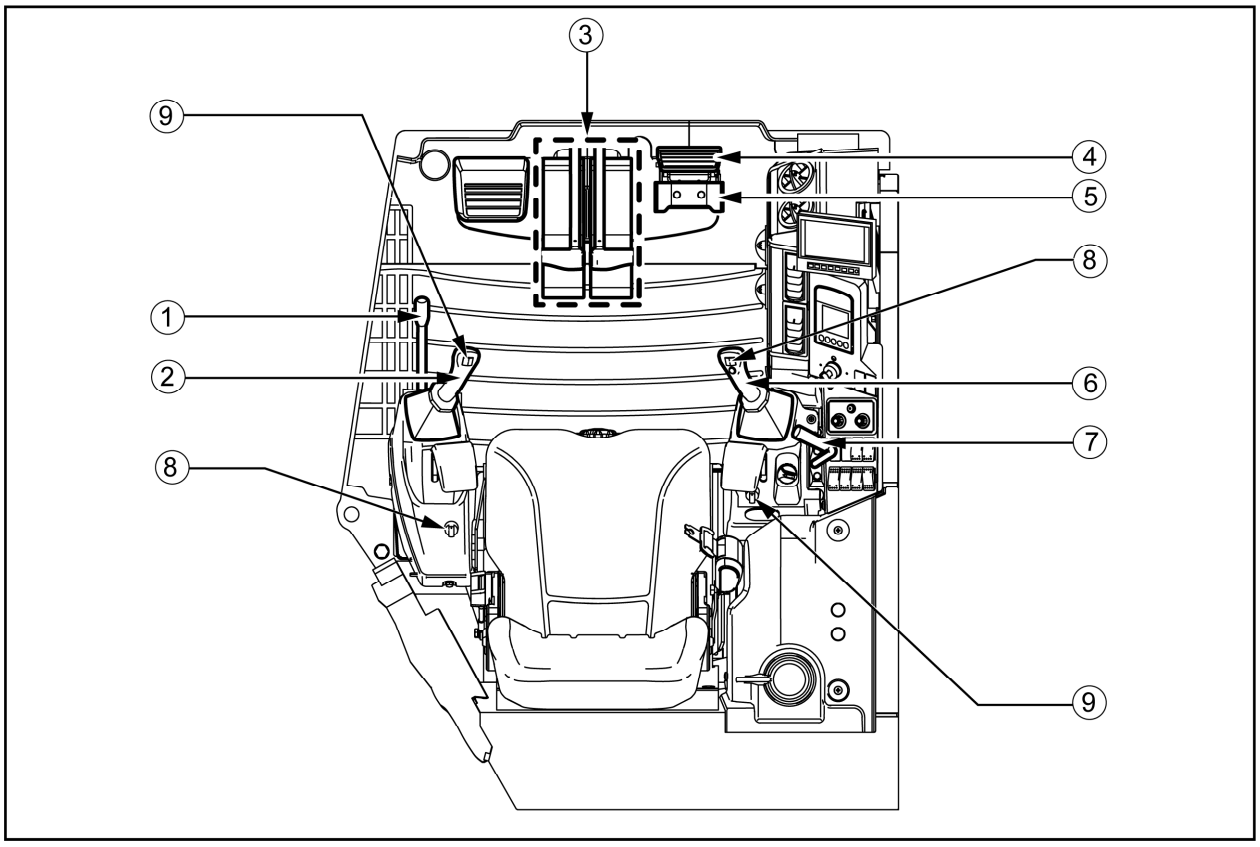


- This symbol indicates that an error occurred in the diagnostics when checking particle emissions.
- Contact your dealer.

Other errors

- In case of problems on the machine different from that already described, if the warning light is flashing and the STOP icon appears on the operator display station as well an error code, stop the machine immediately and contact your dealer.

5.3 Joysticks and pedals



1 = Locking lever
2 = Left command lever
3 = Travel levers and pedals
4 = Protection of pedals
5 = Boom rotation pedal
6 = Right command lever
7 = Blade lever
8 = Adjustable proportional AUX circuit**, P.T.O. 1**
9 = Adjustable proportional AUX circuit**, P.T.O. 2**

5.3.1 Locking lever

⚠ WARNING

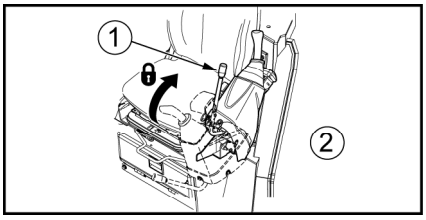
When you leave the operator's seat, place the bucket on the ground and put the locking lever in the locked position.

Unintentional manipulation of the control levers when the locking lever is not in the locked position can lead to a serious accident.

The movement relationship between the command lever mechanism and the equipment movements thay produce are described in detail in this manual.

To avoid any accidents due to handling errors, it is prohibited to modify the hydraulic circuit when reconnecting the hydraulic cylinder hoses and valves.

- The machine is equipped with locking lever(s) controling the hydraulic security system.
- When raising the locking lever to operate the security system, the lever stand raises for an easier access to the driving position.
- In locked position, the security system condemn the control devices of the machine.

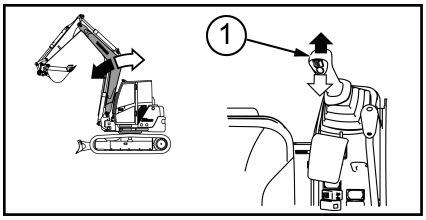


1 = Locking lever

2 = Left hand side

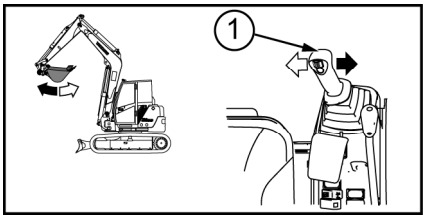
5.3.2 Right command lever

- The right hand command lever is used to handle the boom and the bucket.



Handling the boom

1 = Right command lever

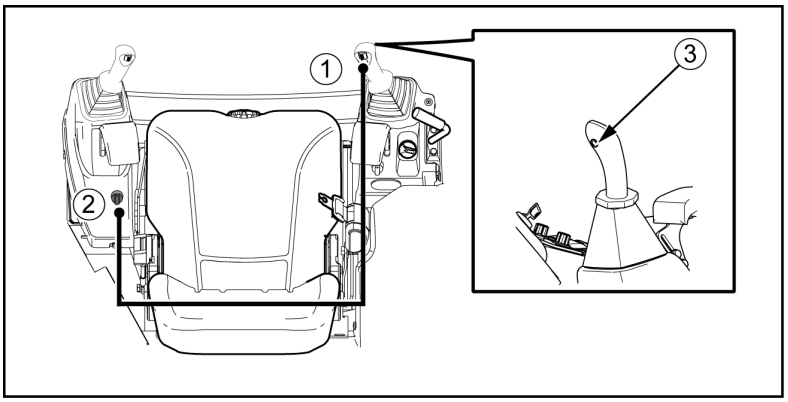


Handling the bucket

1 = Right command lever

- When you release the lever, it returns to neutral position and the respective movements stop.
- The potentiometer on the right-hand control lever controls the AUX1 circuit.

5.3.3 AUX1 circuit control



1 = Proportional roller
2 = Knob
3 = Position holding button

AUX circuit switch

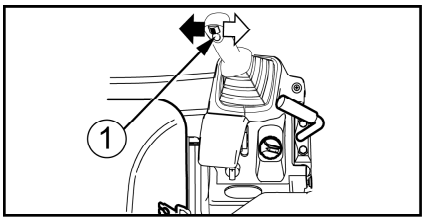
⚠ CAUTION

Do not operate the controls of circuit AUX1 if there are no attachments installed.

- Use the proportional roller to adjust the flow rate of the double-acting AUX circuit.

12 Using the hydraulic outlets, page 106

- Use the knob on the right joystick to use the attachment in single or double action mode.

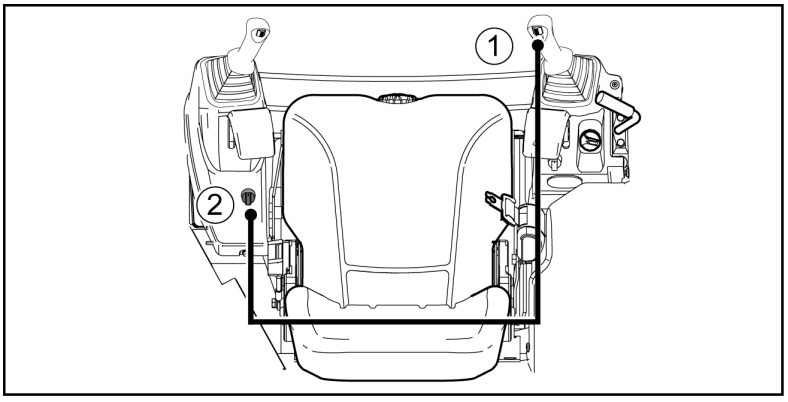


⇦⇨Dual action attachment (tilt bucket, auger, etc.) : operate only the proportional roller.

1 = Proportional roller

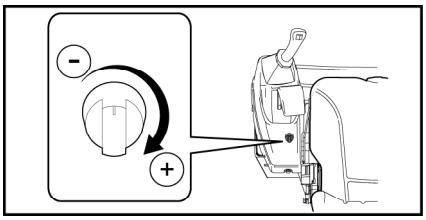
Adjustable proportional AUX circuit

- Use the proportional roller to adjust the flow rate of the AUX circuit.
- Adjustable proportionality allows better flow control to the AUX circuit by combining a potentiometer with the proportional roller.



1 = Proportional roller
2 = Knob

- To use the adjustable proportionality system :
  1. Operate the attachment with the proportional roller
  2. Set the maximum hydraulic circuit speed with the knob



- Turn the button clockwise to increase the flow rate.
- Turn the button counter-clockwise to decrease the flow rate.

⚠ CAUTION

When starting the machine, check the setting on the knob

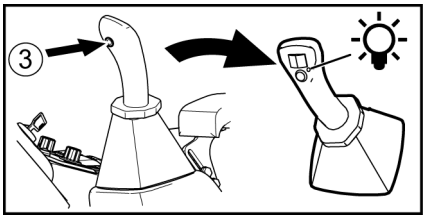
If the knob is set to the minimum, you cannot operate the attachment mounted on the AUX circuit.

Position holding button

⚠ CAUTION

Do not use the position holding with bucket tilting, you would risk damaging the machine's hydraulic circuit.

To use the position holding button:



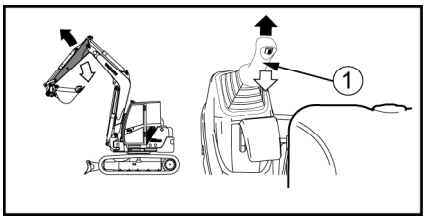
3 = Position holding button

1. Operate the attachment with the proportional roller
2. Press the position holding button. Release the proportional roller.

   The proportional roller control pressure is blocked and the LED on the corresponding joystick comes on.
3. The attachment operation is maintained and the attachment is operated at the rate set by the proportional roller.
4. Press the position hold button again to disable the position hold function.

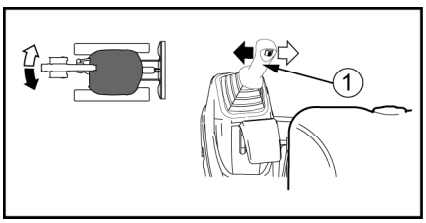
5.3.4 Left command lever

- The left hand joystick is used to control the arm movements and the rotation of the upper part.



Handling the arm

1 = Left command lever

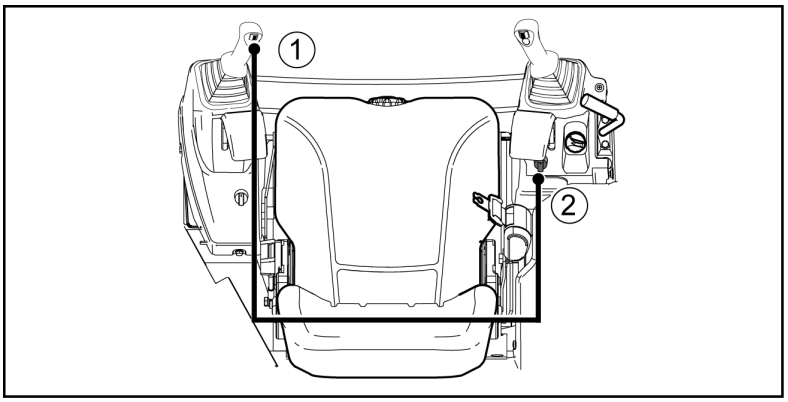


Rotation of the upper part

1 = Left command lever

- When you release the lever, it returns to neutral position and the respective movements stop.
- The potentiometer on the left-hand control lever controls the AUX2 circuit.

5.3.5 AUX2 circuit control



1 = Proportional roller

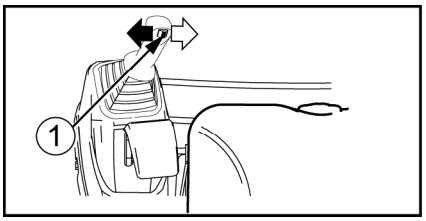
2 = Knob

AUX circuit switch

⚠ CAUTION

Do not operate the controls of circuit AUX2 if there are no attachments installed.

- Use the proportional roller to adjust the flow rate of the double-acting AUX circuit.
- Dual action attachment (tilt bucket, auger, etc.) : operate only the proportional roller.

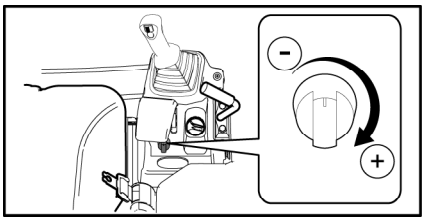


Use the proportional roller to adjust the flow rate of the double-acting AUX circuit.

1 = Proportional roller

Adjustable proportional AUX circuit

- Adjustable proportionality allows better flow control to the AUX circuit by combining a potentiometer with the proportional roller.
- To use the adjustable proportionality system :
  1. Operate the attachment with the proportional roller
  2. Set the maximum hydraulic circuit speed with the knob



- Turn the button clockwise to increase the flow rate.
- Turn the button counter-clockwise to decrease the flow rate.

5.3.6 Travel levers and pedals

⚠ DANGER

It is strictly forbidden to handle the machine controls outside the cockpit.

Incorrect use of the machine may cause serious injury or even death.

Personnel involved in using and maintaining the machine must familiarise themselves with the content of this manual before carrying out a task.

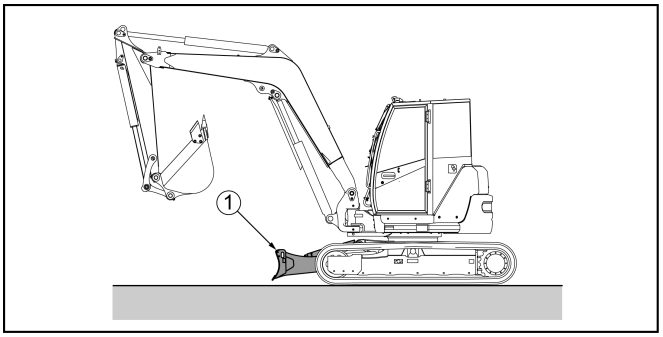
⚠ WARNING

Before handling the travel levers, check whether the machine is in normal or reverse position.

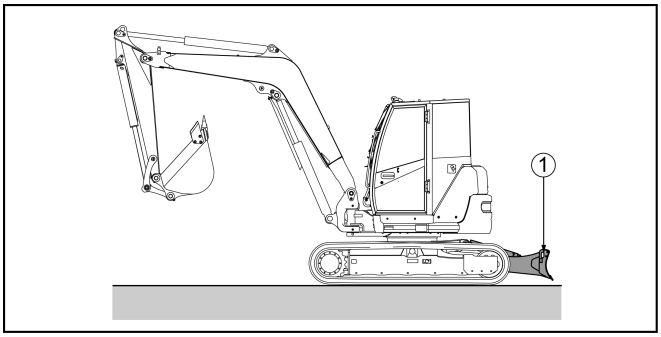
The machine is in the normal position when the blade is on the same side as the work equipment.

If the machine is in the reverse position, the displacement levers must be handled in reverse to move forward and backward.

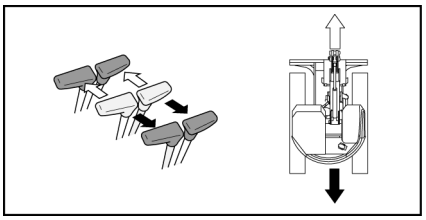
Normal position



Opposite position

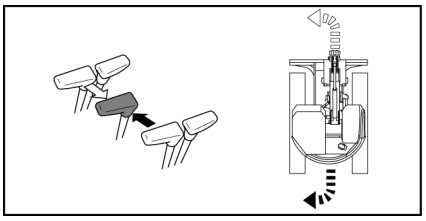


1 = Blade



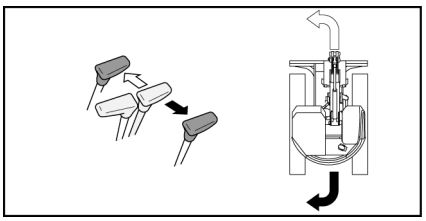
- To move the machine forward, push the travel levers, or press the front of the pedals.

  To move the machine backwards, pull the travel levers, or press the back of the travel pedals.



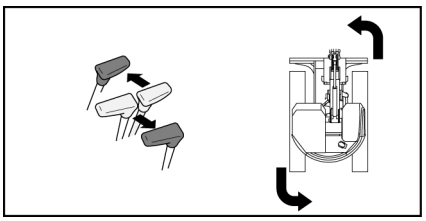
- To turn to the left with the machine moving:
  1. Position the travel levers forward or rearward.
  2. Return the left travel lever into neutral position to turn the machine.

  To turn right, do the same thing with the right travel lever.



- To turn to the left with the machine stopped:
  1. Position the travel levers in the neutral position.
  2. Push the right travel lever to rotate forward or pull the right travel lever to turn backwards.

  To turn right, do the same thing with the left travel lever.



- To make a rotating turn of the machine to the left:
  1. Position the travel levers in the neutral position.
  2. Push the right travel lever forward and pull the left travel lever rearward.

  To make a rotating turn of the machine to the right, reverse the operation of the levers.

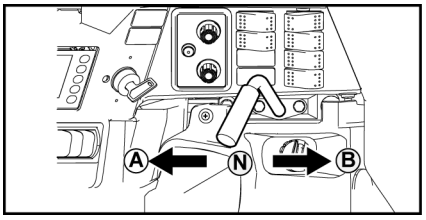
5.3.7 Blade lever

⚠ WARNING

Do not operate the blade lever when you are not using it.

- Use this lever to command the blade.

Operating the blade



- Push the lever forward to lower the blade.
- Pull the lever back to raise the blade.
- If the lever is released, it return to neutral position and the blade remains in its position.

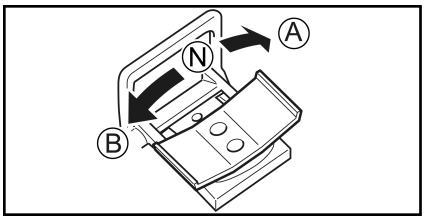
A = Lower the blade

B = Raise the blade

N = Neutral

5.3.8 Boom rotation pedal

- Use this pedal to pivot the boom to the left or right.



A = Rotate right: press right

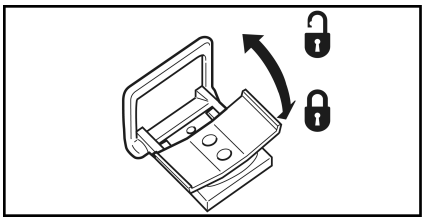
B = Rotate left: press left

N = If the pedal is released, it returns to the neutral position and the boom keeps its position.

Protection of pedals

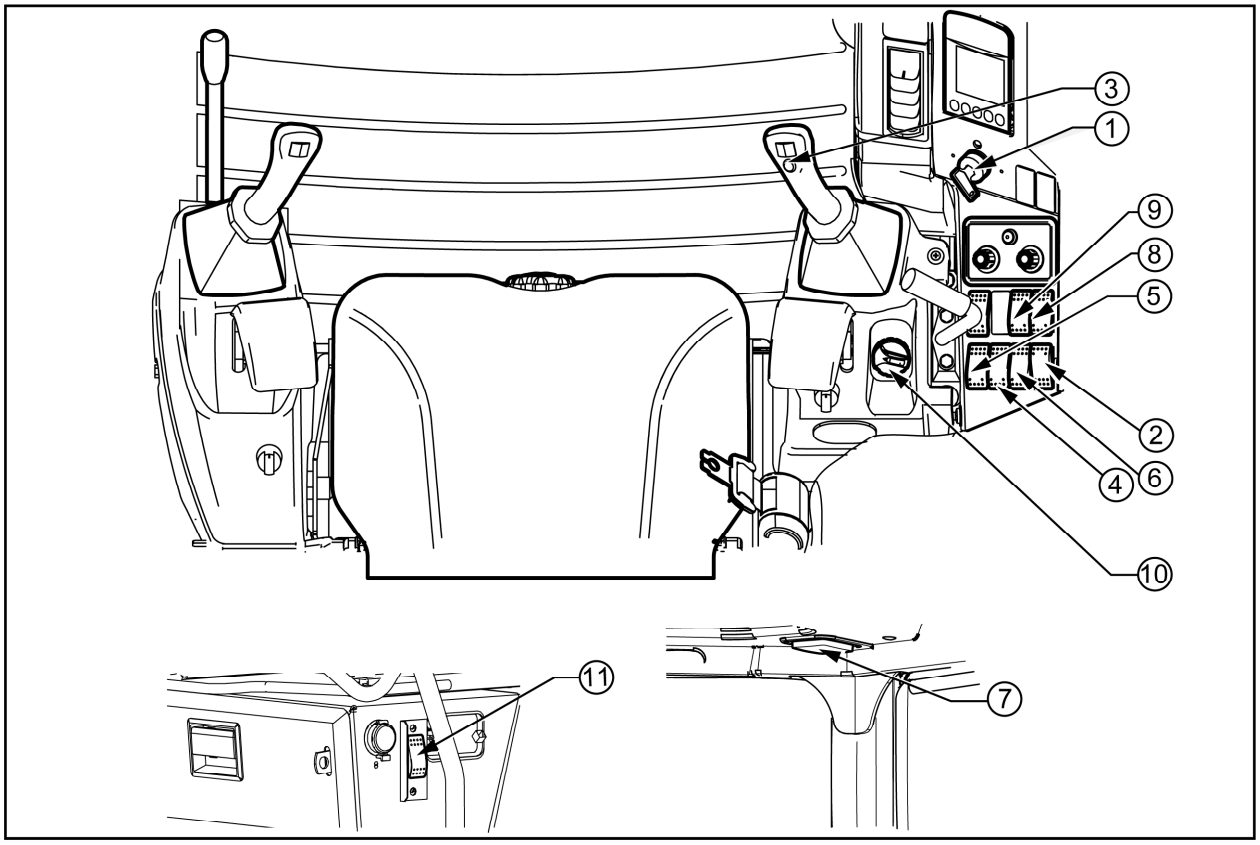
⚠ WARNING

To avoid the risk of any inappropriate or involuntary use, always place the pedals in locked position when they are not being used.



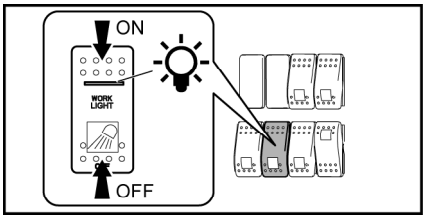
- Fold the protection to lock the pedal.
  It may then be used as a foot rest.

5.4 Switches



1 = Start key
2 = Manual regeneration
3 = Horn
4 = Headlight switch
5 = Speed movement switch
6 = Windscreen wiper and windscreen washer switch
7 = Interior lighting switch
8 = Eco mode switch
9 = Engine slow down switch
10 = Engine rate setting
11 = Engine stop switch

5.4.1 Headlight switch

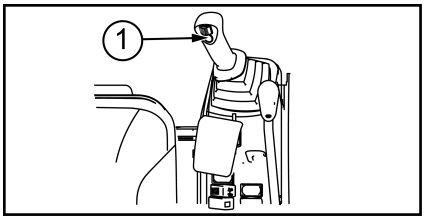


⚠ IMPORTANT

Do not leave the headlights switched on when the engine is not running. The battery will discharge and the engine will be unable to start.

- ON = The headlights come on.
- OFF = The headlights switch off.

5.4.2 Horn



1 = Horn

- Press the switch at the top of the right command lever to activate the horn.

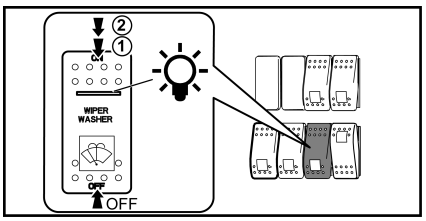
5.4.3 Windscreen wiper and windscreen washer switch

⚠ IMPORTANT

Do not press the washer command when the washer tank is empty as this may damage the pump.

Using windscreen wipers on a dry windscreen may damage the glass. Only use the windscreen wipers when the windscreen is wet.

The windscreen wiper blade may freeze in cold weather. Do not try to activate it if it is frozen as this may damage the windscreen wiper motor.



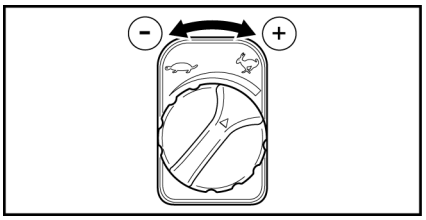
- This switch is used both for the windscreen wipers and the washer.

  1 = The windscreen wipers work.

  2 = Press the switch to spray wiper fluid onto the windscreen.

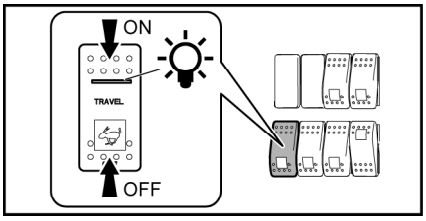
  OFF = The windscreen wipers stop.
- Check the windscreen washer fluid level daily.

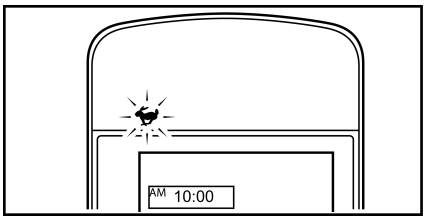
5.4.4 Engine rate setting



- Turn the switch to the left to decrease the engine speed.
- Turn it clockwise to increase engine speed.

5.4.5 Speed movement switch





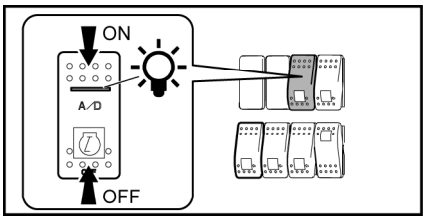
- Use this switch to speed up the machine's side movement.

ON = high speed. The indicator light is on.

OFF = Low speed. The light is off.

5.4.6 Engine slow down switch

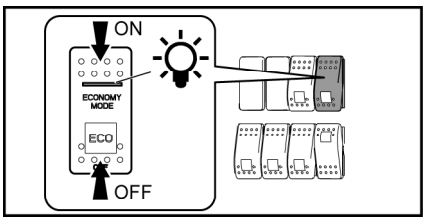
- Use this switch to automatically reduce engine speed and thus fuel consumption.
- When the auto-idle switch is ON and the machine controls are in neutral, the engine speed is automatically reduced after 4 seconds.
- If you use the machine controls, the engine speed will automatically returns to the speed set by the engine speed knob.



ON = Auto-idler activated. The switch indicator is on.

OFF = Auto-idler deactivated The switch indicator is off.

5.4.7 Eco mode switch

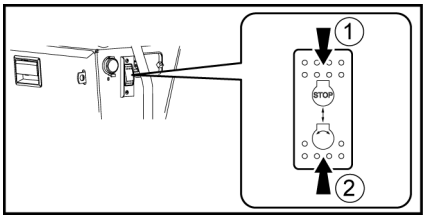


- This switch is used to reduce fuel consumption by reducing the engine rate.

ON = eco mode activated. The switch indicator is on.

OFF = eco mode deactivated. The switch indicator is off.

5.4.8 Engine emergency stop switch

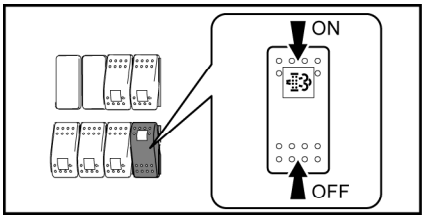


1 = STOP

2 = Normal

- If the engine does not stop when the ignition key is set to "OFF", set this switch to "STOP". After stopping the engine, make sure you put the engine stop switch to the "NORMAL" position.
- When this switch is set to "STOP", the engine can not be started. Also, make sure to position the ignition key to the "OFF" position to avoid draining the battery.

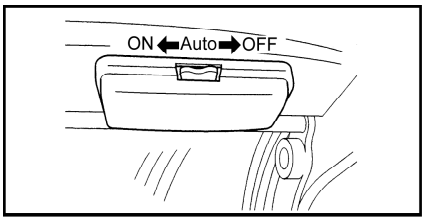
5.4.9 Manual regeneration



- Repeated use of the machine with the engine at low speed or at no-load can cause insufficient regeneration of the DPF.
- In case of insufficient regeneration of the DPF, the monitor displays the DPF regeneration icon.
- Conduct a manual regeneration of the DPF as soon as possible

13.4 Manual regeneration of the particulate filter, page 109

5.4.10 Interior lighting switch



ON = The lighting is activated.

OFF = The lighting is desactivated.

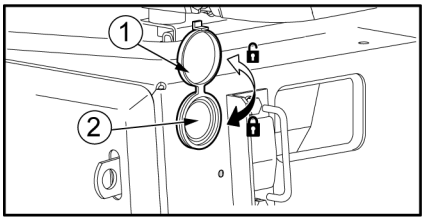
Auto = At the opening of the door, a timer switches the interior lights on for 10 seconds. The interior light automatically turns off when the cabin door is closed.

5.5 Power socket

⚠ IMPORTANT

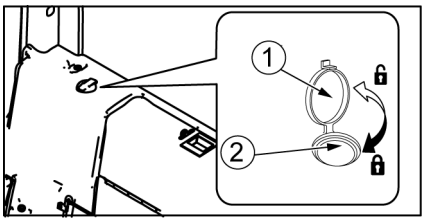
Always close the lid if the plug is not used to seal for dust.

Prolonged use when the machine is switched off may damage the battery.



1 = Lid

2 = Power socket



- The power sockets work when the ignition key is in the ON position. Appliances up to 12V-120W (10A) may be connected.

5.6 Driver's seat

⚠ WARNING

Do not adjust the seat position when you are working on the machine; adjust it before you start.

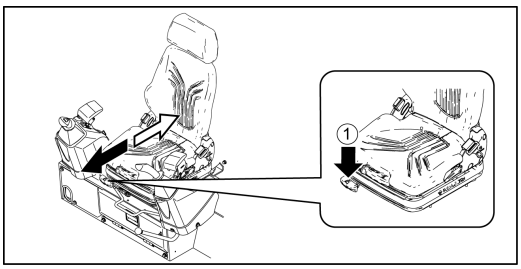
Always fasten your safety belt and adjust it before starting the machine.

- Adjust the seat position so that the driver can operate the controls easily and comfortably.

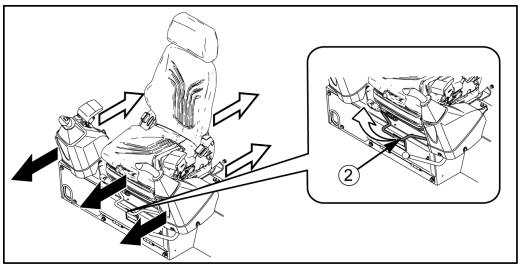
  Note

  The seat adjustment controls vary according to the type of seat installed in the machine.

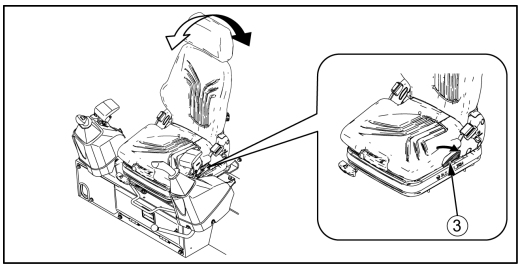
Seat position adjustment



- Pull the lever (1) to move the seat forward and back.

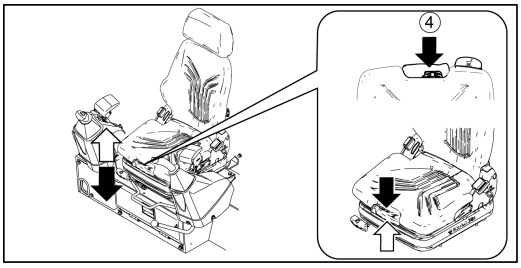


- Pull the lever (2) to push the seat and the two side consoles back and forwards together.



- Pull lever (3) to adjust the seat back.

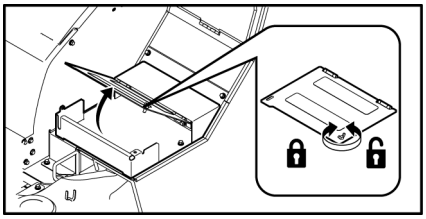
Suspension adjustment



1. Turn the key to the ON position to turn on the power circuit and the charging circuit.
2. The seat suspension (4) can be adjusted according to the weight of the driver:
   - ⇨ Firm suspension
   - ⇦ Flexible suspension

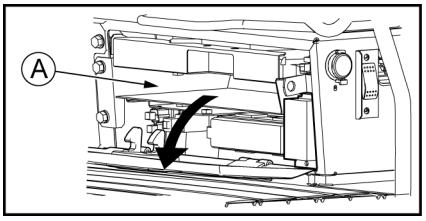
5.7 Location for the tools and user manual

5.7.1 Toolkit



- The location for the toolkit is between the cab and cover B.
- Keep the toolkit in the compartment provided for that purpose.

5.7.2 User manual



A = User manual

- The location for the user manual is under the driver's seat.

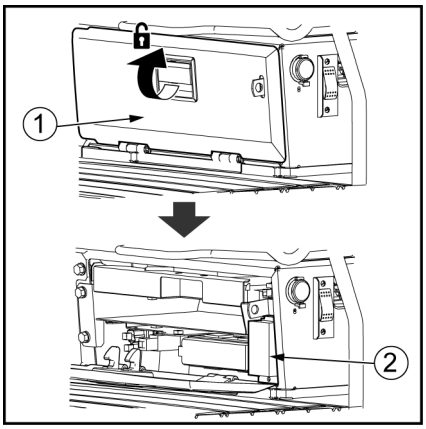
5.8 QR code

- The QR code gives access to the user manual in digital format, to instructional videos and to summary sheets.

5.9 Fuses

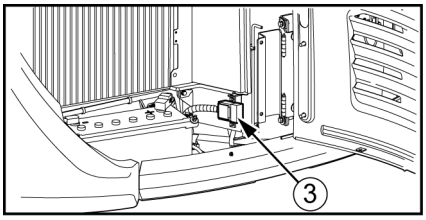
- The fuses protect the equipment and the electrical cabling against a surge.
- If an element of the electrical system is inoperative when the key is in the ON position, replace its fuse with a fuse in good condition. If the malfunction persists, contact your dealer.

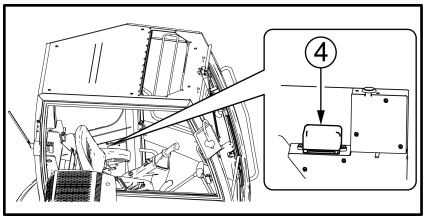
4.3.1 Fuse replacement, page 147



1 = Storage box cover

2 = Fusebox





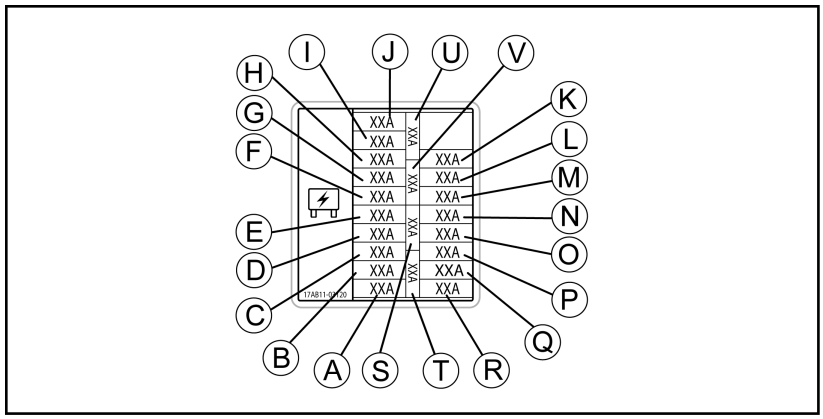
3 = General supply fuses

4 = Power fuse options

- The general supply fuses are located beside the battery
- The fusebox is underneath the driver's seat.

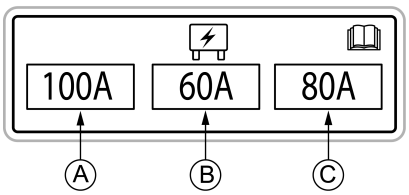
5.9.1 Fusebox

Fusebox



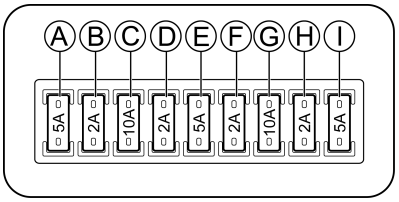
Symbol	Fuse capacity	Circuit name
A	5A	Electrical start signal
B	5A	Starter
C	30A	Cabin power supply • Cab lighting Electric fuel tank filling pump
D	5A	Engine Electronic Control Unit (ECU) **2**
E	20A	EGR valve
F	20A	Air conditioning
G	20A	Engine Electronic Control Unit (ECU)
H	5A	Operator display station
I	30A	Power socket
J	20A	Radiator ventilator
K	30A	Boom headlamp
L	5A	Engine Electronic Control Unit (ECU) **1**
M	5A	Travel alarm
N	10A	P.T.O./ Hydraulic quick hitch
O	10A	Safety relay
P	5A	Engine Electronic Control Unit (ECU) **2 (ACC)**
Q	5A	Engine
R	20A	Windscreen wiper
S	10A	Spare fuses
T	5A	
U	30A	
V	20A	

General supply fuses



Symbol	Fuse capacity	Circuit name
A	100A	Fusebox
B	60A	Starter
C	80A	Preheating relay

Power fuse options



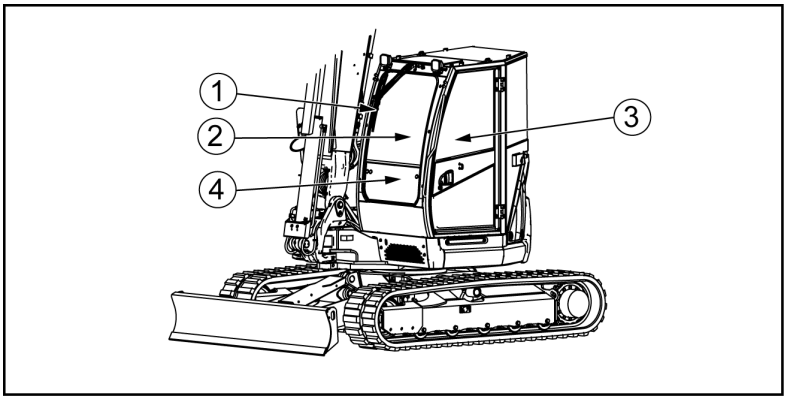
Symbol	Fuse capacity	Circuit name
A	5A	-
B	2A	Camera
C	10A	-
D	2A	-
E	5A	Rotating head TILTROTATOR
F	5A	Hydraulic quick hitch • Medium pressure hydraulic line • Continuous pressure hydraulic line
G	10A	Centralized greasing system *(Options)*
H	2A	-
I	5A	Safety

5.10 Cabin

⚠ CAUTION

The upper and lower parts of the windscreen can be opened. The opening and closure of the windscreen must be secured with the safety levers in order to avoid any sudden, unplanned closure which may cause injuries.

Do not pass your hand or head through the open door or windscreen.



1 = Windscreen wiper
2 = Upper windscreen
3 = Side door
4 = Lower windscreen

⚠ CAUTION

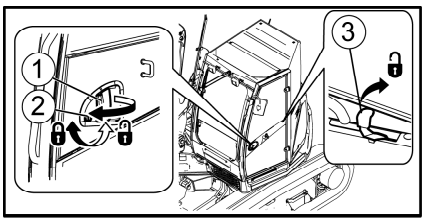
Place the locking lever(s) in locked position to avoid any unplanned operation of the joysticks when handling the windscreen.

If there is a risk of splashing, the windscreens, door and side window of the cab must be closed.

5.10.1 Cab side door

⚠ WARNING

The machine door must be locked in the open or closed position when the machine is in use.



1 = Exterior handle

2 = Key

3 = Interior handle

a. Opening and closing of the door

From the exterior

- To open the door :
  1. Insert the key into the lock.
  2. Turn the key anti-clockwise to unlock the door.
  3. Pull the exterior handle to open the door.
- To close the door :

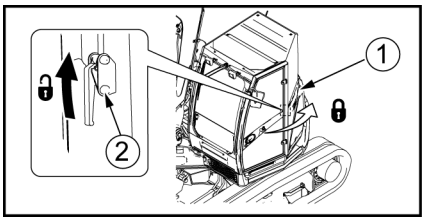
  Slam the door and turn the key clockwise to lock it.

From the interior

- Push the interior handle to open the door.

b. Locking the door

- The door lock is used to hold the door open during the machine operation.



1 = Cylindrical lock

2 = Handle

To lock the door:

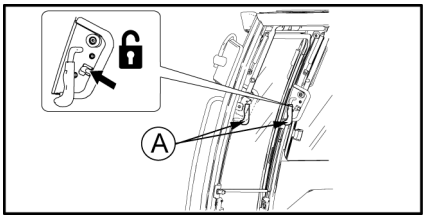
1. Open the door.
2. Push the door against the outer side of the cabin for engaging the cylindrical lock.

To unlock the door:

1. Pull the handle to disengage the cylindrical lock.
2. Close the door with the handle.

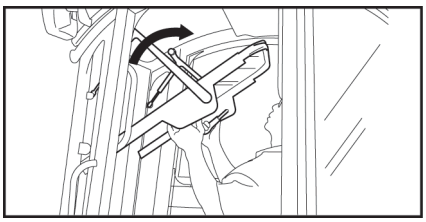
5.10.2 Upper windscreen

Opening of the upper part of the windscreen



1. Grasp the handles and push the levers to the right and left of the window until you hear a click for them to unlock.

A = Handle



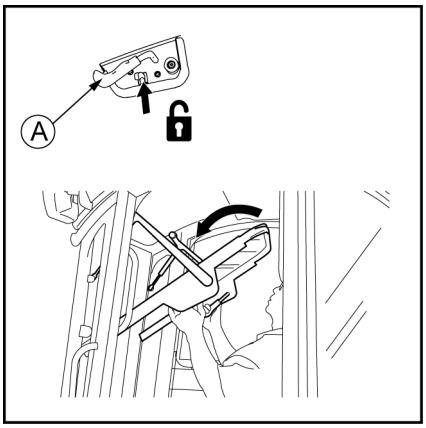
2. Remount the top part of the windscreen and drag it backwards until it positions itself under the ceiling.



⚠ WARNING

Open the windshield carefully to avoid bumping your head.

Closure of the upper part of the windscreen



1. Grasp the handles and push the levers to the right and left of the window until you hear a click for them to unlock.

   A = Handle

2. Slowly lower the windscreen holding the handles.
3. Lock it using the safety lock to the right and left of the window.

5.10.3 Lower windscreen

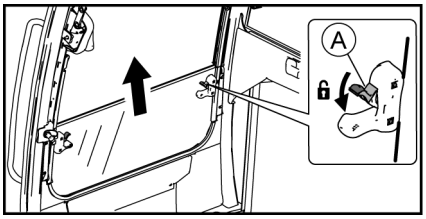
⚠ CAUTION

Place the locking lever(s) in locked position to avoid any unplanned operation of the joysticks when handling the windscreen.

Opening of the lower part of the windscreen

⚠ IMPORTANT

Only open and close the lower windscreen when the upper windscreen is closed.

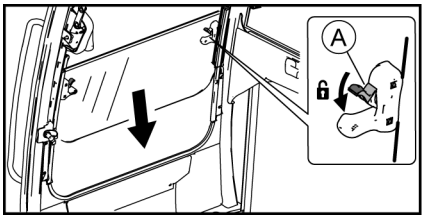


A = Lever

1. Push the locking levers on the right and left of the lower windscreen down.
2. Lift the lower windscreen.
3. Hold it in place using the locking levers.

⚠ IMPORTANT
Make sure the locking levers are fully engaged to prevent the lower windscreen from falling.

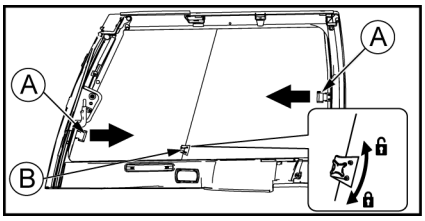
Closure of the lower part of the windscreen



A = Lever

1. Push the locking levers on the right and left of the lower windscreen down.
2. Lower the lower windscreen.
3. Hold it in place using the locking levers.

5.10.4 Right hand cab window



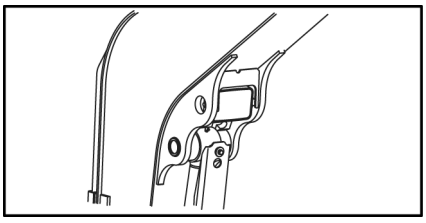
A = Handle

B = Pressure lock

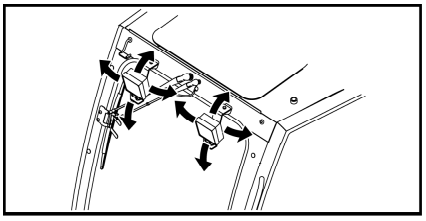
1. Press the latch.
2. Open the right hand cab window by sliding it in the direction indicated by the arrows.
3. Tighten the pressure lock to hold the window in the position you want.
4. To close the window, loosen the pressure lock.

5.11 Headlights

Boom headlamp



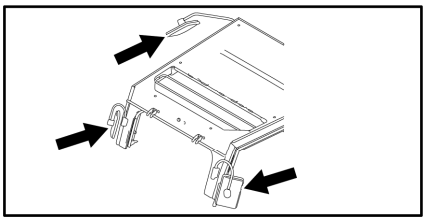
Cab headlight

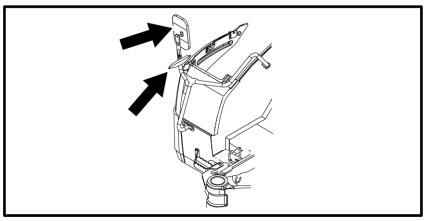


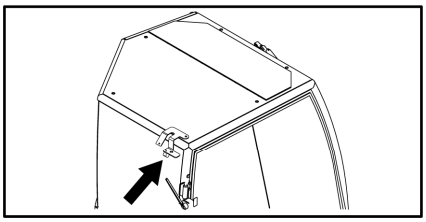
5.12 Rear-view mirror(s)/Camera(s)

The machine is equipped with rear-view mirror(s) and/or camera(s) to ensure good visibility all around the machine.

2.1.7 Adjusting the rear-view mirror(s)/camera(s), page 68







➡ Standard

⇨ Option

Camera

⚠ WARNING

The camera is used to provide visibility behind the machine. When using the machine, be sure to check directly that the surrounding area is visible.

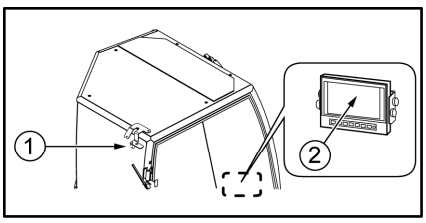
Distance perception can vary depending on the position of the machine, the surrounding conditions and the slope of the ground.

Objects may be closer in reality than they appear on screen.

There are blind spots around the machine and some areas are not displayed on the LCD screen.

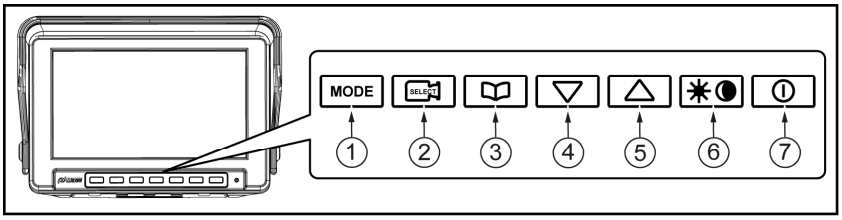
When the lock lever is in the unlocked position, the camera display activates automatically on the screen and the POWER, MODE, and Menu buttons are disabled.

Put the lock lever in the locked position to reactivate all the camera screen functions.



1 = Camera

2 = Camera screen



#	Button	Function
1	MODE	Change the display mode (Function not used on machines fitted with a single camera)
2	SELECT	Change the camera (Function not used on machines fitted with a single camera)
3	Menu	Open the menu

4	Down arrow	Browse down the menu
5	Up arrow	Browse up the menu
6	Brightness	Switch from day mode to night mode
7	POWER	ON / OFF

5.13 Fleet management system SMARTASSIST-REMOTE

from serial number**YMRVIO80PHAJAF718**

⚠ CAUTION

Do not use in areas where the use of mobile phones is prohibited (hospitals, airports, mining operation area...).

Do not enter a potentially explosive area with your machine, your box may result in an explosion or fire, resulting in serious physical injury. Hazardous areas are indicated by signage on the work area; observe these to avoid any accidents.

Do not open, repair, disassemble or rebuild the fleet managment system and contact your dealer if it malfunctions.

To operate communication devices, comply with the legal requirements, regulations and conditions of yout country.

Dispose of batteries in accordance with the regulations in force.

⚠ DANGER

If you have a Pacemaker, do not carry a mobile phone on your person in a machine fitted with a telemetry control box, to avoid any interference with your medical equipment.

People with a Pacemaker must keep a minimum distance of 22 cm between the Pacemaker and the SMARTASSIST-REMOTE antenna. This minimum distance is guaranteed for all uses and maintenance operations described in this manual.

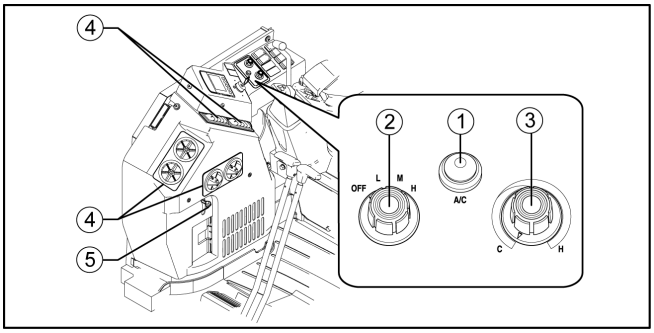
- The telemetric device can be coupled on your machine to an immobilizer box and a key reader installed in the cockpit.
- The fleet management system makes it possible to know the geographical position of the machines that are equipped.
- Accessing the fleet management system's interface is handled from YANMAR's website or using a smartphone application. Assistance modules and a presentation of the fleet management system's functions are also available from YANMAR's website.
- The telemetry control box is fitted with a GSM modem and a GPS receiver to transmit the data for the fitted machine.

  Note

  Communication may be disturbed in tunnels, buildings or areas with a poor mobile network.

  The fleet management system is connected to the power supply of the machine and is also equipped with its own battery. This allows data exchange even when the machine is switched off.
- For more details, contact your dealer.

6 OPERATION OF THE AIR CONDITIONING



1 = Operating switch

2 = Ventilator switch: sets the ventilator speed.

3 = Temperature switch: allows setting the desired temperature.

4 = Air diffusers

5 = Air recycling lever

⚠ WARNING

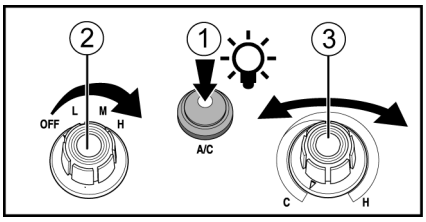
Ice may form on the air intake if the air conditioning is running. This is normal and comes from the condensation of water particles suspended in the air.

After long exposure to heat, run the air conditioning while opening the cab door and window to facilitate the circulation of air.

Correctly adjust the temperature; if it is too low it may be bad for health.

If the air circulates with difficulty in the cab, or if the air conditioning is ineffective, stop it immediately (switch to OFF) and contact your dealer. Use under abnormal conditions may damage the installation.

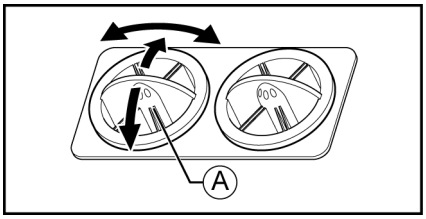
Every week, run the air conditioning at least once for a few minutes ; this will help to keep the installation in good condition.

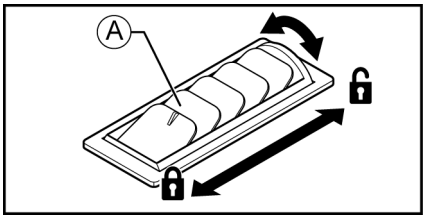


1 = Operating switch

2 = Ventilator switch

3 = Temperature switch





A = Grill

1. Activate the operating switch.

⚠ IMPORTANT

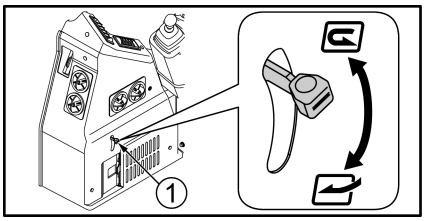
Only start up the air conditioning after starting the machine to avoid overloading the thermal motor on start-up.

2. Set the ventilator selector switch to the desired position.
3. Set the temperature control switch to the desired position.

   Note

   When the switch is at OFF, the light is off and the compressor does not work, even if the operating switch is at ON.
4. Adjust the air output by turning the air vents. It is useful to start up the ventilator to create an over-pressure inside the cab; in this way it will be more difficult for dust to enter the cab when you are working.

Air recycling



1 = Air recycling lever

= The exterior air is cooled down or heated and introduced into the cab.

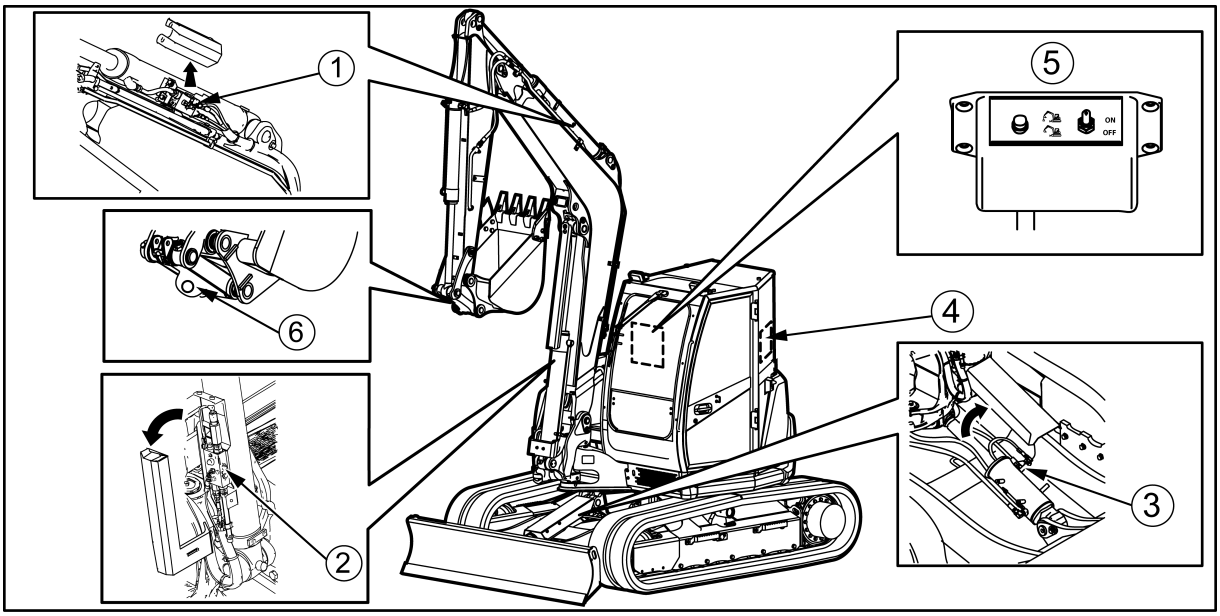
= The cab air is cooled down or heated up then re-expelled into the cab.

7 LIFTING KIT

⚠ IMPORTANT
The composition of this kit varies according to machine configuration.
This option is subject to periodic inspection.

⚠ WARNING
Do not perform lifting operations without the lifting equipment listed below being installed on the machine.

11 Load lifting, page 105



1 = Arm valve

2 = Boom valve

3 = Blade valve

4 = Lifting Tables

5 = Overload box

6 = Liftingring (or a lifting device with an approved quick coupler)

7.1 Safety valves

The lifting device (ring on linkage or quick coupler) must be installed with safety valves. These valves are installed on the machine's boom, rocker arm and blade cylinders to avoid the equipment falling to the ground if the hoses break.

7.2 Lifting device

⚠ IMPORTANT

There is a risk that the metal cable or the suspension hook may be detached from the ring if the ring is not in a vertical position.

Install a device that can oppose the accidental release of the load on the machine's lifting device (latch hook, shackle, eye, etc.) and whose WLL is equal to or greater than the load to be lifted.

- An appropriate lifting device is required to suspend a load with the machine.For more details, contact your dealer.
- The lifting device (ring on linkage or quick coupler) must be installed with safety valves.

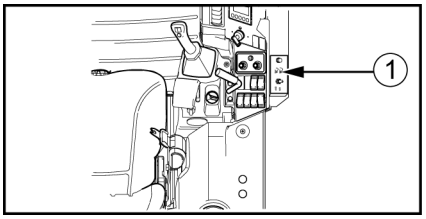
⚠ IMPORTANT

This kit can be supplied without the bucket link with a lifting ring if the machine is equipped with an attachment that has a lifting device.

- Check the condition of the lifting device. If you detect any damage, ask your dealer to intervene.

7.3 Overload box

- When the operator wishes to handle something, it is imperative that the overload box switch is in the ON position to inform the operator of the tipping points depending on the load being handled and the position of the equipment.
- An audible signal warns the operator that the load that he is handling is too heavy and could well topple the vehicle.
- When the audible signal sounds, the operator must promptly put the load being handled down on the ground because it could well topple the vehicle.

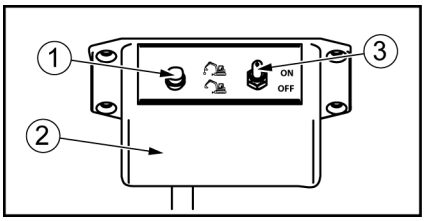


1 = Overload box

⚠ IMPORTANT

Activating the load indicator box does not stop the operator from making sure that the load to be handled does not exceed the value indicated on the load table.

It is forbidden to handle the loads without turning on the overload box.



1 = Green light: is on when the charge indicator is on.

2 = Overload box located in the cab.

3 = Switch

7.4 Lifting Tables

A table summarising the machine's lifting capacities is provided when the machine is fitted with a lifting device.

⚠ DANGER

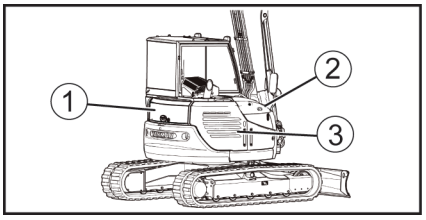
The board must be installed in the cab so as to be visible by the operator while operating the machine.

Check it out before doing any load lifting.

F Lifting capacities, page 163

8 COVERS

⚠ IMPORTANT
If there is snow on the covers, clear it off before opening them.



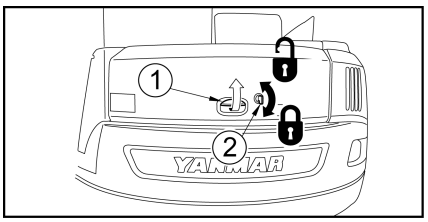
1 = Bonnet
2 = Cover B
3 = Cover R

8.1 Bonnet

⚠ WARNING
Do not open the bonnet during machine operation. Verification and topping up of the various levels should be done when the engine is stopped and the temperatures are brought back down.

- Under the bonnet you find:
  - the expansion tank
  - the engine oil gauge
  - the engine oil tank orifice

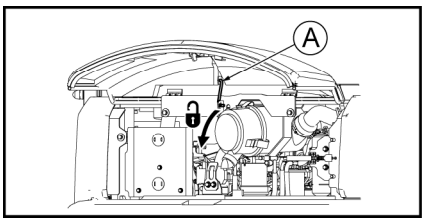
Opening the cover



1 = Exterior handle
2 = Key

1. Insert the starter key into the lock.
2. Turn the key counterclockwise.
3. Pull the exterior handle to open the bonnet.
4. Lock the cover using the rod.

Closing the cover



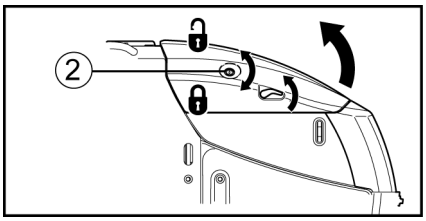
A = Rod

1. Lift the cover slightly and press the rod to release it.
2. Close the cover.
3. Press on it until you hear a click.
4. Turn the key clockwise to activate the lock.

8.2 Cover B

- Under cover B are:
  - the fuel tank
  - the hydraulic oil tank opening cap

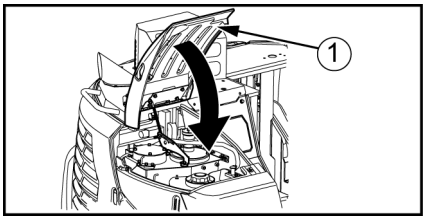
Opening the cover



2 = Key

1. Insert the starter key into the lock.
2. Turn the key counterclockwise.
3. Pull the exterior handle to open the bonnet.
4. Lock the cover using the rod.

Closing the cover



1 = Cover B

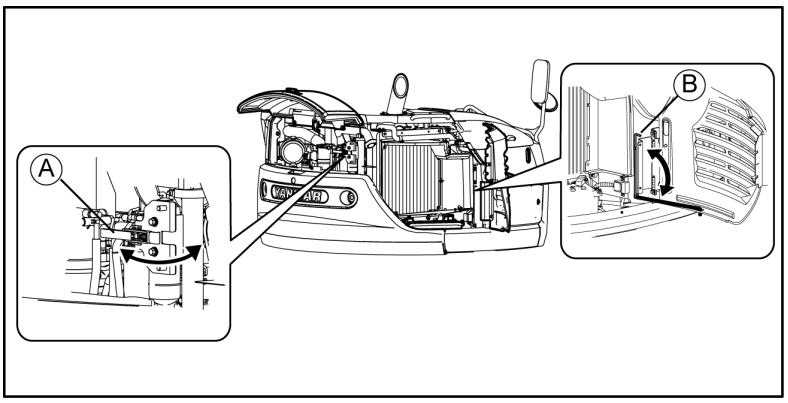
1. Lift the cover slightly and press the rod to release it.
2. Close the cover.
3. Press on it until you hear a click.
4. Turn the key clockwise to activate the lock.

8.3 Cover R

- Under cover R are:
  - the battery
  - Electric refuelling pump
  - the radiator

Opening the cover

1. Open the cover using the starter key.
2. Pull the handle to unlock the safety mechanism.
3. Lock the cover using the rod.



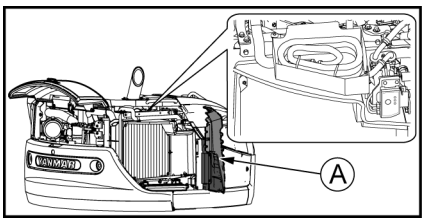
A = Handle
B = Rod

Closing the cover

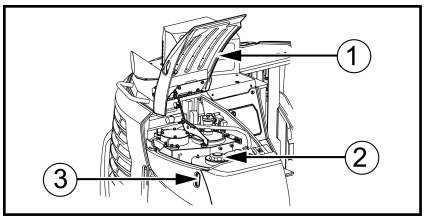
1. Lift the the rod to release it.
2. Close the cover.

9 USING THE ELECTRIC FUEL FILLING PUMP

- Park the machine on flat, firm ground.
- Stop the engine by turning the key from ON position to OFF position.



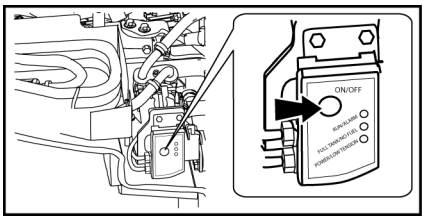
A = Cover R



1 = Cover B

2 = Fuel tank

3 = Diesel gauge



1. Open the bonnet **R.** The electric fuel filling pump is under the machine's right cover.
2. Remove the suction hose from its housing.
3. Unscrew the aspiration suction cap.
4. Dip the aspiration suction into the volume of diesel to be aspirated.
5. Open cover B using the starter key. Open cap on the fuel tank.
6. Switch the pump on by pressing the on/off button.

   Note

   The tank is equipped with a level sensor (automatic shutdown of the pump).
7. Wait for the pump to stop automatically, or shut it off manually.
8. Remove the suction strainer from the Diesel volume.
9. Close the suction cap.
10. Store the aspiration pipe in its housing.
11. Close the tank cap.
12. Close the cover.

10 Options

- Mounting options that are not authorised by YANMAR may cause accidents and reduce the machine's life span.
- The installation and use of unauthorised parts may lead to the warranty being cancelled.
- The machine can be fitted with the options presented in this section, on request.

10.1 Long arm

- Use of hydraulic hammer is not recommended with the long arm.

10.2 Half-circuit

- The half-circuit consists of hoses and two two-way valves mounted on the bucket cylinder supply lines.

⚠ IMPORTANT

Before using an attachment requiring hydraulic power, check the pressure compatibility from the machine specifications chart.

1 Specifications, page 158

⚠ CAUTION

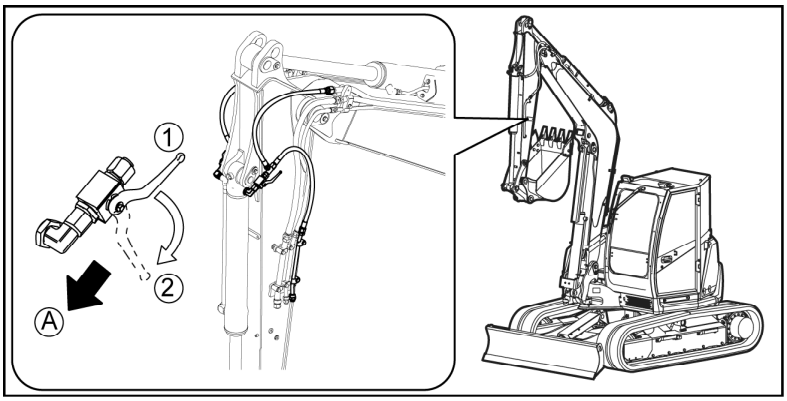
Before any connection or disconnection of the hydraulic hoses, remove the residual pressure from the hydraulic circuit.

1.1.1 Removing the residual pressure, page 124

- Position the valve handles so that the bucket cylinder supply lines are closed and the attachment installed on the machine can be supplied.

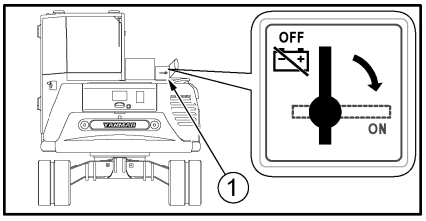
  Note

  Make sure both handles are placed in the same position, so that the bucket cylinder or attachment is properly supplied.



A = Front
1 = Bucket cylinder power supply
2 = Accessory power supply

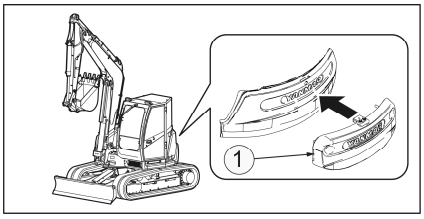
10.3 Circuit breaker



1 = Circuit breaker

- This switch is used to disconnect the battery directly.

10.4 Additional counterweights



1 = Additional counterweights

- The machine can be equipped with an additional counterweight that gives it better stability and greater lifting capacities.

Weight of the counterweight:

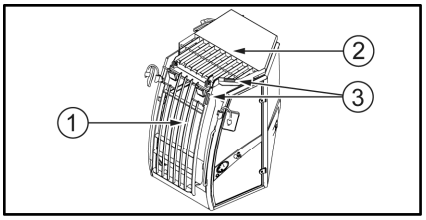
1 Specifications, page 158

10.5 Operator protection

⚠ WARNING

Before using the machine, check that the protection is clean and in good condition.

If one of the safety structures is damaged, replace it immediately to avoid any injury. Do not repair or modify it.



1 = Front guard
2 = Roof guard
3 = Identification plates

Front guard

The front guard protects the operator in the event of flying objects coming from the front.

The machine must be fitted with this protective structure to ensure operator safety during operations likely to generate flying objects at the front.

Refer to the attachments manual.

The front guard is rated FOPS I in accordance with the ISO 10262 standard.

Roof guard

The roof guard protects the operator in the event of falling objects.

The machine must be fitted with this protective structure to ensure operator safety during operations likely to generate falling objects.

The roof guard is rated FOPS II in accordance with the ISO 10262 standard.

10.6 Separator/decanter alarm

- The option is composed of a water presence sensor in the separator/decanter, a harness, and a sound alarm.
- When water is detected in the separator/decanter, a short beep is heard inside the cab. Stop the machine and clean the separator/decanter :

4.1.4 Cleaning the separator/decanter, page 137

10.7 Plug-in beacon and rear LED light

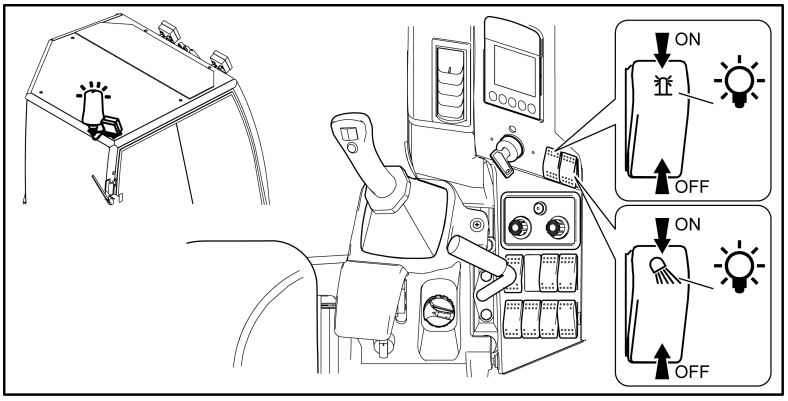
⚠ WARNING

Keep three points of support with the machine to complete the installation safely. If three points of stable support are not available, use suitable equipment to operate the machine safely.

- The option consists of:
  - Flashing light
  - Rear light
  - An electrical harness
  - A bracket
  - Beacon switch
  - Rear light switch

⚠ IMPORTANT

The composition of this kit varies according to machine configuration.



- To activate the LED light attached to the rear of the cab, turn on the switch located in the cab on the right of the driver's seat.
- To activate the flashing light attached to the rear of the cab, turn on the switch located in the cab on the right of the driver's seat.
- To attach the flashing light :

1. Remove the protective cap from the pin's tip.
2. Insert the tip of the flashing light in the pin and tighten the nut located at the base of the flashing light.

10.8 Fleet management system and immobiliser system

- The fleet management system is composed of a telemetry control box and an electric harness.
- The fleet management system makes it possible to know the geographical position of the machines that are equipped. The use of the control box's GPS functions involves sending a text message to the GSM number assigned to the machine and provides access to the management services using a web portal (available as a smartphone application).
- The telemetry control box is fitted with a GSM modem and a GPS receiver to transmit the data for the fitted machine. A separate battery supplies power to the telemetry control box when the machine's power supply is cut, thereby giving the fleet management system a certain degree of autonomy.

⚠ CAUTION

Once installed, the telemetry control box cannot be turned off.

Do not use in areas where the use of mobile phones is prohibited (hospitals, airports, mining operation area...).

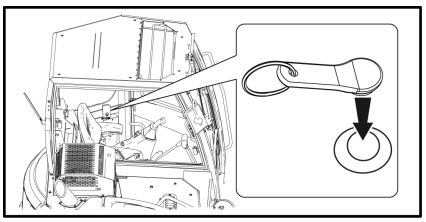
Do not enter a potentially explosive area with your machine, your box may result in an explosion or fire, resulting in serious physical injury.

Hazardous areas are indicated by signage on the work area; observe these to avoid any accidents.

⚠ DANGER

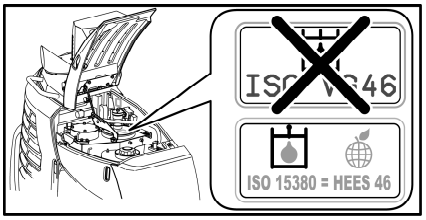
If you have a Pacemaker, do not carry a mobile phone on your person in a machine fitted with a telemetry control box, to avoid any interference with your medical equipment.

- The telemetric device can be coupled on your machine to an immobilizer box and a key reader installed in the cockpit.
- For more information, consult the instructions supplied with the device.



1. Pass the coded key on the key reader in the cockpit.
2. Then turn the starter key within 30 seconds.

10.9 Bio oil



⚠ WARNING

When working on your hydraulic system, contact your dealer

Note

Do not mix different types of oils.

Standard bio oil

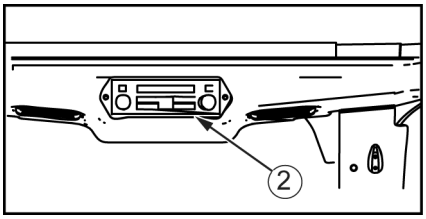
The machine can operate with biodegradable hydraulic oil

Panolin bio oil

The machine can operate with biodegradable hydraulic oil (Panolin).

The percentage of mineral oil mixed with the bio oil must not exceed 2 %. Refer to the datasheet VDMA 24 569 of March 1994.

10.10 Radio



2 = Radio

- Refer to the user manual supplied with the radio.

10.11 Quick connector

⚠ CAUTION

Before any connection or disconnection of the hydraulic hoses, remove the residual pressure from the hydraulic circuit.

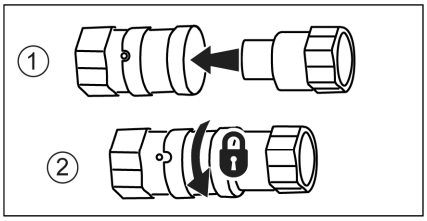
1.1.1 Removing the residual pressure, page 124

Note

Before each use, clean the receiver surfaces.

The operation of the quick coupler depends on the type of coupler installed.

Connecting

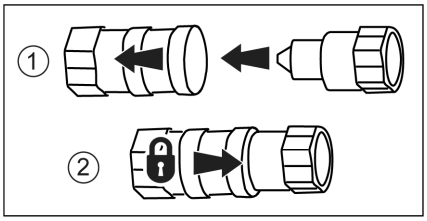


For couplers fitted with a ball:

1. Insert the adapter into the receiver.

   A slight click indicates that the connection is successful. The ball is released from the adapter groove located on the receiver.

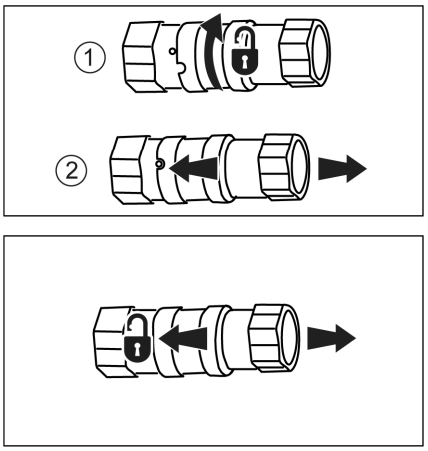
2. Turn the adapter on the receiver to secure the connection.



For other connectors:

1. Connect the male plug to the female socket and pull on the socket to insert the plug.
2. Release the female socket to lock the connection.

Disconnecting



For couplers fitted with a ball:

1. Turn the socket to align the ball with the groove in the female socket.
2. Slide the socket back to release the male plug.

For other connectors:

1. Pull on the socket of the female plug to release the male plug.

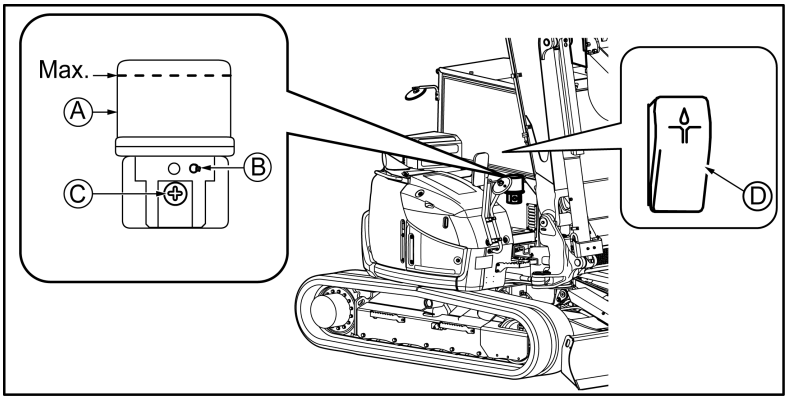
10.12 Centralized greasing system

- The centralized lubrication automates the greasing of the swivel pins ,on your machine. It comes with a timer allowing adjusting the lubrication cycle and time.
- The timer is triggered at machine startup and stops at the machine's complete shutdown. When the ignition switch is turned off, the elapsed time before the next lubrication is saved and the timer restarts with this value when the machine is restarted.

⚠ CAUTION

The lube cycles are factory set to optimize the performance of your machine, it is not advisable to change them.

- A switch in the cabin allows to launch the lubrication of the machine swivel points.



A = Tank
B = Filling connector
C = Control plate lid
D = Switch
MAX = Filling limit

⚠ CAUTION

Do not plug the hole at the top of the tank in order not to block the filling.

⚠ DANGER

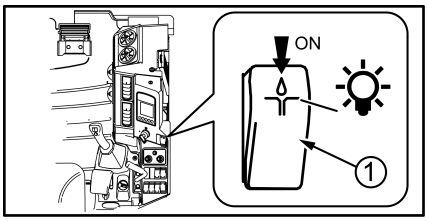
In case of over filling, the tank can burst and cause physical injuries.

- To refill the centralized greasing system, connect the grease pump on the filling connector nipple (B).

2 Recommended greases and fluids, page 129

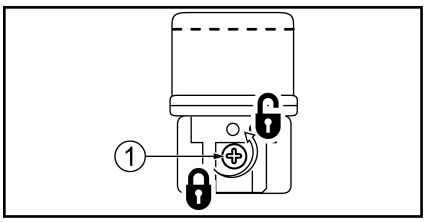
Using the centralized greasing system

- It is possible to manually start a lubrication in order to ensure proper greasing pump operation or if the machine needs an additional lubrication :



– Press the switch in the cab.

1 = Switch

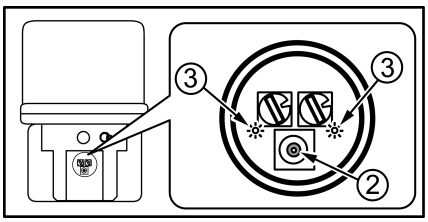


– Press the button located under both switches for 2 seconds until the LED on the right comes on.

Note

To access the timer, remove the cap located below the grease tank.

1 = Control plate lid



2 = Switch

3 = Lights

- The lubrication cycle is shortened and the lubrication starts normally. Once the lubrication is carried out, the lubrication cycle restarts at zero.

10.13 Continuous pressure hydraulic line

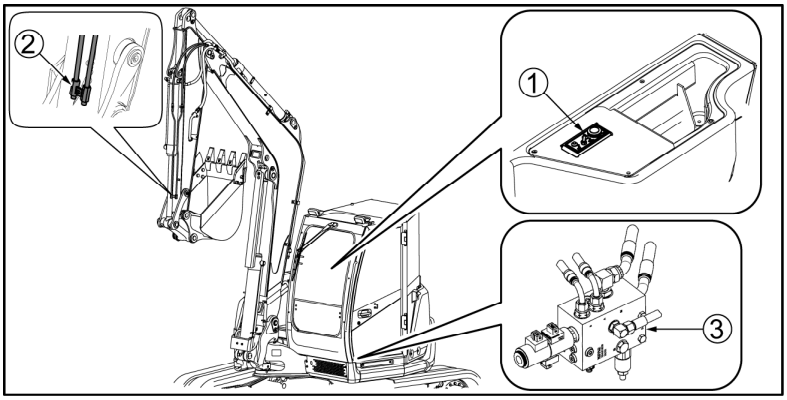
⚠ IMPORTANT

The instructions provided in this section may differ following a regulatory change in the quick connection hydraulic line.

Before using an attachment requiring hydraulic power, check the pressure compatibility from the machine specifications chart.

If in doubt, contact the attachment manufacturer or dealer.

1 Specifications, page 158



- The option is composed of a valve and its bracket, a hydraulic line, and a quick connection control unit or switch.
- The hydraulic line is powered by the hydraulic valve which ensures the locking of the attachment by the quick hitch.

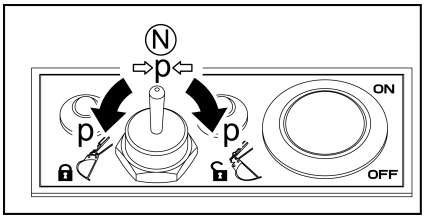
1 = Quick hitch control unit / Quick hitch control switch

2 = Hydraulic line

3 = Hydraulic valve

Quick hitch control unit

- Use the control box located in the cab to install or remove a bucket or an attachment.



p = Hydraulic circuit pressure

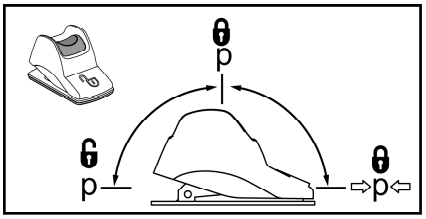
N = Neutral

⇨p⇦ = Continuous pressure

Continuous pressure hydraulic line	150 bar

Quick hitch control switch

- Use the switch located in the cab to install or remove a bucket or an attachment.

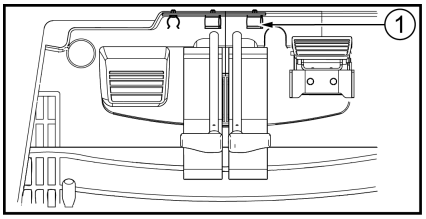


p = Hydraulic circuit pressure

⇨p⇦ = Continuous pressure

Continuous pressure hydraulic line	150 bar

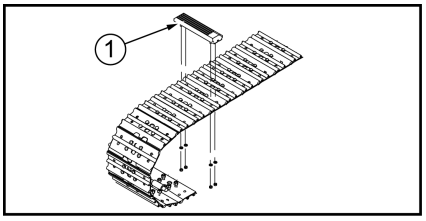
10.14 Quick coupler key housing



- This housing is where the quick coupler key is stored. The housing may be of a different type depending on the quick coupler.

1 = Quick coupler key housing

10.15 Rubber rollers for use with steel tracks



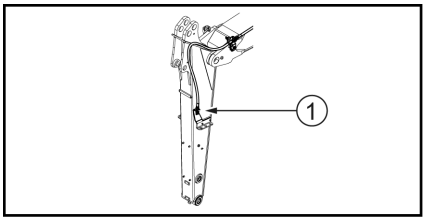
- The use of rubber rollers avoids damaging the ground, and also reduces both noise and vibrations.

1 = Rubber rollers for use with steel tracks

⚠ IMPORTANT
Use the rubber rollers sparingly depending on the site conditions and the type of work required in order to prolong their useful life. The same precautions as used for rubber crawlers must be observed.

8.4 Precautions for using rubber tracks, page 96

10.16 Attachments drain line



1 = Attachments drain line

- Use this line for attachments that require a drain line for them to operate properly.

B OPERATING INSTRUCTIONS

CHAPTER COVERED IN THIS PART:

1 Basic precautions
2 Usage precautions
3 Checks before starting the machine
4 Checks after start-up
5 Checks after use
6 Operator LCD display station interfaces
7 Using the machine in cold weather
8 Rubber tracks
9 Handling the bucket
10 Attachment change by direct coupling
11 Load lifting
12 Using the hydraulic outlets
13 Using the particle filter
14 Transporting the machine
15 Detecting anomalies
16 If the battery is discharged
17 Machine recovery

1 BASIC PRECAUTIONS

⚠ CAUTION

The user must determine whether dangerous phenomena may occur in an application, for example, the release of toxic gases, or whether the ground conditions require specific precautions. The user establish the measures to be taken to eliminate or reduce the risks.

1.1 Comply with your workplace's safety rules

- This machine must only be used and maintained by qualified personnel.
- When using or maintaining the machine, comply with all safety rules, precautions and procedures at all times.
- Any task performed in teams or with a flagman should be performed based on regulatory signals.

⚠ DANGER

The machines are not designed to work in explosive or polluted environments.

The machine configuration cannot guarantee the safety of the operator in a harmful environment. The machine must therefore not be used in such environments.

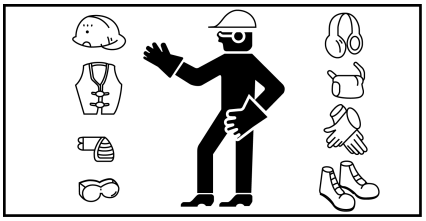
1.2 Put the safety mechanisms in place

- Make sure that all covers and all housings are properly installed in their respective positions. If any of them are damaged, repair them immediately.
- The use of safety mechanisms, such as locking lever(s) must be mastered and understood by the machine's operator.

5.3.1 Locking lever, page 22

- Never remove the safety mechanisms. Check that they are operating correctly at all times. If the safety mechanisms are operating incorrectly this may cause serious physical injury.

1.3 Wear suitable clothing and protective equipment



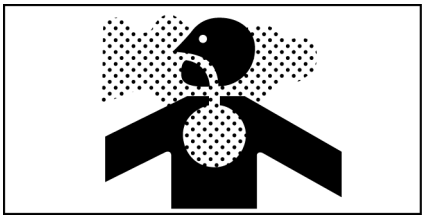
- Never wear bulky clothing or jewellery that may be caught in the control levers or a part of the machine.

  Also avoid wearing soiled work clothes, which can be risky when using the machine.
- Wear a helmet, protective goggles, safety shoes, a mask, gloves, and any other protective equipment necessary according to the working conditions and the regulations in force.

1.4 Operator health

- Never use the machine if you are under the influence of alcohol and/or drugs, if you are ill or if you do not feel well as this may cause an accident.

1.5 Provide adequate ventilation when working in an enclosed space



- The engine exhaust fumes are harmful to the human body and it is very dangerous to inhale them. When you start the engine in an enclosed space, open the windows and doors to let air circulate.
- Never let the engine idle unnecessarily and never leave the engine running when you are not using the machine.
- If fumes are emitted in a poorly ventilated area, shut off the machine and move to a ventilated area.
- Provide respirators based on working conditions to ensure the machine operator works safely.

1.6 Protect plants from hot air and exhaust fumes

- The silencer and radiator release hot air and exhaust fumes at high temperatures. If the hot air directly reaches a plant, it alters its state and may cause its death.
- Protect plants from hot air and exhaust fumes with a protective plate when you are working near a hedge or plants.

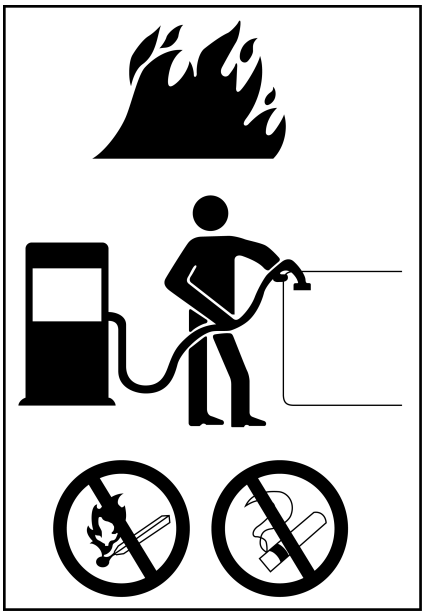
1.7 Weather conditions

- Do not use the machine during a thunderstorm.
- Do not use the machine when visibility is severely reduced by rain, snow or fog.
- Do not use the machine in extreme temperatures.

  Operating temperature range :

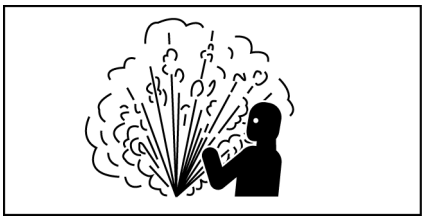
1 Specifications, page 158

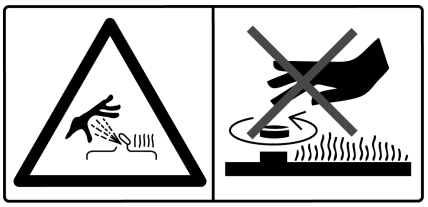
1.8 Fire hazard



- Leaving flames near fuel, oil, hydraulic oil or anti-freeze solutions, which are highly flammable and dangerous, may cause a fire.
- Specific attention must be paid to the following points :
  - Keep flammable materials away from cigarettes, lit matches or any source of fire.
  - Never top up any fluids while the engine is running. Do not smoke when topping up any fluids.
  - Tighten the fuel and oil tank caps firmly.
- Store fuel and oil in a cool, well-ventilated place away from direct sunlight.
- The fuel and oil must be stored in a place that responds to applicable safety regulations. Unauthorised personnel must not enter this area.

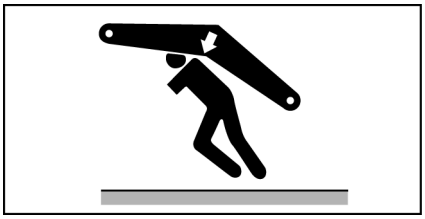
1.9 Avoid removing the caps when the temperatures are high





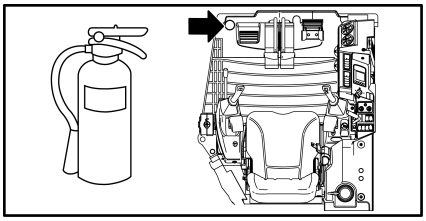
- The engine coolant, engine oil and hydraulic oil are hot and pressurised after the engine stops.
- Removing caps, draining coolant or oil or replacing a filter under these conditions risk causing burns.
- Before you remove the cap from the hydraulic oil tank, shut down the engine then gently turn the cap to release all the pressure and avoid any oil spilling.
- When you remove the radiator cap, shut down the engine and let the coolant cool down enough then gently turn the cap to release all the pressure.

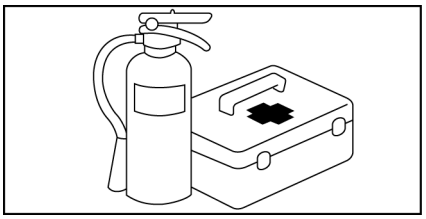
1.10 Avoid crush injuries due to attachments



- Keep your hands, arms and other parts of your body away from moving parts, between the machine's attachments or between the hydraulic cylinder and the attachment as jamming points may be created.

1.11 Have an extinguisher and a first aid kit





- The workplace must be equipped with an extinguisher.

  Read the instructions on the adhesive labels to find out how to use it.
- Place a first aid kit in a specific location.
- Specify the action to be carried out in the event of a fire or accident.
- Indicate the person to be contacted in the event of an emergency and leave the emergency call number near your telephone.
- A location to install an extinguisher is provided inside the machine's cab.
- In the event of a fire in a building, activate the fire alarm for that building.

1.12 Unauthorised modifications

- Any unauthorised modification to the design or use of unauthorised attachments may cause physical damage. YANMAR cannot be held responsible for any physical injuries, accidents, failure or damage to the machine due to any unauthorised modifications.
- In addition, in that these actions would constitute an explicit violation of the terms of the YANMAR Product Warranty, the applicable warranty would also become null and void. If you want to modify your machine, you must contact your dealer.

1.13 Precautions for optional parts and tools

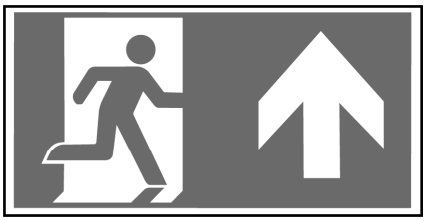
- Any modifications that are not approved by YANMAR may cause safety risks.
- If the equipment you want to add to your machine is not listed by YANMAR, you must contact your dealer.
- YANMAR cannot be held responsible for any physical injuries, accidents, failure or damage to the machine due to any unauthorised modifications.
- Any unauthorised modification will lead to the YANMAR warranty being cancelled.
- When you install or use optional attachment, read their operating instructions and the section in the manual that relates to the installation of attachment.

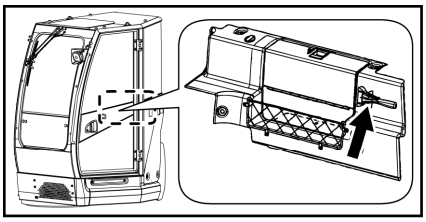
  10 Attachment change by direct coupling, page 103
- Only use attachments authorised by YANMAR.
- The use of unauthorised attachments not only risks affecting the safety of the machine but also its operation or life span.
- The use of unauthorised equipment will contravene the terms of the YANMAR warranty and cancel it.

1.14 Warning concerning the cab windows

- If, by accident, a cab window is broken, the sharp edges may represent a danger to the operator.
- Stop the machine immediately and contact your dealer for repairs.

1.15 Cabin's emergency exit





1. Raise the locking lever(s).

⚠ WARNING

When you leave the operator seat in case of emergency, always set the locking lever(s) to the locked position.

Otherwise, untimely handling of the control levers may lead to severe injury.

2. If the cab door can be opened, open it to exit the machine.
3. If the cab door does not open, break the window identified as an emergency exit using the hammer provided to get out of the machine.

Note

The emergency exit is indicated by a safety sticker.

⚠ WARNING

Remove the pieces of glass that remain in the window frame to avoid any cutting risk.

Make sure that you do not slip on the pieces of glass that have fallen at your feet on the cab floor.

4. Do not return inside the machine as long as the issue having triggered emergency evacuation has been identified and corrected.

Note

If it is not possible to exit the cabin safely, third parties must assist and provide help.

1.16 Air conditioning system

The air conditioning system contains fluorinated greenhouse gases. The characteristics of these gases are indicated on the sticker affixed to the machine, and are listed below.

3 Warning labels, page 6

		
The air conditioning system of this product contains fluorinated greenhouse gases.		
	HFC – R134a =	0,750 kg (1)
	TeqCO2 =	1,073 t (2)
GWP = 1430 (3)		
The fluorinated greenhouse gases are contained in hermetically sealed equipment.		

(1)Mass of HFC-R134A fluorinated greenhouse gases in the air conditioning system

(2)CO2 equivalent mass

(3)Potential global warming due to the gas

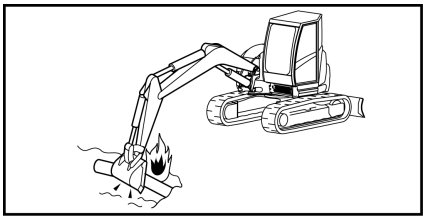
⚠ WARNING

In case of a problem with the air conditioning system, contact your dealer.

2 USAGE PRECAUTIONS

2.1 Precautions before using the machine

2.1.1 Make sure that your workplace is safe



- Before you start the engine, make sure that there is no danger in your working area.
- If there are any underground installations such as water or gas pipes, high voltage lines or other elements, contact the responsible companies to locate them exactly and to avoid damaging them.

- Examine the field and the ground and decide on the best way to work.
- When working on the street, make sure the worksite is secure.
- Be aware of the position and the work undertaken by other machines present at the place of work.
- Do not work near a fire.
- Do not start the machine near flammable products.
- If you have to use the machine under specific conditions (water, snow, etc.)

2.3.7 Working in an area covered with snow, page 77

2.3.10 Working in a submerged area, page 77

2.3.11 Working in a muddy area, page 77

2.1.2 Clean the machine

Cleaning

⚠ WARNING

Before using compressed air, make sure there are no people nearby and wear safety glasses and appropriate clothing.



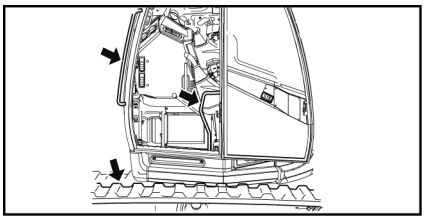
- Wood chips, dead leaves, detritus, mould, and other flammable materials around the engine can catch fire. Clean these materials from the machine.

- Dirt, oil and snow on the floor of the driver's compartment, the levers, handles or steps are slippy and dangerous. Clean them completely.
- Clean the machine’s windows to ensure perfect visibility from the driver’s seat. De-mist and de-ice the windows where necessary.
- Proceed to the checks:

3 Checks before starting the machine, page 82

Keep the headlights and rear-view mirrors and/or cameras clean

- Clean the headlights and rear-view mirrors and/or cameras to maintain optimum visibility around the machine.



- To clean the cab exterior :
  - Be sure to keep three points of support with the machine when cleaning the external elements (e. g. mirrors).
  - Use the support points identified in the illustration opposite.
  - If 3 points of stable support are not accessible for cleaning or maintenance of the external elements, use adapted equipment in order to safely work on the machine.

- Check that your machine is fitted with headlights and specific working lamps and that they are working correctly.

2.1.3 Check the safety structures

⚠ WARNING

If one of the safety structures is damaged, replace it immediately to avoid any injury. Do not repair or modify it.

- For your safety, the machine includes a protection structure in the event of it turning over (ROPS), for protection against falling objects (FOPS) and protection against side tipping (TOPS). Never modify any of these structures' elements.
- The standard machine is equipped with a Falling Objects Protection Structure (FOPS) on the machine's roof.
- The protection structures mounted on the machine comply with the recommendations of ISO 12117-2 of 2008 (ROPS) and 10262 of 2000 (FOPS).

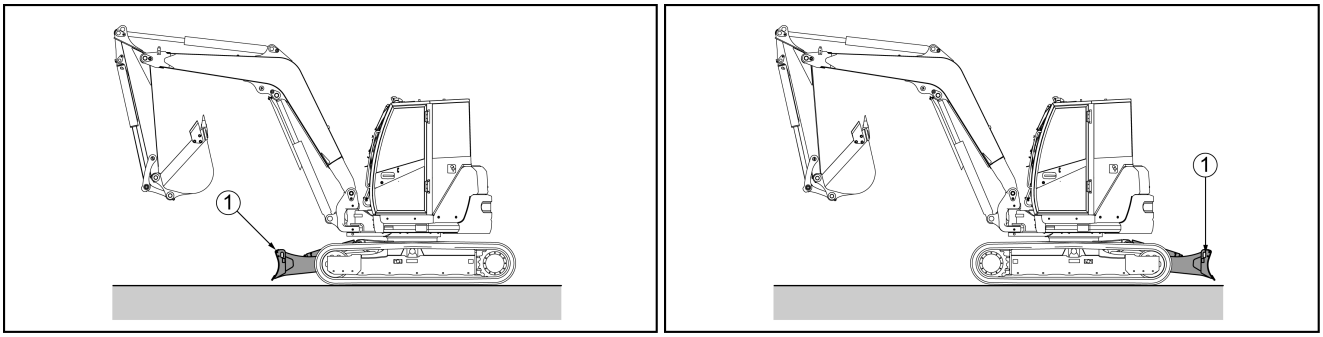
  For the specifications of these structures, refer to the table below :

Type	ROPS / TOPS
Weight (in conformity with CE standards)	11525 kg

2.1.4 Check the position of the blade

- Check the position of the blade before operating the side movement levers. When the blade is at the back, the operation of the side movement levers is reversed.

Normal travel **Reverse slide movement**



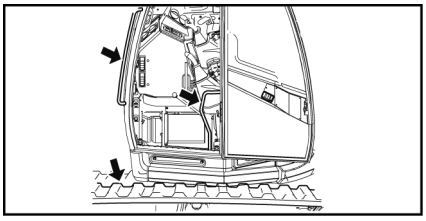
1 = Blade

2.1.5 Accessing the machine

⚠ CAUTION

Make sure that you do not bang your head against the rearview mirror when you climb into or out of the cab.

- Do not jump on or out of the machine.
- Do not climb into or out of the machine when it is operating as this may cause physical injuries.
- When you enter and leave the machine, face the machine and use the handles and the top of the track.



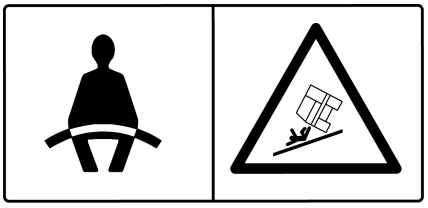
- Use the contact points indicated by arrows in the illustration opposite to climb onto and descend from the machine.
- Do not use the command levers as handles.
- Always maintain three points of contact.
- If the handles or the track is dirty or covered with oil, wash them off.

2.1.6 Fasten your safety belt

⚠ WARNING

The seat belt must be replaced after an accident or if it is damaged.

When using the machine, the operator must remain seated, with seatbelt fastened, and keep arms and legs inside the operator area.



- The operator's seat is fitted with a safety belt.
- Always fasten your safety belt and adjust it before starting the machine.

- The seat and its support must be checked by your dealer after an accident.
- If the seat and/or its support are damaged they must be replaced immediately.

2.1.7 Adjusting the rear-view mirror(s)/camera(s)

⚠ WARNING

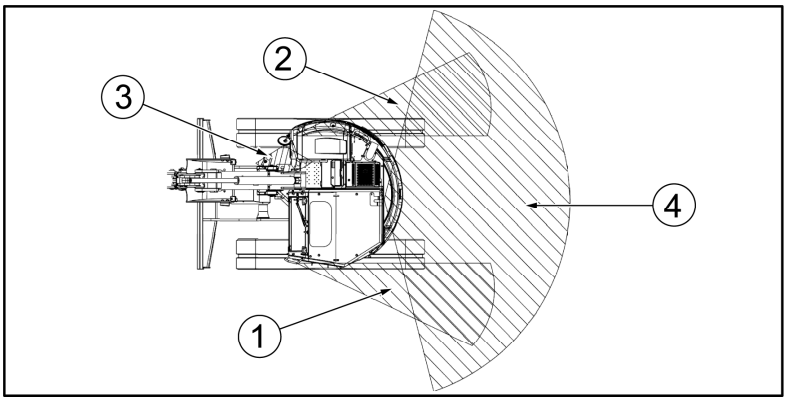
Before using the machine, adjust the rear-view mirror(s) and/or camera(s) so that you have an optimum view all around the machine.

Any damaged mirror or camera must be replaced immediately.

Ask another person to assist with adjusting the rear-view mirror(s) and the camera (s).

Use suitable accessories for adjustment (e.g. ladder or platform).

The rear-view mirror(s) and/or camera(s) must be adjusted to view the areas shown in the illustration.



1 = Left-hand mirror
2 = Right hand wing mirror
3 = Rearview mirror (Front)
4 = Camera (Rear)

2.1.8 Precautions before starting the engine

- Do not start the machine if a label indicating that a maintenance operation is in progress is present on the machine or on the control levers.
- Place the control lever in the neutral position.

2.1.9 Precautions during the break-in period

- It is vital that you respect a running in period for the machine during the first hundred hours of service (read the time counter). During this period, the machine must not be used with an excessive load, even though it has been correctly prepared and checked before despatch. Otherwise there is a risk that its performance will be affected and its life span shortened.
- When running in the machine, make sure to :
  - Preheat the engine by running it on idle for 5 minutes after starting it.
  - Do not run the machine with a heavy load or at a high speed.
  - Do not start, accelerate or stop the engine suddenly.
  - Do not change direction too suddenly.

Note

Observe these precautions throughout the life of the machine in order to preserve the good condition of the engine.

⚠ IMPORTANT

In order for the emissions performance of the engine to be maintained, the engine and the emission-management system must run, be used and be maintained according to the instructions provided in this manual.

It is forbidden to modify or deliberately misuse the engine‘s emission management system.

Any problems caused by malfunction, misuse or faulty maintenance of the emission management system, and indicated by warnings displayed on the control screen, must receive immediate remedial action.

5.2.9 Information and error icons, page 19

The machine is equipped with an operator-warning system for any malfunction of the emission management system. If warning messages go unheeded by the operator, the system is programmed to reduce the engine's performance.

2.2 Movement precautions

2.2.1 Machine's Danger Zone

⚠ DANGER

If a person is in the machine's danger zone, it may be struck by the machine's moving parts or be wedged between the machine's lower and upper parts, which can result in serious injury or death.

The field of vision from the machine is limited when looking backwards. Ensure nobody is located behind the machine before reversing.

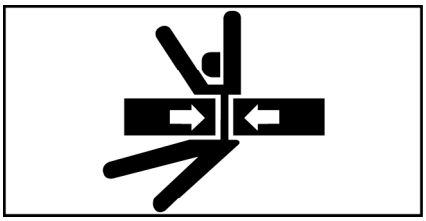
When using the machine, don't just look at the rear-view mirrors and/or the camera screen. Also look directly around the machine to cover any blind spots.

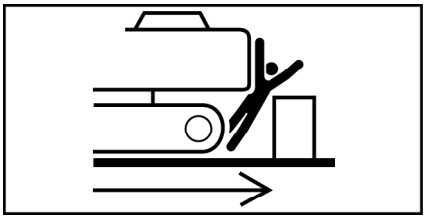
The operator must manipulate the machine controls from the operator seat.

Any use of the machine controls from the ground is strictly prohibited because it can lead to physical injury.

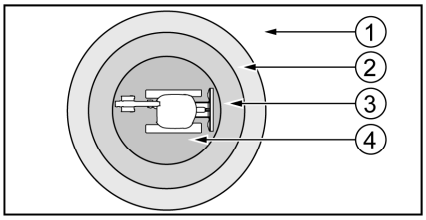
⚠ WARNING

Start the engine and run the machine only from the operator seat.





- A signaller must be provided when the working site is dangerous or has poor visibility.
- Keep all other people away from the working site or movement route of the machine.
- Alert people nearby using the horn or any other signal before starting the machine.



1 = Environment
2 = Danger zone
3 = Work area
4 = Local area

Environment

This area is only reached by the machine when it is moving. While driving, it also becomes a danger zone.

There is a risk when machines or moving parts move in this area.

Danger zone

This area is not reached by the machine or its accessories.

However, there is a constant risk due to projected parts, loads handled, malfunctions or the machine overturning.

Work area

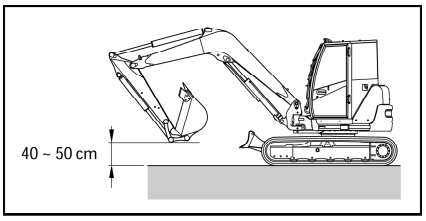
This area is within the working radius of the machine or its accessories.

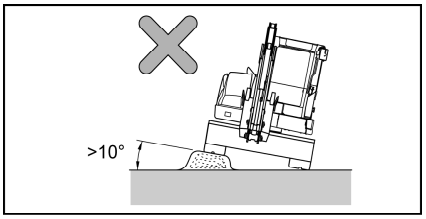
There is a constant risk from moving parts and machine accessories.

Local area

This zone is located in the immediate vicinity of the machine.
There is a constant risk of collision with the body of the machine or its moving parts or accessories.

2.2.2 Movement and attachments





- When moving the machine, keep the bucket between 40 and 50 cm above the ground with the boom and arm folded.
- If you need to use the command levers when moving, do not make any sudden movements when operating them.
- Move the machine at low speed and slow down when turning on hilly terrain.
- Avoid driving over obstacles if possible. Avoid them or remove them. If this is not possible, drive the machine at low speed keeping the tool near the ground. Never travel over obstacles that risk tilting the machine by over 10 degrees.

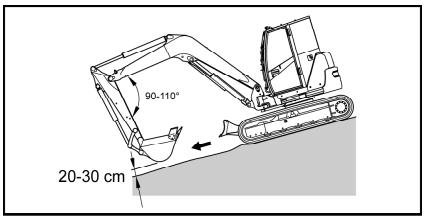
2.2.3 Driving the machine on a slope

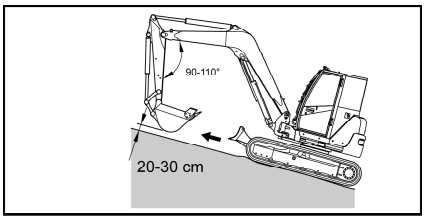
⚠ WARNING

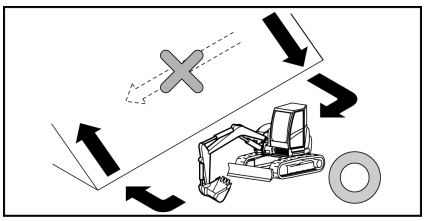
The machine may lose its balance and tip over when rotating the upper part or when the equipment is working on a slope.

Do not pivot the upper structure with a load in the bucket. If the rotation cannot be avoided, provide a bank to keep the machine as horizontal as possible. Then turn the upper structure.

Never travel across a slope of greater than 20° as the machine may tip over.







- Drive the machine carefully on a slope to avoid any tipping over or slipping to the side.
- When driving the machine on a slope, keep the bucket between 20 and 30 cm above the ground to be able to lower it to the ground and stop the machine in the event of an emergency.
- Never turn the machine on a slope and do not move it across a slope. Descend to flat ground and then turn.

  Note

  For the maximum acceptable slope :

  1 Specifications, page 158

- The machine will slide easily on grass, dead leaves or a damp metal plate, even with a slight tilt. Drive the machine carefully at low speed to prevent it slipping.

Braking when descending on a slope

- When going downhill, you can automatically stop the machine by putting the travel levers in neutral.

If the engine stops

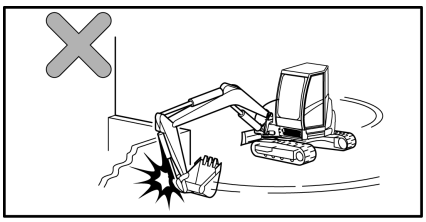
- If the engine stops when climbing an incline, position the travel levers in the neutral position and lift the locking lever, then stop the machine and restart the engine. If the machine does not start, pull the locking lever and check the fuel level.

2.3 Working precautions

2.3.1 Precautions for using the equipment

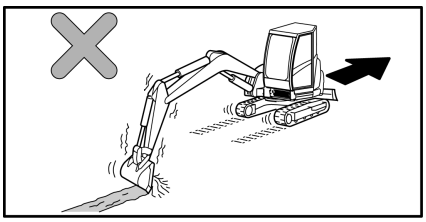
⚠ WARNING

Do not use the equipment's command levers during side movement. Stop the side movement then use the equipment.



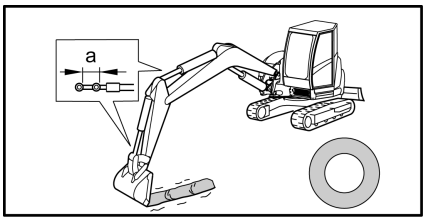
- **Do not use the equipment's rotation force.**

Do not use the rotation force to level the ground or break a wall. Do not use the bucket's teeth to dig the ground during rotation. This may damage the equipment.



- **Do not use the equipment's side movement force (except where unavoidable).**

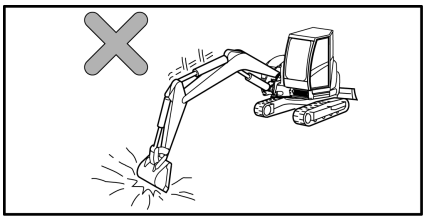
Do not use the side movement force to dig the ground with the bucket's teeth in contact with the ground. This may apply excessive force to the rear of the machine and shorten its life span.



- **Do not use the hydraulic cylinder to the end of its run.**

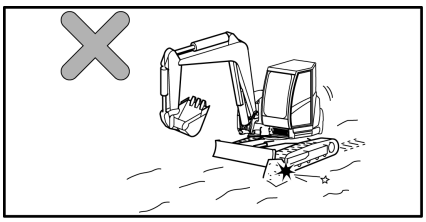
a = play

This may apply excessive force to the cylinder's stop piece and may reduce the equipment's life span. Maintain safe room for manoeuvre.



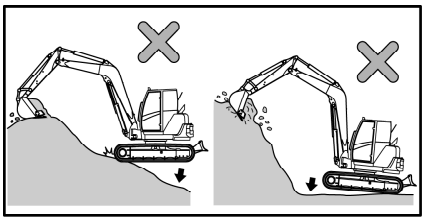
- **Do not use the bucket's dropping force.**

Do not use the bucket's dropping force to dig the ground as with a pick or harvester. This may apply excessive force to the rear of the machine and shorten its life span. In addition, this may cause a serious accident.



- **Do not strike the blade against a rock or stone.**

This may damage the blade or hydraulic cylinder.



- **Do not use the machine's lowering force.**

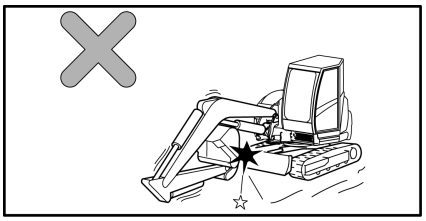
  Note

  Do not use the machine's lowering force to dig the ground.

- **When excavating a hard rock, keep the machine's tracks flat on the ground.**

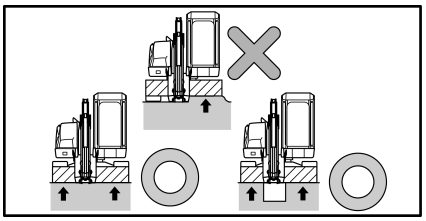
  Note

  It is also recommended to break hard rock into several pieces using other means to prevent damage to the machine.



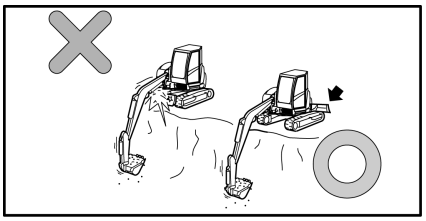
- **Be careful when pulling the equipment out.**

When you retract the equipment for side movement and transport, make sure that the bucket and blade do not come into contact.



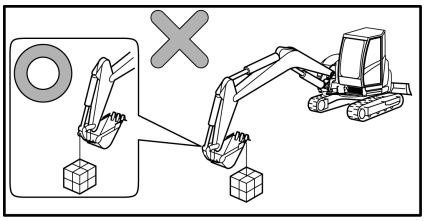
- **Support the blade on both sides.**

When you use the blade as a support, press the blade down on both sides.



- **Pay attention to the blade during excavation.**

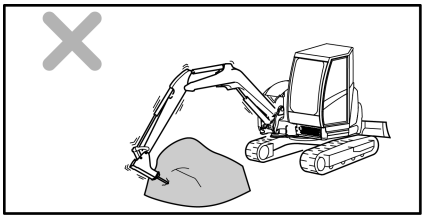
When carrying out a deep excavation on the ground in front of the blade, make sure that the blade does not come into contact with the boom cylinder. Place the blade at the back if it is not in use.



- **Do not lift loads without a suitable fastening device; it is strictly forbidden to wrap a sling around your machine's attachment or suspend it to a bucket tooth.**

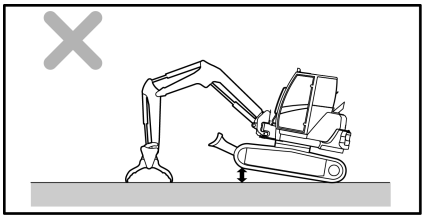
  Do not hang a load without the kit's lifting facilities.

  7 Lifting Kit, page 44



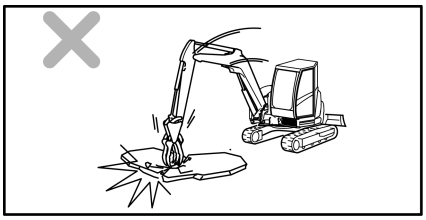
- **Do not operate the attachment with any hydraulic cylinder at the end of stroke.**

Do not operate the attachment with any hydraulic cylinder fully extended or retracted (i.e. at the end of stroke). Doing so may apply excessive load to the hydraulic cylinder, resulting in damage to the hydraulic cylinder or oil leaks.



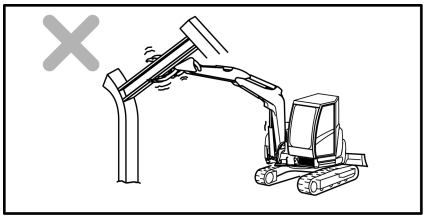
- **Do not raise the machine using the attachment mounted on the implement.**

Do not turn or lift the machine by pressing the attachment against the ground, except in the specific cases described in this manual. Doing so may result in an accident or damage to the machine.



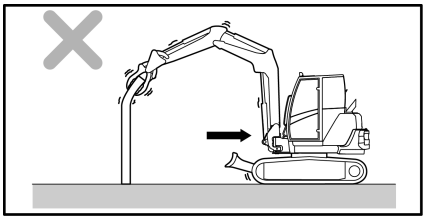
- **Do not strike an object with the attachment mounted on the implement by operating the implement.**

Do not attempt to break an object by striking it or applying pressure to it with the attachment. Doing so may result in damage not only to the attachment, but also to the machine.



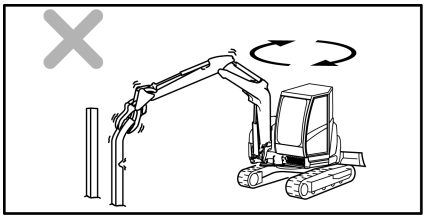
- **Do not grab an object with the attachment mounted on the implement at an oblique angle to the object.**

Grabbing an object with the attachment oblique to the object is prohibited since doing so may result not only in reduced work efficiency, but also in damage to the machine.



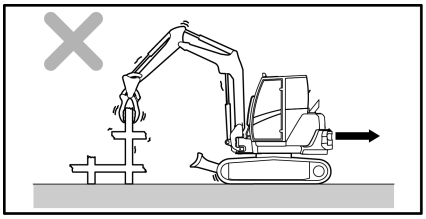
- **Do not twist, pull or drag an object by grabbing it using the attachment mounted on the implement.**

Twisting, pulling or dragging an object forcibly with the object held by the attachment is prohibited since doing so may result in damage to the attachment or the machine.



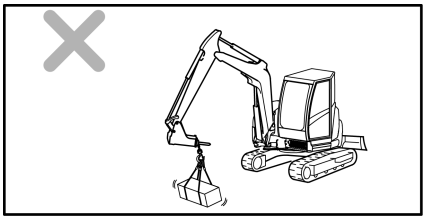
- **Do not turn the upperstructure with an object held by the attachment mounted on the implement.**

Turning the upperstructure with an object held by the attachment is prohibited since doing so may result in an accident or damage to the attachment or the machine.



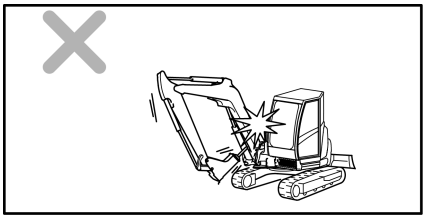
- **Do not run the machine with an object held by the attachment mounted on the implement.**

Running the machine with an object held by the attachment is prohibited since doing so may result in an accident or damage to the attachment or the machine.



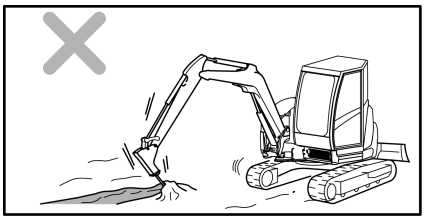
- **Do not lift a load using the attachment mounted on the implement.**

Never lift a load with the attachment using lifting means such as wire ropes since doing so falls outside the scope of the intended use of the machine and can be dangerous.



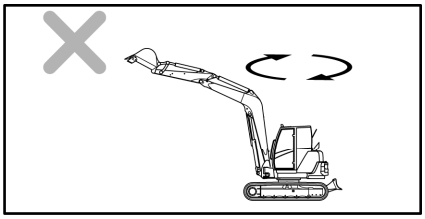
- **Be careful that the attachment does not come into contact with other parts.**

It is possible that the attachment may come into contact with the machine body or the implement. Be careful to avoid such contact during operation.



- **Do not rake up objects using the attachment mounted on the implement.**

Do not rake up objects using the attachment since doing so may result in damage to the attachment or the machine.



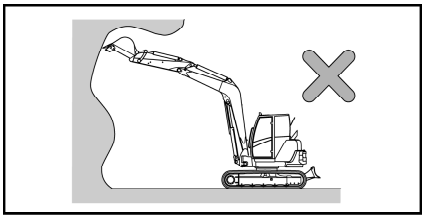
- **Danger due to inertia when rotating the upper frame**

Do not rotate the upper frame at maximum speed when the equipment is in the raised position.

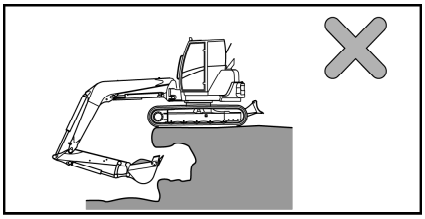
2.3.2 Dangerous tasks

⚠ DANGER

When you are working in an area with a high risk of rock fall, wear a helmet and remain under the canopy or in the cab.

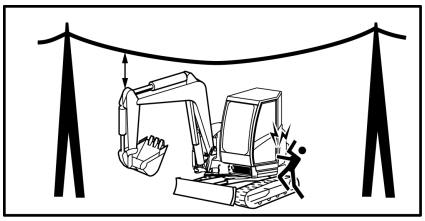


- Digging from the top is dangerous as there is a risk of rock falls or landslides.



- Digging from the bottom is dangerous as this may destabilise and tip over the machine.

2.3.3 Working near electricity lines



⚠ DANGER

Working close to overhead electricity lines is very dangerous and specific precautions must be taken.

- For this manual, you are considered as working near overhead electricity lines once the equipment or your machine's load can reach the minimum distances indicated in the table below.
- Follow these procedures to prevent any accident or injury :
  - Wear shoes with rubber or leather soles.
  - Use a signaller to warn the operator when the machine is too close to an electrical line.
  - If the machine is to enter into contact with a cable, the operator must not leave his seat.
  - Warn all personnel on the ground to stay far enough away from the machine.
- In the event of an electrostatic discharge, move the machine away from the electrical hazard zone by raising or lowering the work equipment, removing it or rotating it.

If this is not possible :

– Do not leave the driver's seat.

– Do not allow any other person to approach the machine or to touch it.

– Ask to have the power cut off.

- To determine the voltage of the wires on the work site, contact the electricity production company concerned.

⚠ WARNING

This table is provided for information only. Please refer to the regulations in force in your country.

	Voltage (V)	Minimum safety distance (m)
Electricity lines	< 50000	3
	≥ 50000	5

2.3.4 Working near obstacles

- When moving in a tunnel, under a bridge or when you are working in an area near tall obstacels, drive the machine carefully to avoid knocking the boom, the arm or the attachment against these obstacles.

2.3.5 Emergency stop and securing the machine

In case of an emergency stop of the machine, immediately put the attachment or load being handled on the ground according to the following procedure:

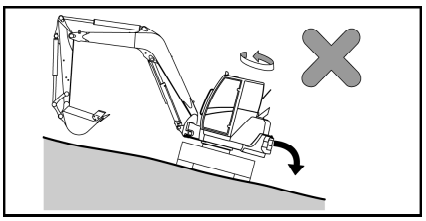
1. In case of hose rupture or imminent dangerous situation due to loss of control of the machine, release the machine controls and immediately lift the safety lever. The machine's power circuits are cut, except the one controlling the blade.

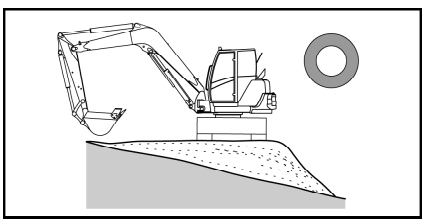
   Note

   If necessary, move the ignition key to OFF to stop the engine.

2. Lower the lock lever.
3. Set the starter key to ON position.
4. Use the joysticks to lower the boom and place the attachment or load on the ground.
5. Raise the lock lever.
6. Turn the key to OFF position to switch off the engine and disconnect the electrical circuit. Remove the key from the ignition.

2.3.6 Working on a slope





- Make sure that the machine does not lose its balance and tip over when rotating the upper structure or when rotating equipment on a slope.
- Do not pivot the upper structure with a load in the bucket.
- If the rotation cannot be avoided, provide a bank to keep the machine as horizontal as possible. Then turn the upper structure.

  Note

  For the maximum acceptable slope :

  1 Specifications, page 158

2.3.7 Working in an area covered with snow

- Snow-covered and icy surfaces are hazardous because the machine may slip, even on a slight incline. Drive the machine at reduced speed; do not stop or turn suddenly.
- Remove the snow carefully as verges or other potential dangers may be buried beneath the snow.

2.3.8 Working on unstable ground

⚠ WARNING

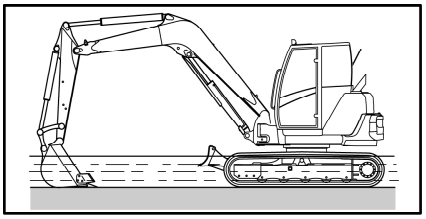
Unstable ground increase the risks of the machine tipping over.

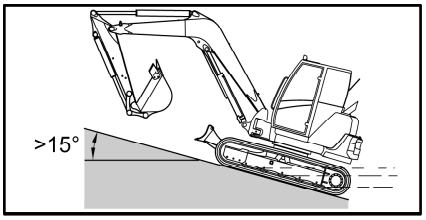
- Keep away from cliffs, verges and ditches as the ground there is unstable. There is a risk that it will give way because of the machine's vibrations or weight, which would cause the machine to tip over or fall. Be careful when working immediately after rainfall or an explosion as the ground is unstable.
- Infills and grounds near trenches are not stable and risk giving way because of the weight or vibrations of the machine, which would cause the machine to tip over or fall. Be very careful when working on this type of ground.

2.3.9 Working in a narrow area

- Driving in narrow areas can lead to collisions with other objects or the machine tipping over.
- Check the external dimensions of the machine and the dimensions of narrow passages before driving the machine in narrow areas. When driving in areas where there is a risk of the machine hitting other objects or of the verges collapsing, reinforcement or other appropriate measures should be taken and guides deployed to ensure the safety of the machine.

2.3.10 Working in a submerged area





- Before you use the machine in a submerged area, examine the condition of the ground and the depth and flow of the water.
- The maximum depth of water in which the machine can be used is up to the centre of the support roller or the track guide.

⚠ IMPORTANT

When you come out of the water, if the machine is climbing a slope with an angle of over 15°, there is a risk that the rear of the upper structure will remain submerged in the water, which risks damaging the radiator when it stirs up the water. Be aware of this when you exit the water.

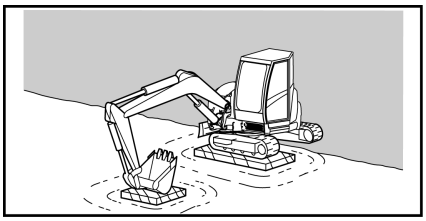
- After use, apply a large quantity of grease to the moving parts (in particular the bucket pin) which have been submerged in water for a long period until the grease used is extruded from the bearings.
- Then wipe off the extruded grease with a cloth.

2.3.11 Working in a muddy area

- Operate the machine carefully so that it does not get stuck. If it does get stuck, release it using the following procedures.

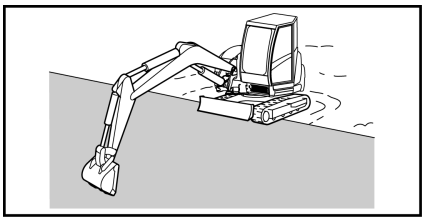
If only one track is stuck

⚠ IMPORTANT
When you raise the machine, support yourself on the ground with the lower part of the bucket (and not with the teeth). **The angle between the boom and the arm must be 90° to 110°.**



1. Place the bucket on the muddy side.
2. Lift the track.
3. Place wood or a wedge under the track runners.
4. Raise the bucket.

If both tracks are stuck



1. Place a log or piece of wood under the tracks.
2. Push the bucket into the firm ground.
3. Retract the arm as if to dig and move forward with the side movement levers to get out of the mud.

- In case of total immobilisation, have the machine towed to pull it out of the mud.

17 Machine recovery, page 122

2.3.12 Working in an area with reduced visibility

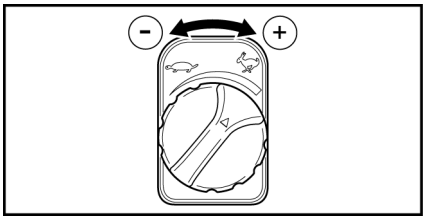
- When working in a dimly-lit area, switch on the lights and front headlights and provide additional lighting if necessary.
- Stop all work when fog, snow or rain hinders your visibility.

2.4 Parking precautions

⚠ WARNING
Unintentional use of the control levers before the machine has stopped can lead to a serious accident.

⚠ IMPORTANT
Park the machine preferably on a stable, flat and level surface.

1. Release the right and left side movement levers in neutral position to stop the machine.

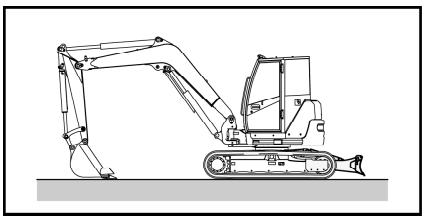


2. Turn the switch to the left to decrease the engine speed.

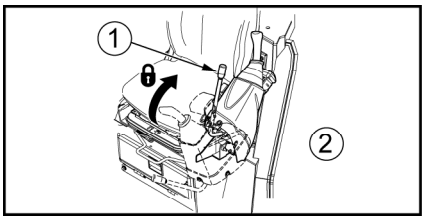
⚠ IMPORTANT

Stopping the engine after a rotation at high speed risks reducing its life span. Do not stop the engine suddenly except in an emergency.

If the engine is overheating, do not stop it immediately. Reduce the engine temperature progressively by running it at an intermediate rotation speed before stopping it.



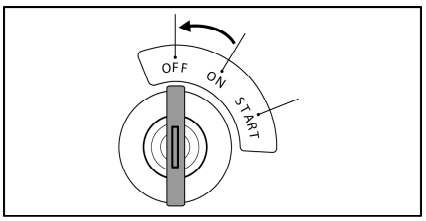
3. Lower the bucket to place its lower surface in contact with the ground.
4. Lower the blade to the ground.



5. Pull the locking levers back.

1 = Locking lever

2 = Left hand side



6. Turn the key to OFF position to switch off the engine and disconnect the electrical circuit.
7. Remove the key from the ignition.

2.5 Precautions for the attachments

⚠ CAUTION

An attachment that is not adapted to the machine may imbalance it.

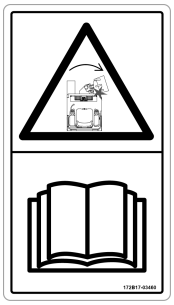
- When you mount or remove an attachment, follow these precautions :
  1. Place the machine on flat, firm ground.
  2. Keep the parts clean and well greased.
  3. Never mount any attachments that exceed the maximum accepted dimensions.
  4. Do not stay beneath a suspended load.
- See the attachments manual for a complete list of usable attachments. The user must ensure that the attachment is compatible with the capabilities of the machine and the task at hand. If in doubt, contact the attachment manufacturer or dealer.
- The user must read and keep the instructions related to mounting and using attachments. Refer to the attachments manual.

2.6 Precautions for using optional attachments

- An attachment that is very long may imbalance the machine and cause it to tip over when it descends a slope or pivots on a slope.

2.2.3 Driving the machine on a slope, page 71

2.3.6 Working on a slope, page 76



When using a large attachment, keep the attachment at a sufficient distance from the machine to avoid hitting it.

- If you mount a particularly heavy attachment on the machine, the inertia of the upper structure will increase and continue to rotate over a long distance once the rotation lever has been released.
- This may give the operator a false impression of the distance to be respected between the pivoting attachment and a nearby object and may strike the attachment against the object. To avoid this type of accident, stop the rotation as soon as possible.
- Because of the increase in the inertia, the attachment will fall a greater distance away after it has been stopped in the air. There will be major unplanned drift for the attachment.
- Check that the arm and the boom are correctly mounted. If this is not the case, accidents or damage may occur. Contact your dealer if you have any questions relating to mounting the boom or the arm.
- If you mount a long attachment, you may incorrectly estimate the distance between the attachment and a nearby object and strike the attachment against the object. Provide enough room between the long attachments and the nearby objects.
- Some quick fasteners have a lifting point.

11 Load lifting, page 105

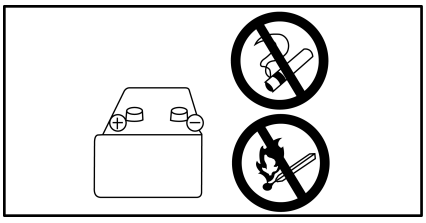
- Check the condition of the interface between the quick hitch and the attachment (cleanliness, shocks...).
- It is forbidden to operate the bucket or attachment if improperly locked in quick hitch, because in the case of improper installation it may fall during use.

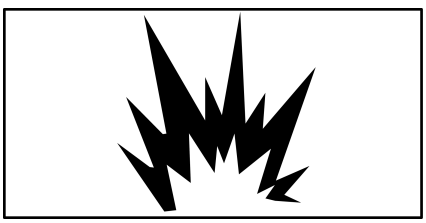
2.7 Precautions for the battery

- The battery is located under the right cover.

⚠ DANGER

Be careful when handling the battery.





- The battery electrolyte can cause severe burns to the eyes or skin. Always wear safety glasses and clothes when handling the battery.
- If the battery electrolyte comes into contact with your skin or clothes, rinse it off immediately in a large quantity of water and consult a doctor.
- An explosion may occur as the hydrogen produced by the battery is flammable. Keep the battery away from flames, sparks, and direct sunlight.

- Before inspecting or handling the battery, switch off the engine and turn the starter switch to OFF.
- Make sure that you do not cause a short circuit by touching the battery terminals with a tool.
- If a terminal connection comes loose, heat and sparks may be caused because of a poor contact and may cause an explosion. Make sure that the terminals are connected safely.
- Do not try to recharge the battery with a booster.
- The battery requires no maintenance, so do not try to open it.



- The battery contains pollutants. It must be collected by specific means.

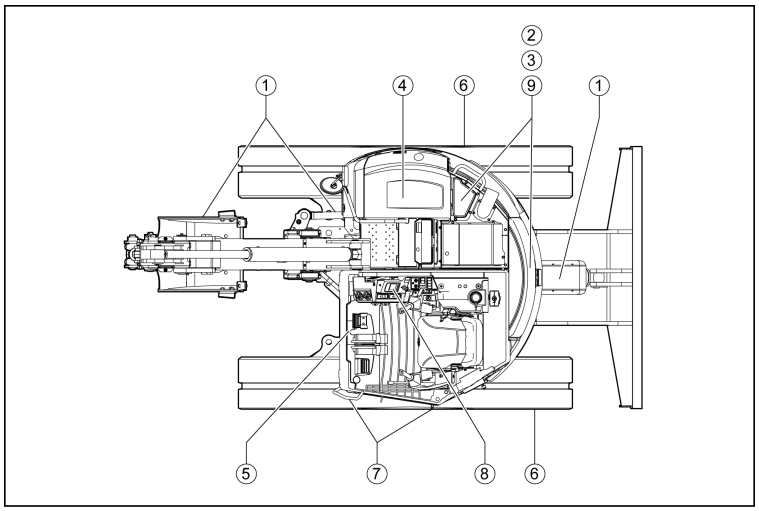
⚠ CAUTION

To start the engine using the connection cables, comply with the procedure described

16 If the battery is discharged, page 119

3 CHECKS BEFORE STARTING THE MACHINE

3.1 Overall visual inspection



⚠ WARNING

If there is any fuel on hot areas or if there are any fuel and/or oil leaks, this may cause a fire.

Carefully check these possible causes of fire.

If there are any faults, contact your dealer.

1	Check the hydraulic components : wear and leaks around the cylinders, damage to the hoses and connectors come loose.
2	Clean the dust and combustible materials (dead leaves, chips) on areas where heat develops : around the engine, the battery and the radiator.
3	Check that there are no oil leaks from the engine or water leaks from the cooling system.
4	Check that there are no oil leaks from the hydraulic system, the hydraulic oil tank, the pipes and seals.
5	Check that there are no traces of grease or leaks from the hydraulic pipes.
6	Check that there are no cracks, wear or play on the bolts and there are no oil leaks on the track rollers (runners, sprockets and rollers).
7	Check that the bolts have not broken or come loose.
8	Check the proper operation and the condition of the operator display station. • If nuts are loose, tighten them if necessary. • If the screen is damaged, replace it with a new operator display station. • Clean the surface of the operator display station.
9	Check that the red ring on the water decantor is pushed onto the lower part of the bowl. If the ring floats in the bowl, this means that water has mixed with the diesel. In this case, take out the bowl and remove the water.

3.2 Checking and topping up the level of cooling fluid

⚠ IMPORTANT

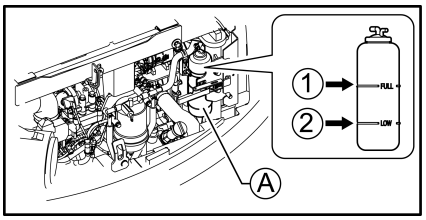
If the expansion tank is empty, check for leaks and the water level in the radiator.

If the water level in the radiator is low, top up the radiator and then the expansion tank.

⚠ WARNING

Only remove the radiator cap to top up the radiator.

- Check the level of cooling fluid every day according to the following procedure :
  1. Place the machine on flat ground.
  2. Stop the machine and take the key out of the starter switch.
  3. Wait until the engine and the radiator have cooled down.
  4. Open the bonnet with the ignition key.
  5. Lock it with the safety rod.
  6. Check that the level of liquid in the expansion tank is between the minimum and maximum markers.



A = Expansion tank
1 = Maximum
2 = Minimum

- If the level is below the min marker :
  1. Remove the cap from the expansion tank.
  2. Top up to the maximum marker.
  3. Close the expansion tank again.
  4. Close the engine bonnet.
- If the level exceeds the maximum mark, contact your dealer.

For the fluids and quantities to use, refer to:

2 Recommended greases and fluids, page 129

3.3 Checking and topping up the engine oil level

⚠ WARNING

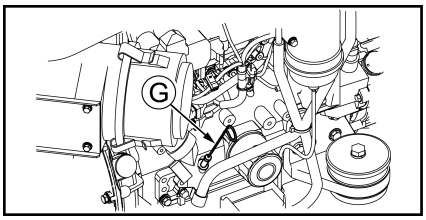
At operating temperature, the oil and the gauge area are hot.

Avoid the hot oil or the components coming into contact with your skin to avoid any physical injuries.

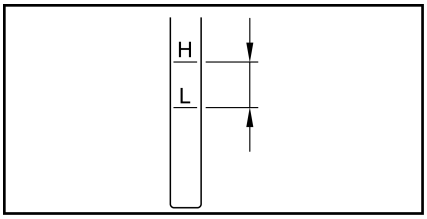
⚠ IMPORTANT

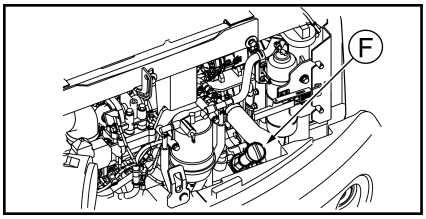
Do not over-fill. Excess oil may cause white smoke, engine overspeed or internal damage.

Do not allow any impurities to contaminate the engine oil. Carefully clean the cap, the gauge and the surrounding area before removing the cap.

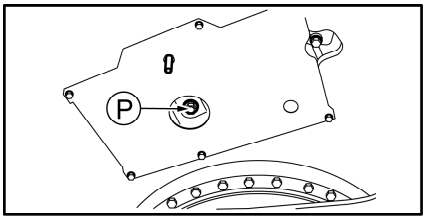


G = Gauge





F = Filler hole



P = Drain plug

1. Place the machine on flat, firm ground.
2. Wait until the engine has cooled down.
3. Open the bonnet with the ignition key. Lock it with the safety rod.
4. Read the engine oil gauge.
5. Clean the gauge with a cloth to remove any oil deposits.
6. Insert the gauge into its tube.
7. Remove it. The engine oil level must be between markers H and L.

- If the oil level is below marker L, open the filling hole and top up to marker H.
- If the oil level is above marker H, remove the excess quantity of oil via the drainage cap then check the level again.

Note

Do not pour the excess engine oil onto the ground or the road.

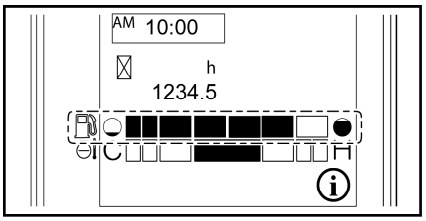
For the fluids and quantities to use, refer to:

2 Recommended greases and fluids, page 129

3.4 Checking and topping up the fuel level

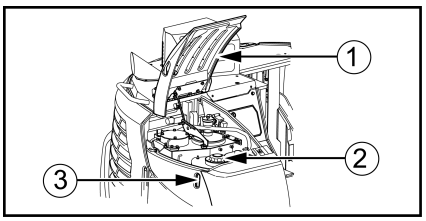
⚠ WARNING

If you spill any fuel, wipe it up with a cloth. Absorb spilled fuel to prevent it from entering the environment/ground.



● = Full

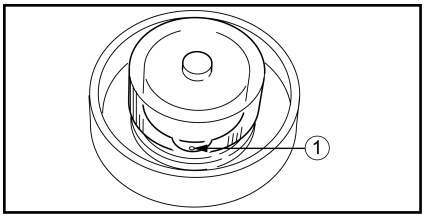
○ = Empty



1 = Cover B

2 = Tank cap

3 = Diesel gauge



1 = Tank vent

1. Place the machine on flat, firm ground.
2. Set the starter key to ON position.
3. Check the fuel level using the fuel gauge.
4. Set the starter key to OFF position.
5. To top up the fuel level, you can use the machine's filling pump (Option) :

9 Using the electric fuel filling pump, page 49

Otherwise do the following:

a. Open cover B using the starter key.

b. Take the cap off the tank.

c. Top up through the filler hole, keeping an eye on the gauge located on the tank.

6. Close the tank again.
7. Close cover B.

Note

If the cap vent holes are plugged, the pressure in the reservoir may vary and the fuel supply will be faulty. To avoid this happening, clean these vents air holes regularly.

For the fluids and quantities to use, refer to:

2 Recommended greases and fluids, page 129

3.5 Checking and topping up the hydraulic oil level

⚠ CAUTION

When you remove the cap from the oil filling opening, loosen it gently to release the pressure from the tank and avoid any high pressure oil leaks that would be dangerous.

⚠ IMPORTANT

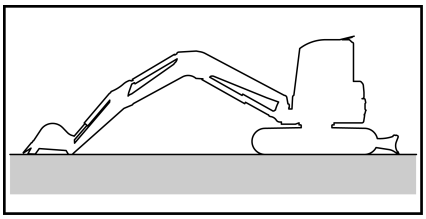
Do not top the hydraulic oil over the upper limit marker on the oil level gauge. An excessive quantity of hydraulic fluid may damage the hydraulic system by applying too much pressure to these components, which would cause a dangerous high pressure leak.

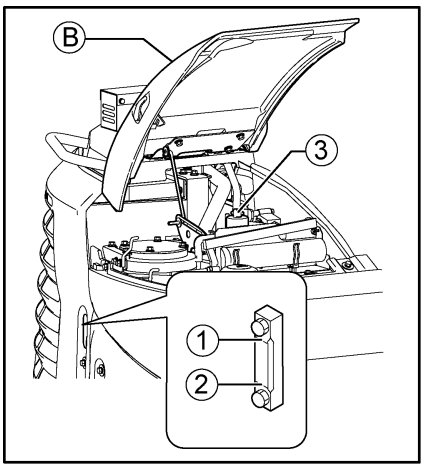
Note

The oil level varies according to the oil temperature.

• Before start-up, the oil level must be on or around the central point of the gauge scale (oil temperature : 10 to 30°C).

• During normal operation, the oil level must be around the upper limit marker on the oil gauge scale (oil temperature : 50 to 80°C).





B = Cover B

1 = Upper limit

2 = Lower limit

3 = Filler hole

1. Put the machine in the position shown opposite: blade back and lowered to the ground, equipment parallel to the tracks, boom cylinder half out, arm cylinder retracted to the end of its run, bucket teeth on the ground.
2. Stop the machine and take the key out of the starter switch.
3. Determine the oil level by looking at the gauge on the right hand side of the machine.

   The ball must be between the gauge's upper and lower markers.
4. If necessary, top up to the correct level according to the oil temperature as follows:

   a. Open cover B using the starter key.

   b. Open the hydraulic oil tank opening cap.

   c. Top up throught the filler hole, keeping an eye on the gauge located on the tank.
5. Close the tank again.
6. Close cover B.

For the fluids and quantities to use, refer to:

2 Recommended greases and fluids, page 129

4 CHECKS AFTER START-UP

⚠ WARNING

Emergency stop : if an abnormal action occurs, turn the key in the ignition switch to the OFF position. The electrical system is interrupted and the engine stops.

Ask your dealer to check the machine.

If you do not use the pre-heating, the machine may respond slowly to the command levers or not operate correctly, especially in cold weather.

⚠ IMPORTANT

The hydraulic oil must be at a temperature from 50°C to 80°C.

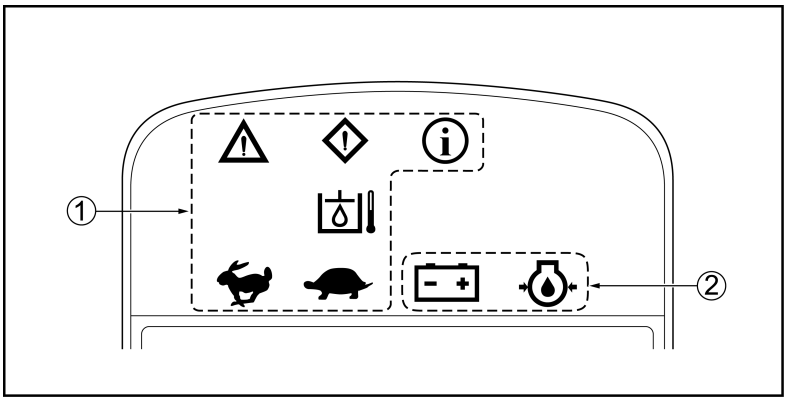
If the temperature is low, wait until it reaches 20°C before using the equipment.

If you need to use a command lever before the oil reaches this temperature, handle it gently.

Do not accelerate suddenly if the engine is not hot.

After the engine starts, do not use the machine immediately but respect the following procedure :

1. Run the engine on idle.
2. Check that the indicator lights correspond to the following statuses :



1		
2		2s

3. Check that the gauges correspond to the following statuses :
   - **5.2.4 Diesel gauge, page 18**
   - **5.2.5 Cooling fluid temperature indicator, page 18**
4. Set the engine speed switch setting between idle and full throttle positions.

   Run the engine about 5 minutes with no load at the intermediate rotational speed.
5. Unlock the locking levers and lift the bucket from the ground.
6. Use the joysticks to extend and retract the bucket and arm cylinders to the end of their run. Alternately run the bucket cylinder for 30 seconds then the arm cylinder for 30 seconds over a total duration of around 5 minutes to raise the hydraulic oil temperature to at least 20°C.

⚠ IMPORTANT

When moving the attachment, make sure it does not hit the ground or the machine.

Check that there is no abnormal noise in the hydraulic circuit.

7. Check the colour of the exhaust gas, the noise and the vibrations of the machine.
8. Raise the locking lever to ensure that no handling of the equipment and no rotation of the upper structure is possible with the joysticks.
9. Unlock the locking lever and activate the joysticks to check that everything is operating normally.

⚠ IMPORTANT
If you observe the slightest anomaly during this procedure, contact your dealer.

5 CHECKS AFTER USE

⚠ IMPORTANT
If you detect any faults, contact your dealer.

- Check the global aspect of the machine.
- Check there are no cracks or damage.
- Check that no nuts or screws are missing.
- Check for leaks.
- Lock the cab (if equipped) and the cover(s).

If the machine is used in a rocky place :

- Check for damage to the lower chassis.

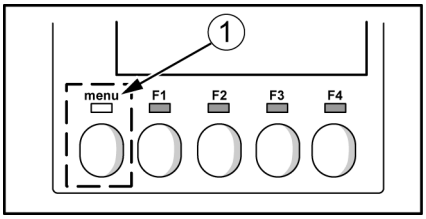
If the machine is used in a dusty place :

- Check whether the air filter is clogged.
- Check the air filter cartridge regularly.
- Check whether the radiator vents are clogged.
- Clean or replace the fuel filter cartridge regularly.
- Clean the electrical equipment, particularly the starter and the alternator to avoid any dust deposits.

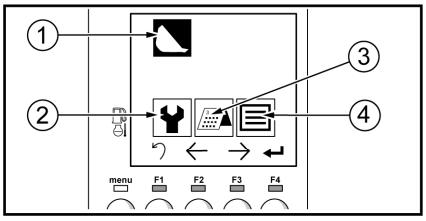
If the machine is used in mud, snow or sand :

- Clean the machine.
- Apply grease to all equipment pins that have been submerged in mud, snow or sand.

6 OPERATOR LCD DISPLAY STATION INTERFACES



1 = Menu change



1 = User Interface

2 = Maintenance interface

3 = Machine usage management interface

4 = Configuration interface

1. Press the "Menu Change" button to access the main menu.
2. Move the selection with the navigation keys F2 (←) and F3 (→) on the icon to select.

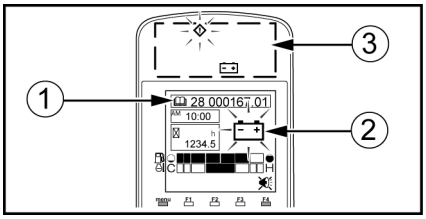
   The colour of the selected icon is reversed (the icon background becomes black) and it is displayed above the other icons.
3. Confirm the selection by pressing F4 **(↵)**

6.1 Indication of functions

This section of the menu indicates the functions of buttons F1 to F4.

	Return to previous menu.	(R)	Reset the selected value
	Move the cursor over the object to the left of the one selected		Displays the details of an information notice (maintenance notice for example).
	Move the cursor over the object to the right of the one selected.		Stop the buzzer that sounds when a problem arises.
	Move the cursor over the object above the one selected		Select an object or validate a parameter.
	Move the cursor over the object below the one selected.		Increase the selected value by 1

6.2 User Interface



1 = Error Code

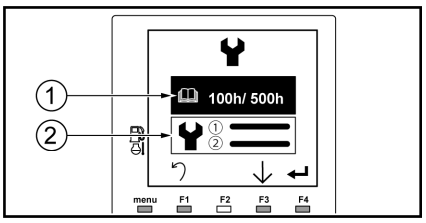
2 = Error Icon

3 = Lights

- The user interface displays the machine use information (hour meter, fuel gauge) and information after a failure (error code and error icon).
- In case of malfunction, the visual indicator LED lights up, the error code is displayed with the icon and the buzzer sounds.
- For more information about the information displayed on the monitor

5.2.1 Lights, page 16

6.3 Maintenance interface

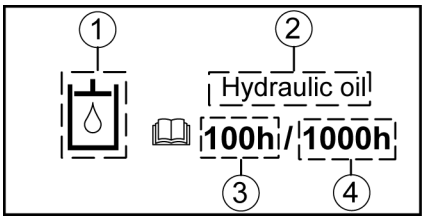


1 = Displays the maintenance interval screen

2 = Displays the maintenance history screen

- This interface allows you to check the maintenance periods and cumulative elapsed time since the last maintenance for each maintenance object.
- Information icon appears on the screen indicating that the maintenance period for an object has been reached.

⚠ IMPORTANT
The maintenance time accumulator must be reset after the maintenance is performed.



1 = Maintenance object icon

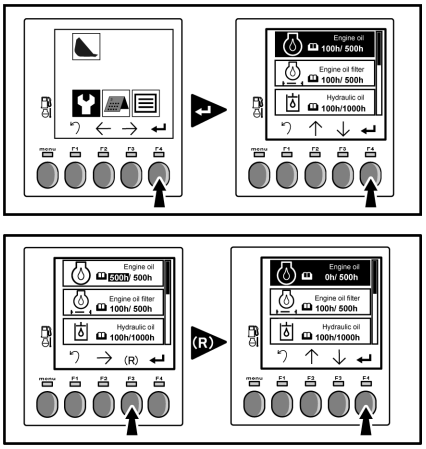
2 = Maintenance object name

3 = Time accumulated since the previous maintenance

4 = Maintenance interval

- The date, duration and number of hours indicated on the hour meter are recorded in the maintenance history.

Resetting the accumulated maintenance time



Following the maintenance completion, reset the maintenance time accumulator:

1. Select the maintenance interface.
2. Select the maintenance object using F4
3. Reset the maintenance time by pressing F3

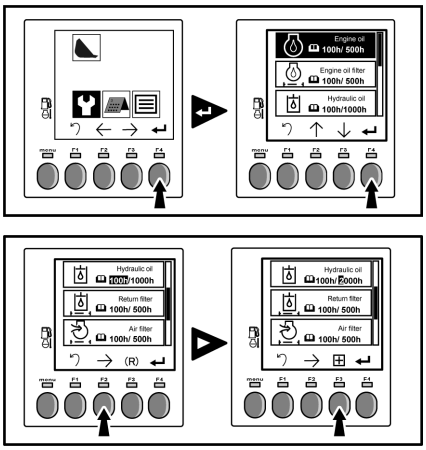
   Maintenance time goes to 0.

   Note

   To cancel the maintenance time reset, press F1.
4. Press F4 to complete the process.

   The display returns to the maintenance interface and a confirmation sound is emitted.

Changing the maintenance interval



To change the maintenance interval, follow this procedure:

1. Select the maintenance interface.
2. Select the maintenance object using F4
3. Press the F2 key to select the first digit.

   Note

   To select the thousands, hundreds or tens digits, repeatedly press F2.
4. To edit the highlighted number, press F3 to increase the value by 1 until you reach the desired value.
5. Press F4 to complete the process.

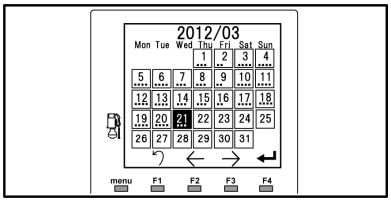
   The display returns to the maintenance interface and a confirmation sound is emitted.

6.4 Machine usage management interface

- This interface allows you to check the machine hours of operation over a period of 90 days.

Hours of machine use for the selected month:

- The number of operating hours is shown approximately by a number of chips under the corresponding date and a time span:



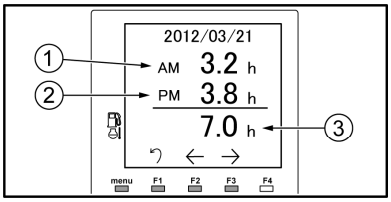
■ 0.5~2.0h

■■ 2.0~4.0h

■■■ 4.0~8.0h

■■■■ 8.0h <

Hours of machine use for the selected day:



The hours of machine operation are displayed as follows:

1 = Number of hours in the morning.

2 = Number of hours in the afternoon.

3 = Total operating hours for the day.

6.5 Configuration interface

This interface allows you to change the settings shown in the table below.

	**Language:** Changes the language used by the various interfaces.
	**Date and time setting:** If the battery in the machine is removed, the date and time settings will be reset.
	**Sound parameter:** Adjusts the monitor to emit a confirmation sound when a button is pressed. The buzzer sounds when the settings are changed or when a malfunction is detected can not be removed.
	**Brightness setting:** Adjusts the brightness of LED visual indicators and the LCD screen when the work light is in operation.
	**Fuel consumption** Sets the fuel consumption display on the operator display station.

7 USING THE MACHINE IN COLD WEATHER

7.1 Preparation for use in cold weather

- De-mist and de-ice the windows where necessary.
- De-mist and de-ice the rear-view mirror(s) and/or camera(s) if necessary.
- In cold weather, you may have difficulty starting the engine if the coolant and the fuel are unsuitable.
- Consequently, take the following measures :

1. Use oil and fuel suitable for the outside temperature.

2 Recommended greases and fluids, page 129

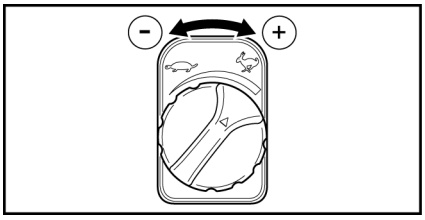
2. Keep the battery charged. In cold weather, remove the battery after using the machine and store it in a heated room to facilitate restarting the machine.

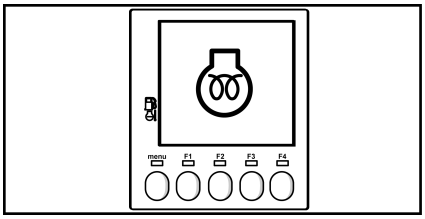
7.2 Starting in cold weather

⚠ WARNING

Consult these pages and respect these safety instructions before starting up the machine.

2.1 Precautions before using the machine, page 66





1. Set the engine speed switch setting between idle and full throttle positions.
2. Turn the key to the ON position.
   a. Keep the key in the ON position to warm up the engine until the "warm-up" icon no longer appears on the screen.
   b. When the glow plug icon no longer appears on the screen, turn the key to the START position to start the engine.
   c. Release the key after the engine starts and it will return itself to ON position.
3. When the engine speed increases, move the throttle switch to the idle position.

⚠ IMPORTANT

Do not leave the key in START position for over 10 seconds.

If the engine does not start, position the key at OFF. Wait 30 seconds then restart the engine.

Moving or operating the machine without warming it up first may affect its performance.

7.3 Precautions after use

To avoid that the machine is jammed due to mud, water or frozen deposits on the rubber tracks :

1. Remove the mud or water stuck to the machine.
2. Park the machine on firm, dry ground or place boards on the ground and park the machine on these boards to avoid the tracks freezing on the ground.
3. Drain the water built up in the fuel system by turning the evacuation tap to avoid and freezing.
4. Cover the battery or place it in a warm place and reinstall it on the machine the next morning.

7.4 When cold weather is over

- When the exterior temperature increases, replace the engine oil and the fuel.

2 Recommended greases and fluids, page 129

8 RUBBER TRACKS

8.1 Correct use of rubber tracks

- Rubber tracks have certain advantages over steel tracks. However, you cannot get the full benefit out of rubber tracks if you use them in the same way as steel tracks.
- Use the rubber tracks moderately according to the conditions at the work site and the type of work.
- The track tension should be adjusted according to the work zone.

8.2 Comparison between rubber tracks / steel tracks

	Rubber	Steel
Low vibrations	◊	□
Gentle side movement (does not jerk)	◊	○
Silent side movement	◊	□
Less damange to the ground	◊	□
Simple operation	◊	□
Resistance	□	◊
Traction power	◊	◊

◊ = excellent

○ = good

□ = ordinary

- The rubber tracks have certain advantages that are inheritent to the material's unique properties. It is essential that you perfectly understand the properties of the rubber tracks and comply with the handling and operating precautions for these tracks to extend their life span and get the most out of them.

8.3 Rubber track warranty

- The rubber tracks are not guaranteed for repair and replacement if they are damaged following careless use by the user : lack of check of the track tension or incorrect maintenance, use of the tracks on surfaces or terrain likely to damage them.

8.4 Precautions for using rubber tracks

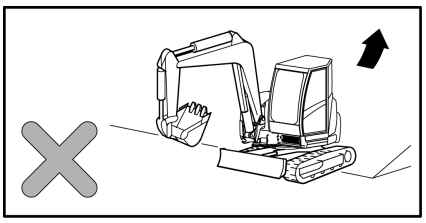
- Do not use them or pivot them on broken stones, a hard, rough rock base or around steel or iron rods or the edges of iron plates.
- Do not use the machine on rocky ground such as a river bed as there is a risk that the tracks will be damaged by gravel entering the runners or the tracks becoming loose. Pushing earth by force will reduce the tracks' life span.
- Avoid the rubber becoming stained by oil, fuel or chemical solvents. If the tracks are dirty, wipe them immediately. Do not travel across oily surfaces.
- When you do not use the machine for a period of over 2 months, avoid placing the tracks in a place that is directly exposed to sunlight or rain.
- Never drive on heated surfaces such as fires in the open air, a steel plate exposed to the sun, or a hot asphalt surface.
- Never drive on a track when the other track is held above the ground with the equipment. This may damage the tracks or cause them to come off.
- Never turn on the spot on concrete or asphalt surfaces.
- Do not suddenly change the speed. You risk wearing or damaging the track.

- Never rotate on ground with a significant difference in level.
- Climb a step at a right angle to avoid the tracks coming off.
- Gently lower a machine that has been raised from the ground with the equipment.
- We recommend not to handle materials that become oily once crushed (soya, wheat grains, compressed colza oil yeast, etc.).

  After use, clean the machine fully with water.
- We recommend not to handle materials such as salt, ammonium sulphate, potassium chloride, potassium sulphate or super lime biphosphate.

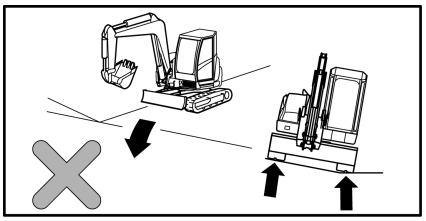
  Transporting these materials risks damage the metals' adhesion.

  After use, clean the machine fully with water.
- Avoid the tracks coming into contact with concrete walls.
- The tracks tend to slip on snow or icy surfaces. Check that you do not slip when moving or working on a slope in cold weather.
- Operating the machine in extremely cold weather may damage the rubber tracks and reduce their life span. Given the physical characteristics of rubber, observe the operating temperatures specified in this manual.
- Do not damage the tracks with the bucket when using the machine.

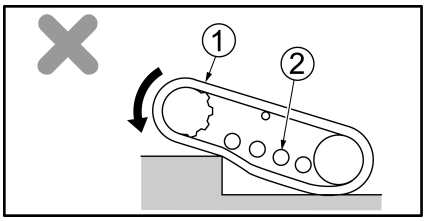


- Do not drive on the boundary between a flat surface and a slope to climb in reverse.

  Otherwise, reduce the speed.

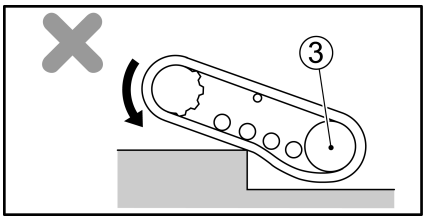


- Do not drive with a track on a slope or convex surface (one that generates an angle of over 10°) and the other track on flat ground; this will damage the tracks. Drive with both tracks on the same flat surface.

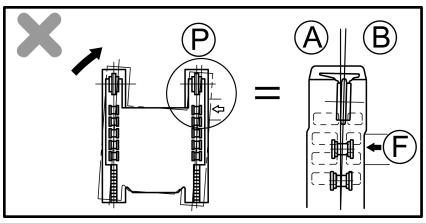


1 = Track

2 = Track roller



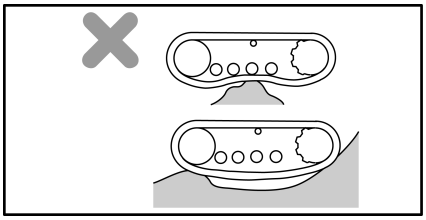
3 = Idle wheel

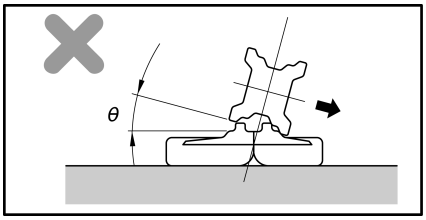


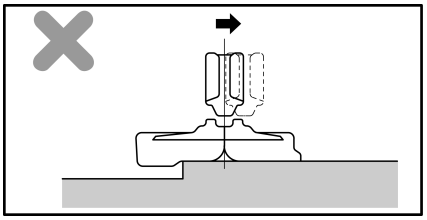
A = Chassis side

B = Rubber track side

- Keep the tracks at their adequate tension to avoid them coming off. If the tension is too low, the machine can throw a track in the following circumstances :
  - when there is a significant difference in level, there is a spacing between the tracks and the rollers.
  - when you carry out side movement in reverse, there is another spacing between the tension roller and the track.
  - when the machine is moving although the tracks have been blocked to the side by an obstacle.
  - when the idler pulley and the rollers are not aligned with respect to the tracks.
  - when you are reversing under these conditions.







9 HANDLING THE BUCKET

9.1 Machine stability when using with a bucket or an attachment

- The maximum weight when in use in bucket mode or with attachments that ensures machine dynamic stability in use. It corresponds to the maximum weight allowed at the end of the empty arm.
- This weight is determined for the machine on a flat and firm ground under the most unfavourable conditions and is indicated in the table below.

1 Lifting ViO80-1A, page 165

	1650 mm	2000 mm	
	860	790	
	990	920	

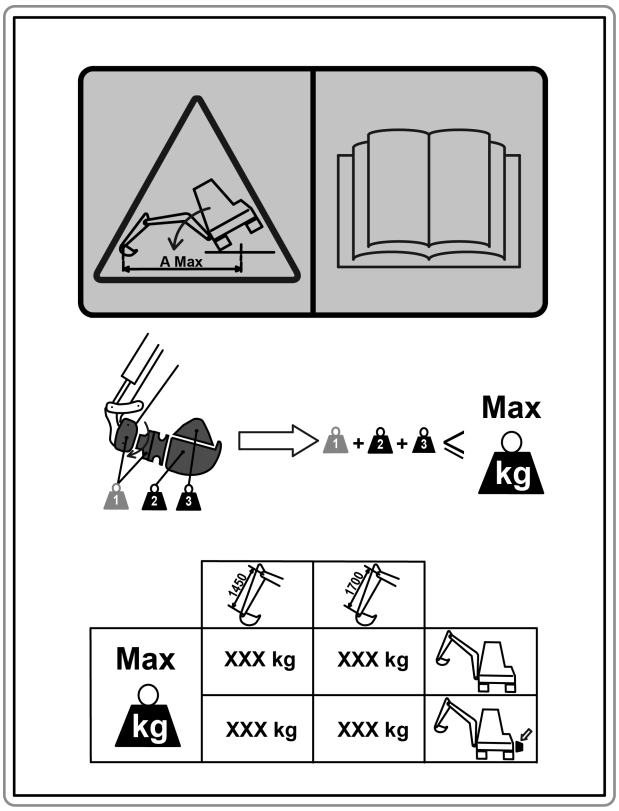
- It must absolutely be taken into account by the operator before using the machine for excavation, levelling operations or in working conditions with the attachments.
- Depending on the machine configuration (arm length, presence of a counterweight…) and working conditions, the operator must make sure that:
  - the equipment and attachments selection is made according to the nature of the task to be carried out and according to the machine's stability limits.
  - the total weight of the quick hitch, the attachment used (bucket, hydraulic hammer...) and the load handled does not exceed the maximum weight allowed.

⚠ DANGER

Any excess can lead to a loss of stability of the machine and tip it over. YANMAR CONSTRUCTION EQUIPMENT EUROPE S.A.S. accepts no responsibility in case of non compliance with the safety instructions described in this chapter.

⚠ WARNING

When using the machine with a heavy attachment (bucket in loader mode or log loader for example) associated with travel movement, the maximum weight guaranteeing the stability of the machine and the loads shown in the lifting table must be reduced by 20%.



To determine the weight that your machine will handle, make the following calculation:

Weight handled =	
+	Weight of equipped quick hitch
+	Weight of the attachment (hammer, empty bucket...)
+	(Bucket load capacity x material density)

This operation is reminded by a sticker affixed in the cab interior and visible from the driver's compartment. Compare the result with the maximum weight under condition of use with bucket, shovel or with attachments.

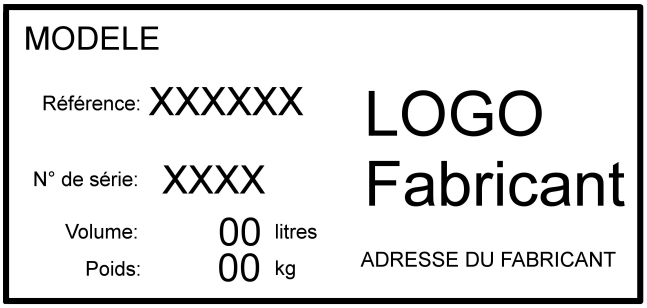
Weight of quick hitch and attachments (hammer, empty bucket...):

Please refer to the stickers or C.E. and manufacturer's plates affixed on the attachment mounted on your machine.

C.E. sticker sample



Manufacturer's plate example



Weight of material handled:

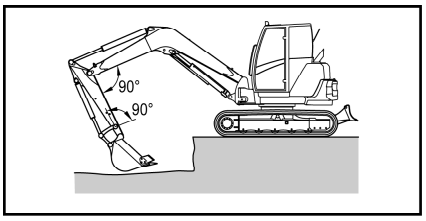
The bucket loading capacity (or SAE volume) allows calculating the weight of material handled in the bucket (in case of full buckets) and it takes into account the extra weight caused by the dome piling of certain materials. To determine the weight of materials handled, make the following calculation:

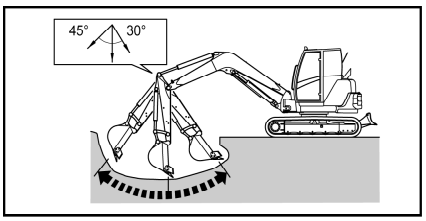
Weight of materials (kg) = Load Capacity (L) x Density

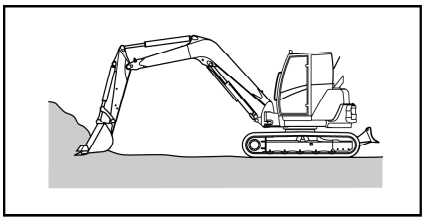
Materials	Density
Sand	1,64
Clay	1,7
Mud	1,8
Gravel	1,5

The density of the materials has a great influence on the weight of the load handled. The opposite table specifies the density of the most commonly handled materials.

9.2 Operation of the retro bucket





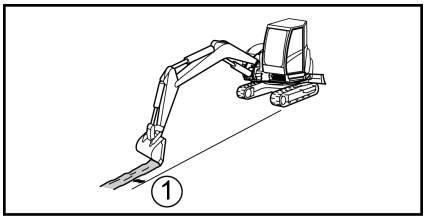


- The retro bucket is adapted to dig the ground at a level below the machine.
- The maximum digging force is obtained when the angle between the bucket cylinder and the bucket arm and the angle between the arm cylinder and the arm is 90°.
- For maximum effectiveness, handle the arm within the range illustrated opposite : 45° forward and 30° back.
- Do not move the equipment to the end of the cylinder run.
- To dig at a level above the machine, install the bucket in the reverse position.

10.1.1 Loading bucket, page 104

9.1 Machine stability when using with a bucket or an attachment, page 99

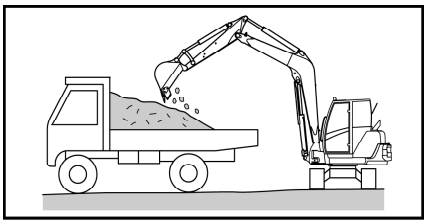
9.3 Digging trenches



1 = Parallel

- To increase the effectiveness of the machine, place an appropriate bucket to dig a trench and position the tracks in parallel on each side of the trench to be dug.
- To dig a wide trench, dig on the two sides then the centre.

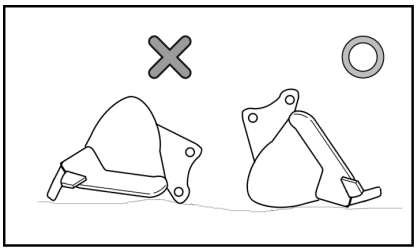
9.4 Loading



- To increase effectiveness, position the skip truck at a location where the operator may view it and where the machine's rotation angle is minimised.
- Load the earth from the back of the truck to facilitate loading and maximise the quantity of earth loaded.

10 ATTACHMENT CHANGE BY DIRECT COUPLING

10.1 Installing the bucket



⚠ WARNING

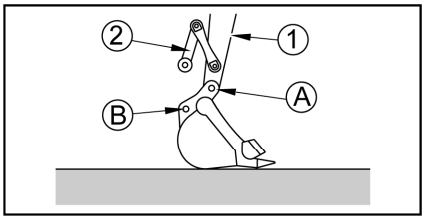
Before mounting a bucket or an attachment on your machine, make sure that:

– the bucket or attachment is compatible with the capabilities of your machine.

Refer to the attachments manual.

– the bucket or attachment mounting operation is performed on a level and stable ground.

– the bucket or attachment is properly positioned to be installed on the machine.



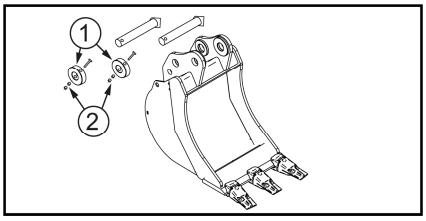
1 = Arm

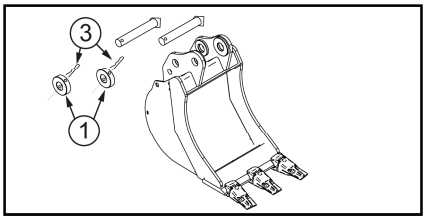
2 = Bucket link

1. Clean and lubricate the bores.
2. Put the o-rings in place.
3. Align the arm bore with the bore A.

   Add shims to compensate for play if necessary.
4. Insert the swivel pin into the bore A.
5. Align the pin bore with the bore B.

   Add shims to compensate for play if necessary.
6. Insert the swivel pin into the bore B.
7. Install the stop systems depending on the attachment model mounted on the machine.
8. Grease the hinged parts.

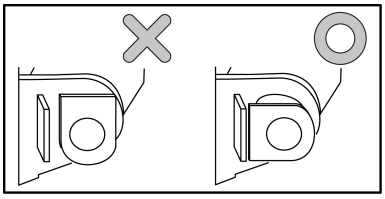




1 = Rings

2 = Bolts

3 = Locking pins

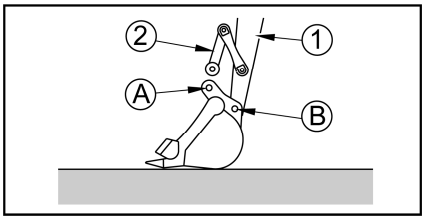


Note

Make sure to install the swivel pin stops correctly by positioning them with the flat plane against the stop.

10.1.1 Loading bucket

⚠ IMPORTANT
Protect the various elements from dirt and dust.
Take care not to damage seals on each bushing side.



1 = Arm

2 = Bucket link

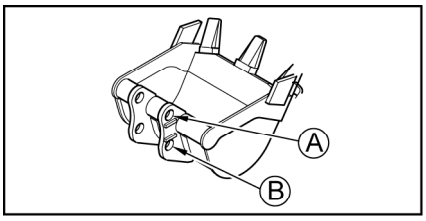
1. Clean and lubricate the bores.
2. Put the o-rings in place.
3. Align the pin bore with the bucket A bore.

   Add shims to compensate for play if necessary.
4. Insert the swivel pin into bore A.
5. Lift the equipment and align the arm bore with the bucket B bore holding the bucket about 5 cm of the ground.

   Add shims to compensate for play if necessary.
6. Insert the swivel pin into bore B.
7. Put the stop pins in place on axes A and B.
8. Grease the hinged parts.

10.2 Removing the bucket

⚠ IMPORTANT
Protect the various elements from dirt and dust.
Take care not to damage seals on each bushing side.
Check the good state of o-rings. Replace it if damaged.



A & B = Bucket or attachment bore

1. Place the machine on flat ground.
2. Place the attachment at about 5 cm above the ground.
3. Stop the engine.
4. Clean all the parts.
5. Remove the swivel pin from the A bore and the swivel pin from the B bore.

11 LOAD LIFTING

Do not hang a load without the kit's lifting facilities.

7 Lifting Kit, page 44

⚠ WARNING

It is forbidden to lift loads over people.

Lifting operations are prohibited if the lifting attachment is resting on a sharp edge of the equipment, which could damage it and cause it to drop the load.

⚠ IMPORTANT

It is forbidden to handle the loads without turning on the overload box.

When using the machine for log or long charge handling, the machine must be fitted with a frontal protection structure.

Limit the load's lifting height as much as possible during handling.

To make lifting a load with the machine, use the following procedure:

1. Check that the WLL of the lifting accessories used are compatible with the load being lifted.
2. See the load tables for your machine so you do not exceed these limits during the lifting operation.
3. Install a device that can oppose the accidental release of the load on the machine's lifting ring (with latch hook, shackle, eye...) and whose WLL is equal to or greater than the load to be lifted.
4. Attach the load to be handled with the lifting attachment.
5. Pass the lifting attachment in the lifting device and lock the device.
6. Turn the overload housing switch to ON located in the machine's cab.
7. Lift the load slowly and smoothly.

   Note

   Never lift a load roughly; quick movements and sudden stops can cause overloads.

12 USING THE HYDRAULIC OUTLETS

12.1 Description

⚠ WARNING

Before any connection or disconnection of the hydraulic hoses, remove the residual pressure from the hydraulic circuit.

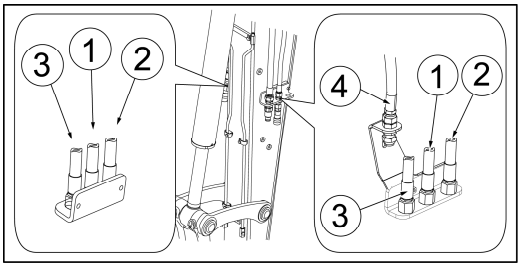
1.1.1 Removing the residual pressure, page 124

Always drain the machine's oil into a safe container and never directly onto the ground.

Before using an attachment requiring hydraulic power, check the pressure compatibility from the machine specifications chart.

1 Specifications, page 158

Do not use the hydraulic circuit controls if no attachments are fitted.



The layout of the possible hydraulic connections on this machine is shown in the illustration opposite.

Refer to the attachments manual to make the hydraulic connections for your attachments.

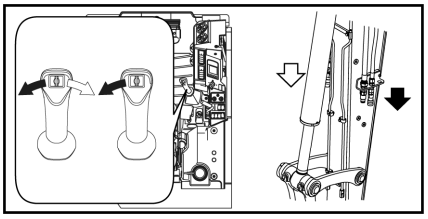
1 = Circuit AUX1

2 = Circuit AUX2

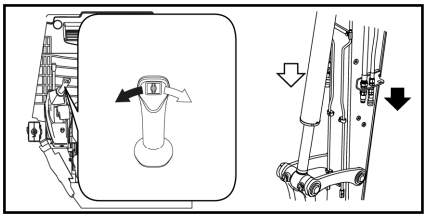
3 = Half-circuit (Option)

4 = Attachments drain line (Option)

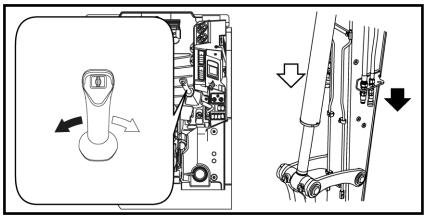
Circuit AUX1



Circuit AUX2



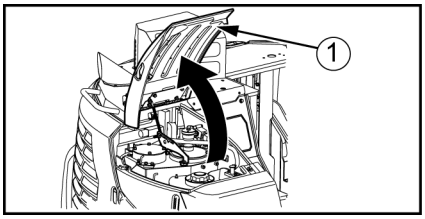
Half-circuit

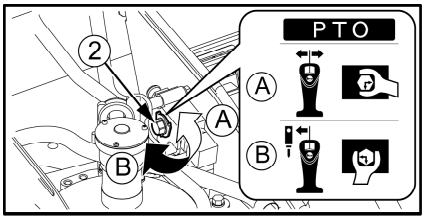


⬇Out

⇩Back

12.2 AUX1 circuit selector





1 = Cover B

2 = AUX1 circuit selector

A = Circuit AUX1 - double-acting

B = Circuit AUX1 - single-acting with direct tank return

- Use this valve to select circuit AUX1 in single-acting or double-acting mode.
  1. Open cover B using the starter key.
  2. Turn the valve lever to select single or dual effect.

12.3 Precautions for using the attachment

- Before using an attachment, make sure the hydraulic system is configured for its proper operation.

Hydraulic hammer (single action attachment)

- Set the return pipe selector valve to the position for a single action attachment.
- The hammer works when the proportional roller is operated.

Dual action attachment (Sorting grapple, Auger, Powertilt...)

- Position the return circuit selector valve to the position for a dual action attachment.
- Use the proportional roller to operate the attachment.

13 USING THE PARTICLE FILTER

⚠ WARNING

When launching the regeneration, fuel is burned directly in the DPF. The heat is used to regenerate the particle filter and the combustion increases the temperature of exhaust gas to a temperature close to 600°C. In case of insufficient regeneration of the DPF, the DPF regeneration request lamp comes on.

The regeneration of the DPF must be carried out in a well ventilated place. Carbon monoxide (CO) that is contained in the exhaust gas is colourless and odourless, and can cause carbon monoxide poisoning which is dangerous to health.

The DPF destroys the harmful substances contained in the exhaust gas using a catalytic converter and a particle filter that prevents the diffusion of soot in the atmosphere. The regeneration of the DPF is necessary to prevent the substances recovered from clogging the filter, which could reduce engine performance.

YANMAR engines are equipped with a continuous regeneration system which filters harmful substances using a DPF and to perform the regeneration without interrupting the operation of the machine.

The soot accumulated in the DPF contains mainly metal components; it accumulates in large amounts within the filter, but it can not be burned in the DPF. It is necessary to perform periodic maintenance to remove the DPF soot accumulated in the filter.

⚠ IMPORTANT

To maintain optimal functioning of the DPF:

• Contact your dealer when the maintenance interval of the DPF is reached.

• Diesel fuel with sulphur levels of 15 ppm or less shall be used as fuel.

• A low ash oil must be used as engine oil.

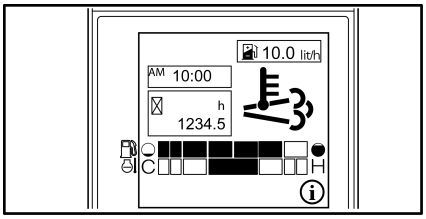
13.1 Auto-regeneration

While using the machine at high speed or high load, harmful substances are systematically burned and removed.

13.2 Assisted regeneration

When the accumulation of pollutants reaches a certain level in the DPF, the engine's ECU increases the exhaust gas temperature and automatically performs the regeneration of the DPF.

13.3 Launching the regeneration



The exhaust gas temperature increases to high levels. When launching the regeneration, an icon representing the temperature of the exhaust gas is displayed on the operator display station to warn of the emission of high temperature gas.

Note

The following phenomena are not faults:

• White smoke can be emitted from the exhaust pipe when the engine is cold or accelerating. The vapour accumulated in the DPF causes the emission of smoke which ceases when the temperature of the exhaust gas increases.

• The exhaust gases cleaned by the catalytic converter on the DPF emit a smell different from that of conventional engines.

• When regeneration is underway, engine noise may change if the engine is idling with no load.

• When regeneration is in progress, the noises from the engine and the DPF may be different from the noise that occurs during normal operation.

13.4 Manual regeneration of the particulate filter

⚠ WARNING

The exhaust gases and some parts of the machine are very hot during manual regeneration. Park the machine away from people and flammable materials before starting manual regeneration.

The regeneration of the DPF must be carried out in a well ventilated place. Carbon monoxide (CO) that is contained in the exhaust gas is colourless and odourless, and can cause carbon monoxide poisoning which is dangerous to health.

In case of an emergency stop of the machine, you can stop the regeneration of the DPF by performing one of the following

• Lower the locking lever to unlock the machine controls.

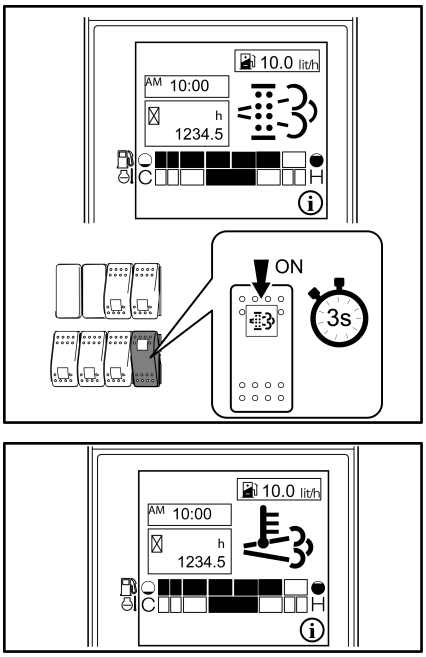
• Turn the engine speed setting switch to the high positron.

• Press the manual regeneration switch.

• Set the starter key to the OFF position.

⚠ IMPORTANT

Only start manual regeneration once the coolant temperature has reached the middle of the gauge, or at least 15 minutes after starting the engine. If manual regeneration does not start, warm up the engine and try again.



- In case of insufficient regeneration of the DPF, the monitor displays the DPF regeneration icon. To perform a manual regeneration:
  1. Park the machine in a well-ventilated place.
  2. Turn the engine speed setting switch to the slow positron.
  3. Raise the lock lever.
  4. Hold the DPF manual regeneration switch in the ON position for 3 seconds or more to start a manual regeneration.
- When regeneration starts, the engine speed will increase gradually reach high speed idle to perform the regeneration.
- During the regeneration, the exhaust gas temperature icon is displayed on the operator display station.
- The manual regeneration lasts about 30 minutes and then the engine speed gradually decreases and the operator display station stops displaying the exhaust gas temperature icon.

14 TRANSPORTING THE MACHINE

⚠ WARNING

Choose a road taking account of the width, height and weight of the machine loaded on the truck.

Transport the machine safely according to the rules associated with applicable legislation.

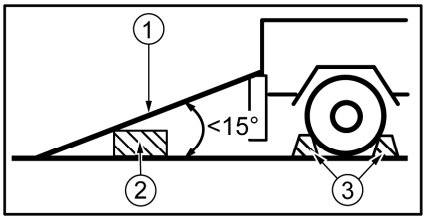
14.1 Loading/unloading the machine

14.1.1 Precautions for loading/unloading the machine

- Make sure the ramps used are adapted to the machine's weight.
- Check the technical specifications of the transport vehicle or trailer.
- Load or unload the machine of a flat, firm surface, a good distance away from any verges.
- Use appropriate ramps for the weight of the machine with hooks at the ends.
- Make sure the ramps are sufficiently wide, long and thick to hold the machine so that you can load it and unload it safely.

  If the ramps flex excessively, consolidate them with wedges.
- Install the ramp safely on the truck deck so that they do not become detached.
- Clean grease, oil and any other slippery deposits from the ramps and remove the mud from the tracks to avoid the machine sliding sideways on the plates.
- Do not load or unload the machine if the ramps are slippery due to rain, snow or frost.
- Load or unload the machine at reduced speed.
- Never change the direction of travel on the ramps. If you need to change your path, take the ramps down, and do it on the ground.

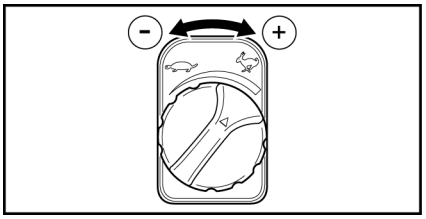
14.1.2 Procedure



1 = Ramps

2 = Wedge

3 = Stops



1. Engage the truck's brake.
2. Position wedges to immobilise the truck.
3. Position the ramp plates on the truck deck so that the centre of the truck and the centre of the machine are aligned. Check that the left and right ramp plates are at the same level.
4. The angle between the ground and the ramp plates must be less than 15°.

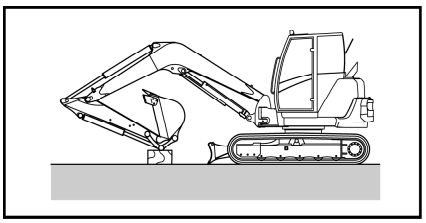
   Note

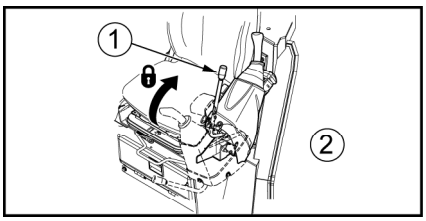
   Determine the spacing between the ramp plates based on the centre of the track runners.
5. Engine rate setting:

   Turn the switch to the left to decrease the engine speed.
6. Direct the machine towards the ramp plates at low speed and load the machine onto the truck. Do not use levers other than the side movement levers when travelling across the ramp plates.

14.2 Immobilising the machine on the truck

Once the machine is in a suitable position on the truck, immobilise it as follows :





1 = Locking lever

2 = Left hand side

1. Lower the blade to the ground.
2. Fold the bucket and the arm to the maximum, then lower the boom to wedge the arm on a wooden block.
3. Turn the key to OFF position to switch off the engine and disconnect the electrical circuit. Remove the key from the ignition.
4. Lock the control levers with the locking lever.

   Note

   The hydraulic brake locks the rotation motor.
5. Lock the bonnet, covers and cabin door (if equipped) with the starter switch key to prevent them from opening during transportation.

14.3 Tying down the machine



⚠ WARNING

Do not perform the tie-down if a person stands on the machine or on an attachment.

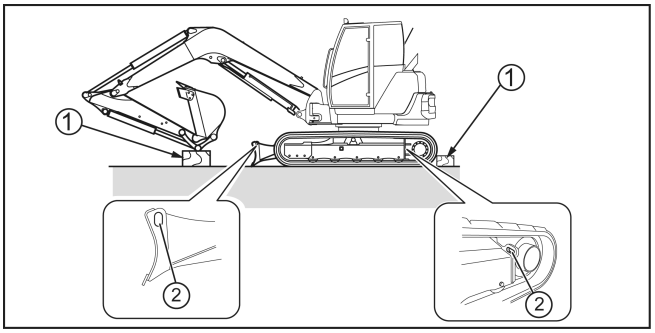
Use a tie-down attachment (belt, chain, cable) compatible with the weight of the machine and compliant with European standards.

Check the tie-down attachment labelling to know the LC.

In the absence of or damage to the attachment labelling, do not use it without being assured of its LC.

Before transporting the machine, check the total height of the load.

2 Working dimensions, page 159



1 = Wedge

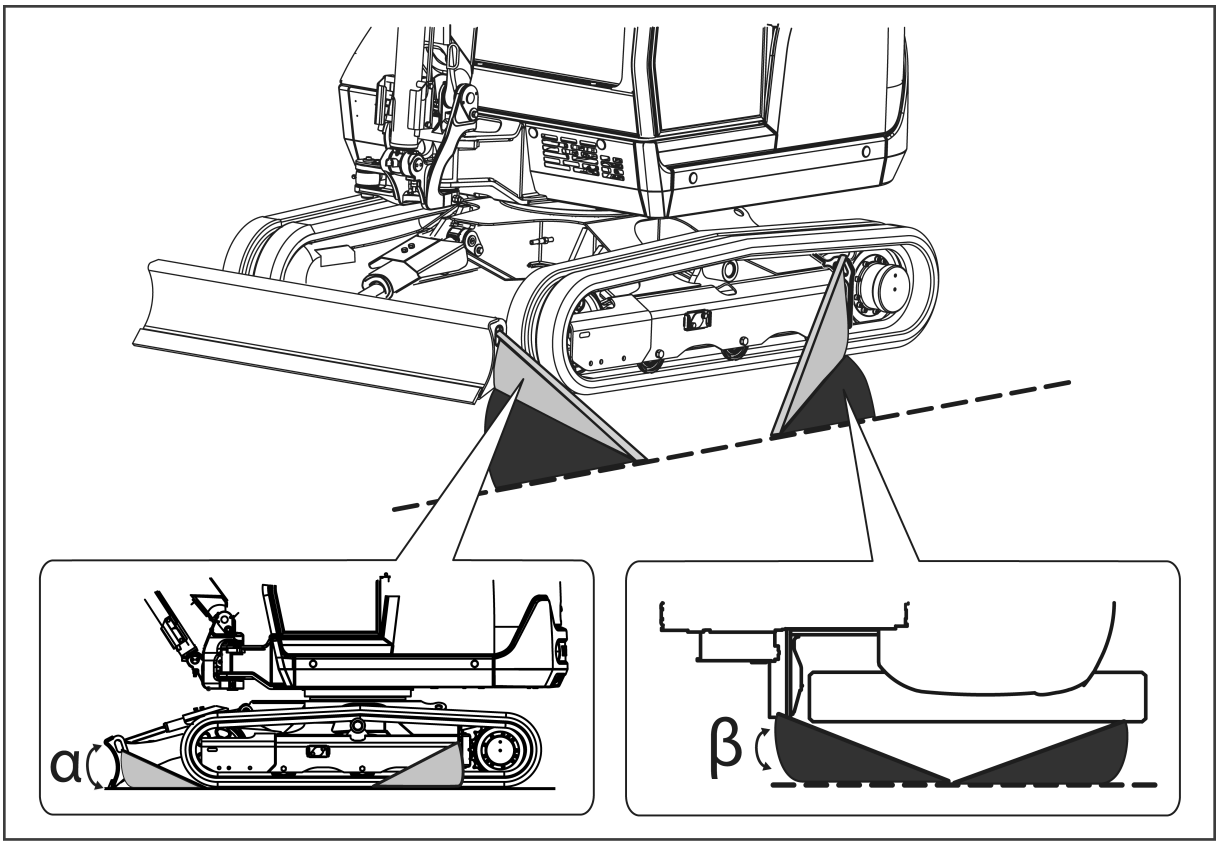
2 = Anchor points

1. Check the condition of the transport vehicle surface. If the surface is greasy, it must be cleaned before installing the machine on the transport vehicle.

   Note

   If the transport vehicle surface is steel, provide a non-slip mat or spacers to prevent the machine tracks from slipping.

2. Check the LC of the tie-down points of the transport vehicle, it must be at least the LC recommended for tying down the accessories.
3. Check the location and condition of the machine tie-down points.
4. Tie-down the machine at the points provided for that purpose and that are indicated on the machine. YANMAR CONSTRUCTION EQUIPMENT EUROPE S.A.S.recommends securing the machine according to the diagonal direct tie-down method respecting the angles shown below.



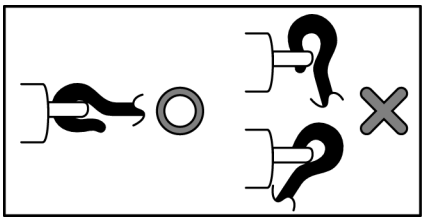
Angle	Value in degrees
α	30° - 60°
β	15° - 45°

3 Warning labels, page 6

⚠ IMPORTANT

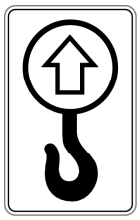
If other tie-down methods are used,
YANMAR CONSTRUCTION EQUIPMENT EUROPE S.A.S.does not guarantee the machine tie-down.

The driver must ensure that the angles α and β are determined so that there is no deflection of the tie-down accessories.



a. Correctly position the hooks on the tie-down points.
b. Be alert to where tie-down accessories pass; they should not rest on sharp edges or have knots present when tying down.
c. Make sure to load balance the various tie-downs and do not overload them.

14.4 Slinging the machine



⚠ WARNING

This operation must be done by a crane operator.

Never lift the machine with someone on it or on an attachment.

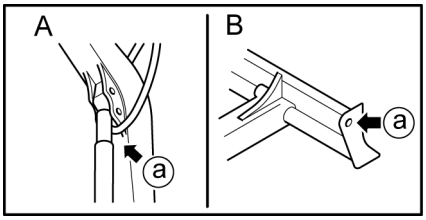
Use a slinging method that is compatible with the weight of the machine and that complies with current standards.

If you do not lift the machine as shown, it will be out of balance.

Do not pivot the machine when it has been raised.

Never walk under or beside a suspended machine.

1. Pivot the upper structure so that the blade is behind the operator's seat.
2. Lift the blade to the maximum limit.
3. Place the equipment in the longitudinal axis of the machine.
4. Place all the equipment cylinders to maximum extension (except the rotation cylinder).
5. Stop the engine, put the levers in the locked position and check that you have left nothing around the operator's seat before leaving the machine.

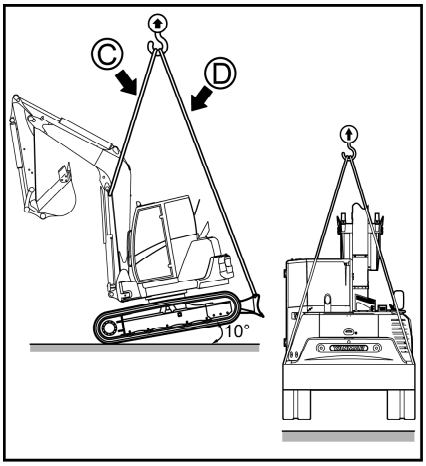


A = Front side

B = Back side

a = Lifting holes at each end

3 Warning labels, page 6



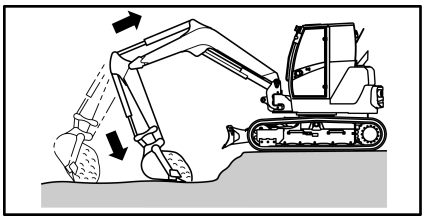
- Lift the machine as follows :
  1. Hook the shackles to the suspension holes at the rear (2 points).
  2. Pass the sling between the boom's cylinder and the boom. Install the sling in a sleeve or a sheath to protect it from sharp edges of the machine during slinging.
  3. Tension the load lifting accessories carefully.
  4. Gently suspend the machine and wait until it stabilises before continuing to lift it.

	Length (m)	WLL (t)
C	2	9
D	4 x 2	6

15 DETECTING ANOMALIES

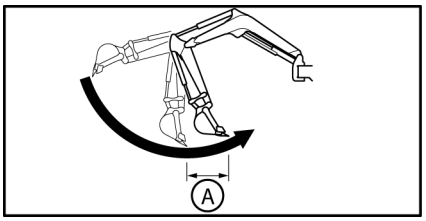
15.1 Phenomena that do not constitute faults

The following phenomena are not faults :



- **Bucket shaking**

  When the boom is raised immediately after the arm is extended while the bucket is pulled back, the bucket may shake. This is not a fault.



- **Discontinuous movement of the arm**

  When you dig the ground with the arm, the arm may slow down temporarily in an almost vertical position. This is not a fault and occurs especially when the motor speed is low.

  A = Slowdown is noticeable on this range.

- **Shift in the position of the upper chassis**

  When you turn the machine suddenly, as in turning or pivoting, the upper chassis may be slightly offset.

- **Thermal shock for the side movement motor**

  If, during cold weather, the hydraulic oil temperature rises to over 60°C in relation to the exterior temperature, during an unloading operation without movement after the engine starts the machine may not pivot because of a thermal shock. This is not a fault.

- **The rotation cylinder extends during excavation**

  The rotation cylinder may extend in certain situations or excavation positions. This is not a fault.

- **Delayed reaction to the response to change of speed**

  At slow engine rate, a reaction delay may occur when you reduce the speed. This phenomenon is not a fault.

15.2 Detecting anomalies

If a fault occurs and the proposed solutions do not resolve it, contact your dealer for diagnosis and possible repair.

15.2.1 Engine

Problem	Action to be taken
The engine oil pressure indicator light comes on.	Check the engine oil level and top up if necessary. **3.3 Checking and topping up the engine oil level, page 83**
The coolant temperature warning light comes on or steam comes out of the top of the radiator.	Check the coolant level and top up if necessary. **3.2 Checking and topping up the level of cooling fluid, page 83**
	Check that the fan belt tension is correct. **4.2.2 Checking alternator belt tension, page 146**
	Check the condition of the radiator. **4.1.2 Checking and cleaning the radiator fins, page 135**
The starter works correctly but the engine does not start.	Check the fuel level and top up if necessary. **3.4 Checking and topping up the fuel level, page 84**
	Check the condition of the fuses and replace if necessary. **4.3.1 Fuse replacement, page 147**
	Check that the correct fuel is being used and replace it if necessary. **4.3.5 Purging the fuel tank, page 148** **3.4 Checking and topping up the fuel level, page 84**
	Follow the cold weather starting instructions when the temperature is low. **7.2 Starting in cold weather, page 94**
Black smoke escapes from the machine.	Make sure the workload is appropriate for the machine and reduce it if necessary.
	Check the condition of the air filter and clean or replace it if necessary. **4.3.7 Air filter cleaning, page 148**
	Check that the correct fuel is being used and replace it if necessary. **4.3.5 Purging the fuel tank, page 148** **3.4 Checking and topping up the fuel level, page 84**
White or bluish-white smoke comes out of the machine.	Check that the correct fuel is being used and replace it if necessary. **4.3.5 Purging the fuel tank, page 148** **3.4 Checking and topping up the fuel level, page 84**

15.2.2 Electrical equipment

Problem	Action to be taken
The starter does not rotate or turns slowly.	Check the battery's state of charge and recharge it if necessary. **16.5 Charging the battery, page 120**
	Check the condition of the fuses and replace if necessary. **4.3.1 Fuse replacement, page 147**
	Check that the circuit breaker is in the ON position. **10.3 Circuit breaker, page 51**
	Check that the locking lever is in the locked position. **5.3.1 Locking lever, page 22**
	Check that the engine stop switch is in the NORMAL position. **5.4.8 Engine emergency stop switch, page 30**
The battery charge indicator lights up.	Check that the alternator belt tension is correct. **4.2.2 Checking alternator belt tension, page 146**
	Check the battery's state of charge and recharge it if necessary. **16.5 Charging the battery, page 120**
The horn does not make any sound.	Check the condition of the fuses and replace if necessary. **4.3.1 Fuse replacement, page 147**
The headlights do not light up.	Check the condition of the fuses and replace if necessary. **4.3.1 Fuse replacement, page 147**

15.2.3 Machine structure

Problem	Action to be taken
The power or speed of the moving parts is low.	Check the hydraulic oil level and top up if necessary. **3.5 Checking and topping up the hydraulic oil level, page 85**
	Make sure the workload is appropriate for the machine and reduce it if necessary.
	Check the position of the travel speed switch. **5.4.5 Speed movement switch, page 30**
The hydraulic oil temperature is too high.	Check the hydraulic oil level and top up if necessary. **3.5 Checking and topping up the hydraulic oil level, page 85**
	Make sure the workload is appropriate for the machine and reduce it if necessary.
The machine does not move forward in a straight line.	Check the condition and tension of the tracks. **c. Tension check, page 139** **c. Tension check, page 142**
One side of the sprocket is worn or the track is loose.	Check the condition and tension of the tracks. **c. Tension check, page 139** **c. Tension check, page 142**
The upper part does not rotate or does not rotate smoothly.	Grease the ring gear. **4.2.1 Greasing the pin and rotation crown, page 146**
Abnormal pump noise	Check the hydraulic oil level and top up if necessary. **3.5 Checking and topping up the hydraulic oil level, page 85**

16 IF THE BATTERY IS DISCHARGED

16.1 Precautions for connecting and disconnecting the starter cables

⚠ WARNING

When you use connection cables, wear protective goggles.

When using connection cables, ensure that your machine does not come into contact with the other machine.

To connect the starter cables, start with the positive terminal.

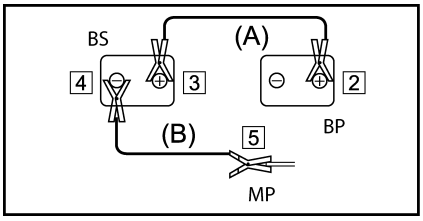
To disconnect them, start with the negative terminal (mass).

If a tool comes into contact with the machine's positive terminal, there is a risk of sparks.

Do not connect the connection cables to the terminals in reverse polarity. For example, never connect the negative terminal on one machine to the positive terminal on the other machine.

- The capacity of the starter cables and the size of the clips must be adapted to the size of the battery.
- Check that there is no damage, cracks or corrosion on the starter cables and clips.
- The machines' batteries must have the same capacity.

16.2 Connecting the starter cables



BS = giving battery

BP = discharged battery

MP = machine engine broken down

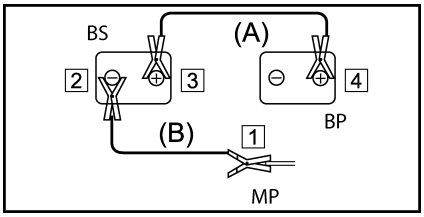
1. Set the start switches on both machines to OFF.
2. Connect the clip of the red starter cable (A) to the positive terminal of the battery on the machine that has broken down.
3. Connect the other clip of the red starter cable (A) to the positive terminal of the battery on the repair machine.
4. Connect the clip of the black starter cable (B) to the negative terminal of the battery on the repairing machine.
5. Connect the other clip of the black starter cable (B) to the engine block of the machine that has broken down.

16.3 Starting the engine

1. Check that the cables are connected safely to the battery terminals.
2. Start the engine on the repair machine and increase the engine speed to maximum.
3. Turn the starter switch of the machine that has broken down to START to start the engine. If the engine does not start, wait at least two minutes before trying again. Do not stop the engine on the repair machine and keep the engine speed at full rate.

16.4 Disconnecting the starter cables

- After starting the engine on the machine that has broken down, disconnect the starter cables in reverse order to the connection procedure.



BS = giving battery

BP = discharged battery

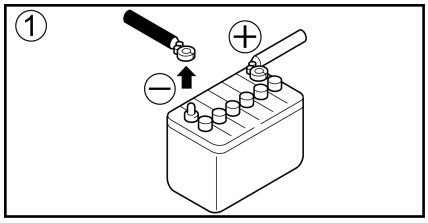
MP = machine engine broken down

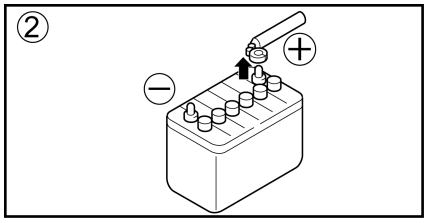
1. Remove the clip of the black starter cable (B) from the engine block of the machine that has broken down.
2. Remove the clip of the black starter cable (B) from the negative terminal of the battery on the repairing machine.
3. Remove the clip of the red starter cable (A) from the positive terminal of the battery on the repairing machine.
4. Remove the clip of the red starter cable (A) from the positive terminal of the battery on machine that has broken down.

16.5 Charging the battery

Disconnecting

- To disconnect, start with the negative terminal.**(-)**





Charging the battery

⚠ WARNING

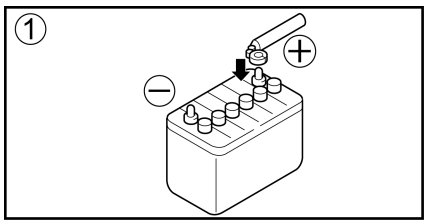
Remove the cables from the positive and negative terminals of the battery before setting the battery to charge. Otherwise, abnormal voltage may be applied to the alternator and may damage it.

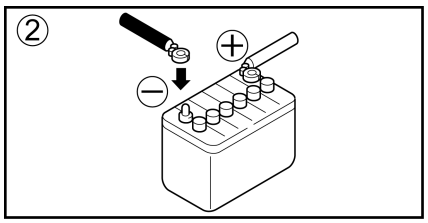
Do not connect the connection cables to the terminals in reverse polarity. For example, never connect the negative terminal on one machine to the positive terminal on the other machine. A polarity reversal may damage the alternator.

- If the battery overheats (the electrolyte temperature exceeds 45°C), stop the operation.
- Stop the charging operation as soon as the battery is charged. If you continue, the following faults may occur :
  - battery overload
  - reduction in the battery electrolyte
  - battery failure
- The battery must only be handled once the cables have been disconnected.

Connecting

- To connect, start with the positive terminal.**(+)**





17 MACHINE RECOVERY

⚠ WARNING

To recover a broken down machine safely, always use the appropriate tools. Failure to follow the correct procedure may result in serious personal injury and damage to the machine.

⚠ IMPORTANT

Check that the metal cables, the slings and the towing mechanisms to be used are resistant enough and that they are not cracked or broken.

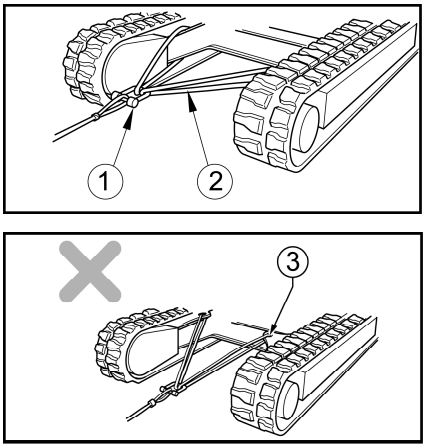
Never recover the machine using a cable that is only attached to a hook.

Troubleshooting must be limited to resolving a critical situation (e.g. machine stuck in the mud).

Note

In the event of a machine breakdown (engine stopped, hydraulic pump failure, etc.), the machine has no back-up system and is therefore no longer operative. The machine must be recovered by following the slinging procedure.

14.4 Slinging the machine, page 114



- When the machine gets stuck in the mud and cannot get out on its own, attach the sling as shown opposite.

1 = Shackles

2 = Slings

3 = Lifting holes

- Minimum capacities of the coupling devices to use:

	WLL (t)
Shackles	≥13
Slings	≥13

- To recover the machine from the mud, the operator must be at the driving station with the engine running and the safety lever(s) down, and operate the travel levers.
- When recovering with another machine, use a machine and towing equipment suited to the weight of the machine to be towed.
- Never tow the machine on a slope.
- Never use a deformed or damaged towing cable.
- Do not roll over the towing equipement.
- When you hook on an object to be towed, make sure that there is no-one between the machine and the object.
- Before towing, align the tow truck and the machine to be towed.

C PERIODIC MAINTENANCE PROGRAMME

CHAPTER COVERED IN THIS PART:

1 Maintenance precautions
2 Recommended greases and fluids
3 Periodic inspections and upkeeps
4 Maintenance by the operator
5 Maintenance by the dealer

1 MAINTENANCE PRECAUTIONS

⚠ CAUTION

No maintenance operations described in this guide are to be performed with the engine running; please refer to the Maintenance Manuel for any other operation.

Wear suitable clothing and protective equipment

1.1 Precautions before maintenance

- Perform the maintenance operations as per the periodic intervals specified.
- Read the machine's time counter every day to determine whether maintenance operations are required.
- When using the machine in difficult conditions (dusty environment, corrosion...) shorten the maintenance intervals.
- Use suitable lifting equipment when handling heavy machine parts. Refer to the maintenance manual.

1.1.1 Removing the residual pressure

Before performing any maintenance operation, remove residual pressure in the hydraulic circuit.

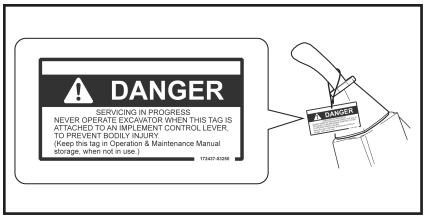
1. Undertake parking operations for the machine on flat and stable ground.
2. Lower the bucket and the blade to the ground.
3. Turn the key to the OFF position to stop the machine's engine, then turn it to the ON position.

   Note

   The locking lever must be lowered.
4. Handle the following controls several times to remove the residual pressure :
   - Left command lever (Arm & Rotation of the upper part)
   - Right command lever (Boom & Bucket)
   - Blade lever
   - AUX1 circuit control
5. Raise the locking lever(s).
6. Set the starter key to OFF position.
7. Remove the key from the ignition.

The residual pressure in the accumulator is removed and there is no more pressure in the hydraulic circuit.

1.1.2 Place a warning label



⚠ WARNING

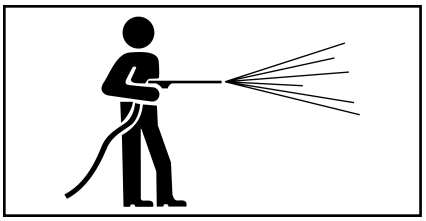
Do not operate the control lever during servicing. Maintenance personnel may be seriously injured.

Place a "MAINTENANCE IN PROGRESS" label on the machine and on the joysticks.

1.1.3 Establish a safety perimeter

- Anyone who is not part of the maintenance team must be kept away from the working area.
- Pay attention to the safety of people nearby, notably during milling or welding operations or when a hammer is used.
- When the machine is checked or adjusted by two people, one of them must commission the machine according to the signals given by the other person.

1.1.4 Keep the machine clean



- Cleaning the machine will enable you to detect any leaks and defective parts quickly.
- In particular, clean the filler caps and vent holes for the various fluids in the machine to prevent dust from entering them.

- Spots of oil or grease or dispersed part fragments are dangerous and may cause slipping.
- Any water that gets into the electrical system may cause it to malfunction, leading to defective operation of the machine. This also risks causing short circuits that may cause a fire or electric shock.
- Do not spray any vapour directly onto the electrical components.
- Do not use harsh chemicals to clean the machine, as these affect the visual and technical characteristics of the machine components.

  These products may also deteriorate the rigidity of the tank. Use car cleaning products, for example.
- Do not spill any water onto the dashboard.
- Do not spray water directly at high pressure onto the radiator or the oil radiator.
- During the first two months after commissioning or after touching up the paintwork, do not clean the machine with a steam or high-pressure jet so that the paintwork can harden.
- When using a pressure washer, wear a helmet with a full face shield and protective clothing.
- Place the machine to be cleaned on a cleaning surface equipped with an oil separator.
- Clean from the ground up.
- If a steam jet is used, the jet must not exceed 90°C and 60bar.
- Keep a minimum distance of 1m.
- Do not clean the insulation, the exhaust outlets and the air filter outlets with a direct stream of water, steam or high pressure water.
- When cleaning the engine, do not expose sensitive parts (alternator, sensors, etc.) and cover the electrical components and tubes.
- Only clean the engine when it is cold.
- To clean the engine with a cold cleaner, spray the engine with the cleaner and allow about 10 minutes for it to work, then rinse the engine.
- Run the engine to evaporate the residual water.
- Clean the washing station.
- The operator is responsible for the design of the cleaning area and must ensure that the wastewater is disposed of in accordance with environmental regulations.

1.2 Precautions during maintenance

1.2.1 Oil and grease

⚠ WARNING

Oil, grease or other fluids may be sprayed when certain parts are maintained.

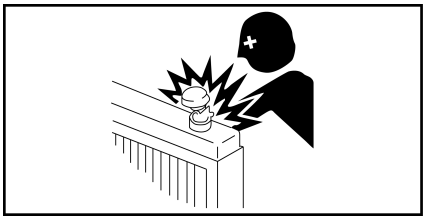
For maintenance in complete safety, respect to the letter the procedures described in the following chapters.

If oil or grease comes into contact with the skin or eyes, seek medical attention immediately.

⚠ IMPORTANT

Do not mix different types of oils.

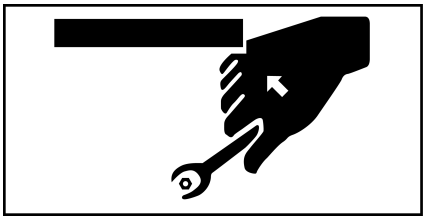
If you need to top up the oil with an oil of a different brand or type from the oil left in the tank, remove the remaining oil completely.



- Always use oils and greases recommended by YANMAR.

  2 Recommended greases and fluids, page 129
- Use clean oils and greases. Avoid any contamination by dust.

1.2.2 Tools

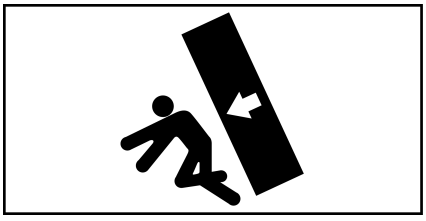


- Use tools that are adapted to the planned task.
- The use of damaged , worn or inappropriate tools is very dangerous and there is a risk that the machine will be damaged.

1.2.3 Parts

- Use YANMAR original parts as recommended in the parts catalogue.
- Clean parts with a non-combustible and non-aggressive detergent.
- If you need to remove a seal or a hydraulic component, refer to the maintenance manual.

1.2.4 Dismantling the attachment



- If the scheduled task requires the dismantling of the attachment, remove it carefully by following the instructions described in this manual.

  10.2 Removing the bucket, page 104
- Reinstall it carefully and follow the instructions described in this manual.

  10.1 Installing the bucket, page 103

1.2.5 Working under the machine

⚠ DANGER

Park the machine on flat, firm ground.

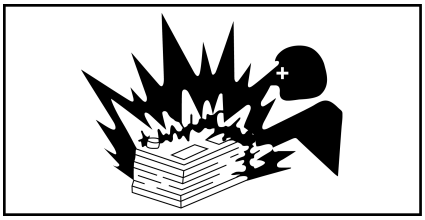
If the machine is not stable, do not carry out any maintenance under the machine.

Do not work under the machine if it is only held up by its hydraulic system.



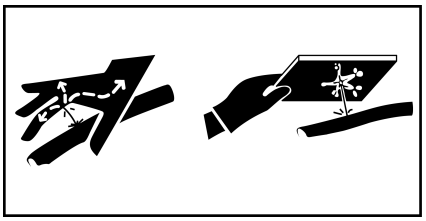
- Before you carry out any maintenance or repairs under the machine, place the attachment on the ground or in its lowest position.

1.2.6 Battery



- Disconnect the negative terminal of the battery or use the circuit breaker (if there is one) to disconnect the electric current when working on the electrical circuit (repair, soldering, brazing).

1.2.7 Hoses

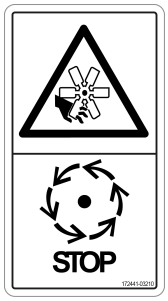


- Do not fold the hoses. Do not strike them against any hard objects.
- Damaged or incorrectly bent hoses, pipes and ducts explode easily under high pressure ; never reuse them.
- Fuel and oil leaks may cause a fire.
- A pressurized hot oil jet from a minor leak may cause severe injury.
- Wear protective goggles and gloves when searching for leaks.
- Use a piece of cardboard or plywood to detect sprays of hot oil.

1.2.8 Electrical harnesses

- Do not disconnect the machine’s electrical wiring harnesses.
- If a harness is damaged, do not touch it and contact your dealer.

1.2.9 Radiator ventilator



⚠ WARNING

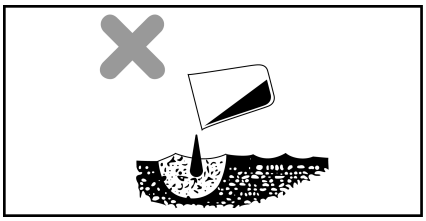
Never touch the moving radiator ventilator or the ventilator belt with an object as this may cause serious physical injuries.

1.2.10 Soldering

If you need to solder, respect the following points :

- Disconnect the battery cabling (negative terminal then positive terminal).
- Disconnect the control units from the machine.
- Disconnect the operator display station before performing a welding operation.
- Ground the machine no more than 1 metre away from the part to be welded.
- Make sure there are no seals or bearings between the soldered part and the earthed part.
- Do not earth near the axes of the equipment or the hydraulic cylinder.
- Soldering on safety structures and on hydraulic systems is strictly prohibited.

1.2.11 Waste processing



- Do not dispose of the various fluids contained in the machine by discharging them into the environment.
- Drain them into a suitable container and never directly onto the ground.
- When disposing of toxic waste such as hydraulic fluid, coolant, solvents, filters, etc., obey all the applicable regulations.

2 RECOMMENDED GREASES AND FLUIDS

⚠ IMPORTANT

Grease and fluids must be stored in a location complying with currently enforced regulations and recommendations of the manufacturers of these products.

This machine's engine is fitted with a high accuracy injection system ensuring it complies with regulations on emissions.

For the fuel, avoid using galvanised steel containers, but rather containers in plastic or stainless steel. Dissolved zinc or lead in the fuel can alter engine performance.

2.1 Grease

Temperatures °C							Quantity prescribed (L)
-20	-10	0	10	20	30	40	
YANMAR POWER MP GREASE NLGI 2							–

To top up:

4.1.3 Greasing points, page 136

2.2 Cooling fluid

Temperatures °C								Quantity prescribed (L)
-40	-20	0	20	40	60	80	100	
Long-life cooling fluid **YANMAR POWER COOLANT B-36**								8,9 Radiator 0,4 Expansion tank

To top up:

3.2 Checking and topping up the level of cooling fluid, page 83

2.3 Gear oil

Do not mix different types of oils. If you need to top up the oil with an oil of a different brand or type from the oil left in the tank, remove the remaining oil completely.

Use an oil of the following grade or better:API-GL 5

Select the viscosity of the oil depending on the room temperature in which the machine will be used.

Temperatures °C							Quantity prescribed L
-20	–10	0	10	20	30	40	
75W-90LS							1,1 by reducer
80W-90LS							

2.4 Engine oil

Do not mix different types of oils. If mixing, the lubricating properties of the oil may be altered. If you need to top up the oil with an oil of a different brand or type from the oil left in the tank, remove the remaining oil completely.

Only use the specified oils. Using other oils may affect the warranty and damage the engine and reduce its life cycle.

Ensure that the oil, the oil cans and the oil filling attachment are not contaminated by impurities or by water.

It is not recommended to use additives.

The engine oil must be changed when the total base number (TBN) becomes less than 2 mgKOH/g. (Test method JIS K-2501-5.2-2 (HCI) or ASTM D4739 (HCI))
Use oil which has the same or superior quality than the following classifications:

- API category CJ-4, CK-4
- ACEA category E6
- JASO category DH-2

Select the viscosity of the oil depending on the room temperature in which the machine will be used.

Temperatures °C							Quantity prescribed (L)
-20	–10	0	10	20	30	40	
10W-30							11,2
15W-40							

To top up:

3.3 Checking and topping up the engine oil level, page 83

2.5 Fuel

The fuel used must comply with one of the following standards depending on the geographic zone in which the machine is used:

- No. 2-D, No. 1-D, ASTM D975-94 (United States)
- EN590:96 (European Union)
- ISO 8217 DMX (International)
- BS 2869-A1, BS2869-A2 (United Kingdom)
- JIS K2204 Grade No.2 (Japan)
- KSM-2610 (South Korea)
- GB252 (China)

Additional specifications to respect:

- The cetane number must be 45 or above.
- The quantity of sulphur must not exceed 0.5% in volume. It is preferable to not exceed 0.05%.
- Never mix kerosene, used engine oil or fuel oil with the fuel.
- Water and deposits must not exceed 0.05% in volume.
- Keep the tank clean as well as equipment used to handle fuel.
- Poor quality fuel may reduce engine performance and damage it.
- It is not recommended to use additives. Some additives may reduce the engine's performance.
- The quantity of ash must not exceed 0.01% in volume.
- The quantity of residual carbon must not exceed 0.35% in volume. It is preferable to not exceed 0.1%.
- The quantity of aromatic compounds must not exceed 35% in volume. It is preferable to not exceed 30%.
- The quantity of polycyclic aromatic hydrocarbons must not exceed 10% in volume.
- The quantity of Na, Mg, Si and Al metals must not exceed 1ppm in mass. (Test method JPI-5S-44-95)
- Lubricity: The WS1.4 wear rate measured during the HFRR test must not exceed 460µm.

Select a fuel depending on the room temperature in which the machine will be used.

Temperatures °C							Quantity prescribed L
-20	–10	0	10	20	30	40	
No. 1-D / No. 2-D							115

To top up:

3.4 Checking and topping up the fuel level, page 84

Biodiesel

In some countries, non-mineral fuels such as rape methyl ester or soybean methyl ester, known by the name of fatty acid methyl ester, are added to mineral fuels.

Biodiesel may be used if it contains a maximum of 7% in volume of fatty acid methyl ester for 93% in volume of mineral fuel (type B7 fuel).

These type B7 fuels must comply with the following standards depending on your location:

- ASTM D-6751 (United States)
- EN14214 (European Union)

Only buy biodiesel from an approved fuel distributor.

Precautions concerning biodiesel:

- The methanol contains in fatty acid methyl esters may lead to corrosion of aluminium or zinc parts.
- The water contained in the fatty acid methyl esters may block the fuel filters and lead to the growth of bacteria.

2.6 Hydraulic oil

Do not mix different types of oils. If you need to top up the oil with an oil of a different brand or type from the oil left in the tank, remove the remaining oil completely.

The following viscosities must be observed (in accordance with the ASTM D445 standard):

- Minimum 8 mm²/s (cSt) at 100°C (212°F).
- About 1500 mm²/s (cSt) at -10°C (14°F).

Select the viscosity of the oil depending on the room temperature in which the machine will be used.

Temperatures °C							Quantity prescribed L
-20	-10	0	10	20	30	40	
VG46							60 in the tank
VG68							52,0 the rest

To top up:

3.5 Checking and topping up the hydraulic oil level, page 85

3 PERIODIC INSPECTIONS AND UPKEEPS

◇Checking/Correction/Procurement　□Clean　■Oil and grease　●Replace　♦Oil sample　+ = and　/ = or

Check and Service items			Daily	Every 50h	Every 100h	Every 250h	Every 500h *	Every 1000h *	Every 2000h **
General	Machine overall		□						
	Missing or broken parts		◇						
	Tightening of nuts and bolts		◇						
	Engine condition, exhaust and inlet hoses		◇						
	No fluid leaks		◇						
	Operation manual			◇(1)			◇	◇	◇
Greasing	Greasing points		■						
	Swing gear and crown			■	■	■	■	■	■
	Bearing rollers and bearings, idler wheels		◇			■(2)	■	■	■
	Functional clearances		◇						
Engine	Diesel filter			●(1)			●	●	●
	Water separator	Drain	◇						
		Pre fuel filter					●	●	●
		Bowl (if equipped)					□	□	□
	Oil		◇	♦(1)			♦+●	♦+●	♦+●
	Oil filter			●(1)			●	●	●
	Coolant		◇						●
	Radiator fins		◇+□						
	Belt			◇	◇	◇	◇	◇	●
	Fuel hose, coolant hose								◇/●
	Performance of engine control and engine speed			◇(1)			◇	◇	◇
	Governor lever and accelerator device			◇(1)			◇	◇	◇
	Air cleaner	External air cleaner element	□(3)			●(3)	●	●	●
		Safety cartridge element (if equipped)					●	●	●
	Intake and exhaust valves								◇
	Injectors and injection pressure								□+◇
	Crankcase breather system								◇
	Engine silent-bloc and bracket			◇	◇	◇	◇	◇	◇
Exhaust	EGR valve							□+◇	□+◇
	Diesel Particulate Filter							□+◇	□+◇
	No exhaust gas leakage		◇						
Travel	Oil for travel gears			●(1)	◇(2)	◇/●(2)	●	●	●
	Tracks, rubber tracks abd pads		◇						
	Track tension		◇						
	Play of travel lever			◇(1)			◇	◇	◇
	Performance of travel			◇(1)			◇	◇	◇
Hydraulic	Oil		◇	♦(1)			♦/●(4)	♦+●	♦+●
	Aspiration filter			□(1)			□/●(4)	□/●(4)	□/●(4)
	Ventilation filter							●	●
	Hydraulic oil return filter			●(1)		●(4)	●	●	●
	Other filter					●(4)	●	●	●
	Accumulator			◇(1)			◇	◇	◇
	Pump pressure			◇(1)			◇	◇	◇
	Play in control levers			◇(1)			◇	◇	◇
	Low pressure			◇(1)			◇	◇	◇
	Blade operation			◇(1)			◇	◇	◇
	How the equipment works			◇(1)			◇	◇	◇
	Options			◇(1)			◇	◇	◇
Electric	Time counter		◇	◇	◇	◇	◇	◇	◇
	LCD monitor (General status and presence of error codes)		◇	◇	◇	◇	◇	◇	◇
	Condition of fuses			◇	◇	◇	◇	◇	◇
	Battery			◇(1)			◇	◇	◇
	Tightening bolts and electrical terminals		◇	◇	◇	◇	◇	◇	◇
	Broken and worn wiring harnesses, short circuits, disconnected terminals		◇	◇	◇	◇	◇	◇	◇
Cabin	Seat operation		◇	◇	◇	◇	◇	◇	◇
	Air conditioning						◇	◇	◇
	Cab filters		□			●(3)	●	●	●
Final	Sign inspection card and return to YANMAR			◇ (1)		◇ (2) (3) (4)	◇	◇	◇

* or annualy first time occurs

** or two years

(1) First time 50-80h visit

(2) If machine does lot of digging line during one day (fiber, drop pipe, drainage…).

(3) If machine is used at dusty worksites.

(4) If a hydraulic hammer is used more than 30% of the machine operating time.

♦ Collect oil sample and keep analysis report. According to result replace oil if necessary.

It is important to entrust the machine to a deal at the intervals indicated so that the dealer can carry out the maintenance operations necessary for the machine to operate correctly.

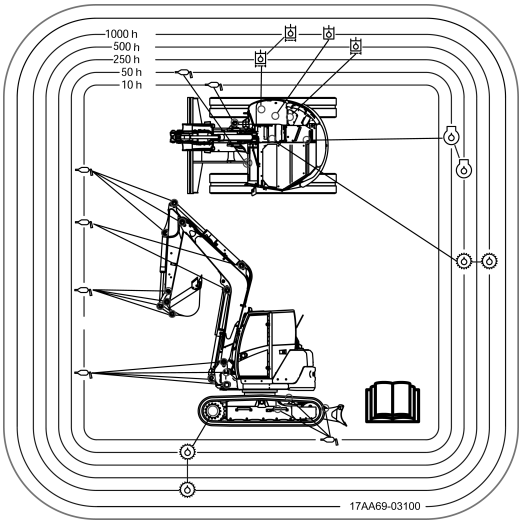
You should also contact your dealer in the following cases :

- part missing, broken or loose
- horn defective
- time counter defective
- electric circuit defective
- battery defective
- light(s) defective

In general, contact your dealer as soon as you think something is wrong.

Scheduled maintenance points of the machine (lubrication, filters...)

⚠ IMPORTANT
These are frequencies : for example the operations to be carried out every 50 hours must be carried out at 50h, 100h, 150h, 200h, etc.



= Hydraulic oil

= Engine oil

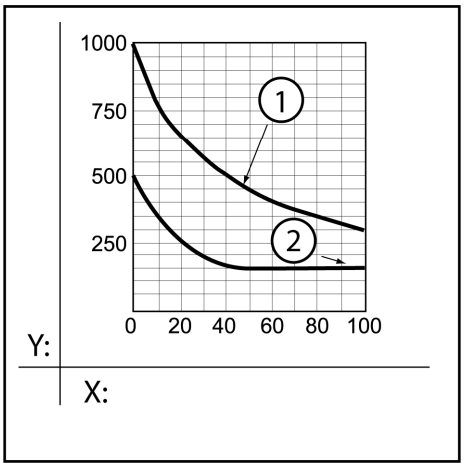
= Hydraulic oil return filter

= Oil for travel gears

= Greasing points

Dependent on technical modifications.

- Certain intervals may vary if a hydraulic hammer is used.
  Refer to the corresponding notes.



Note

If a hydraulic hammer is used, the return filter must be replaced after 100 or 150 hours of service for a new machine, then according to the diagram opposite.

The hydraulic oil must be replaced more frequently if a hydraulic hammer is used. Comply with the diagram opposite.

1 = Hydraulic oil

2 = Hydraulic oil return filter

X = Hydraulic hammer usage rate (%)

Y = Replacement interval (h)

4 MAINTENANCE BY THE OPERATOR

⚠ IMPORTANT
Before any upkeep or maintenance, follow the precautions described in this manual.

4.1 Daily maintenance

4.1.1 Checking the machine before use

⚠ IMPORTANT
If an element is not working or you think it is defective, shut down the machine's engine immediately and contact your dealer.

Before each use of the machine, visually check the following :

- No missing, broken or loose parts
- Greasing / Functional clearances

  4.1.3 Greasing points, page 136
- Bearing rollers and bearings, idler wheels
- Decanter/separator

  4.1.4 Cleaning the separator/decanter, page 137
- Engine oil

  3.3 Checking and topping up the engine oil level, page 83
- Cooling fluid and leakage

  3.2 Checking and topping up the level of cooling fluid, page 83
- Radiator vents

  4.1.2 Checking and cleaning the radiator fins, page 135
- Air filter

  4.3.7 Air filter cleaning, page 148
- Cab filters

  4.1.9 Cleaning the cabin/air-conditioning filter, page 145
- Tracks, rubber tracks abd pads / Track tension

  4.1.5 Rubber track maintenance, page 137

  4.1.6 Steel track maintenance, page 142
- Hydraulic oil

  3.5 Checking and topping up the hydraulic oil level, page 85
- Checking the hydraulic hoses
  - Visually check that there are no oil leaks from the hydraulic hose connectors.
- Visual inspection of the fuel hoses
  - Visually check that the fuel does not leak from the fuel hose connectors.
  - Also check that the hoses are not damaged.

- Checking the seat
  – Check that the safety belt is present and in good condition.
- Also check that the hour meter, the headlights, the horn, the indicator lights, and the camera (if there is one) are working correctly.
- Checking the commands
  – Operate the commands.
  – Release the levers, they should return to neutral position themselves.
  – If they do not, contact your dealer.
- Engine condition, exhaust and inlet hoses
- Tightening bolts and electrical terminals
- Broken and worn wiring harnesses, short circuits, disconnected terminals
- LCD monitor

4.1.2 Checking and cleaning the radiator fins

⚠ WARNING

After the machine has stopped, the engine components are hot and may cause burns. Check or clean the radiator fins only after the engine has cooled down.

Before using compressed air, make sure there are no people nearby and wear safety glasses and appropriate clothing.

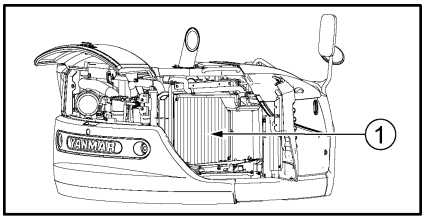
Do not use compressed air above 0.7 MPa.

⚠ IMPORTANT

Keep a sufficient distance from the radiator when using compressed air to avoid damaging it.

A damaged radiator may leak and the machine may overheat.

Dirty fins may cause overheating.

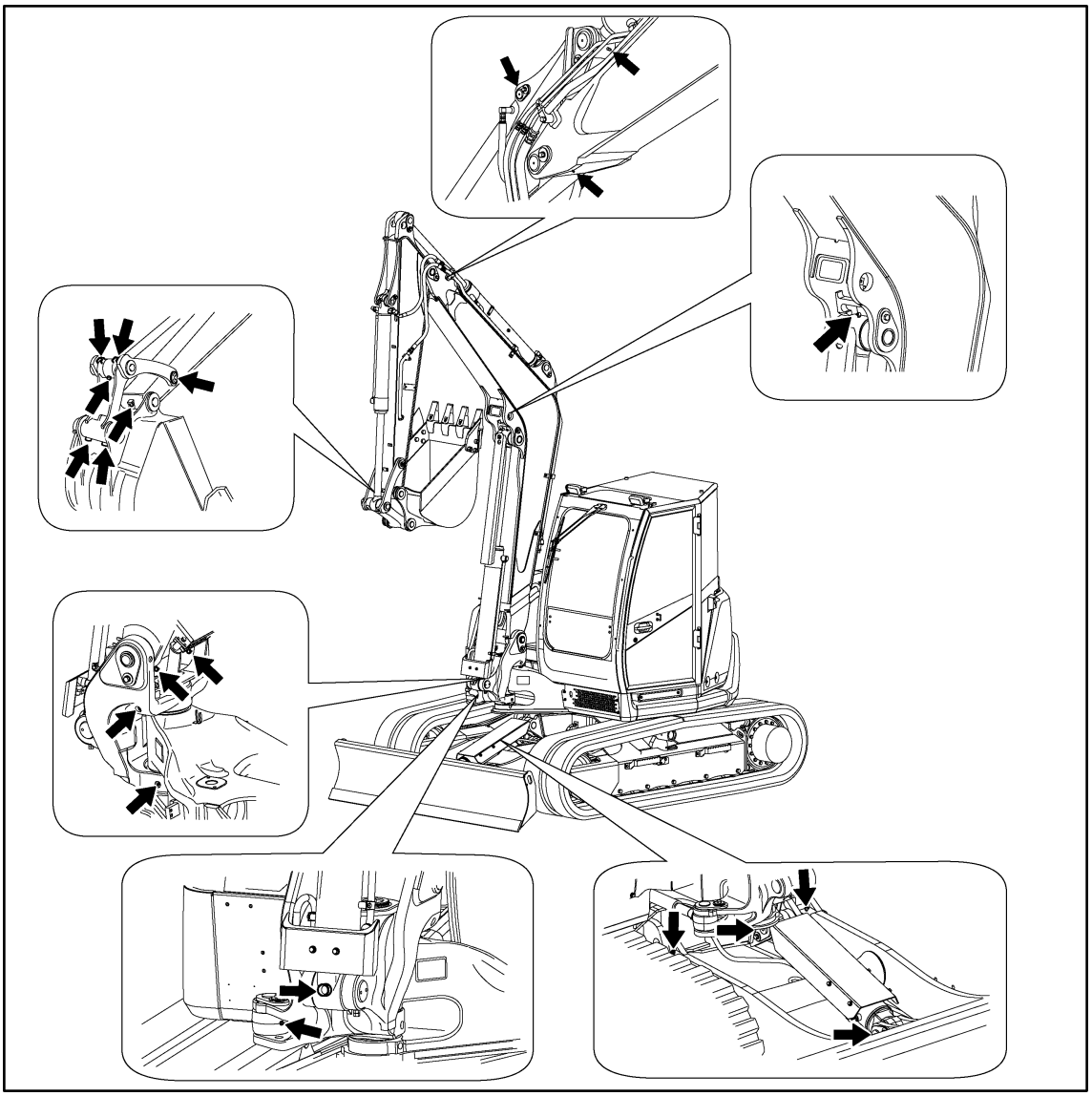


1 = Radiator

1. Open the bonnet **R.**
2. Use compressed air to remove dust from the radiator fins.
3. Close the cover.

4.1.3 Greasing points

- Grease the machine swivel pins daily using the nipples, and also before using the machine or after use in the rain, on soft ground or in muddy water.
- Proceed as follows :
  1. Lower the bucket and the blade to the ground.
  2. Stop the engine.
  3. Clean the greasing connectors indicated by the arrows on the figures.
  4. Grease them with a grease pump.
  5. Wipe off the excess grease with a cloth or equivalent.



If your machine is equipped with a central lubrication system:

10.12 Centralized greasing system, page 55

4.1.4 Cleaning the separator/decanter

⚠ WARNING

Keep all sparks, flames or cigarettes away.

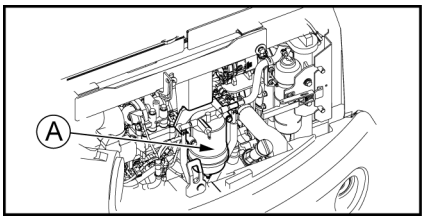
At operating temperature, the engine components are red hot and may cause burns.

Disconnect the battery mass and clean the separator when the engine has cooled down enough.

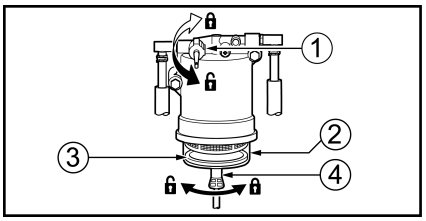
A diesel leak or spray onto a red hot element may cause a fire.

As an option, the separator/decanter can be fitted with a water presence alarm indicating it requires cleaning:

10.6 Separator/decanter alarm, page 52



A = Decanter/separator



1 = Fuel inlet tap

2 = Bowl

3 = Ring

4 = Drain valve

1. Open the bonnet with the ignition key.
2. Prepare a container to catch the used fuel, and place the drain hose from the engine compartment in it.
3. Close the fuel inlet tap.
4. Loosen the drain valve to drain the separator. Let the liquid drain until pure fuel comes out.
5. Loosen the bowl tightening ring.
6. Remove the bowl.

   Note

   Remove the bowl carefully to avoid spilling any fuel. If you spill any fuel, wipe it up with a cloth.
7. Empty into the container. Take care not to lose the ring.
8. Remove the filter and replace with a new filter.
9. Clean the ring and the inside of the bowl with clean fuel or a cleaning agent.
10. Check that the o-ring is not damaged or deformed. Replace it if necessary.
11. Reinstall the bowl with the ring inside.
12. Tighten the separator drain valve.
13. Wipe the drain hose and return it to the engine compartment.
14. Open the fuel inlet tap.
15. Close the engine bonnet.

4.1.5 Rubber track maintenance

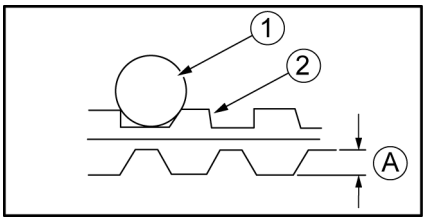
a. Checking the condition of the tracks

- The wear to the rubber tracks depends on the working conditions and the nature of the ground. Regularly check the wear and tension of the tracks.

  Note

  A new track must be checked for the first time after 30 hours.

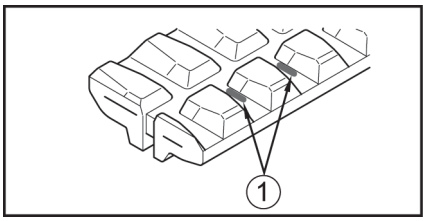
Height of the fixing nuts



1 = Track roller

2 = Track

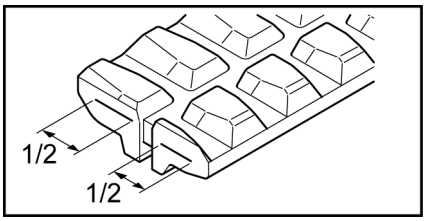
- If height A is reduced by wear, the traction power reduces.
- If A is lower than or equal to 5 mm, replace the track.



1 = Exposed steel cables

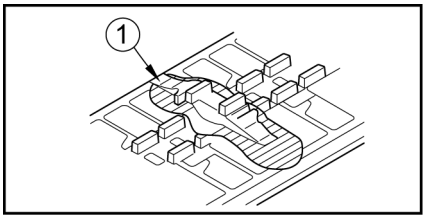
- If the track steel cables are uncovered over two or more joints, replace the tracks.
- If two or more links in the steel cable inside the track are exposed due to wear on the feet, replace the track.

Steel cables for the rubber tracks



- If half or more of the cable bed is broken, replace the track.

Metal insert



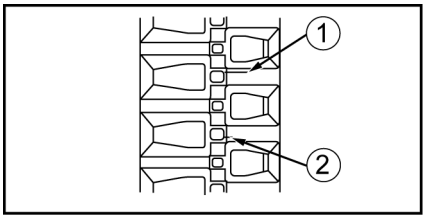
1 = Detachment of the metal insert

- If the metal inserts detach even at a single place, replace the track.

Greaser

- If the tracks are relaxed even after adjusting the tension, the lubrication nipple may have an internal failure. Contact your dealer for repair.

Crack



1 = Repair if over 60 mm

2 = Not yet to be repaired

- If a crack appears between the track attachment inserts, repair it if the length of the crack reaches 60 mm. If the interior steel cable is exposed, repair the track immediately even if the crack is a small one.
- If the length of the crack is less than 30 mm or if the depth of the crack is less than 10 mm, you do not need to repair the track.

- To find out whether the track must be replaced, repaired or you can continue to use it, contact your YANMAR dealer.

b. Track replacement

- If a track (or both tracks) needs to be replaced, contact your dealer.
- A new track must be checked for the first time after 30 hours.

c. Tension check

⚠ WARNING

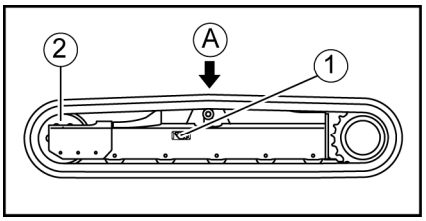
Do not support the machine with the attachment only. The command levers may move or hydraulic oil may spill accidentally and cause the machine to fall.

When the machine is checked or adjusted by two people, one of them must commission the machine according to the signals given by the other person.

Be sure to perform the track tension verification on a firm and even surface. It is strictly forbidden to be positioned under the machine for the duration of the operation.

⚠ IMPORTANT

Perform a task with a relaxed track link may derail the track or cause premature wear of the undercarriage.

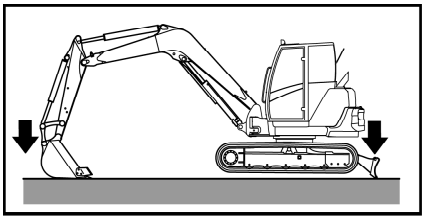


A = Mark ⚠ inside the track

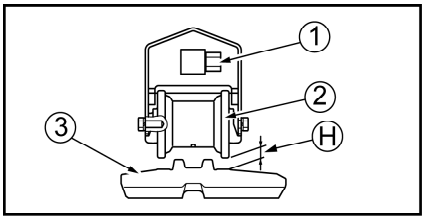
1 = Cover

2 = Idle wheel

1. Move the machine so that the seal on the internal surface of the track is placed in the centre of the upper chassis.



2. Raise the machine with the equipment by activating the command lever.



1 = Greaser

2 = Track roller

3 = Track

3. Check the tension. The play H between the external rolling surface of the second track roller on the tightener roller and the internal surface of the track must be 20 ~ 25 mm.

- If the tension is incorrect, follow the procedures given in the following chapters to increase or release the track tension.

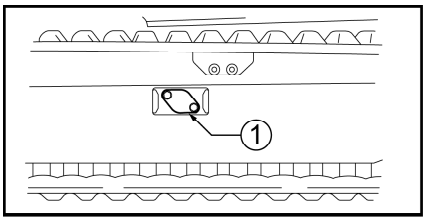
d. Increasing the tension

⚠ WARNING

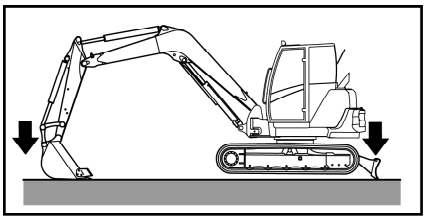
Do not support the machine with the attachment only. The command levers may move or hydraulic oil may spill accidentally and cause the machine to fall.

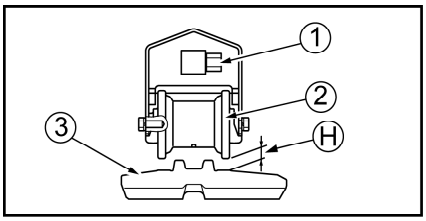
When the machine is checked or adjusted by two people, one of them must commission the machine according to the signals given by the other person.

Be sure to perform the track tension verification on a firm and even surface. It is strictly forbidden to be positioned under the machine for the duration of the operation.



1 = Cover

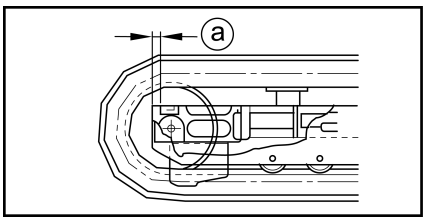




1 = Greaser

2 = Track roller

3 = Track



1. Prepare a grease pump.
2. Loosen the two screws and rotate the bottom cover to access the lubrication nipple.
3. Raise the machine with the equipment by activating the command lever.
4. Using the grease pump, inject grease with the greaser so that the play H is between 20 ~ 25 mm.
5. Proceed with the track tensioning. To check that the tension is correct, put the machine down and move it gently forwards and backwards.
6. Check the tension again. If it is still not correct, adjust it again.
7. Re-install the cover.

- The tension may be adjusted until the distance "a" is reduced to 0. If the tension is still insufficient, the track must be replaced due to excessive wear. Contact your dealer for repair.
- If the tension is weak, even after grease is injected, the track must be replaced or a system tension check must be performed. Contact your dealer.

e. Releasing the tension

⚠ WARNING

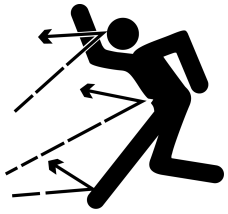
Do not support the machine with the attachment only. The command levers may move or hydraulic oil may spill accidentally and cause the machine to fall.

When the machine is checked or adjusted by two people, one of them must commission the machine according to the signals given by the other person.

Be sure to perform the track tension verification on a firm and even surface. It is strictly forbidden to be positioned under the machine for the duration of the operation.

⚠ IMPORTANT

The rubber track does not resist grease. Wipe the grease off completely as it may reduce the life time of the rubber tracks.



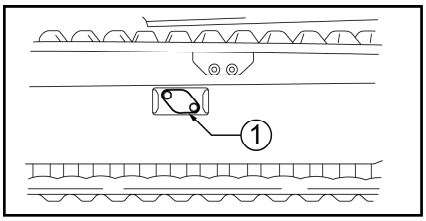
⚠ WARNING

Do not loosen the greaser by more than one turn.

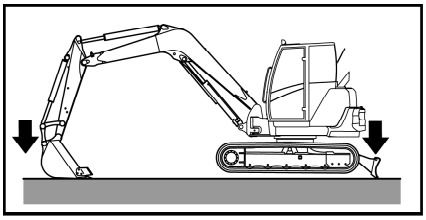
If it is loosened suddenly, the high pressure grease inside may escape or the valve may be ejected, which may cause serious injuries.

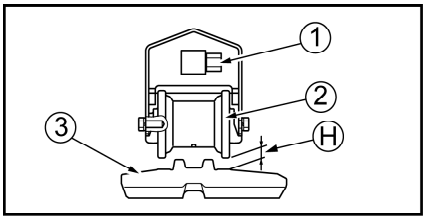
When you check whether the grease has escaped, do not look inside the greaser but check that the track is released. Do not place your face, hand, legs or body in the direction of the greaser.

It is very dangerous to remove the grease using procedures other than those described here. If the track cannot be relaxed, ask your YANMAR dealer to intervene.



1 = Cover





1 = Greaser

2 = Track roller

3 = Track

1. Loosen the two screws and rotate the bottom cover to access the lubrication nipple.
2. Raise the machine with the equipment by activating the command lever.
3. Loosen the greaser.
4. Let the grease escape so that the track will extend.
5. Tighten the greaser.

   Tightening torque : 59–88 N•m.
6. Proceed with the track tensioning.
7. Check the tension again. If it is still not correct, adjust it again.
8. Wipe off the excess grease with a cloth or equivalent.
9. Re-install the cover.

4.1.6 Steel track maintenance

a. Checking the condition of the tracks

- The wear to the track pins and pegs depends on the working conditions and the nature of the ground. Check the track tension regularly to maintain suitable tension.
- Check and adjust the track tension under the same conditions as the operating conditions (for example, muddy conditions if the task is carried out on muddy ground).
- To find out whether the track must be replaced, repaired or you can continue to use it, contact your YANMAR dealer.

b. Track replacement

- If a track (or both tracks) needs to be replaced, contact your dealer.

c. Tension check

⚠ WARNING

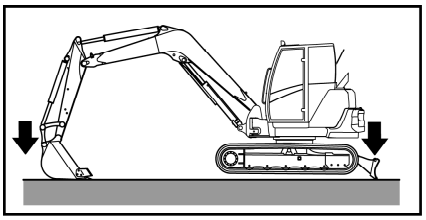
Do not support the machine with the attachment only. The command levers may move or hydraulic oil may spill accidentally and cause the machine to fall.

When the machine is checked or adjusted by two people, one of them must commission the machine according to the signals given by the other person.

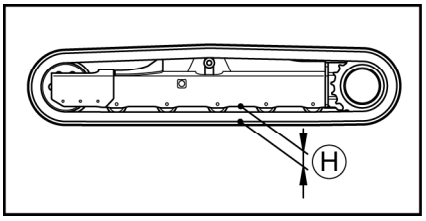
Be sure to perform the track tension verification on a firm and even surface. It is strictly forbidden to be positioned under the machine for the duration of the operation.

⚠ IMPORTANT

Perform a task with a relaxed track link may derail the track or cause premature wear of the undercarriage.



1. Raise the machine with the equipment by activating the command lever.



2. Check the tension. The gap between the lower part of the lower chassis and the internal surface of the track must be 150 ~ 160 mm.

3. If the tension is incorrect, follow the procedures given in the following chapters to increase or release the track tension.

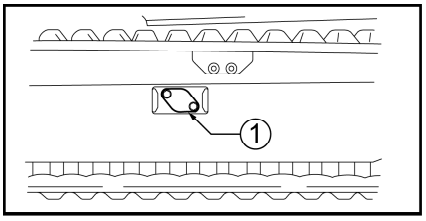
d. Increasing the tension

⚠ WARNING

Do not support the machine with the attachment only. The command levers may move or hydraulic oil may spill accidentally and cause the machine to fall.

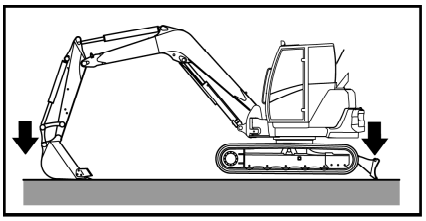
When the machine is checked or adjusted by two people, one of them must commission the machine according to the signals given by the other person.

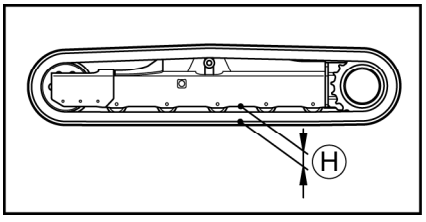
Be sure to perform the track tension verification on a firm and even surface. It is strictly forbidden to be positioned under the machine for the duration of the operation.

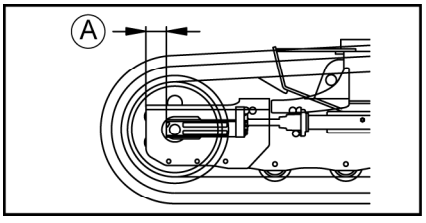


1 = Cover

1. Prepare a grease pump.
2. Loosen the two screws and rotate the bottom cover to access the lubrication nipple.
3. Raise the machine with the equipment by activating the command lever.
4. Using the grease pump, inject grease with the greaser so that the play H is between 150 ~ 160 mm.
5. To check that the tension is correct, put the machine down and move it gently forwards and backwards.
6. Check the tension again. If it is still not correct, adjust it again.
7. Re-install the cover.







- The tension may be adjusted until the distance "a" is reduced to 0. If the tension is insufficient after being adjusted, the pin and the peg must be replaced. Contact your dealer for repair.
- If the tension is weak even after grease is injected, the track must be replaced. Contact your dealer.

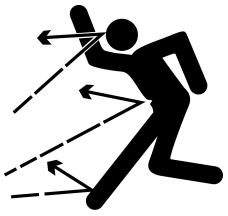
e. Releasing the tension

⚠ WARNING

Do not support the machine with the attachment only. The command levers may move or hydraulic oil may spill accidentally and cause the machine to fall.

When the machine is checked or adjusted by two people, one of them must commission the machine according to the signals given by the other person.

Be sure to perform the track tension verification on a firm and even surface. It is strictly forbidden to be positioned under the machine for the duration of the operation.



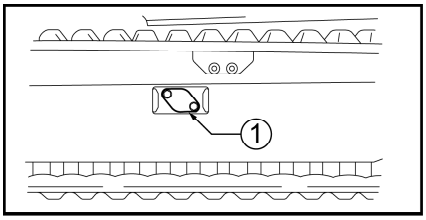
⚠ WARNING

Do not loosen the greaser by more than one turn.

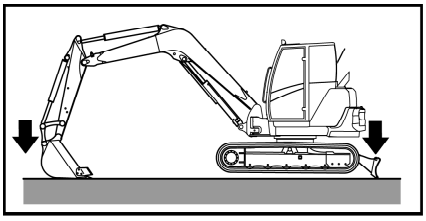
If it is loosened suddenly, the high pressure grease inside may escape or the valve may be ejected, which may cause serious injuries.

When you check whether the grease has escaped, do not look inside the greaser but check that the track is released. Do not place your face, hand, legs or body in the direction of the greaser.

It is very dangerous to remove the grease using procedures other than those described here. If the track cannot be relaxed, ask your YANMAR dealer to intervene.



1 = Cover



1. Loosen the two screws and rotate the bottom cover to access the lubrication nipple.
2. Raise the machine with the equipment by activating the command lever.
3. Loosen the greaser.
4. Let the grease escape so that the track will extend.
5. Tighten the greaser.

   Tightening torque : 59–88 N•m.
6. To check that the tension is correct, put the machine down and move it gently forwards and backwards.
7. Check the tension again. If it is still not correct, adjust it again.
8. Wipe off the excess grease with a cloth or equivalent.
9. Re-install the cover.

4.1.7 Checks after using the machine

After each use, several checks must be carried out according to how the machine is used ; refer to chapter :

5 Checks after use, page 89

4.1.8 Air conditioning system

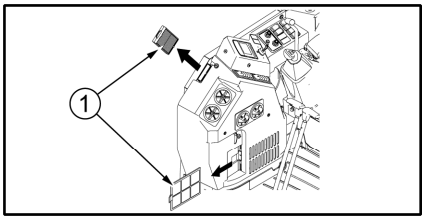
⚠ IMPORTANT
Daily cleaning and periodic servicing of the air-conditioning system are essential to ensure that it runs correctly. **Proper maintenance reduces breakdowns, extends the life of the air-conditioning system, and reduces repair costs.**

The following points must be checked:

- Abnormal noise or vibrations from the air-conditioning system, particularly the compressor.
- Damage to the compressor and condenser.
- Oil leaks around the air-conditioning system and its connections.

4.1.9 Cleaning the cabin/air-conditioning filter

⚠ IMPORTANT
Dispose of used dust filters in accordance with the regulations in force.



1 = Cab filters

1. Pull the filters by their handle to remove them.
2. Clean the filters with compressed air or by gently tapping them.

⚠ IMPORTANT
Do not use compressed air above 0.7 MPa. **Do not use water to clean the filters.** **When cleaning the inside of the machine with water, cover the filters to avoid splashing them.**

3. Replace the filters in their slots.

Note

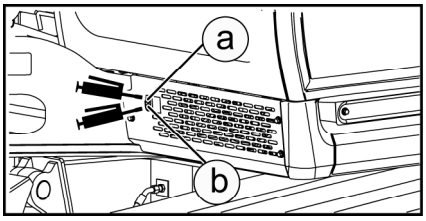
If a filter malfunctions after cleaning, replace it.

4.2 Maintenance every 50 hours

4.2.1 Greasing the pin and rotation crown

⚠ WARNING

Do not pivot the upper structure during greasing. Grease and pivot alternately to avoid any injury.



- Using a grease pump, grease the pin and the rotation crown at the greasers indicated with arrows on the figure opposite.

a = Rotation crown

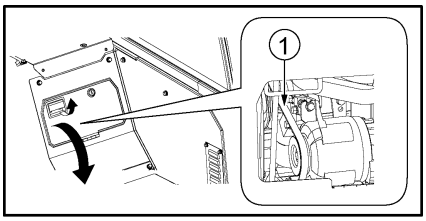
b = Pin

- Slowly pivot the upper structure until it has made one complete turn.

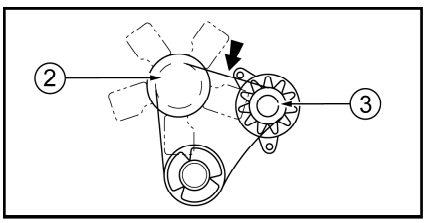
4.2.2 Checking alternator belt tension

⚠ WARNING

After the machine has stopped, the engine components are hot and may cause burns. Check the tension of the belt once the engine parts have completely cooled.



1 = Alternator belt



2 = Fan pulley

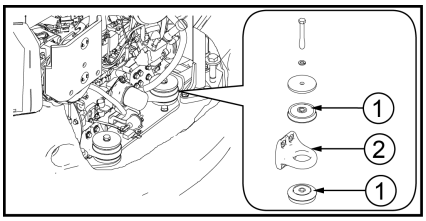
3 = Alternator pulley

1. Open the bonnet
2. Check the belt tension by pressing the section of the belt between the fan pulley and the alternator pulley with your finger.

   Compressive force : approximately

   Correct range of travel: 10-14 mm
3. Check that the pulleys, the V-groove, and the fan belt are not damaged, and check that the fan belt is not touching the lower part of the V-groove.
4. If the belt or pulleys are damaged or the belt is loose, contact your dealer.
5. Close the cover.

4.2.3 Engine silent-bloc and bracket



1 = Silent-bloc

2 = Bracket

- Check the condition of the silent blocks and their supports.

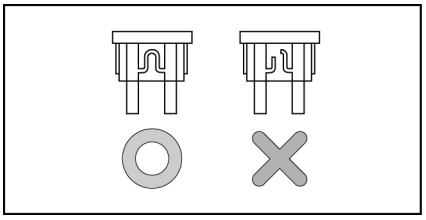
4.3 Non periodic maintenance

4.3.1 Fuse replacement

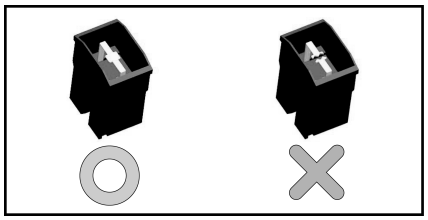
⚠ IMPORTANT
An unsuitable fuse or a fuse holder with a short circuit may cause overheating and damage the electrical circuit or the electrical components.

1. Set the starter key to OFF position.
2. Remove the lid from the fusebox.
3. Identify the burnt out fuse.
4. Replace it with an equivalent fuse.

Fuse strip



General supply fuses



- If a fuse burns out immediately after it is replaced, this means there is a problem in the electric circuit.

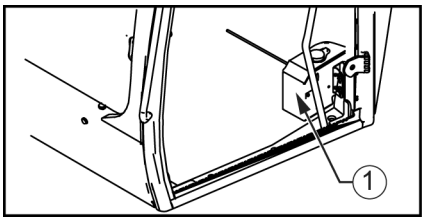
  Note

  When replacing a slow-blow fuse secured with a bolt, tighten the bolt to the specified torque after installing a new fuse:

  • M5: 2.9 - 3.9 Nm

  • M6: 4.9 - 5.9 Nm

4.3.2 Top up the windscreen washer fluid



1 = Windscreen washer tank

⚠ IMPORTANT
Do not let any impurities into the tank.

1. Open the bonnet with the ignition key.
2. Open the windscreen washer tank.
3. Top up the windscreen washer fluid.

4.3.3 Replacing the windscreen wiper

- Replace the windscreen wiper when it no longer cleans the windscreen correctly. Follow the procedure indicated by the windscreen wiper manufacturer.

4.3.4 Attachment state check

- When working on an attachment, please contact your dealer or refer to the manufacturer user manual supplied with the attachment.

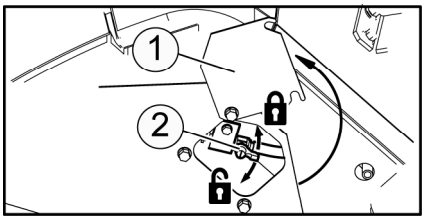
4.3.5 Purging the fuel tank

⚠ DANGER

Keep all sparks, flames or cigarettes away.

⚠ WARNING

Ensure the fuel does not enter contact with your body.



1 = Cover

2 = Drain plug

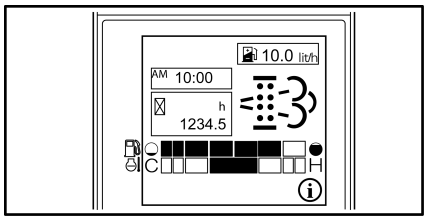
1. Pivot the upper structure so that the drainage cap under the fuel tank is opposite the blade between the two tracks.
2. Loosen the screws and rotate the bottom cover.
3. Place a container to catch the fuel residue under the drainage tap.
4. Remove the drainage cap to purge the water and dirt left in the tank.
5. Once clean fuel starts to come out, reinstall the drain plug and tighten to the right torque.

   Maximum torque = 7 Nm

4.3.6 Maintenance of the particle filter

To service the DPF, contact your YANMAR dealer.

- Particle filter, cleaning around every 3000h and replacement every 9000h.



⚠ IMPORTANT

When the operator display station displays the DPF regeneration icon, shut down the machine and perform manual DPF regeneration as soon as possible.

13.4 Manual regeneration of the particulate filter, page 109

- Catalytic converter, replace every 9000h.

4.3.7 Air filter cleaning

⚠ WARNING

Do not clean or change the air filter if the engine is not stopped. Wait until the engine has cooled down.

Compressed air is used to clean the air filter. Wear protective goggles to prevent eye injury.

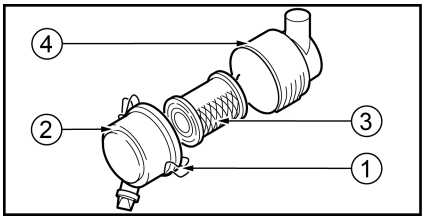
When cleaning, the compressed air pressure must be below 0.5 MPa.

⚠ IMPORTANT

Do not hit the filter against other objects when you clean it, as this would damage it.

Do not reuse the filter if damaged.

Dispose of used dust filters in accordance with the regulations in force.

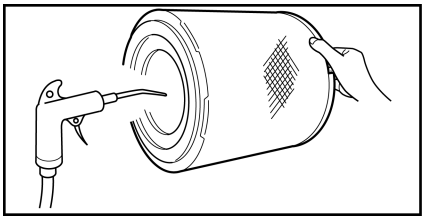


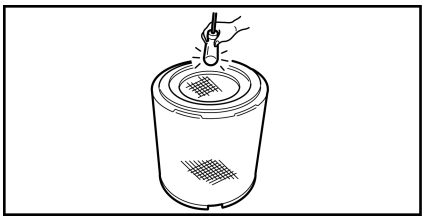
1 = Fastener

2 = Air filter cover

3 = Filter

4 = Air filter body





1. Open the bonnet with the ignition key.
2. Release the fasteners to remove the air filter lid.
3. Remove the filter.
4. Clean the air filter cover.
5. Clean inside the air filter body.
6. Remove dirt by blowing dry compressed air inside the filter, along the folds.
7. Then blow dry compressed air outside the filter.
8. Blow dry compressed air again inside the filter to finish cleaning.
9. After cleaning, check filter integrity using a lamp. Change the filter if you notice holes or worn zones.
10. Reposition the clean filter.
11. Close the filter with its cover while turning it in the direction shown by an arrow on the cover.
12. Close the cover.

5 MAINTENANCE BY THE DEALER

5.1 After the first 50 hours of service

- Checks carried out by the dealer :

– User manual available and in good condition

– Engine	Alternator belt : Tension check
	Performance of engine control and engine speed
	Governor lever and accelerator device
	Engine silent-bloc and bracket

– Travel levers : Play of travel lever

– Travel : Performance of travel

– Command lever : Play in control levers

– Hydraulic	Accumulator
	Pump pressure
	Low pressure
– Equipment	Blade
	Rotation of the boom
	Arm
	Boom
	Bucket
	Options
– Electrical equipment	Time counter
	Tightening bolts and electrical terminals
	Operator display station
	Condition of fuses
	Broken and worn wiring harnesses, short circuits, disconnected terminals
	Seat operation
	Battery

- Servicing carried out by the dealer :

– Swing gear and crown : Greasing

– Diesel filter : Replacing the element

– Engine oil : Oil sample

– Engine oil : Replacing the element

– Travel gears : Oil replacement

– Hydraulic oil : Oil sample

– Hydraulic oil, Aspiration filter: Cleaning

– Hydraulic oil return filter : Replacing the element

- Sign inspection card and return to YANMAR

D MACHINE STORAGE AND END-OF-LIFE

CHAPTER COVERED IN THIS PART:

1 Conservation
2 Storage
3 Recommissioning
4 Dismantling

⚠ IMPORTANT
The conservation and storage of the machine must comply with standard NF ISO 6749 " Earth moving equipment, conservation and storage ". **The following chapters take part of the standard mentioned above but are not exhaustive.** **Refer to the standard for any additional information.**

1 CONSERVATION

- Placing in conservation is intended to ensure the protection of the machine against corrosion from the environment and against minor damage that may occur during handling, transport and storage.
- Return the machine to good condition before placing it in conservation.

1. Clean all the parts.
2. Apply rust remover and paint to metal components the paintwork of which is damaged.
3. Apply greasing oil and grease to the machine's metal surfaces and replace the engine oil.
4. Apply grease to the exposed parts of the cylinder rods.
5. To avoid condensation in the fuel tank, drain the tank or fill it up.
6. The battery must be disconnected. If the storage period exceeds one month, the battery must be removed and stored in a special room.
7. Make sure the liquid in the cooling system has sufficient performance characteristics and is appropriate for the machine's storage temperatures.

2 Recommended greases and fluids, page 129

If necessary, top up the water.

3.2 Checking and topping up the level of cooling fluid, page 83

⚠ WARNING

Do not open the bonnet during machine operation.

Verification and topping up of the various levels should be done when the engine is stopped and the temperatures are brought back down.

8. Lock the joysticks and pedals using locking levers and pedal protectors.

Note

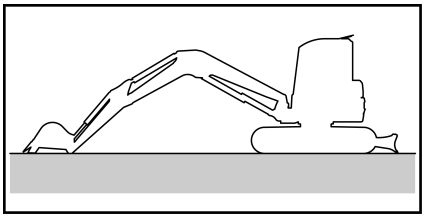
The machine rusts easily if it is left near the sea or in a place exposed to sea winds.

Apply rust protector to all the exposed parts of the piston rods and cover the machine with a tarpaulin. Certain rust protection solvents dammage rubber materials. Make sure you use an adapted rust protector.

⚠ WARNING

When you place the machine in an enclosed space, ventilate by opening the doors and windows to avoid any gas intoxication.

2 STORAGE



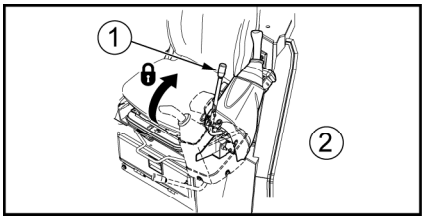
- You are recommended to store the machine in a closed and covered location.
- If the machine is stored outdoors, park it on flat ground and cover it with a protective sheet.
- The machine must be placed in the position illustrated opposite to protect the hydraulic cylinder rods against corrosion.

- In a long-term storage, move the machine at least once a month to form new oil on all the moving parts and remove the battery.

⚠ WARNING

Before using the machine indoors, ensure the area is ventilated properly by opening the windows and doors.

- When you do not use the machine for a period of over 2 months, avoid placing the tracks in a place that is directly exposed to sunlight or rain.
- The conservation and recommissioning instructions, as well as the conservation date must be placed in an impermeable envelope with a label and secured to the machine at a visible location.
- To protect the machine against rainwater, trap it to avoid accumulation of water that can promote corrosion of metal parts.



- The locking lever(s) must be in locked in a position to avoid any possibility of the machine being activated accidentally.

1 = Locking lever

2 = Left hand side

- The machine in prolonged storage must be regularly inspected in terms of its external appearance, the condition of the protected surfaces and the protection materials.

  The inspection intervals are the following :

  – every 6 months under temperate weather conditions,

  – every 3 months under tropical, cold, Arctica or coastal weather conditions.

3 RECOMMISSIONING

⚠ WARNING

After storage of the machine at temperatures outside the machine's operating temperature range, make sure the temperature is again in the operating temperature range before restoring the machine to working order.

⚠ IMPORTANT

If the machine has not been used for more than six months, the hydraulic filters must be changed before it is put back into service.

Before using the machine again after a storage period of two months, do the following:

1. Clean the machine.
2. Check the global aspect of the machine.
3. Remove the protective grease from the cylinder rods.
4. Grease the machine.

4.1.3 Greasing points, page 136

5. Drain the water from the fuel tank, from the engine oil casing and from the hydraulic fluid tank by removing the drainage caps.
6. Clean the air filter and exhaust ports.

4.3.7 Air filter cleaning, page 148

7. Leave the machine to warm up after you start the engine.

4 DISMANTLING

⚠ IMPORTANT
Failure to dispose of the machine correctly at the end of its service life may result in environmental accidents and damage.

- Do not dispose of the machine or its fluids in the environment.
- The machine must be dismantled by a specialist company, in compliance with current safety and environmental standards and regulations.
- For more information, contact your dealer.

E TECHNICAL DATA

CHAPTER COVERED IN THIS PART:

1 Specifications
2 Working dimensions
3 Noise emitted by the machine
4 Vibrations emitted by the machine

1 SPECIFICATIONS

Tracks		Rubber | Steel
H (track tension)	mm	20 ~ 25 | 150 ~ 160
Elements		Cabin

Weight (in conformity with European standards)

Weight of the machine (with operator (75 kg) + bucket)	kg	8065 / 8125
Weight of standard bucket	kg	196
	kg	400

Working range and performance

Operating temperature range	°C	-15 ~ 40
Bucket capacity, standard	m³	0,28
Bucket width, standard	mm	750
Boom rotation angle : left / right		57°/60°
Maximum excavation force : bucket / arm	kN	63,5 /40,8
Travel Speed : high/ low	km/h	4,5/2,5 | 4,1/2,3
Maximum slope		30°
Rotation speed	rpm	9,0
Average pressure on the ground, standard track	kg / cm²	0,36/0,36

Hydraulic circuit

Hydraulic pump rate	L/min
70,3 x 2 (variable rate pump) 53,2 x 1(variable rate pump) 19,0 x 1(geared pump)	
Maximum hydraulic circuit pressure	MPa
25,5 x 2 ; 24 x 1 ; 2,9 x 1	

Engine: 4TNV98C-WBV

Type	4 cylinders, water cooling,direct Diesel injection	
Power / revs	kW / rpm	39,3 / 1900
Alternator capacity	V / A	12 / 80
Battery	V / Ah	12 / 92[1]
CO2emissions	g / kWh	791[2]
Test cycle		HOT NRTC

Dependent on technical modifications.

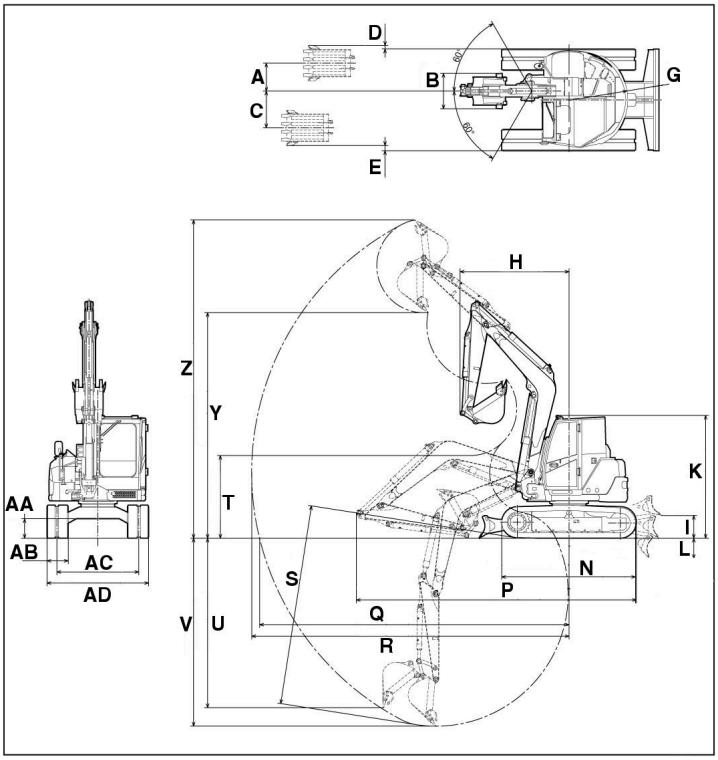
1. Minimum battery capacity
2. This CO_2 measurement is the result of tests, carried out in laboratory conditions on a fixed cycle, on a parent engine, representative of a family of engines, and may in no way be considered as an indication or a guarantee of the performance of any particular engine.

2 WORKING DIMENSIONS

⚠ WARNING

The working dimensions are indicated for a machine equipped with the standard bucket defined in the table of machine specifications.

The dimensions of the additional attachments and equipment installed on the machine may modify the working dimensions, and must therefore be taken into account before using the machine.

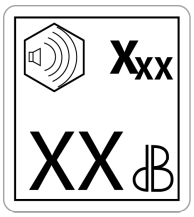


Unit :mm					
A	620	620	Q	6820	7160
B	750	750	R	6960	7290
C	840	840	S	4440	4790
D	60	60	T	1940	1590
E	120	120	U	3800	4130
G	1135 / 1265[1]	1135 / 1265[1]	V	4150	4500
H / swing	2470 / 2130	2520 / 2170	Y	4680	4910
I	460	460	Z	6790	7020
K	2710	2710	AA	390	390
L	480	480	AB	450	450
N	2890	2890	AC	1870	1870
P	6410	6450	AD	2270	2270

1. with rear counterweight

3 NOISE EMITTED BY THE MACHINE

Examination results :



LwA (dBA)	98
LpA (dBA)	75
LpPeak (dBC)	<130

Rounded values

LwA : A-weighted sound power level determined and guaranteed according to Directive 2000/14/EC amended by Directive 2005/88/EC.

LpA : A-weighted sound pressure level at the operator's ear measured and guaranteed in accordance with ISO 6396:2008.

LpPeak (dBC) : maximum value of the instant acoustic pressure measured with frequency weighting C.

Under certain specific operating conditions, the actual noise emission may differ from the values determined by the acoustic tests.

The user of the machine (or the employer) must determine whether there are any sources of noise other than the machine in the workplace (e.g. other machines) and the duration of exposure in order to determine the need to wear hearing protection.

4 VIBRATIONS EMITTED BY THE MACHINE

Declared vibration value in accordance with EN 12096			Unit : m/s²
Vibrations	Work cycle	Measured vibration emission value, a	Uncertainty, K
Hand-arm in m/s²	Roadworks trench	< 2,5	–
	Levelling	< 2,5	–
	Displacement	2,56	0,47
	Breaker	< 2,5	–
Full body in m/s²	Roadworks trench	< 0,5	–
	Levelling	< 0,5	–
	Displacement	0,79	0,16
	Breaker	< 0,5	–
Values determined in accordance with standards ISO 5349-2 & EN 1032			

Work cycle	Work cycle definition
Roadworks trench	So called excavation work; bucket movements digging in the soil (packed earth).
Levelling	Advance with blade in the down position and move backward with blade raised; on packed earth.
Displacement	Loop circuits on the gravel storage area (approximate speed 4km/h - 2.6 mi/h) clockwise turn.
Breaker	Operation of hydraulic rock breaker for 20 seconds on a steel plate of 100x50x5cm placed on the ground.

Note

These values are declared in accordance with Directive 2006/42/CE and do not correspond to exposure values over 8h of work. They are determined with a machine in the standard configuration defined by YANMAR.

The following provisions should be taken in order to transmit the minimum amount of vibration to the whole body while the machine is operating and to avoid damaging the operator's health :

- Adjust the seat according to the operator's size.
- Keep the terrain in good condition.
- Use the machine under the conditions provided for, taking account of the real conditions of the terrain and the specific effects of the vibration that results from the actual operation of the machine.

The user must read and keep the instructions related to mounting and using attachments.

F LIFTING CAPACITIES

CHAPTER COVERED IN THIS PART:

1 Lifting **ViO80-1A**
2 Lifting **ViO80-1A,** with rear counterweight

⚠ IMPORTANT

Using the machine as a hoist is subject to the Machinery Directive 2006/42/EC for members of the European Community, and to the legislations specific to each country for states outside the EC.

⚠ IMPORTANT

The capacities indicated in the following tables are determined for flat, firm ground.

When the machine is not used on this type of ground, you should take account of these new conditions.

The machine's maximum weight allowed for dynamic operating conditions is determined by the most unfavourable cylinder extension and positioning conditions for the machine.

Depending on the machine configuration (arm length, presence of a counterweight…) and working conditions, the operator must make sure that: the total weight of the quick hitch, the attachment used (bucket, hydraulic hammer...) and the load handled does not exceed the maximum weight allowed.

9.1 Machine stability when using with a bucket or an attachment, page 99

⚠ IMPORTANT

The data in these tables represent the lifting capacity according to standard ISO 10567. They correspond to 75 % of the maximum static load before tipping or to 87 %of the hydraulic lifting force.

The data marked with * show the hydraulic limits of the lifting force.

YANMAR CONSTRUCTION EQUIPMENT EUROPE S.A.S.declines all responsibility for any use of the machine that does not respect the instructions in this regulation.

⚠ IMPORTANT

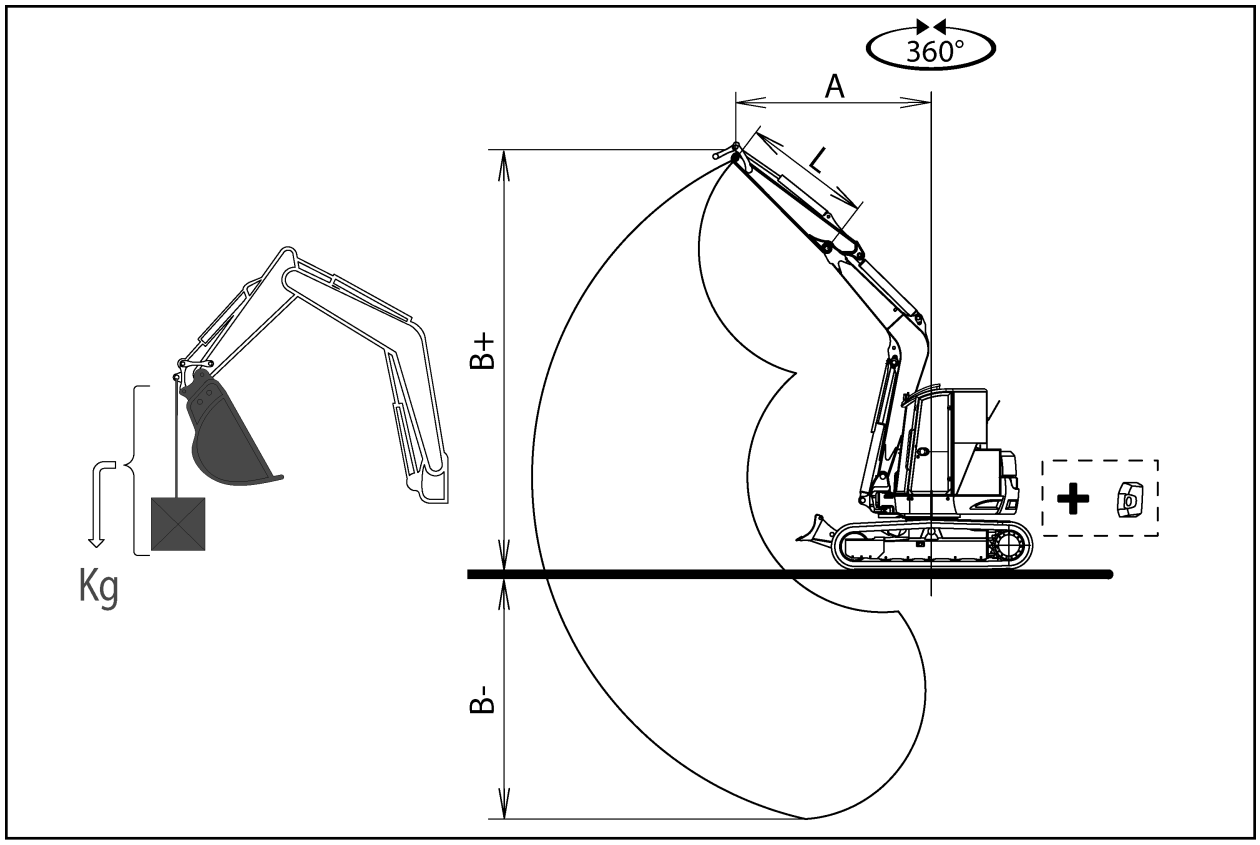
The position of the blade affects the lifting capacity but the tables show the worst case.

The lifting table indicates the maximum value which can be lifted by the machine through a complete rotation of the turret.

⚠ IMPORTANT

The machine's lifting capacity tables were generated using the ring welded to the tie rod of the machine. YANMAR CONSTRUCTION EQUIPMENT EUROPE S.A.S cannot guarantee proper machine operation or operator safety when lifting operations are performed using lifting points located on the attachment.

1 LIFTING VIO80-1A



L = 1650mm					
B \ A	Max	5m	4m	3m	2m
5m	*1720	-	*1720	-	-
4m	1090	1190	*1750	-	-
3m	950	1200	1720	*2480	-
2m	870	1190	1730	2460	-
1m	860	1140	1620	2190	-
0m	890	1100	1560	2180	-
-1m	970	1100	1560	2340	-
-2m	1190	-	1570	2600	-
-3m	*1350	-	-	*1550	-

L = 2000mm					
B \ A	Max	5m	4m	3m	2m
5m	*1610	-	*1530	-	-
4m	1050	1240	*1570	-	-
3m	890	1210	*1810	-	-
2m	820	1160	1640	2520	-
1m	790	1120	1530	2250	-
0m	800	1060	1450	2140	-
-1m	820	1050	1410	2150	-
-2m	1000	1040	1420	2140	-
-3m	-	-	-	-	-

Machine with cab and rubber tracks.

A = Tilt from the rotation axis

B = Attachment point height

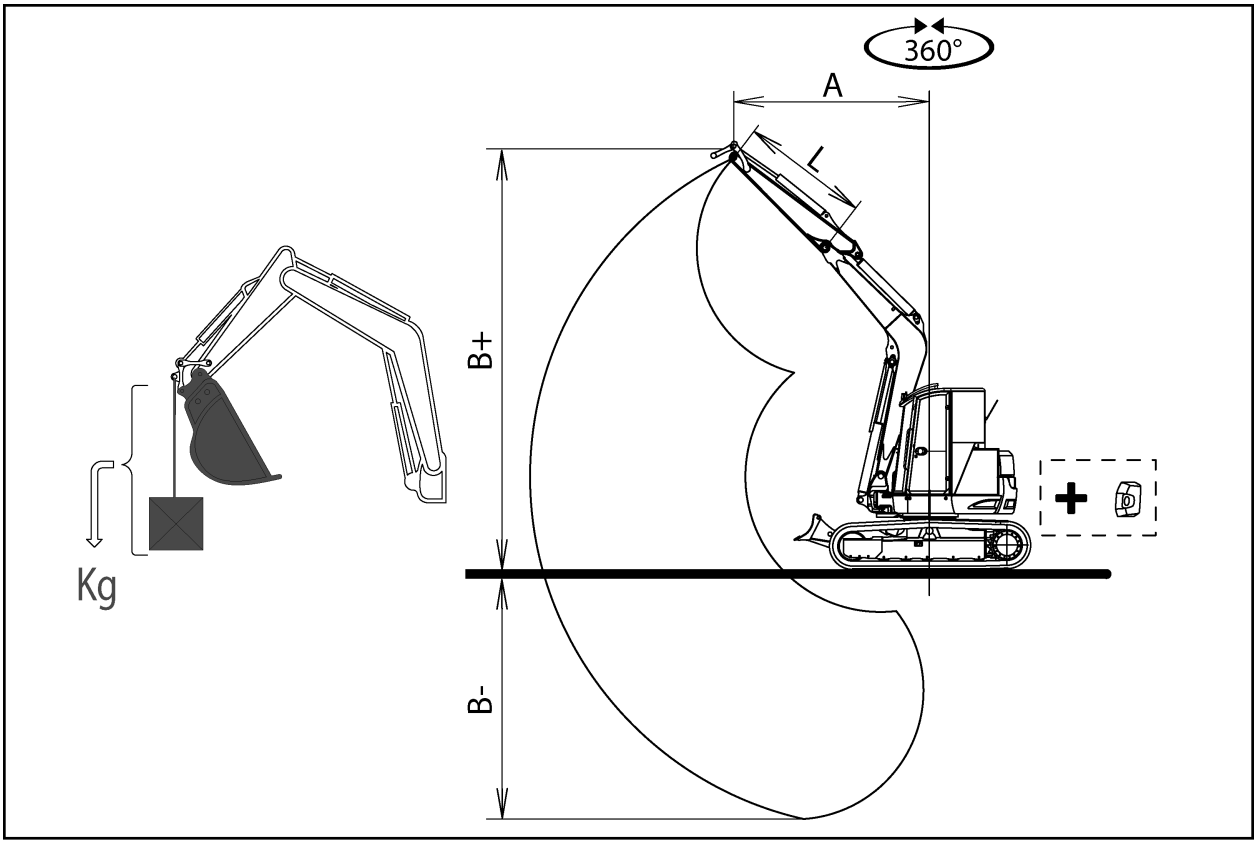
L = Arm length

* = Hydraulic capacity limits of the lifting force

= Maximum load raised by the machine

= Housing overload alarm value setting

2 LIFTING VIO80-1A, WITH REAR COUNTERWEIGHT



L = 1650mm						
B \ A	Max	5m	4m	3m	2m	
5m	*1720	-	*1720	-	-	+ 394kg
4m	1250	1350	1750	-	-	
3m	1090	1360	1940	*2480	-	
2m	1000	1350	1940	2790	-	
1m	990	1300	1840	2520	-	
0m	1030	1260	1780	2510	-	
-1m	1120	1260	1780	2670	-	
-2m	1370	-	1780	2930	-	
-3m	*1350	-	-	*1550	-	

L = 2000mm						
B \ A	Max	5m	4m	3m	2m	
5m	*1610	-	*1530	-	-	+ 394kg
4m	1200	1410	*1570	-	-	
3m	1030	1380	*1810	-	-	
2m	950	1320	1850	2860	-	
1m	920	1280	1760	2570	-	
0m	930	1220	1680	2470	-	
-1m	1010	1210	1630	2470	-	
-2m	1160	1200	1640	2470	-	
-3m	-	-	-	-	-	

Machine with cab and rubber tracks.

A = Tilt from the rotation axis

B = Attachment point height

L = Arm length

* = Hydraulic capacity limits of the lifting force

= Maximum load raised by the machine

= Housing overload alarm value setting

Appendices

ADDITIONAL INFORMATIONS:

A Notes
B Lashing record

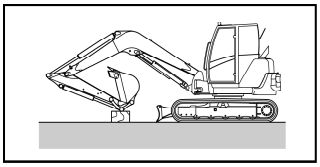
A Notes

B Lashing record

YANMAR CONSTRUCTION EQUIPMENT EUROPE S.A.S
25, rue de la Tambourine
52100 SAINT-DIZIER CEDEX FRANCE
+ 33 (0) 3 25 56 39 75

GENERAL PRINCIPLE OF APPLICATION

Road transport	Model: ViO80-1A	Type of operation :Tie-down



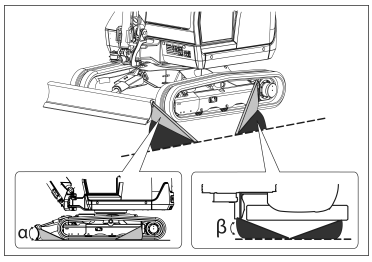
Activity:	Earthmover
Group:	Excavator
Subgroup:	Tracked excavator
Category:	Hydraulic excavator
Size:	L.= 6410-6450 mm / l.= 2270 mm / H.= 2710 mm

⚠ **WARNING**

Do not perform the tie-down if a person stands on the machine or on an attachment.Use a tie-down attachment (belt, chain, cable) compatible with the weight of the machine and compliant with European standards.

The tie-down process is defined based on the characteristics of a trailer with a Maximum Authorised Total Weight (MATW) of **>20 t**

1. Check the condition of the transport vehicle surface.If the surface is greasy, it must be cleaned before installing the machine on the transport vehicle.
2. Check the location and condition of the machine tie-down points.
3. Tie-down the machine at the points provided for that purpose and that are indicated on the machine.



⚠ **DANGER**

Blocking of turret (provided by the brake)
Additional attachments (bucket, arm, etc)
Rigging
Tension in lashing accessories
Measure the loading height
Grip on truck bed

* Using additional rigging accessories depends on the nature of the contact between the device and the transport vehicle and the weather conditions.
Please refer to the machine user manual.

14.3 Tying down the machine, page 112

Reference standards
NF EN 474-1 & NF ISO 15818

DEVICE

Weight of the vehicle (kg)	7990 – 8450

DEVICE CARRIER DEVICE

Nature of the contact	Steel-wood
Angle range α	30° - 60°
Angle range β	15° - 45°

ACCESSORIES		LC min (t)
Wedge (Lengthwise direction FR)	NONE*	
Wedge (Lengthwise direction RR)	NONE*	
Wedge (Lateral direction)	NONE*	
Slip resistant mat	NONE*	
Tie-down accessories	4	5 t

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