5200005490	1.0
0312	

Track Excavator

38Z3

OPERATOR'S MANUAL

5200005490

The cover features the machine with possible optional equipment.

Wacker Neuson Linz GmbH
Haidfeldstrasse 37
A-4060 Linz-Leonding

Document: BA 38Z3 US

Table of contents

S

V

W

1 Introduction

1.1 Important operator information

Store the Operator's Manual in the storage compartment at the rear of the seat.

This Operator's Manual contains important information on how to work safely, correctly and economically with the machine. It provides information and instructions for all operators regardless of experience. It helps to avoid dangerous situations and reduce repair costs and downtimes. Furthermore, the reliability and the service life of the machine will be increased by following the instructions in the Operator's Manual. This is why **the Operator's Manual must always be kept at hand in the machine.**

Your own safety, as well as the safety of others, depends to a great extent on how the machine is moved and operated. Thoroughly read and understand the information in this Operator's Manual before operating the machine for the first time.This Operator's Manual will help to familiarize yourself more easily with the machine, thereby enabling you to use it more safely and efficiently.

Before operating this machine for the first time, carefully read the section "Safety Instructions" to learn how to operate the machine safely.

Careful and prudent working is the best way to avoid accidents!

- Instructions are provided for bucket attachments. No instructions are provided for other attachments. Refer to the specific attachment operator's manual for safe operation.
- Wacker Neuson reserves the right to make product improvement changes during the course of series production of this machine.
- Modifying the manufacturer specification and configuration of this machine, or using unapproved attachments, can cause personal hazards and damage the machine. Contact your Wacker Neuson dealer for additional information and clarification regarding modifications.

Operational safety and readiness of the machine do not only depend on your skill, but also on maintenance and servicing of the machine. This is why regular maintenance and service work is absolutely necessary. Extensive maintenance and repair work must always be performed by an expert with appropriate training. Insist on using original spare parts when performing maintenance and repair work. This ensures operational safety and readiness of your machine, and maintains its value.

- Special equipment and superstructures are not described in this Operator's Manual.
- We reserve the right to improve the technical standard of our machines
- Modifying Wacker Neuson products and fitting them with additional equipment and tools not included in our delivery program requires written authorization from Wacker Neuson, otherwise warranty and product liability for possible damage caused by these modifications shall not be applicable.

Your Wacker Neuson dealer will be pleased to answer any further questions regarding the machine or the Operator's Manual.

Abbreviations / symbols

- This symbol stands for a list.
  - Subdivision within lists or an activity. Follow the steps in the recommended sequence.

☞ *This symbol requires you to perform the activity described.*

➥ Description of the effects or results of an activity.

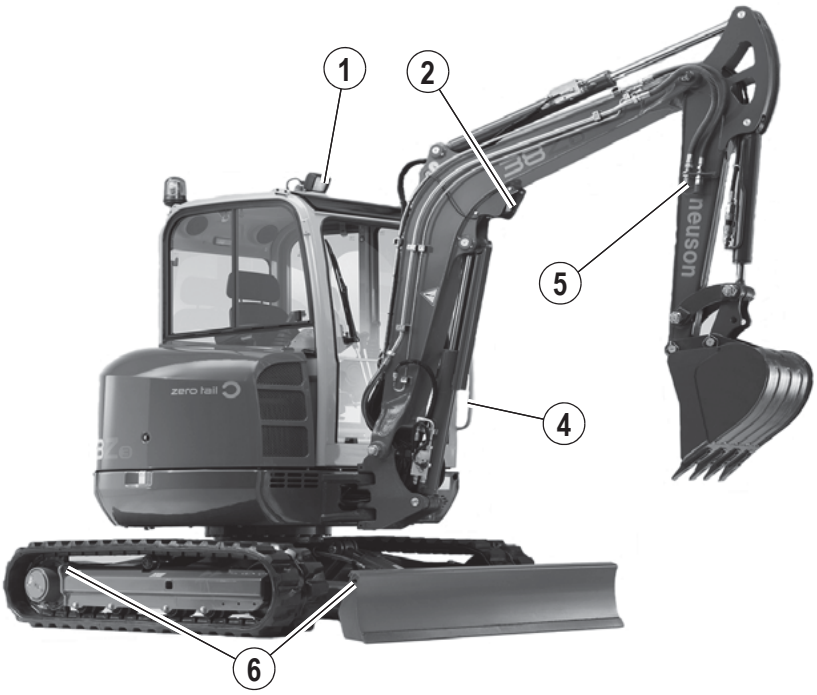
n. s. = not shown

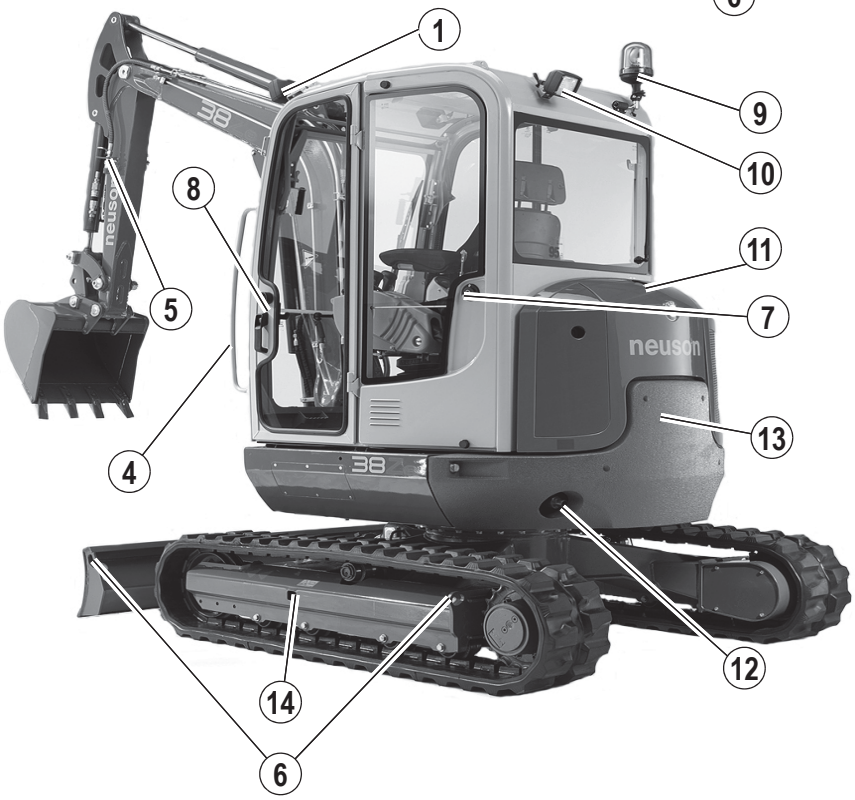
“Opt” = option Stated whenever controls or other components of the machine are installed as an option.

 This symbol shows the driving direction – for better orientation in figures and graphics.

1.2 Machine overview

1 Lights
2 Boom light
3 Boom
4 Handle
5 Auxiliary hydraulics
6 Lifting and tie-down point
7 Door arrester
8 Door handle and lock





9 Rotating beacon
10 Rear light
11 Hydraulic oil filler inlet
12 Exhaust pipe
13 Counterweight (option)
14 Fitting point for chain tension

Fig. 1: Machine outside views

1.3 Brief description

The model 38Z3 excavator is a self-propelled work machine.
Get informed on and follow the legal regulations of your country.
This machine is a versatile and powerful tool for moving earth, gravel and debris on construction sites and elsewhere. A wide range of attachments accounts for the numerous applications of the machine, among others hammer and grab applications. See chapter – *see Fields of application, attachments* on page 1-4

The main components of the machine are:

- FOPS (Falling Object Protective Structure), TOPS (Tip Over Protective Structure) and ROPS (Roll Over Protective Structure) tested closed cab (standard)
- FOPS (Falling Object Protective Structure), TOPS (Tip Over Protective Structure) and ROPS (Roll Over Protective Structure) open version (option)
- Model 38Z3: water-cooled Yanmar four cylinder diesel engine
- Sturdy steel sheet chassis; rubber-mounted engine

Travelling drive

The diesel engine permanently drives the twin axial variable displacement pump whose oil flow is sent to a hydraulic motor for each track drive.

Work hydraulics

The diesel engine also drives the joint gear pump for the work hydraulics. The oil flow of this pump depends on the diesel engine speed only.

Cooling system

The indicator light in the instrument panel of the machine ensure constant monitoring of the engine and hydraulic oil temperature, as well as of the coolant temperature and level.

Cab

Do not modify or attempt to repair the ROPS cab or ROPS structure. A bent or damaged ROPS will no longer protect the operator in the event of a tipping incident and must be replaced. Contact your Wacker Neuson dealer for instructions or clarification.

The ROPS is a special safety device designed and produced to exacting material and assembly standards for certification. Bending, heating, welding, cutting, or drilling holes in the ROPS will reduce the protection performance in a tipping incident.

Fasten your seatbelt, otherwise you can be thrown around or even outside the cab and crushed. Therefore always fasten your seatbelt as you drive and work with the machine. Tighten the seatbelt before taking up work with the machine.

1.4 Fields of application, attachments

The attachments installed determine the intended use of this machine.

NOTICE

In order to avoid damage to the machine, only the attachments listed below have been certified for installation on the machine.

☞ *Contact your Wacker Neuson dealer if you wish to use other attachments.*

Using tools of other manufacturers, or tools which have been released for other excavator types, can reduce the machine's output and stability considerably, and can also cause damage to the machine and injuries to the operator or the staff.

Always compare the weight of the tool and its maximum payload with the indications in the lift capacity table. Never exceed the maximum payload stated in the lift capacity table.

Use: attachment

The measurements are Metric (Imperial).

Possible attachments

Description of attachment	Capacity	Item no.:	Excavator	Remarks
Complete quickhitch		1000018479	38Z3	Required for operation of Wacker Neuson quickhitch systems
Bucket B = 300 mm (11.8'')	50 l (1.7 ft^3)	1000093755	38Z3	
	50 l (1.7 ft^3)	1000017130	38Z3	For quickhitch
Bucket B = 400 mm (1'4'')	69 l (2.4 ft^3)	1000093756	38Z3	
	69 l (2.4 ft^3)	1000017125	38Z3	For quickhitch
Bucket B = 500 mm (1'8'')	88 l (3.1 ft^3)	1000093757	38Z3	
	88 l (3.1 ft^3)	1000017127	38Z3	For quickhitch
Bucket B = 600 mm (2')	107 l (3.8 ft^3)	1000093758	38Z3	
	107 l (3.8 ft^3)	1000017134	38Z3	For quickhitch
Bucket B = 700 mm (2'4'')	127 l (4.5 ft^3)	1000093759	38Z3	
	127 l (4.5 ft^3)	1000017128	38Z3	For quickhitch
Fork		1000070738	38Z3	For quickhitch
Offset bucket B = 1000 mm (3'4'') short stick	111 l (3.9 ft^3)	1000096567	38Z3	
	111 l (3.9 ft^3)	1000017131	38Z3	For quickhitch
Offset bucket B = 1400 mm (4'7'') short stick	158 l (5.6 ft^3)	1000096568	38Z3	
	158 l (5.6 ft^3)	1000017132	38Z3	For quickhitch

Description of attachment	Capacity	Item no.:	Excavator	Remarks
Offset bucket B = 1000 mm (3'4'') long stick	111 l (3.9 ft^3)	1000096569	38Z3	
	111 l (3.9 ft^3)	1000096571	38Z3	For quickhitch
Offset bucket B = 1400 mm (4'7'') long stick	158 l (5.6 ft^3)	1000096570	38Z3	
	158 l (5.6 ft^3)	1000096572	38Z3	For quickhitch
Ditch cleaning bucket B = 1000 (3'4'') mm	117 l (4.1 ft^3)	1000096563	38Z3	
	116 l (4.1 ft^3)	1000096549	38Z3	For quickhitch
Ditch cleaning bucket B = 1400 (4'7'') mm	166 l (5.8 ft^3)	1000096564	38Z3	
	164 l (5.8 ft^3)	1000096550	38Z3	For quickhitch
Hammer mount console		1000070743	38Z3	

1.5 Operator Qualifications

Requirements to be met by the driver

Earth moving machines may be operated and serviced only by persons who meet the following requirements:

- 18 years or older
- Physically and mentally suited for this work
- Persons have been instructed in operating and servicing the earth moving machine and have proven their qualifications to the contractor
- Persons are expected to perform work reliably.
- They have been assigned by the contractor for operating and servicing the earth moving machine.
- They are informed on and follow the legal regulations of your country.

1.6 EC declaration of conformity version 38Z3 up to serial number AG00572

EC Declaration of Conformity

according to EC Directive 98/37/EC, 2000/14/EC Appendix 6

Wacker Neuson Linz GmbH
Haidfeldstr. 37
A-4060 Linz-Leonding

declare, under their own responsibility, that the product

Product name	Wacker Neuson track excavator 38Z3
Model	38Z3
Version	38Z3
Serial no.	- - - - - - - - - - -

to which this declaration refers, corresponds to the pertinent fundamental requirements regarding safety and health of

EC Directive 98/37/EC,
and the requirements of further pertinent EC Directives and standards.
.

ISO 3471 and EN 13510	Tested 15.11.2006 06072-E		Administrative unit reported according to Appendix 6
2000/14/EC	information Noise level	dBA	TÜV München (Munich/Germany Industrial Supervisory Board) Westendstrasse 199 D-80686 Munich
	Measured value	95.3	
	Guaranteed value	95	

The following standards and/or technical specifications have been used for the proper application of the requirements regarding safety and health stated in the EC Directives:
EN 474-1, EN 474-3, EN 12100-1, EN 12100-2, ISO 3471, EN 13510;

Place of storage of technical documentation:
Wacker Neuson Linz GmbH
Department: R & D
Haidfeldstr. 37
A-4060 Linz-Leonding

Linz-Leonding, (date) _ _ . _ _ . _ _ _ _

Josef Erlinger
Wacker Neuson Linz GmbH

1.7 EC declaration of conformity version 38Z3 from serial number AG00573

EC Declaration of Conformity

according to EC Directive 98/37/EC, 2000/14/EC Appendix 6

Wacker Neuson Linz GmbH
Haidfeldstr. 37
A-4060 Linz-Leonding

declare, under their own responsibility, that the product

Product name	Wacker Neuson track excavator 38Z3
Model	38Z3
Version	38Z3
Serial no.	- - - - - - - - - - -

to which this declaration refers, corresponds to the pertinent fundamental requirements regarding safety and health of

EC Directive 98/37/EC,
and the requirements of further pertinent EC Directives and standards.
.

ISO 3471 and EN 13510	Tested 15.11.2006 06072-E		Administrative unit reported according to Appendix 6
2000/14/EC	information Noise level	dBA	TÜV München (Munich/Germany Industrial Supervisory Board) Westendstrasse 199 D-80686 Munich
	Measured value		
	Guaranteed value	95	

The following standards and/or technical specifications have been used for the proper application of the requirements regarding safety and health stated in the EC Directives:
EN 474-1, EN 474-3, EN 12100-1, EN 12100-2, ISO 3471, EN 13510;

Place of storage of technical documentation:
Wacker Neuson Linz GmbH
Department: R & D
Haidfeldstr. 37
A-4060 Linz-Leonding

Linz-Leonding, (date) _ _ . _ _ . _ _ _ _

Josef Erlinger
Wacker Neuson Linz GmbH

1.8 Type labels and component numbers

Fig. 1: Type label: location

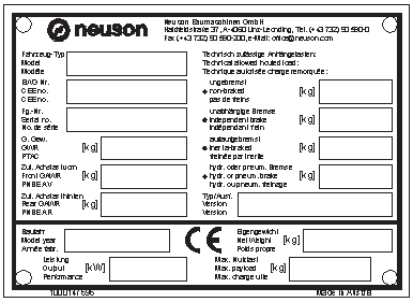


Fig. 2: Type label

Serial number

The serial number is stamped on the machine chassis. It is also located on the Product Indentification Number plate riveted to the front left chassis of the machine.

Type label information

Example: 38Z3

Model:	38Z3
Year:	2007
PIN:	AE 000000
Power, SAE:	21.0 kW (28,2 hp)
Mass:	3800 kg (8378 lb)
Load:	----------
Max. gross mass:	----------
Max. axle load:	----------

Other information – *see chapter 6 Specifications* on page 6-1

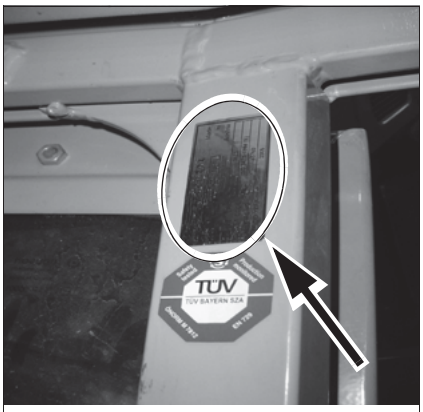
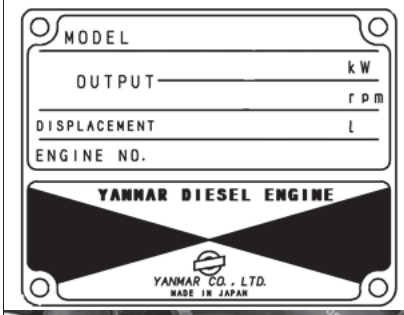


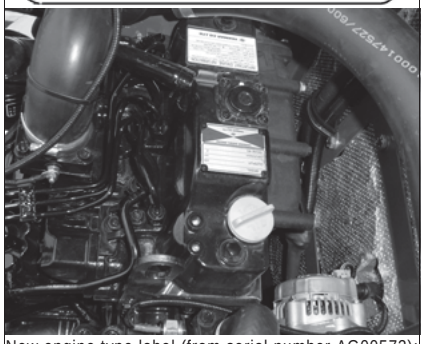
Fig. 3: Cab type label

Cab certification number

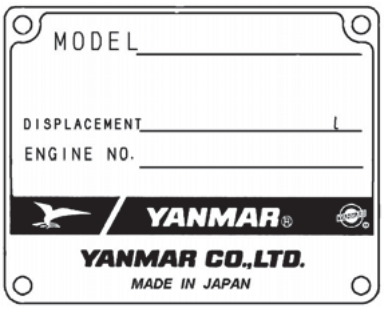
The certification label (arrow) is located on the chassis of the cab, at the upper left beside the door.

Old engine type label (up to serial number AG00572):





New engine type label (from serial number AG00573):



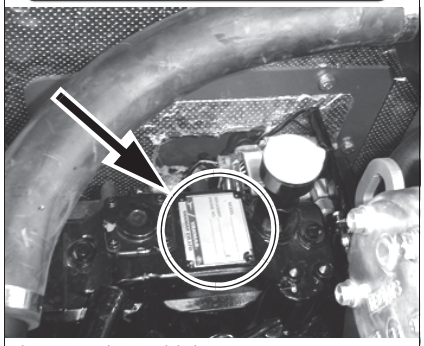


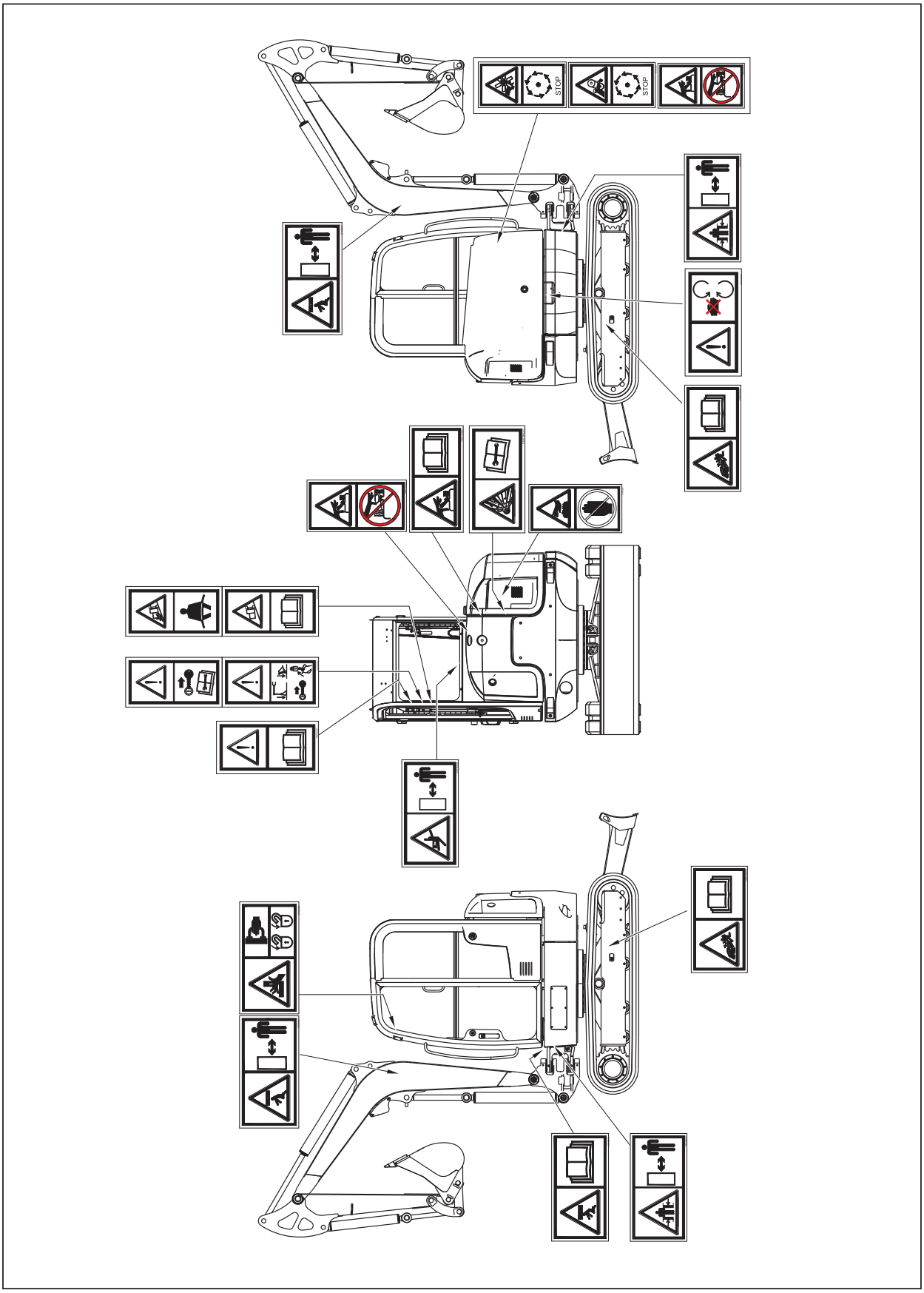
Fig. 4: Engine type label

Engine serial number

The type label (arrow) is located on the cylinder-head cover (engine).

Example: Yanmar 46557

Label overview



1.9 Symbols

The following symbols are displayed on the machine to provide pictorial information to the user. The information and explanations are provided to avoid misinterpretation by the user. The symbols have been chosen to provide important information to those involved with operating, adjusting, maintaining, and repairing this machine.

Fig. 5: Eye hook label

Description

Locates the lifting points for hoisting the excavator with lifting devices (slings, chains, or cables).

Location

On either side of the stabilizer blade, and on either side of the boom near the cylinder end of the stick hydraulic cylinder mounting.

Fig. 6: Label for points used for strapping down the machine

Description

Tie down points.

Location points designated for tie down of the machine during transport to prevent movement during transport.

Location

On either side of the stabilizer blade, and on either side of the undercarriage.

Fig. 7: Noise level label

Description

Noise levels produced by the machine.

L_{WA} = sound power level

Location

Cab: On the left window.
Canopy: On the right wall of canopy

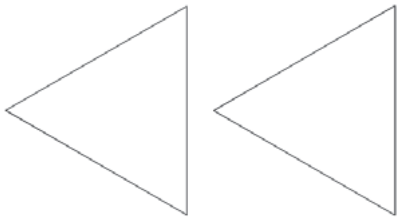


Fig. 8: Direction arrows

Description

This label shows the **forward** driving direction.

Location

On each undercarriage at the idler end of the structure.

Fig. 9: Diesel

Description

Fill location for diesel fuel only.

Location

Near the fuel filler Neck in engine room.

Fig. 10: Hydraulic oil

Description

Hydraulic oil reservoir. Use hydraulic fluid only.

Location

On the reservoir cover.

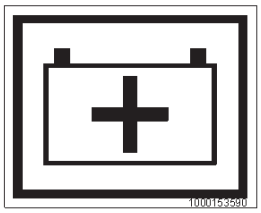


Fig. 11: Positive pole

Description

Indicate that these wiring connections are connected with the positive pole of the battery.

Location

In the engine compartment near the battery main switch.

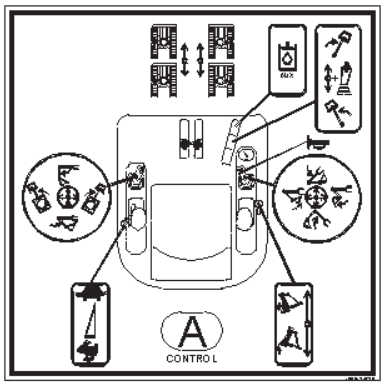


Fig. 12: Control pattern A

Description

Explains the functions of the joysticks (control pattern "A") and of other controls. If the machine is fitted with the "selection valve" check before starting the machine which control pattern you have chosen!

Location

On the cab roof.

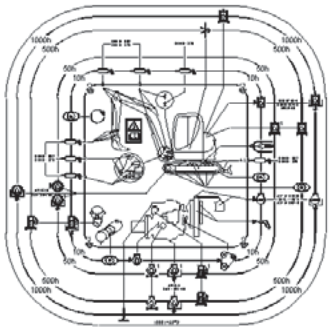


Fig. 13:

Description

Shows the main service intervals. For complete list of service interval see the maintenance section of this Operator's Manual.

Location

Cabin: On the rear window.
Canopy: On the right canopy wall.

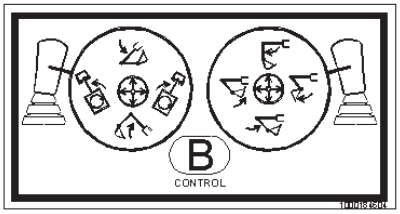


Fig. 14: Control pattern B (Opt.)

Description

Explains the functions of the joysticks (control pattern "B").
Check before starting the machine which control pattern you have chosen!

Location (Opt.)

On the cab roof.

Safety Labels

<u>Always</u> follow the instructions on the safety labels!

Fig. 15: Tighten tracks

Description

The label means the following:

- Potential high pressure grease discharge from the track tension adjustment fitting.
- Always read the maintenance section of this Operator's Manual before relaising or tightening the tracks to avoid potential injury from ejected grease.

Location

On the undercarriage near the opening to insert the grease fitting.

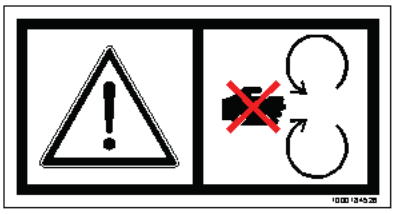


Fig. 16: Prohibitory label

Description

Stop the engine before opening or dismantling the safety devices (like engine hood, fan guard,...)

Location

On the chassis near handle engine cover.

Description

This safety label warns of the following hazards:

Cutting hazard. Cooling fan can cut when rotating. Stop engine before working on the engine or cooling system.

Entanglement hazard. You can be pinched or entlanged in the engine V-belt when the engine is running. Stop engine before working on the engine.

Hot surface! Do not touch.

Burn hazards. Contents are under pressure. Do not remove cap.

Location

In the engine compartment.

Fig. 17: Rotating V-belt

Description

Hot surface! Do not touch.

Location

Engine comportment near exhaust system.

Fig. 18: Hot surfaces

Fig. 19: Hydraulic oil tank under pressure

Description

The tank is hot and under pressure!

- Allow the fluids to cool down!

  Carefully and slowly open the cover only after the cooler has fluids down, to allow the pressure to escape.

Location

On the top of the tank cover.

Fig. 20: Front window

Description

Pinch point hazard. Always use the handles to open and close the front window.

Always fasten the front window with both locks.

Location

On the front window.

Fig. 21: Read the operation manual

Description

Attention! Read and understand the Operator's Manual before starting, operating, adjusting, maintaining, or repairing the machine.

Location

On the b-pillar in the cab.

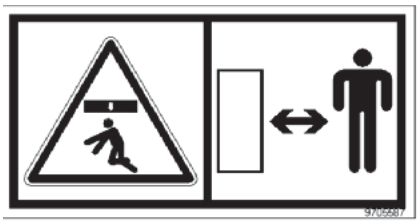


Fig. 22: Keep distance 1

Description

Crushing hazard. Bystanders must stay clear of the machine when it is being operated.

Location

On either side of the boom structure.

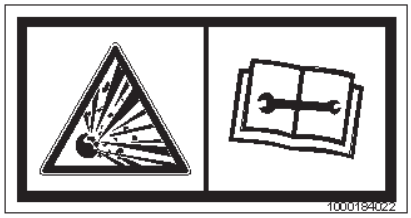


Fig. 23: Under pressure

Description

Accumulator is under high pressure. Always read Service Manual before maintaining or repairing the machine.

Location

On the accumulator.

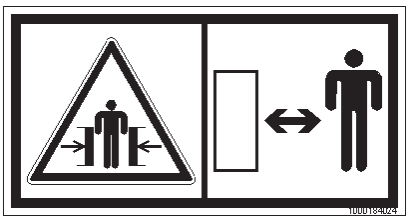


Fig. 24: Keep distance 2

Description

Crushing hazard. Bystanders must stay clear of the machine when it is being operated.

Location

On the left and right side of the boom swing console on the chassis.

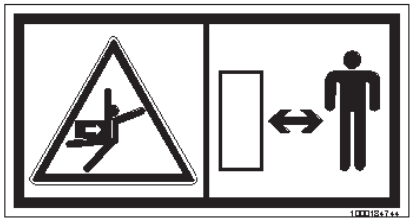


Fig. 25: Keep distance 3

Description

Collision hazard. Bystanders must stay clear of the machine when it is being operated.

Location

On the rear window.

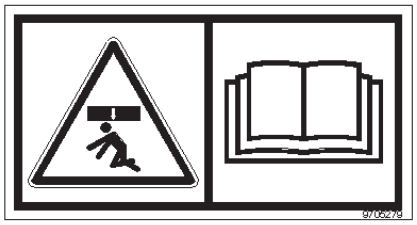


Fig. 26: Cab tiliting

Description

Crushing hazard. Read and understand the instructions in the Operator's Manual before tilting the
cabin.

Location

On the left front of the chassis.

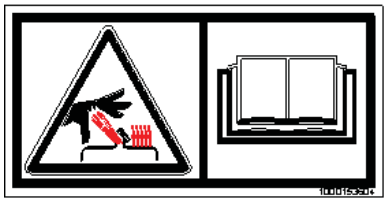


Fig. 27:

Description

The tank is hot and under pressure under high pressure. Allow the tank to cool down. Carefully and slowly open the breather screw only after cooled down, to allow the pressure to escape. Wear safety googles and gloves when opening the breather screw.

Location

In th engine compartment.

Fig. 28: Read manual before maintaining or repairing

Description

Attention! Remove starter key and read the Service Manual before servicing the machine.

Attention! Before leaving the machine lower all equipment to ground, remove the key and lock the controls.

Read and understand the instructions in the Operator's Manual.

Location

On the b-pillar in the cab.

Fig. 29: Operator's seat and fasten seat

Description

Risk of being thrown from the machine. Operate the machine only from the operator's seat.

Fasten seat belt when operating the machine.

Operate within stability limits of machine to avoid tipping over.

Read the Operator's Manual.

Location

On the b-pillar in the cab.

1.10 Fire extinguisher

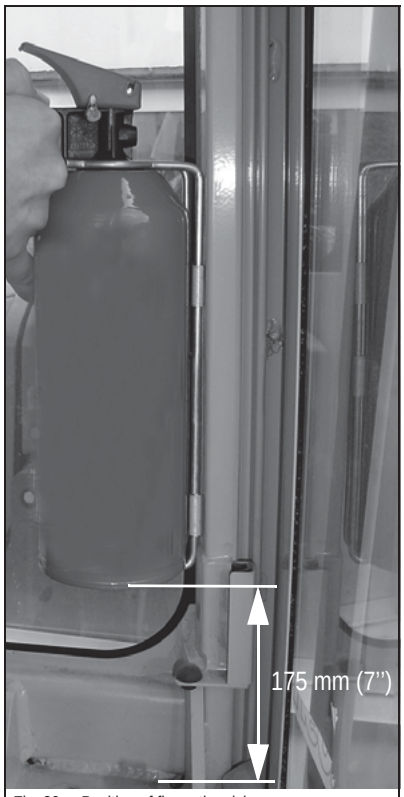


Fig. 30: Position of fire extinguisher

The fire extinguisher is not supplied with the machine.

☞ *Retrofitting a fire extinguisher according to NFPA must be performed by an authorized Wacker Neuson service center.*

☞ *Location:*

➥ In the cab, on the left in driving direction behind the seat (see *Fig. 30*).

☞ *Installation:*

- Mount the fire extinguisher on the cab profile according to the manufacturer's instructions.
- The maximum hole diamenter is 6mm (0.24")
- The maximum number of holes is two.

Important!

Check the fire extinguisher at regular intervals, also make sure it is safely mounted.

2 Safety Information

2.1 Safety Symbols Found in this Manual

This is the safety alert symbol. It is used to alert you to potential personal hazards.

- Obey all safety messages that follow this symbol.

Danger!

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

☞ *Obey all safety messages that follow this symbol to avoid injury or death*

- Aufzählung zur Vermeidung

Warning!

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

☞ *Obey all safety messages that follow this symbol to avoid possible injury or death.*

Caution!

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

☞ *Obey all safety messages that follow this symbol to avoid possible minor or moderate injury.*

NOTICE

Used without the safety alert symbol. NOTICE indicates a situation which, if not avoided, could result in property damage.

Important!

"Important" identifies an instruction that, when followed, provides for a more efficient and economical use of the machine**.**

Environment!

Failure to observe the instructions identified by this symbol can result in damage to the environment. The environment is in danger if environmentally hazardous material, such as waste oil, is not subject to proper use or disposal.

2.2 Warranty

Warranty claims must be submitted to your Wacker Neuson dealer only.

2.3 Designated Use

1. In accordance with its designated use, the machine may be used ONLY for moving earth, gravel, coarse gravel or ballast and rubble. It may also be used for working with the attachments approved in the “Fields of Application” chapter.
2. No other applications are designated for the use of the machine. Wacker Neuson will not be liable for damage resulting from use other than mentioned above. The user alone will bear the risk.
3. “Designated use” also includes observing the instructions set forth in this Operator’s Manual and observing the maintenance schedule.
4. Machine safety can be negatively affected by performing machine modifications without proper authority and by using spare parts, equipment, attachments and optional equipment which have not been checked and released by Wacker Neuson. Wacker Neuson will not be liable for damage resulting from unapproved parts or unauthorized modifications. Wacker Neuson shall not be liable for personal injury and/or damage to property caused by failure to observe the safety instructions on labels and in this Operator’s Manual, and by the negligence of the duty to exercise due care when:
   - transporting the machine
   - operating the machine
   - servicing the machine and performing maintenance work
   - repairing the machine

   This is also applicable when special attention has not been drawn to the duty to exercise due care.
5. Read and understand this Operator’s Manual before starting up, moving, operating, servicing or repairing the machine. Observe all safety instructions.
6. The machine shall NOT be used for transport jobs on public roads!

2.4 Preparing to Use the Machine

Conditions for use

- The machine has been designed and built in accordance with state-of-the-art standards and recognized safety regulations. Nevertheless, its use can constitute a risk to the user or to third parties, or cause damage to the machine and to other material property.
- Read and follow this Operator’s Manual and other manuals that accompany the machine.
- The machine must only be used in accordance with its designated use and the instructions set forth in this Operator’s Manual.
- The machine must only be used by qualified operators who are fully aware of the risks involved in operating the machine.
- Do not start, move or operate a damaged or defective machine. Any mechanical dysfunctions, especially those affecting the safety of the machine, must be repaired immediately. Only qualified technicians shall determine how to move a damaged or defective machine to a safe place for diagnoses and repair.
- The user/owner commits himself to operate and keep the machine in serviceable condition and, if necessary or required by law, to require the operating or servicing persons to wear protective clothing and safety equipment

User training and knowledge

- Always keep this Operator’s Manual and other manuals that accompany the machine in their storage compartment provided in the operator station on the machine. Immediately replace an incomplete or illegible Operator’s Manual.

- All persons working on or with the machine must read and understand the safety information in this Manual before beginning work. This applies especially to persons working only occasionally on the machine, such as performing set-up or maintenance tasks.
- Follow, and instruct the operator in, legal and other mandatory regulations relevant to accident prevention and environmental protection.These may include handling hazardous substances, issuing and/or wearing personal protective equipment, or obeying traffic regulations.
- The user/owner must regularly ensure that all persons entrusted with operation or maintenance of the machine are working in compliance with this Operator's Manual and are aware of the risks and safety factors of the machine.

Preparing for use

- Before starting the machine, ALWAYS inspect the machine to make sure that it is ready for safe work and travel operation.
- Wear close-fitting work clothes that do not hinder movement. Tie back long hair and remove all jewelry (including rings).

Modifications and spare parts

- NEVER make any modifications, additions or conversions to the machine and its superstructures (for example, cab, etc.), or the machine's attachments, without the approval of Wacker Neuson! Such modifications may affect safety and/or machine performance. This also applies to the installation and adjustment of safety devices and valves, as well as to welding work on load-bearing elements.
- Spare parts must comply with the technical requirements specified by Wacker Neuson. Contact your Wacker Neuson dealer for assistance.

2.5 Operator and Technician Qualifications and Basic Responsibilities

User/owner responsibility

- Only allow trained and experienced individuals to operate, maintain, or repair the machine. NEVER let unauthorized or underaged persons operate the machine.
- Clearly and unequivocally define the individual responsibilities of the operator and technician for operation, maintenance, and repair.
- Define the machine operator's responsibilities on the job site and for observing traffic rules. Give the operator the authority to refuse instructions by third parties that are contrary to safety.
- Do not allow persons to be trained or instructed by anyone other than an experienced person. Also, NEVER allow persons taking part in a general training course to work on or with the machine without being supervised by an experienced person.

Repair person qualifications

- Work on the electric system and equipment, on the undercarriage and the steering and brake systems shall be performed only by skilled individuals who have been specially trained for such work.
- Work on the hydraulic system of the machine must be performed only by a technician with special knowledge and experience in hydraulic equipment.

2.6 Safety instructions Regarding Operation

Preparing for use

- Keep the machine clean. This reduces the risk of fire hazards (such as from combustible materials like rags), and reduces the risk of injury or operational accidents that can be caused by dirt build-up on the drive pedals or foot rests and steps.
- Observe all safety, warning, and informational signs and labels on the machine.

- Start and operate the machine from the seat only.
- The operator must sit in the seat, fasten and adjust the seat belt before putting the machine into operation.
- Always adjust the seat position before starting work. Never change the seat position when operating the machine!
- Make sure that all safety devices are properly installed and functional before starting work.
- Before putting the machine/attachment into operation (startup/moving), make sure that no one in the immediate vicinity will be at risk.

Starting and stopping

- Perform startup and shutdown procedures according to this Operator's Manual.
- Observe all indicator lights.
- Do not use starting fluid (for example, ether) especially in those cases in which a heater plug (intake air pre-heating) is used at the same time.
- Make sure the control levers, the signaling and the light systems are functional before operating the machine, and also before restarting after an interruption of work.
- Fold up the control lever base before releasing the seat belt in order to avoid unintentional operation.

Work area awareness

- Familiarize yourself with the surroundings and circumstances of the work site before beginning work. Be aware of:
  - obstacles in the working and traveling area
  - the soil weight-bearing capacity
  - any necessary barriers separating the work site from public roads
- Always keep at a safe distance from the edges of building pits and slopes.
- Look out for the following when working in buildings or in enclosed areas:
  - height of the ceiling/clearances
  - width of entrances
  - maximum load of ceilings and floors
  - sufficient room ventilation—danger of carbon monoxide poisoning!
- Observe the danger area. See "Danger area awareness".
- Always use the rearview mirror.
- Always switch on the work lights in conditions of poor visibility and after dark. However, make sure that users of public roads will not be temporarily blinded by the work lights.
- Provide additional lighting of the work area if the lights of the machine are not sufficient for performing work safely.

Danger area awareness

- The danger area is the area in which persons are in danger due to the movements of the machine, work equipment, additional equipment, or material.
- The danger area also includes the area affected by falling material, equipment or construction debris. The danger area must be extended by 0.5 m (20 inches) in the immediate vicinity of buildings, scaffolds, or other elements of construction.
- Seal off the danger area if it is not possible to keep a safe distance. Stop work immediately if persons do not leave the danger area in spite of warnings!

Operating the machine

- Never operate the machine if you are standing on the ground.

- Operate the machine ONLY when you are seated and you have fastened your seat belt. Stop the engine before releasing the seat belt.
- During operation on slopes, drive or work uphill or downhill. If traveling across a slope cannot be avoided, bear in mind the tilting limit of the machine. Always keep the attachments/work equipment close to the ground. This also applies to traveling downhill. When traveling or working across a slope, the load must be on the uphill side of the machine.
- On sloping terrain, adapt your travel speed to the prevailing ground conditions.
- Never get on or off a moving machine, and do not jump off the machine.
- The travel control levers require practice before a user becomes familiar with the control response. Therefore, adjust the travel speed to your abilities and the surroundings.
- When traveling across a slope with the telescopic undercarriage extended, position the boom facing down the slope, and the bucket about 10–20 cm (4–8 inches) above the ground. This will help to minimize the possibility of personal injuries and equipment damage caused by a hydraulic hose/connector failure in the telescopic undercarriage actuation system. The weight of the machine will cause the undercarriage to retract to the narrow configuration if hydraulic system pressure decreases due to lost fluid.

Carrying passengers

- Do not transport people on the machine or in the attachment.
- Never install a man basket or a working platform to the machine.

Mechanical integrity

- Take the necessary precautions to make sure the machine is used only when in a safe and serviceable state.
- Operate the machine ONLY if all protective and safety-oriented devices (ROPS, removable safety devices, soundproofing elements, exhausters, etc.) are in place and fully functional.
- Check the machine before entering the cab to operate the machine for visible damage and defects. Report any changes, including changes in the machine's function and response, to your supervisor immediately!
- If the machine is functioning unpredictably, stop the machine immediately, lock it, and report the malfunction to a qualified tecnician or supervisor. Safety-relevant damage or malfunctions of the machine must be rectified immediately.

Traveling

- When traveling on or in public areas, observe all applicable regulations. Make sure beforehand that the machine is in compliance with these regulations.
- Installed work lights must NOT be used for travel.
- When crossing underpasses, gates, bridges and tunnels, or when passing under overhead lines, make sure the clearance height and width are sufficient to avoid contact.
- Empty the bucket before traveling on public roads.

2.7 Applications with Lifting Gear

General information

- Craning applications are procedures involving raising, transporting and lowering loads with the help of slings and load-securing devices (for example, ropes and chains). In doing so, the help of persons is necessary for securing and detaching the load. This applies, for example, to lifting and lowering pipes, shaft rings or containers.

- The excavator may be used for applications with lifting gear ONLY if the prescribed safety devices are in place and functional.

Safety criteria

- When used for craning applications, the machine must meet the following criteria:
  - Proper equipment for slinging and securing the load
  - Proper lift capacity per tables in this Operator's Manual
- In addition, a safe load indicator is required for machines bearing loads of over 1000 kg (2205 lbs.) or an overturning moment of over 40000 Nm (29,477 ft.lbs.).

Conditions for safe operation

- Secure the load to prevent it from falling or slipping. Install an OSHA-approved load hook after removing the bucket or other approved attachment to provide a secure attachment point for the lifting sling, chain, or cable.
- Have loads fastened, and crane operators instructed, by a qualified person competent in raning operation and standard hand signals. The person giving instructions to the operator must be within sight of the operator during load attachment and load disconnection.
- The load shall be kept as close to the surface as practical to accomplish the craning operation. The operator shall gently move the controls and machine to avoid swing or oscillating motion of the load. A tether line is recommended to dampen the tendency of the load to swing or oscillate during the craning operation.
- Machine travel with a raised load must be done very carefully on a level surface moving very slowly to avoid sudden motion that can cause swinging or oscillating motion of the load.
- The person(s) attaching the load to the excavator shall approach only if the operator is in visual contact with them. No one shall approach the machine or attempt to attach the load until the excavator has stopped and the operator has signaled for the attachment.

2.8 Attachments

General information regarding attachments

- Prior to traveling remove all attachments which cannot be secured in compliance with the legal regulations of your country.
- The machine operating characteristics including steering vary with different option attachments and counter weights. The operator shall be familiar with the variations and act accordingly.
- Use only approved attachments and connecting hardware.
- Attach and remove attachments carefully to avoid damage and potential injury.
- Attach and remove attachments carefully to avoid damage and potential injury.
- Confirm that the attachment has been properly and securely attached to the machine according to the instructions. Before using the attachment, the operator shall confirm that the attachment performs correctly in response to control actuation.
- Do not attach the attachment with the engine running and the machine moving.
- Before putting the machine/attachment into operation (startup/moving), make sure that no one in the immediate vicinity will be at risk.
- Before leaving the seat, always secure the machine against unintentional movement and unauthorized use. Lower the attachments to the ground.

Installation notes

- Couple and uncouple hydraulic hoses/lines (hydraulic quick couplers) only if the engine is stopped and the controls actuated to release the hydraulic pressure remaining in the circuit. Follow the operating instructions for releasing the pressure.

- Operate the machine only if all protective devices for the attachments have been installed and are functional, and if all brake, light and hydraulic connections have been connected.
- If an optional attachment is installed, make sure that all lights and associated indicator light lamps are installed and functional.
- The lock pin of the quick hitch attachment shall be visible at each end of the pin to confirm that the attachment is securely locked in place. The operator shall perform a check operation to confirm the latching integrity before operating at a production pace.
- Prior to fitting attachments to the stick (the mobile extension of the boom), secure the control lever of the hydraulic control unit against unintentional movement. Raise the left arm rest to avoid unintentional activation for the ISO/SAE operating mode. Avoid actuating the right hand control if the alternative control mode is selected.

2.9 Transport and Towing

Towing

The machine must be towed, loaded and transported according to the procedures described within this Operator's Manual. See section see *3.23 Towing the track excavator* (page 36).

Transporting

- The transporting vehicle must have sufficient load capacity and platform size to safely transport the machine. Refer to section 6 of this manual to determine the physical characteristics of the machine before loading and transporting.
- Use OSHA-approved straps, chains or cables to securely fastened the machine to the surface of the transport.
- Use the tie down points provided on the load surface of the transport.
- Attach the tie down devices to the excavator at the designated tie down points.
- Confirm that the excavator tie down procedures will prevent sideways, forward, rearward and upward motion of the excavator in the event the transport vehicle is involved in an incident or sudden avoidance maneuver.

2.10 Safety Guidelines for Maintenance

General maintenance notes

- Adhere to prescribed intervals or those specified in this Operator's Manual for routine checks/inspections and maintenance work.
- For inspection and maintenance work, ensure that all tools and workshop equipment are capable of performing the tasks prescribed. Do not use defective or broken tools. Use certified measuring devices that are routinely calibrated for accuracy (torque wrench, pressure gauge, ammeter, etc.).
- Replace hydraulic hoses within stipulated and appropriate intervals even if no safety-relevant defects have been detected.
- Recycle scrapped parts and drained fluids according to environmental and hazardous material requirements. To avoid fire and health hazards, dispose of soiled shop towels by approved methods.
- Always tighten any screws, electrical connections, or hose connections that may have been loosened during maintenance.
- Upon completion of the maintenance and repair work, immediately refit and check any safety devices removed for set-up or maintenance purposes.

Personal safety measures

- Brief the technician and the operator before beginning maintenance or repair work. Appoint someone to supervise the activities.
- Always work in groups of two when diagnosing a machine problem requiring the engine to be running. Both persons must be trained on the machine—one person must be seated on the seat and maintain visual contact with the other person.
- Observe the specific safety instructions in the Maintenance section of this Operator's Manual.
- Always keep a safe distance from all rotating and moving parts, for example, fan blades, V-belt drives, PTO shaft drives, fans, etc.
- Before starting work on the machine, always ensure safe blocking/support.
- Apply special care when working on the fuel system due to the increased danger of fire.
- Engine and exhaust system become very hot during operation and require cool-down time after machine is shut off. Avoid contact with hot parts. Wait for the machine to cool before touching components.
- Retainer pins can fly out or splinter when struck with force. Avoid striking the pins during operation, repair, or maintenance.
- Do not use starting fluid (for example, ether), especially in those cases in which a heater plug (intake air pre-heating) is used at the same time.

Preparing for maintenance and repair work

- Prior to performing repair and maintenance work, always attach a warning label such as "Repair work—do not start machine!" to the control elements as a precautionary measure.
- Observe the starting andstopping procedures set forth in this Operator's Manual. This applies to any work concerning the operation, conversion or adjustment of the machine and its safety-oriented devices, or any work related to inspection and maintenance.
- Prior to performing assembly work on the machine, stabilize the area under repair and use proper lifting and support devices to change parts weighing more than 9 kg (20 lbs.).
- Perform maintenance work ONLY if:
  - the machine is positioned on firm and level ground
  - secured against unintentional movement
  - all hydraulically movable attachments and working equipment have been lowered to the ground
  - if the engine is stopped
  - if the starting key has been removed
  - the pressure accumulator is discharged
- Perform maintenance work beneath a raised machine, attachments or additional equipment ONLY if a safe and secure support has been provided. The use of hydraulic rams or jacks as the sole method of support does NOT sufficiently secure raised machines or equipment/attachments!

Performing maintenance and repairs

- Observe the adjustment, maintenance and inspection activities and intervals set forth in this Operator's Manual, including information on the replacement of parts and partial equipment. These activities must be performed only by qualified personnel.
- Disconnect the negative battery terminal when working on the electrical system.
- Do not allow the machine to be serviced, repaired, or test-driven by unauthorized personnel.
- If maintenance with the engine running cannot be avoided, lower the stabilizer blade and raise the control lever base.

- Wear a safety harness when performing elevated maintenance work. Keep all handles, steps, handrails, platforms, landings, and ladders free from dirt, snow and ice.
- Always use specially designed or otherwise safety-oriented ladders and working platforms to perform overhead assembly work. NEVER use machine parts or attachments/superstructures as a climbing aid!
- Do not use the work equipment as lifting platforms for persons.
- In accordance with this Operator's Manual and instructions for the respective assembly, release the pressure in all system sections and pressure lines (hydraulic system) before performing any maintenance work.

2.11 Special Hazards

Battery

- In case of a frozen battery or of an insufficient electrolyte level, do not try starting the machine with battery jumper cables. The battery can burst or explode.
- Batteries contain caustic sulphuric acid. When handling the battery, observe the specific safety instructions and regulations relative to accident prevention.
- A volatile oxyhydrogen mixture forms in batteries during normal operation and especially when charging. Always wear gloves and eye protection when working with batteries.
- Starting the machine with a battery jumper cable can be dangerous if performed improperly. Observe the safety instructions regarding the battery.

Tracks

- Repair work on the tracks must be performed only by trained technical staff or by an authorized workshop.
- Defective tracks reduce the machine's operational safety. Therefore, check the tracks regularly for cracks, cuts or other damage.
- Check track tension at regular intervals.

Electric energy

- Use only original fuses with the specified current rating.
- In case of electrical system malfunctions, switch off the machine immediately, disconnect the battery (by using the battery master switch), and perform troubleshooting procedures.
- When working with the machine, maintain a safe distance from overhead electric lines! If work must be performed close to overhead lines, the equipment and attachments must be kept well away from them.
- If the machine comes into contact with a live wire:
  - Immediately drive the machine out of the danger area.
  - Warn others against approaching and touching the machine.
  - Do not leave the machine until the line that has been touched or damaged has been safely de-energized!
- Make sure that work on the electric system is performed only by a technician with appropriate training, in accordance with applicable electrical engineering codes.
- Inspect and check the electrical equipment of the machine at regular intervals. Defects such as loose connections or scorched cables must be repaired immediately.
- Observe the operating voltage of the machine/attachments. The voltages must be compatible (12 volts) and confirm that an appropriate fuse or circuit breaker is incorporated in the system to prevent damage from malfunction or short circuit.
- Always remove the grounding strap from the battery when working on the electric system.

Hydraulics

- Check all lines, hoses, and threaded couplers and fittings regularly for leaks and obvious damage. Repair any damage and leaks immediately. Splashed oil can cause injury and fire!

Noise

- Close all doors and windows if practical.
- Wear ear protection. This is especially important when performing hammer operations or working in enclosed areas.

MSDS

- When handling oil, grease, and other chemical substances such as battery electrolyte or hydraulic fluid, observe the product-related safety regulations (Material Safety Data Sheet (MSDS)).

2.12 Safety Guidelines while using Internal Combustion Engines

Warning!

Internal combustion engines present special hazards during operation and fueling. Failure to follow the warnings and safety guidelines could result in severe injury or death.

☞ *Read and follow the warning instructions in the engine owner's manual and the safety guidelines below.*

Running the engine

When running the engine:

- Keep the area around the muffler and exhaust pipe free of flammable materials.
- Check the fuel lines and the fuel tank for leaks and cracks before starting the engine. Do not run the machine if fuel leaks are present or the fuel lines are loose.

When running the engine:

- Engine exhaust CAN KILL YOU IN MINUTES. Engine exhaust contains carbon monoxide. This is a poison you cannot see or smell. Never run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided.
- Do not smoke while operating the machine.
- Do not run the engine near open flames.
- Do not touch the engine or muffler while the engine is running or immediately after it has been turned off.
- Do not operate a machine when its fuel cap is loose or missing.
- Do not remove the radiator cap when the engine is running or hot. The radiator fluid is hot and under pressure, and may cause severe burns!

Fueling the engine

When fueling the engine:

- Clean up any spilled fuel immediately.
- Refill the fuel tank in a well-ventilated area.
- Replace the fuel tank cap after refueling.

When fueling the engine:

- Do not smoke.
- Do not refuel a hot or running engine.
- Do not refuel the engine near an open flame

3 Operation

This chapter describes the controls, and contains information on the function and handling of the indicator light light and controls in the cab.

The pages stated in the table refer to the description of the controls.

A combination of digits, or a combination of digits and letters (e.g. 40/**18** or 40/**A**) used for identifying the control elements, means:
fig. no. 40/control element no. 18 or position A in fig. no. 40

Figures carry no numbers if they are placed to the left of the text.

The symbols used in the description have the following meanings:

- This symbol stands for a list
  - Subdivision within lists or an activity. Follow the steps in the recommended sequence

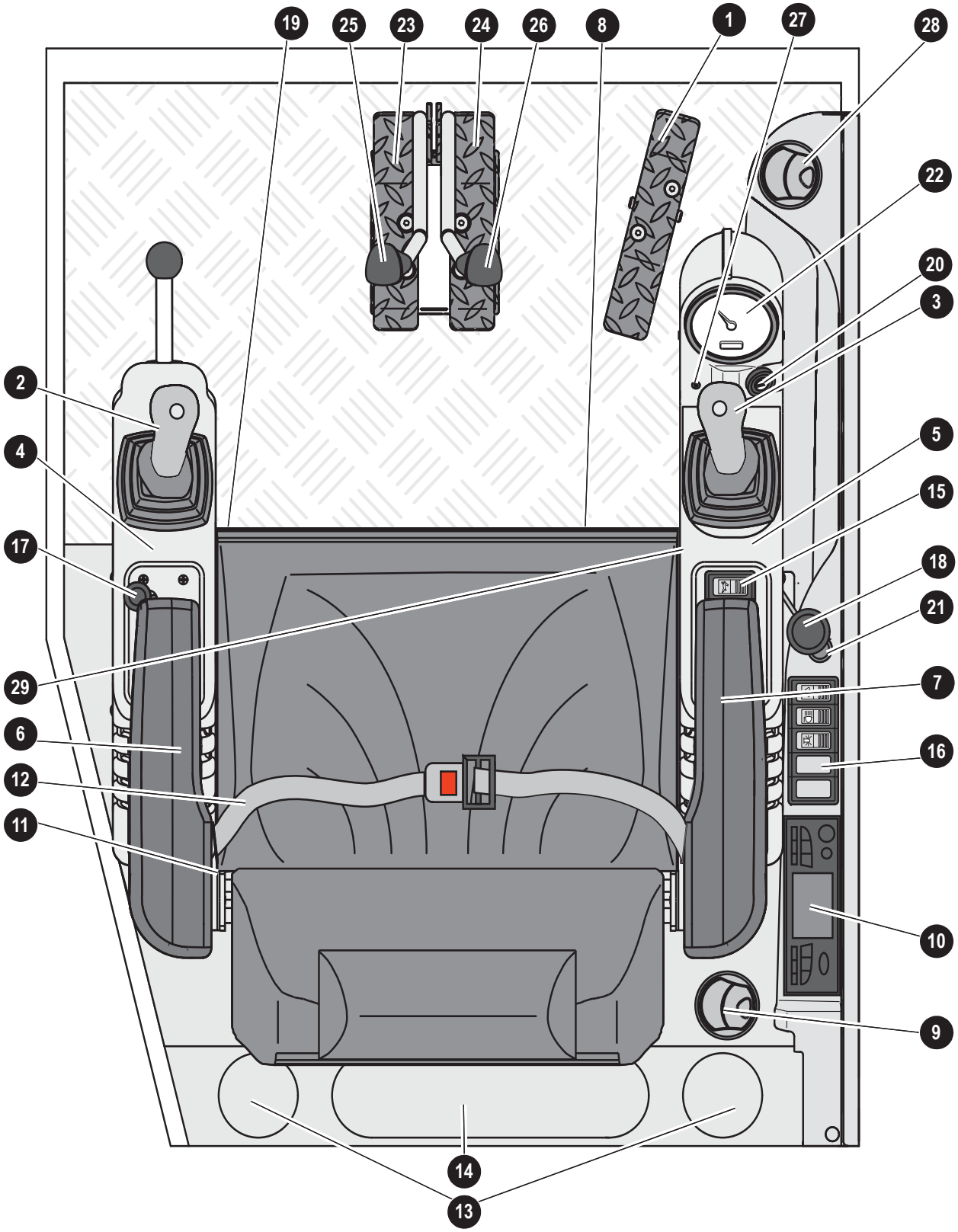
☞ *This symbol requires you to perform the activity described*

➥ Description of the effects or results of an activity

n. s. = not shown

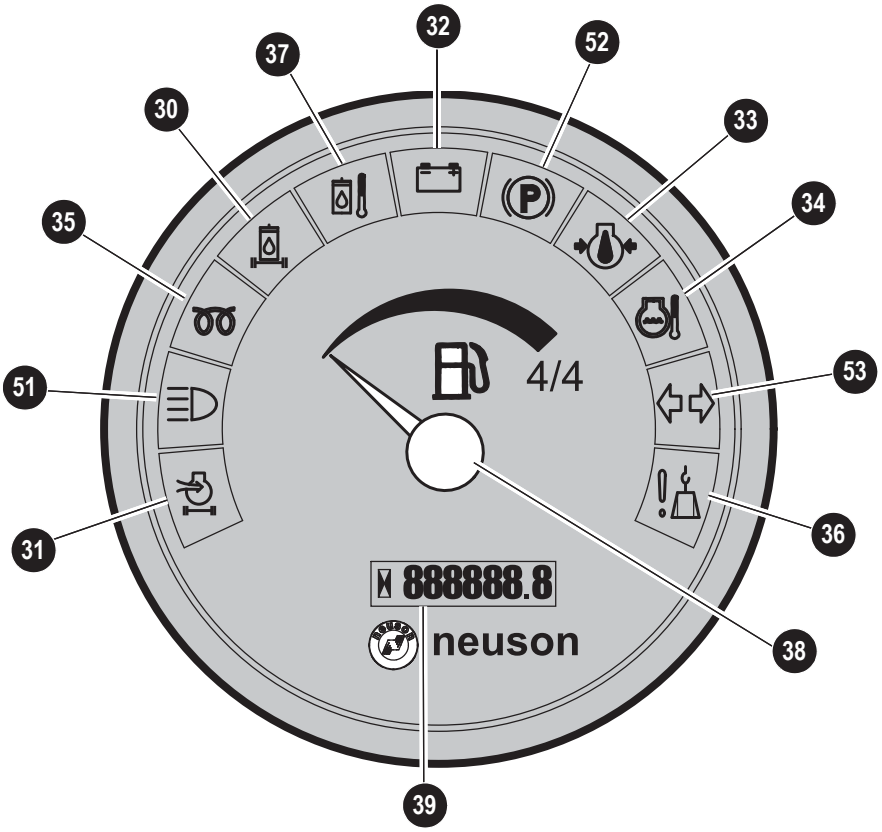
“Opt” = option

Stated whenever controls or other components of the machine are installed as an option.

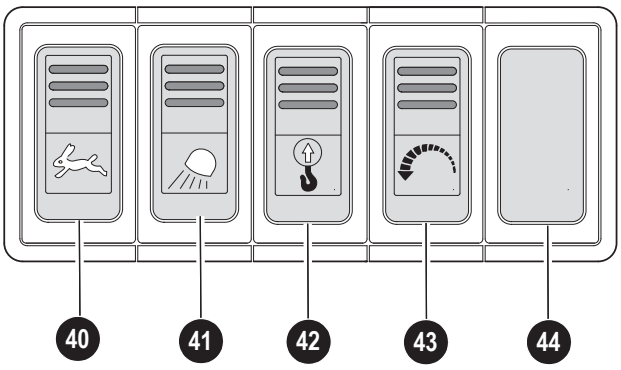

19
25
23
24
26
8
1
27
28
22
20
3
2
4
5
15
17
18
21
29
7
6
16
12
11
10
9
14
13

3.1 Cab overview

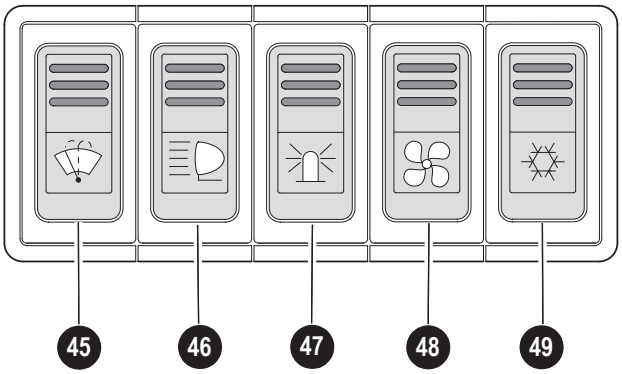
Pos.	Description	For more information see page
1	Hammer pedal	3-42
2	Control lever (left)	3-45
3	Control lever (right)	3-45
4	Control lever base (left)	
5	Control lever base (right)	
6	Armrest (left)	
7	Armrest (right)	
8	Lever (horizontal seat adjustment)	3-27
9	Air vent (rear window, on the right)	3-23
10	Radio (option)	
11	Seat (backrest adjustment)	3-27
12	Seat belt (lock)	3-28
13	Cup holder	
14	Bracket (storage box for documents)	
15	Console switch panel	3-22
16	Cab switch panel	3-22
17	Throttle	3-9
18	Stabilizer blade lever	3-20
19	Fuse box	6-3
20	Preheating start switch	3-9
21	12V power outlet	
22	Round display element	3-5
23	Travel pedal (left)	3-16
24	Travel pedal (right)	3-16
25	Travel lever (left)	3-16
26	Travel lever (right)	3-16
27	Travel interlock status indicator light (option)	3-13
28	Front air vent	3-23
29	Travel interlock emitter/receiver unit	3-13



Control element on control console

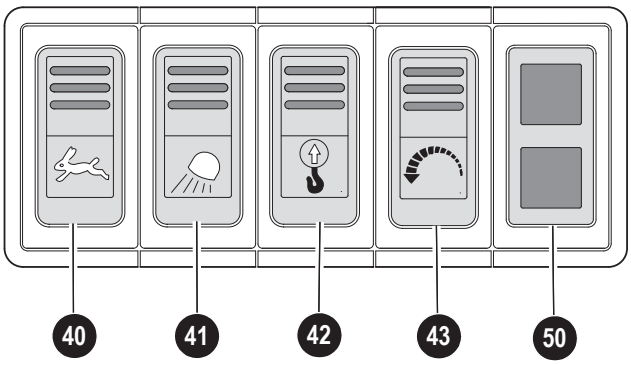


Control element on cab wall

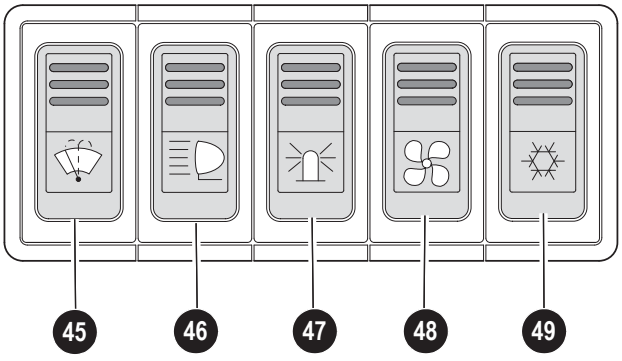


Control elements for proportional controls version (option):

Control element on control console



Control element on cab wall



3.2 Instrument panel overview

Pos.	Description	For more information see page
30	Indicator light (red) – hydraulic oil filter	3-10
31	Indicator light (red) – air filter	3-10
32	Indicator light (red) – alternator charge function	3-10
33	Indicator light (red) – engine oil pressure	3-10
34	Indicator light (red) – coolant temperature	3-11
35	Indicator light (yellow) – cold starter	3-11
36	Indicator light (red) – safe load indicator light	3-11
37	Not assigned	
38	Fuel level indicator	3-11
39	Hour meter	3-11
40	High speed	3-17
41	Working light	3-22
42	Safe load indicator (option)	3-65
43	Automatic engine speed setting (option)	3-65
44	Not assigned	
45	Washer system	3-24
46	Roof lights	3-22
47	Rotating beacon	3-23
48	Ventilation	3-23
49	Air conditioning (option)[1]	3-24
50	Proportional control status indicator (option)	3-47
51	Not assigned	
52	Not assigned	
53	Not assigned	

1. If equipped with air conditioning and proportional controls, switch assignment is the same as without proportional controls. The status indicator is then installed in the control console on the right.

3.3 Operating the Excavator

Warning!

Slipping or falling hazard when entering or leaving the operator station.

☞ *Inspect and confirm that the handholds and steps are undamaged and free of mud and debris.*

☞ *Always use a three point technique with both hands and one foot supporting entry and exit at all times.*

☞ *Face the operator station when using the handholds and steps to enter and exit the machine.*

☞ *Only use the steps and handholds provided when entering and leaving the cab.*

☞ *Never use the controls or movable lines and cables as handholds.*

☞ *Never get on or off a moving machine!*

☞ *Do not jump off the machine!*

NOTICE

Refer to the corresponding load diagrams for the boom.

Putting the machine into operation for the first time

Important information

- The machine may be put into operation by a trained operator only – *see chapter 2.5 Operator and Technician Qualifications and Basic Responsibilities* on page 2-4 and – *see chapter 2 Safety Information* on page 2-1 of this Operator's Manual.
- The operator must have read and understood this Operator's Manual before putting the machine into operation.
- The machine must only be used in serviceable condition in accordance with its designated use and the instructions set forth in the Operator's Manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the machine.
- Go through the “Starting” checklist in the following chapter.

Running-in period

Operate the machine at light loads during the first 50 hours of operation.

The future performance and service life of the machine are heavily dependent on the observance of the following recommendations during the running-in period.

- Do not change engine revs abruptly.
- Avoid using the machine under heavy loads and/or at high speeds.
- Avoid abrupt acceleration, braking and changing driving direction.
- Do not run the engine at high speed for extended periods.
- Strictly observe the maintenance schedules in the – *see chapter 5.17 Maintenance plan (overview)* on page 5-34.

Check lists

The checklists below are intended to assist you in checking and monitoring the machine before, during and after operation.

These checklists cannot claim to be exhaustive; they are merely intended as an aid for you in fulfilling your duties as a conscientious operator.

The checking and monitoring jobs listed below are described in greater detail in the following chapters.

If the answer to one of the following questions is NO, first rectify the cause of the fault before starting or continuing work.

Starting checklist

Check the following points before putting the machine into operation or starting the engine:

No.	Question	✔
1	Enough fuel in the tank? (➠ *5-2*)	
2	Coolant level OK? (➠ *5-8*)	
3	Water drained from the fuel prefilter? (➠ *5-4*)	
4	Engine oil level OK? (➠ *5-6*)	
5	Oil level in hydraulic tank OK? (➠ *5-17*)	
6	Water level in washer tank OK? (➠ *3-24*)	
7	V-belt condition and tension checked? (➠ *5-13*)	
8	Lubrication points greased? (➠ *5-24*)	
9	Tracks checked for cracks, cuts etc. ? (➠ *5-22*)	
10	Lights, signals, indicator light, warning lights and indicator light OK? (➠ *3-22*)	
11	Windows, mirrors, lights and steps clean?	
12	Control lever base folded down? (➠ *3-35*)	
13	Attachment safely locked? (➠ *3-56*)	
14	Engine cover safely locked? (➠ *3-32*)	
15	Especially after cleaning, maintenance or repair work: ➥ Rags, tools and other loose objects removed?	
16	Correct seat position? (➠ *3-26*)	
17	Seat belt fastened? (➠ *3-28*)	

Operation checklist

After starting the engine and during operation, check and observe the following points:

No.	Question	✔
1	Anyone dangerously close to the machine?	
2	Indicator light for engine oil pressure and alternator charge function gone out? (➠ *3-10*)	
3	Temperature indicator light for engine coolant in normal range? (➠ *3-11*)	
4	Drive pedals working correctly? (➠ *3-16*)	

Parking checklist

Check and observe the following points when parking the machine:

No.	Question	✔
1	Attachments lowered to the ground? (➠ *3-40*)	
2	Control lever base folded up? (➠ *3-35*)	
3	Cab locked, especially if the machine cannot be supervised? (➠ *3-31*)	
When parking on public roads:		
4	Machine adequately secured?	
When parking on slopes:		
5	Machine also secured with chocks under the tracks to prevent it from rolling away?	

3.4 Operating the excavator

Preheating/start switch

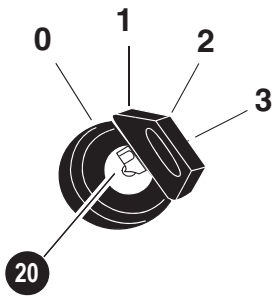


Fig. 1: Preheating start switch

Important!

The engine can only be started if the left-hand side control lever base is folded down.

Position	Function	Power consumer
0	Insert or remove the starter key	None
1	ON/drive position	All functions are operational ➥ Indicator light illuminate ➥ Shrill sound
2	Preheats the engine (10 – 15 seconds)	
3	Starts the engine	➥ Starter is actuated ➥ Indicator light go out

Throttle

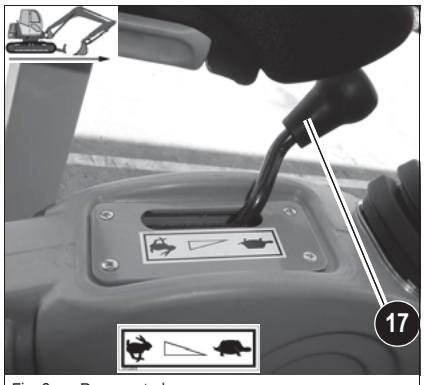


Fig. 2: Revs control

The throttle lever controls the engine speed as follows:

- Moving the throttle lever rearward („turtle“) reduces engine speed. Moving the throttle lever forward („rabbit“) increases engine speed.

Automatic speed setting (option)

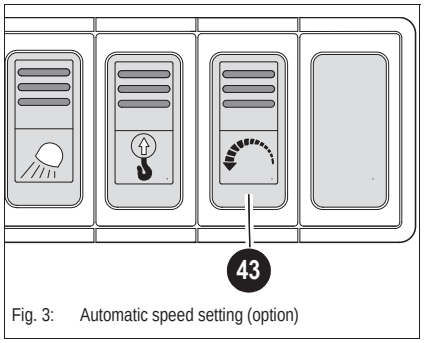


Fig. 3: Automatic speed setting (option)

Diesel engine speed is automatically reduced to idling after 5 seconds if no hydraulic functions are performed and if the automatic engine setting (option) is enabled.

As soon as a hydraulic function is performed with the control levers, diesel engine speed is automatically increased again to the engine speed adjusted with the throttle.

Automatic revs setting (option)		
ON	☞ *Press the speed symbol on switch **43***	➥ indicator light in switch **43** illuminates
OFF	☞ *Press the ribbed end of switch **43***	➥ indicator light in switch **43** goes out

indicator light and warning lights: overview

30 Indicator light (red) – hydraulic oil filter

Indicates inadmissibly high pressure in the hydraulic return line to the tank. In this case:

☞ *Have the hydraulic oil return filter checked and, if necessary, replaced by an authorized Wacker Neuson service center.*

☞ *The indicator light can illuminate briefly if the hydraulic oil is cold, but goes out again once operating temperature is reached.*

31 Indicator light (red) – air filter

Illuminates if air filter is contaminated.

☞ *Stop the machine.*

☞ *Switch off the engine immediately and check the outside and inside filters.*

32 Indicator light (red) – alternator charge function

NOTICE

Possible engine damage. The coolant pump no longer runs if the V-belt is faulty. Engine may overheat or break down.

If the indicator light light comes on with the engine running:

☞ Switch off the engine immediately.

☞ Have the cause repaired by an authorized service center.

The V-belt or the charging circuit of the alternator is faulty if the indicator light illuminates with the engine running. The battery is no longer charged.

33 Indicator light (red) – engine oil pressure

Illuminates if the engine oil pressure is too low. In this case:

☞ *Stop the machine.*

☞ *Stop the engine immediately and check the oil level.*

The indicator light illuminates when the engine is turned on and goes out as soon as the engine runs.

34 Indicator light (red) – coolant temperature

Warning!

Burn hazard. The engine coolant is under pressure at high temperature. Failure to observe specific instructions to check the coolant level in the radiator of the cooling system can cause serious injury from burns or pressure spray of the coolant.

☞ *Do not attempt to remove the radiator filler cap or drain the radiator coolant until the coolant temperature is less than 43°C (110°F).*

☞ *Stop the engine and wait at least 10 minutes or until the cap is comfortable to the touch before attempting removal.*

☞ *Wear protective gloves and eye protection.*

☞ *After determining the temperature is low enough to avoid burns, slowly turn the cap counterclockwise to the first notch stopping cap rotation. Wait to confirm that any pressure has been relieved. Depress the cap and continue to rotate the cap in a counterclockwise motion until the cap is free and can be removed.*

35 Indicator light (yellow) – cold starter

Illuminates if the key in the preheating start switch is in position **2**.

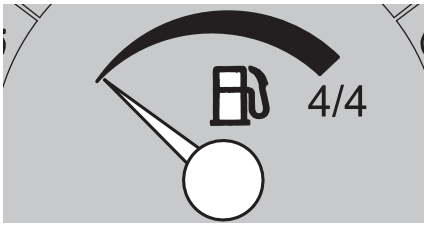
A glow plug preheats the air in the combustion chamber of the engine when the key is in this position.

36 Indicator light (red) – safe load indicator light (option)

This optical warning device tells the operator whether he has reached the admissible (pay)load or load moment according to the (pay)load diagram.

☞ *Reduce the load until the indicator goes out*

38 Fuel level indicator



Refuel immediately if the fuel level indicator reaches minimum. Otherwise the fuel system must be bled if it is run dry.

39 Hour meter

Records the engine service hours with the engine running.

3.5 Before starting the engine

☞ *Adjust seat position and rearview mirror – see Seat adjustment on page 3-26*

Important!

Adjust the seat so that the operator controls are comfortable to use and can be moved throughout the full range of motion without restriction!

☞ *Fasten your seat belt – see Seat belt on page 3-28.*

☞ *Fold the left-hand side control lever base down.*

☞ *Check whether all levers and pedals are in neutral position.*

☞ *Move the throttle to the center position (between minimum and maximum) if the engine is cold.*

3.6 Starting the engine: general

- The starter cannot be actuated if the engine is already running (start repeat interlock).
- Do not run the starter for more than 10 seconds.
- Wait about 1 minute so the battery can recover before trying again.

Procedure

NOTICE

Possible preheater damage. Actuating the preheating system too long can damage the preheater.

☞ Never preheat the engine more than 20 seconds

After you have completed the starting preparations:

☞ *Insert the starter key in preheating start switch* **20.**

☞ *Turn the starter key to position "***1***".*

☞ *Check whether all indicator lightindicator light illuminate:*

☞ *Replace defective indicator light immediately.*

☞ *Turn the starter key to position "***2***" and hold it in this position for about 5 seconds.*

➥ The intake air is preheated

☞ *Turn the starter key to position "***3***" and hold it in this position until the engine starts*

➥ If the engine does not start after 10 seconds

☞ Interrupt the start procedure and try again after about 1 minute

➥ If the engine still does not start after the second try

☞ Contact a Wacker Neuson service center for troubleshooting

➥ As soon as the engine engages:

☞ *Release the starter key*

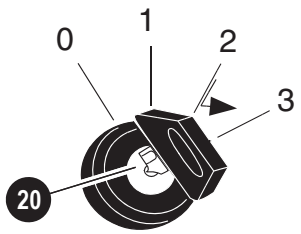


Fig. 4: Preheating/start switch

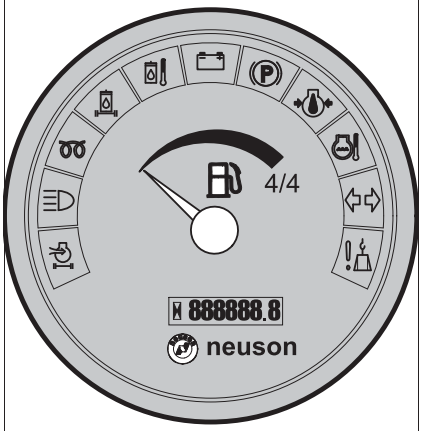


Fig. 5: Indicator light

3.7 Starting with the drive interlock (option)

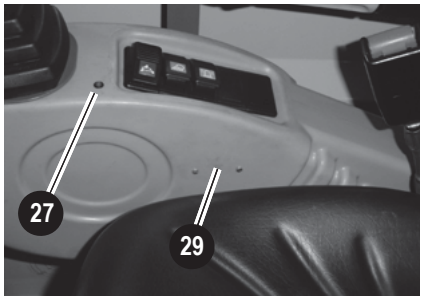


Fig. 6: Drive interlock

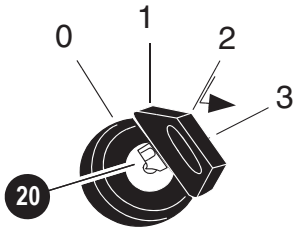


Fig. 6: Preheating/start switch

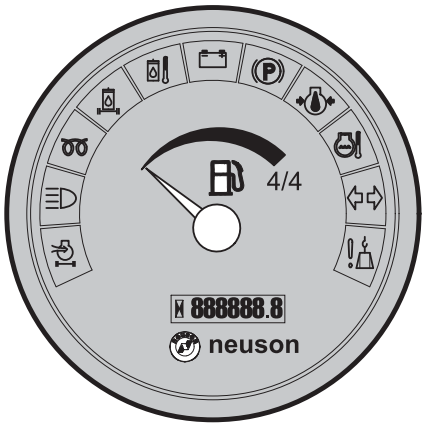


Fig. 6: Indicator light

After you have completed the starting preparations:

☞ *Approach the transponder key to about 2 cm (0.78 in.) to the emitter/receiver unit* **29.**

☞ *The machine can be started as soon as the red indicator light* **27** *goes out.*

☞ *Insert the starter key in the preheating start switch* **20** *within 30 seconds and.*

☞ *Turn the starter key at least to position "***1***".*

☞ *Check whether all indicator light come on.*

☞ *Replace defective indicator light immediately.*

☞ *Turn the starter key to position "***2***" and hold it in this position for about 5 seconds.*

➥ The intake air is preheated.

☞ *Turn the starter key to position "***3***" and hold it in this position until the engine starts.*

➥ If the engine does not start after 10 seconds.

☞ Interrupt the start procedure and try again after about 1 minute.

➥ If the engine still does not start after the second try.

☞ Contact a Wacker Neuson service center for troubleshooting.

➥ As soon as the engine runs:

☞ *Release the starter key.*

3.8 Starting at low temperatures

☞ *Turn the starter key to position "***2***" and hold it in this position for about 15 seconds.*

➥ Engine is preheated.

☞ *Turn the starter key to position "***3***" and hold it in this position until the engine starts.*

➥ If the engine does not start after 10 seconds.

☞ Interrupt the start procedure and try again after about 1 minute.

➥ If the engine still does not start after the second try.

☞ Contact a Wacker Neuson service center for troubleshooting.

☞ *Release the starter key.*

When the engine runs smoothly (increased engine speed):

Important!

In general, a battery delivers less energy in cold conditions. Therefore make sure the battery is always well charged.

After the eingine starts

☞ *Check whether all indicator light have gone out:*

☞ *Let the engine warm up.*

At cold temperatures:

☞ *Increase the engine speed slowly.*

☞ *Do not run the engine at full load until it has reached its operating temperature.*

Engine warm-up

After the engine has started, allow it to warm up at slightly increased idling speed until it reaches its operating temperature of 70 °C / 158°F (coolant). Run the engine with no load during the warm-up phase (fold left-hand side control lever base up). During the warm-up phase, check for unusual noise, exhaust color, leaks, malfunctions or damage. In case of malfunctions, damage or leaks, park and secure the machine, and find out the cause for the damage and have it repaired.

3.9 Jump-starting the engine (supply battery)

Safety instructions

Warning!

Explosion hazard. A frozen battery may explode during a jump-starting operation.

☞ *Do not jump-start the engine if the battery is frozen.*

☞ *Dispose of the frozen battery in accordance with local environmental regulations.*

☞ *Replace the battery.*

Caution!

Possibility of equipment damage or injury from improper jump-starting.

☞ *Make sure the jumper cables are rated for 12 V and the maximum CCA rating of the battery.*

☞ *The cable clamping ends shall be colored red for positive post connectors, and black for the negative post connectors.*

☞ *To avoid sparking, the excavator must not touch the jump-starting vehicle when connected with jumper cables.*

☞ *Use a 12 volt source, either in the form of another battery or a charger equipped for jump starting. Using higher or lower voltage sources can damage the electrical system and potentially cause injury.*

☞ *To avoid short circuits, the jumper cable connected to the positive* **+** *terminal of the starting battery must never be brought into connection with electrically conductive vehicle parts.*

☞ *Route the jumper cables so they do not become entangled in rotating components in the engine compartment.*

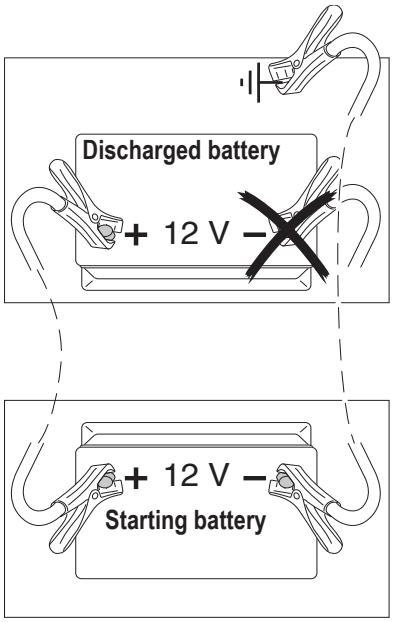


Fig. 7: Starting aid with jump leads

Procedure

☞ *Move the jump-starting vehicle close enough to the machine so that the jump leads can reach to connect the two batteries.*

☞ *Let the engine of the jump-starting vehicle run.*

☞ *First connect one end of the red jump lead (+) to the + terminal of the discharged battery, then connect the other end to the + terminal of the starting battery.*

☞ *Connect one end of the black jump lead (–) to the – terminal of the starting battery.*

☞ *Connect the other end of the black jump lead (–) onto a solid metal component fimly mounted on the engine block or onto the engine block itself. Do not connect it to the negative terminal of the discharged battery, as otherwise explosive gas emerging from the battery can ignite if sparks are formed!*

☞ *Start the engine of the machine with the discharged battery.*

Once the engine has started:

☞ *With the engine running, disconnect both jump leads in exactly the reverse order (first remove the – terminal, then the + terminal) – this prevents sparking in the vicinity of the battery!*

3.10 Special instructions for operating on public roads

The machine is subject to the:

- Applicable legal regulations of your country

Also observe the applicable regulations for accident prevention of your country.

Traveling operation

Important!

The machine will not travel unless the left-hand side control lever ist folded down.

After starting the engine:

☞ *The alternator charge indicator light goes out.*

☞ *Press the drive pedal slowly.*

➥ Machine moves off.

Travel levers

Important!

Possible loss of machine control. Rotating through 180° (stabilizer blade now at the rear) inverts the travel lever functions.

☞ *Confirm the location of the stabilizer with respect to the operator station and compensate before attempting to move the machine.*

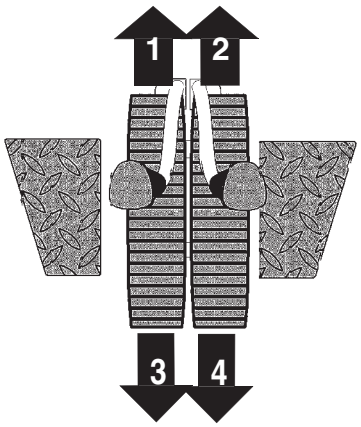


Fig. 8: Drive lever/drive pedal

The stabilizer blade side is the front side.

Raise the bucket and the stabilizer blade.

The machine can be moved either with the drive levers or with the pedals. Lock the upper carriage when travelling over longer distances.

Position	Function	
• 1 • 2	**Push forwards** **Push forwards**	Track excavator moves forwards
• 3 • 4	**Pull backwards** **Pull backwards**	Track excavator moves backwards
• 3 • 2	**Pull backwards** **Push forwards**	Track excavator turns to the left
• 1 • 4	**Push forwards** **Pull backwards**	Track excavator turns to the right

Forwards or reverse drive speed depends on the position of the drive levers or drive pedals.

Important!

Make sure both tracks move as you change direction, otherwise the tracks are subject to increased abrasion.

High travel speed

The machine has two speed ranges which can be selected as follows:

☞ *Press switch 40 High speed 3-17,*

➥ The machine now moves at higher speed

The drive gear shifts to second speed after high speed is selected, the machine moves at higher speed. In case of increased resistance (grading, changing direction, travelling uphill), the drive gear shifts to the lower speed. The machine automatically shifts back to second speed is soon as there is no resistance.

Hydraulic brake

The pedals automatically return to their neutral positions as soon as they are released, which creates sufficient hydraulic braking effect.

When traveling downhill, the automatic hydraulic brake valves prevent the machine from “racing”. The machine does not run any faster than the admissible travel speed.

However, the automatic hydraulic brake valves in the undercarriage circuit no longer work properly if the diesel engine does not run at full rpm.

Important!

Use the travel pedals to reduce the travel speed as required.

Mechanical brake

The parking brake is automatically applied by mechanical springs when the hydraulic propulsion control is set to neutral, releasing the hydraulic pressure to the motors. Actuating the propulsion control to move the machine provides hydraulic pressure to automatically release the brake.

3.11 Operating on slopes

Warning!

Tip-over hazards. Follow these safety instructions carefully when operating on slopes.

Specific safety instructions

- ☞ *Raise the bucket approximately 20–30 cm (8”–12”.) off the ground as you move the machine. Avoid reversing downhill.*
- ☞ *When operating through hollows or crossing obstacles, keep the attachment close to the ground and operate slowly.*
- ☞ *Do not steer or operate across slopes.*
- ☞ *Change your operating direction on level ground. This may take more time but is a safer operating technique.*
- ☞ *When operating the machine, make sure you can stop safely if the machine starts to skid or if it becomes unstable.*
- ☞ *Swivelling or operating the attachment on slopes may cause the machine to lose balance and to tilt. Avoid this under all circumstances.*
- ☞ *Rotating the upper works when operating downhill with a full bucket is especially dangerous. Should this be nevertheless necessary, create a platform of level ground so that the machine can work on the flat level surface.*
- ☞ *Do not operate on slopes over 15°, otherwise the machine can tip.*
- ☞ *Do not continue to attempt traveling up a slope if the rubber tracks lose traction. Do not attempt to continue up the slope using the force capability of the boom, stick, and bucket to pull the excavator upward.*

Operating on slopes

Proceed as follows to prevent the machine from tipping over or slipping sideways.

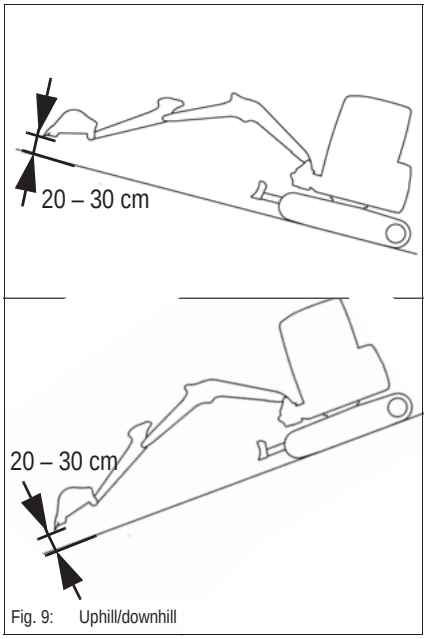


Fig. 9: Uphill/downhill

- ☞ *Keep the attachment about 20 – 30 cm (7.9” - 11.8”) above the ground. In an emergency, lower the attachment immediately to the ground so you can stop the machine more easily.*

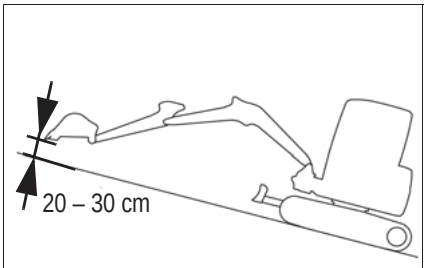


Fig. 10: Uphill, attachment above the ground

☞ *Place the cab with the front side upwards as you travel uphill, and downwards as you travel downhill. Always check the ground's firmness underneath the front part of the machine as you travel.*

☞ *When traveling downhill, extend the attachment to improve stability, and keep it about 20-30 cm (7.9” - 11.8”) above the ground. Drive slowly.*

☞ *Reduce engine speed when driving downhill, keep the drive lever next to neutral position and drive slowly.*

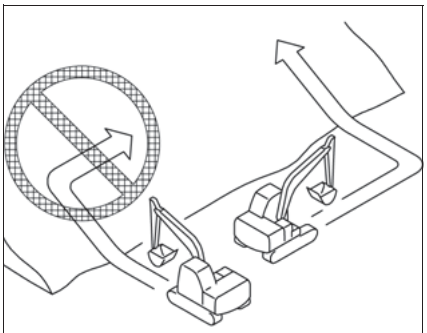


Fig. 11: Driving diagonally or at an angle

☞ *Always travel straight ahead when traveling uphill or downhill. Traveling diagonally or at an angle to the slope is very dangerous.*

☞ *Never change direction on slopes or travel across slopes. Always change position on level ground before continuing to travel on a slope.*

☞ *Travel slowly in meadows, on leaves or wet steel plates. The machine can slip even if the ground is level. If the engine stops as you travel across a slope, immediately put the control levers to neutral position and start the engine again.*

Stabilizer blade operation

Caution!

Possible loss of machine control. Stabilizer blade lever is unprotected and can be moved unintentionally.

☞ *Avoid moving the stabilizer blade lever inadvertently.*

NOTICE

Possibility of equipment damage. Lowering the stabilizer blade too deeply into the ground may create resistance.

☞ *Slightly raise the stabilizer blade.*

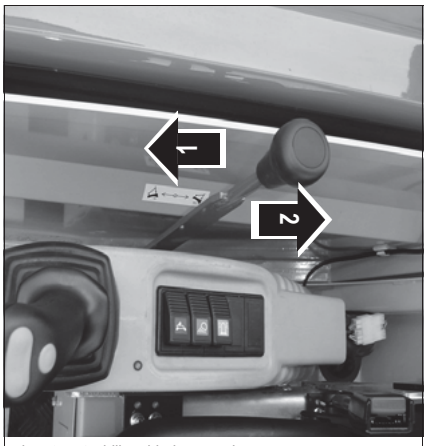


Fig. 12: Stabilizer blade operation

Position	Function	
• 1	Push forwards	Stabilizer blade is lowered
• 2	Pull backwards	Stabilizer blade is raised

Important!

Check the position of the stabilizer blade before driving the machine.

3.12 Parking the machine

Important!

Possibility of inadvertent machine movement. To avoid unintentional movement of the machine once it has been parked:

☞ *Park the machine on level, stable ground.*

☞ *Place stop chocks at the ends of the rubber track.*

3.13 Stop the machine

☞ *Lower the bucket and the stabilizer blade to the ground.*

☞ *Reduce engine speed to low idle setting.*

☞ *Turn off the starter.*

☞ *Fold up the control lever base.*

NOTICE

Possible engine damage due to overheating.

☞ Never stop the engine under full load.

☞ Except in case of emergency, always make sure the engine can cool down before it is stopped.

☞ Let the engine run at idling speed with no load for at least 5 minutes before you stop it.

Important!

Secure the machine against unauthorized operation.

- Lock the cab

Parking the machine on slopes

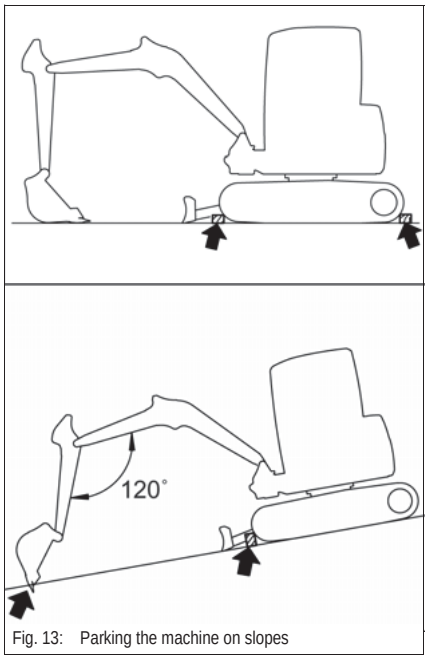


Fig. 13: Parking the machine on slopes

☞ *Avoid stopping the machine abruptly. Always make sure there is enough space for stopping the machine.*

- Park the machine on level ground with sufficient bearing capacity. Never park on slopes. If you cannot avoid parking the machine on a slope:

  ☞ Place chocks *– see chapter 13 Parking the machine on slopes* on page 3-21under the track tracks and lower the attachment *into* the ground to prevent the machine from moving.

- To prevent inadvertent machine or attachment movement, avoid moving the controls unintentionally.

  ☞ Always fold the control lever base up before leaving the seat.

☞ *Place the stabilizer blade downhill and lower it to the ground.*

Light system

Fig. 14: Light system switches

The switch panel for the light system is located on the instrument panel.

Boom light		
ON	☞ *Press the light symbol on switch **41***	➥ Indicator light in switch **see 41** illuminates
OFF	☞ *Press the ribbed end of switch **41***	➥ Indicator light in switch **see 41** goes out

Roof lights (option)

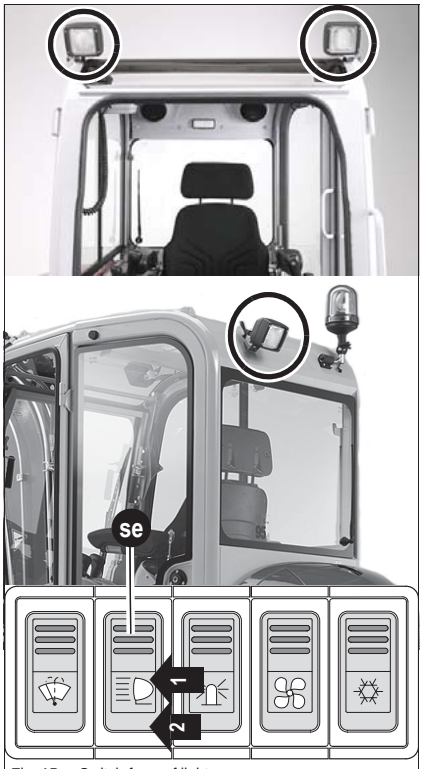


Fig. 15: Switch for roof lights

Warning!

Traffic accident hazard. Working lights can temporarily blind motorists on public roads.

☞ *Do not switch on the working lights when traveling on public roads.*

☞ *When operating the machine near public roads, only switch the working lights on when there is no possibility of blinding passing motorists.*

Roof lights		
ON	☞ *Press the light symbol on switch **46** to Position **1*** ☞ *Press the light symbol on switch **46** to Position **2***	➥ Indicator light in switch illuminates
OFF	☞ *Press the ribbed end of switch **46***	➥ Indicator light in switch goes out

Interior light

Fig. 16: Switch for interior light

Interior light	
ON	☞ *Press switch to the left or right*
OFF	☞ *Return the switch to center position*

Rotating beacon (option)

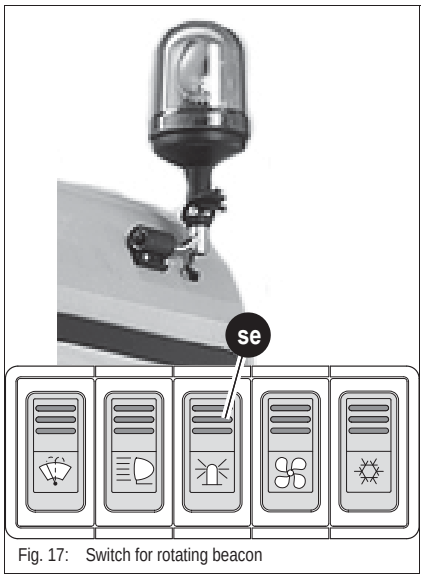


Fig. 17: Switch for rotating beacon

Rotating beacon (option)		
ON	☞ *Press the beacon symbol on switch **47***	➥ Indicator light in switch illuminates
OFF	☞ *Press the ribbed end of switch **47***	➥ Indicator light in switch goes out

Important!

Observe the legal regulations of your country for operating the rotating beacon.

3.14 Cab heating and ventilation

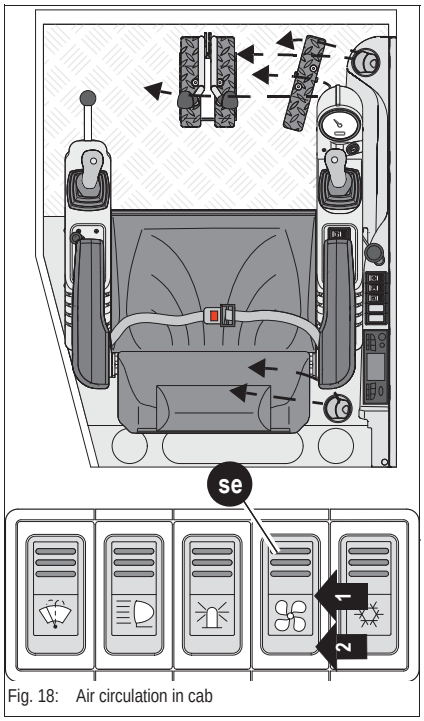


Fig. 18: Air circulation in cab

Important!

The cab is fitted with five air nozzles. Each nozzle can be closed and directed separately. In order to achieve best results for defrosting the front window, open both front right nozzles and the leg room nozzle.

- Direct the nozzles to the front window
- Open or close the nozzles as required to vent or heat the cab.
- Do not place flammable or explosive material or objects near the nozzles.
- Air the cab from time to time

Ventilation (fresh air)		
1st speed	☞ *Press the fan symbol on switch **48** to the first position*	➥ Low fan speed
2nd speed	☞ *Press the fan symbol on switch **48** to the second position*	➥ High fan speed
OFF	☞ *Press the ribbed end of switch **48***	➥ Fan OFF

Heating adjustment

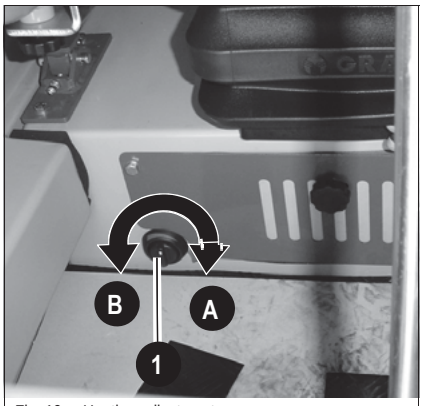


Fig. 19: Heating adjustment

Adjust cab temperature as follows:

- Cooling:

☞ *Turn heater valve **1** towards **A** until you reach the required temperature.*

- Heating:

☞ *Turn heater valve **1** towards **B** until you reach the required temperature.*

Important!

In order to reach the required temperature quickly, make only small changes of the setting on control valve ***1***, otherwise it takes some time for the air in the cab to reach the required temperature.

3.15 Washer system

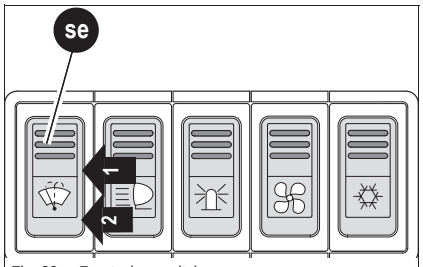


Fig. 20: Front wiper switch

Front window wiper		
ON	☞ *Press the wiper symbol on switch **45***	➥ Front wiper is on
OFF	☞ *Press the ribbed end of switch **45***	➥ Front wiper returns to base position
1st speed	☞ *Press the wiper symbol on switch **45** to the first position*	➥ Front wiper is on
2nd speed	☞ *Press the wiper symbol on switch **45** to the second position*	➥ Pump sprays washer water on the window

Important!

Do not actuate the washer system with the front window folded up. Do not actuate the washer system if the tank is empty, otherwise this can damage the electric pump.

Tank for washer system


Fig. 21: Tank for washer system

The tank's filler inlet is located in the engine compartment.

Important!

Use a blended mix of water and windshield washer fluid. A blended mix will minimize freeze damage, prolong wiper life, and reduce streaking.
In winter: add antifreeze for washer systems to the water.
Refer to the antifreeze instructions for further information on concentrations.
The rubber diaphragm in the non-return valve in the housing sticks to itself if stored in a dry condition over a longer period of time. In order to restore this valve's function, moisten this non-return valve, dip it briefly in water and then blow air through it..

Air conditioning (option)

- In order to achieve best cooling results:

☞ *Open both nozzles on the left and right behind the seat and direct them to the roof. Keep all other nozzles closed. – see Cab heating and ventilation on page 3-23*

➥ This setting ensures good air circulation in the cab as the cool air flows to the cab floor

☞ *The other nozzles can be opened and closed as required.*

- Air the cab from time to time

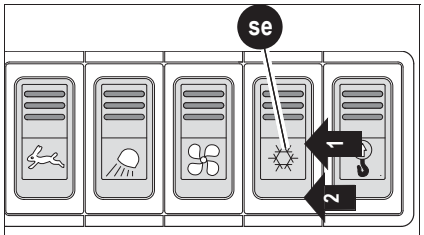


Fig. 22: Air conditioning

Air conditioning		
ON	☞ *Press the snowflake symbol on switch **49***	
OFF	☞ *Press the ribbed end of switch **49***	
1st range	☞ *Press the snowflake symbol on switch **49** to the first position*	➥ Low fan speed
2nd range	☞ *Press the snowflake symbol on switch **49** to the second position*	➥ High fan speed

Important!

Operate the air conditioner continuously for 10–15 minutes each month to maintain function and efficiency. When ambient temperatures no longer warrant the use of air conditioning, follow the instructions on page 3-24 to activate the heating system control located in the engine compartment. – *see Heating adjustment* on page 3-24

Recirculated air mode

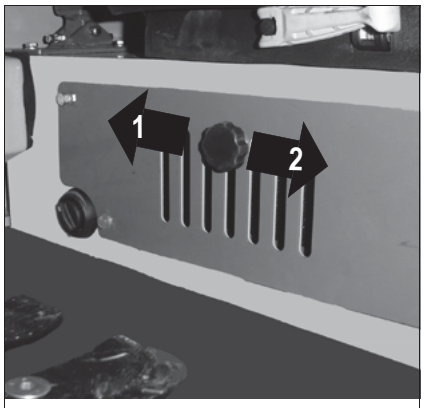


Fig. 23: Recirculated air mode

Position	Function	
1	**Release the button and slide to the left**	Recirculated-air mode switched off
2	**Release the button and slide to the right**	Recirculated-air mode switched on

Recirculated air recycles air within the cab. Otherwise, air is drawn from outside the cab and heated or cooled as selected by the operator..

Important!

Open the windows and the door to allow hot air to escape. Then engage the air conditioning, and close the windows and the doors. Keep all windows and doors closed to achieve best cooling results.

Seat adjustment

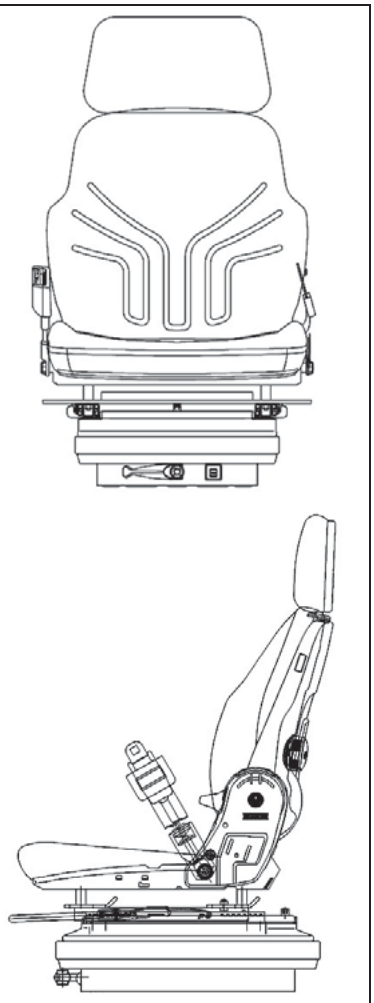


Fig. 24: Seat adjustment

Caution!

Possible loss of machine control while adjusting the seat.

☞ *Do not adjust the seat position during machine operation or travel.*

☞ *Adjust the seat before operating the machine.*

☞ *See "3.5 Before starting the engine.'*

NOTICE

Possible window damage from adjusting the backrest.

☞ Make sure the backrest does not touch the rear window or the removable part of the front window as you adjust backrest inclination.

☞ Select a seat position which will not damage the window panels when working with the machine.

Weight adjustment

Important!

Adjust the seat suspension correctly to ensure a high level of ride comfort. Use the lever to adjust the seat suspension.
The weight indicator shows the weight adjusted (kg/lbs).

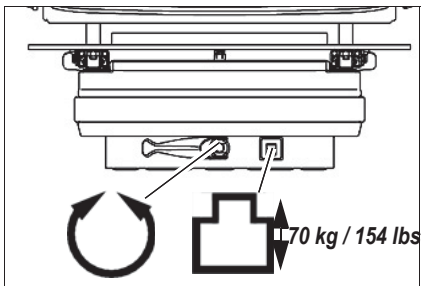


Fig. 25: Weight

☞ *Sit down on the seat.*

To adjust to a higher weight:

☞ *Turn the lever counter-clockwise.*

To adjust to a lower weight:

☞ *Turn the clockwise.*

Height adjustment

Upwards:

☞ *Raise the seat until you hear an audible click.*

Downwards:

☞ *Raise the seat as far as it will go, then lower the seat to the lowest position*

Horizontal adjustment

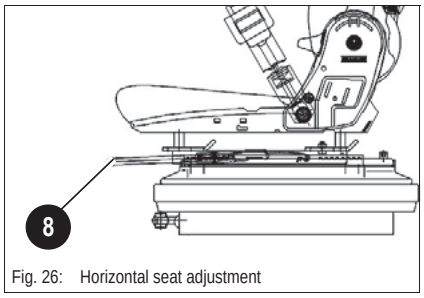


Fig. 26: Horizontal seat adjustment

☞ *Sit in the seat.*

☞ *Pull lever 8 upwards and, at the same time, move the seat forwards or backwards.*

Backrest adjustment

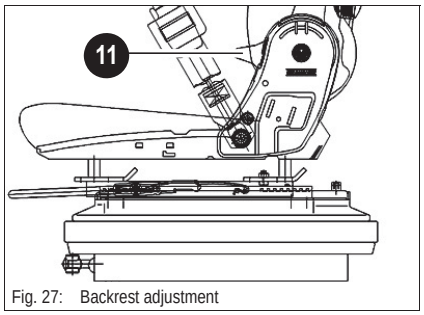


Fig. 27: Backrest adjustment

☞ *Sit in the seat.*

☞ *Pull lever 11 upwards and, at the same time, lean back and push the backrest into the required position.*

☞ *Let lever see 11 lock into place.*

3.16 Seat belt

Warning!

Personal injury hazard. The seat belt provides positive support in the operator seat during operation and travel that keeps the operator located within the comfort zone for control operation. It also reduces the risk of injury in the event a tipping incident occurs during use.

☞ *Always buckle up before moving or working with the machine.*

☞ *Seat belt must not be twisted.*

☞ *Seat belt must run over the hips – not over the stomach – and must always be applied tightly.*

☞ *Do not place the seat belt over hard, edged or fragile items (tools, ruler, glasses, pen) carried inside your clothes.*

☞ *Never buckle up 2 persons with one seat belt.*

☞ *Check seat belts each time the operator uses the machine. Have damaged parts immediately replaced by an authorized workshop before using the machine.*

☞ *Always keep the seat belt and buckle clean, as dirt and debris can cause the buckle to malfunction and accelerate internal webbing abrasion in the belt.*

☞ *Seat belt buckle must not be obstructed by foreign bodies (paper or similar); otherwise the buckle latch cannot lock into place!*

Warning!

Personal injury hazard. The seat belt strap will be stretched after an accident and is no longer serviceable.The seat belt will NOT provide adequate protection in the future!

☞ *Replace the seat belt after an accident.*

☞ *Have fastening points and seat fixture examined for damage or failure. Repair or replace if damaged.*

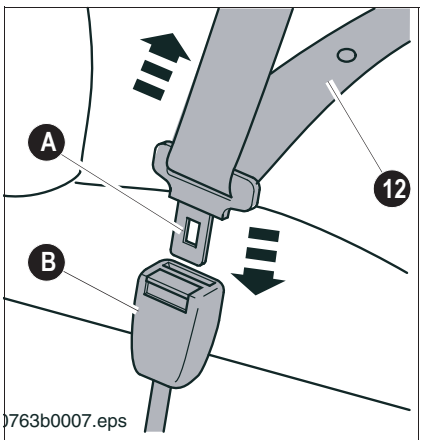


Fig. 28: Fastening the seat belt

Seat belt **see 12** is for the driver's safety during work on construction sites and during road travel.

Fastening the seat belt:

☞ *Fasten seat belt see 12 as follows before moving the machine:*

- Hold belt on buckle latch **A** and run it slowly and steadily over the hips to buckle **B.**

- Insert buckle latch **A** into buckle **B** with an audible click **(pull test).**
- Tighten the seat belt by pulling at its end.

  ➥The seat belt must always be tightly in place over the hips!

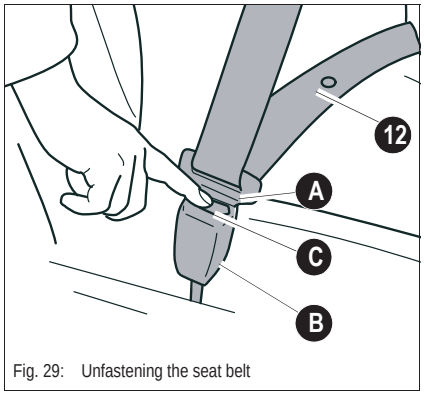


Fig. 29: Unfastening the seat belt

Unfastening the seat belt:

☞ *Unfasten seat belt see 12 as follows:*

- Hold the seat belt.
- Press red catch **C** on buckle **B.**

  ➥Latch **A** is released from buckle **B** by spring pressure.
- Slowly return the seat belt to the retractor.

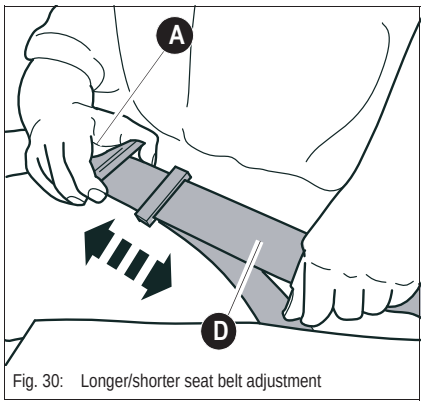


Fig. 30: Longer/shorter seat belt adjustment

Longer/shorter lap belt adjustment:

☞ *Lengthen the lap belt as follows:*

- Hold buckle latch **A** at a right angle to the seat belt and pull the seat belt to the required length.
- To shorten the lap belt, just pull the free end **D** of the belt.

3.17 Emergency exit

You can enter and exit the cab through the side and front windows in an emergency.

Caution!

Personal injury hazard. Do not use the side or front window as routine exits from the machine. Windows are to be used as exits only if the access opening (door for cab option) is blocked or cannot be opened through normal operating procedures.

☞ *The controls are active if the engine is not stopped. Inadvertent control movement with the engine running during an emergency exit can increase the risk of injury. Stop the engine before exiting through an emergency exit.*

☞ *Enter and exit the cab through the side and front windows in an emergency only!*

Opening the side window completely:

☞ *– see Opening the side window: on page 3-32*

Opening the front window completely:

☞ *– see Front window on page 3-30*

Front window

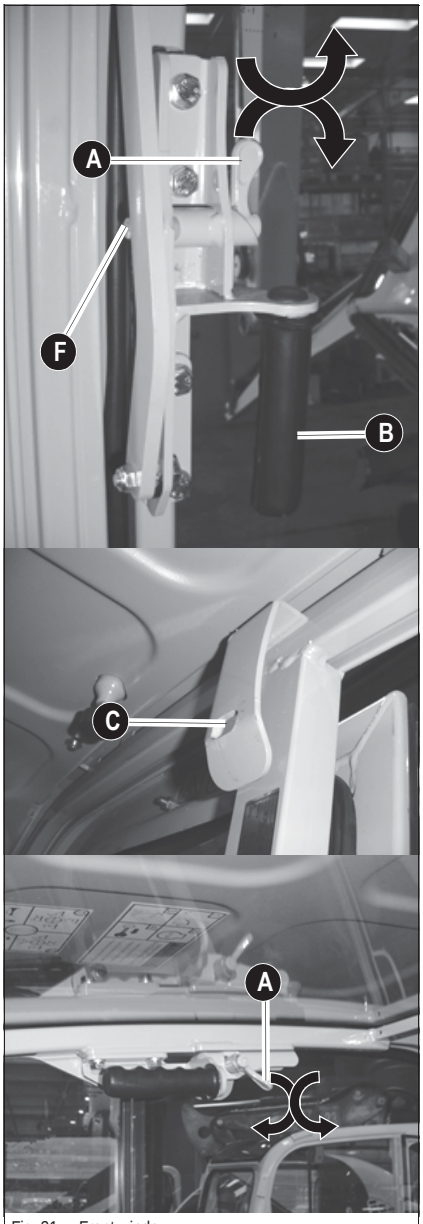


Fig. 31: Front window

Caution!

Crush hazard. Sliding window can pinch or crush extremities.

☞ *Keep extremities and clothing free of the window run.*

Always pull the front window upwards with both handles *B.*

Always let levers *A* lock into place on either side in locks **F.**

Important!

Fold up the control lever base before opening or closing the front window, in order to avoid any unintentional operation or movement of the machine!

Open the front window as follows:

- Either side of the front window is fitted with a lever.

☞ *Push levers A down on either side.*

☞ *Pull the front window upwards with handles B.*

➥ The front window must lock into rails **C** on either side.

☞ *Lock with levers A on either side in C.*

☞ Pull lock levers A rearward to lock the window handles **B** in rail **C**.

Lower the front window as follows:

☞ *Push the locking lever A forward to release the window handle **B** from rail **C**.*

☞ *Pull the front window downwards with handles B.*

☞ Pull lever **A** upward to lock the window in place. *– see chapter 31 Front window* **on page 3-30**.

☞ Pull lock levers A rearward to lock the window handles **B** in rail **C**.

3.18 Door

Important!

Possibility of equipment damage or injury to others. An open door on a moving machine may slam against the machine, damaging the door frame or window glass. The door may also strike nearby objects or people.

☞ *Always make sure that doors and windows are securely closed before moving the machine.*

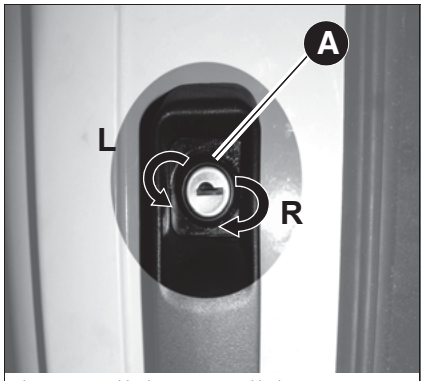


Fig. 32: Outside door opener and lock

Opening the door from the outside:

☞ *Press door lock A.*

Locking the door:

☞ *Turn the key in door lock A counter-clockwise (L).*

☞ The door is locked.

Unlocking the door:

☞ *Turn the key in door lock A clockwise (R).*

☞ The door is unlocked.

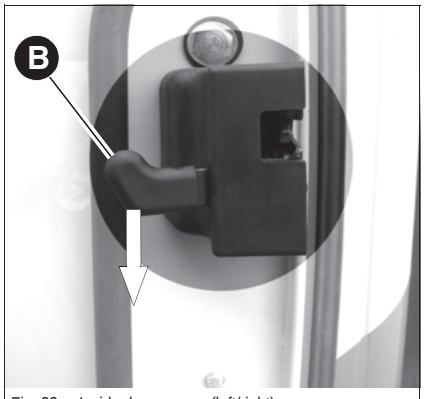


Fig. 33: Inside door opener (left/right)

Opening the door from the inside:

☞ *Push the latch lever down to unlatch the door.*

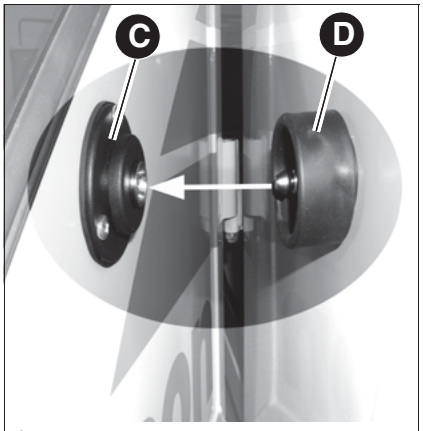


Fig. 34: Door arrester

Securing an open door:

☞ *Press the door against stop/latch C of arrester D with an audible click.*

Fig. 35: Releasing the door arrester

Releasing the door opener:

Pull button E to release the door from the arrester.

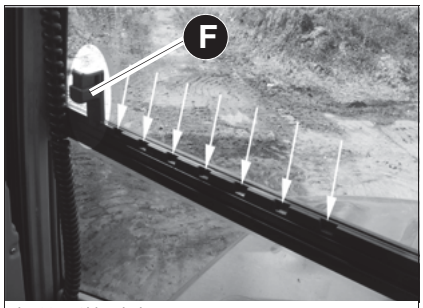


Fig. 36: Side window

Opening the side window:

☞ *Push button F up*

☞ At the same time, move the window to one of the positions marked with seven arrows

3.19 Engine cover

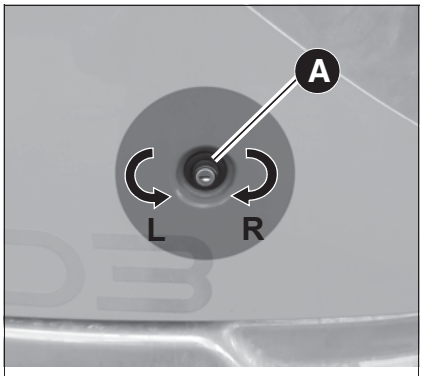


Fig. 37: Engine cover lock

Opening:

☞ *Press lock A*

☞ *Pull the engine cover upwards*

Closing:

☞ *Firmly press down the engine cover until lock A engages with an audible click*

Locking and unlocking:

Close the engine cover with the ignition key of the preheating start switch.

☞ *Turn the starter key in lock A counter-clockwise (**L**)*

➥ Engine cover locked

☞ *Turn the starter key in lock A clockwise (**R**)*

➥ Engine cover unlocked

3.20 Battery master switch (model 38Z3)

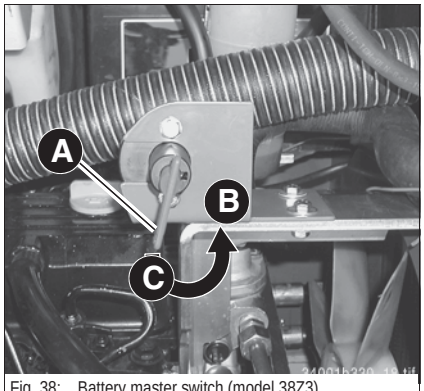


Fig. 38: Battery master switch (model 38Z3)

Important!

Do not disconnect the battery while the engine is running.

Important!

The disconnect switch isolates the battery from the machine electrical system. Disconnect the battery:

- *before performing maintenance or repairs*
- *for deterring theft*

Interrupting power supply:

☞ *Turn key **A** of the battery master switch to position B and remove it*

Engaging power supply:

☞ *Insert key **A** in the battery master switch*

☞ *Turn the key down to the notched position **C***

3.21 Tilting the cab

Caution!

Personal injury hazard. Using improper techniques to tilt the cab can cause personal injury. Follow the precautions below when tilting the cab:

☞ *Always tighten lock screws **A** and **C** when traveling and operating the machine.*

☞ *Place the excavator on level ground before tilting the cab.*

☞ *Lower the boom and the stabilizer blade before tilting the cab.*

☞ *Stop the engine and remove the starter key before tilting the cab.*

☞ *Stay clear from underneath the cab as you tilt it.*

- Fold the control lever base (left) up.

Slacken the lock screws

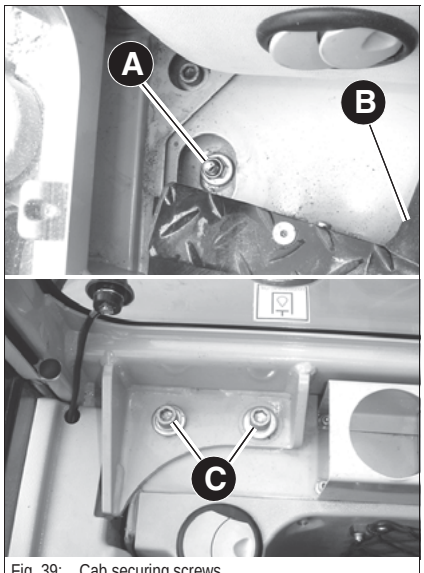


Fig. 39: Cab securing screws

Unscrew the lock screw as follows:

☞ *Switch off the engine.*

☞ *Remove the starter key.*

☞ *Fold the control lever base (left) up.*

☞ *Raise floor mat **B.***

☞ *Unscrew lock nut **A** with a suitable tool.*

➥ Lock nut **A** is located at the front right of the cab.

☞ *Unscrew lock nuts **C** with a suitable tool.*

➥ Lock nuts **C** are located at the rear right of the cab.

Caution!

Close the door before tilting the cab to avoid hazards from uncontrolled door swing.

☞ *Always close the door, even if the door is secured in the open position with the door latch before tilting the cab.*

☞ *Should the door be open as you tilt the cab, do not actuate the door opener unintentionally .See Releasing the door opener on page 3-35.*

Tilting the cab:

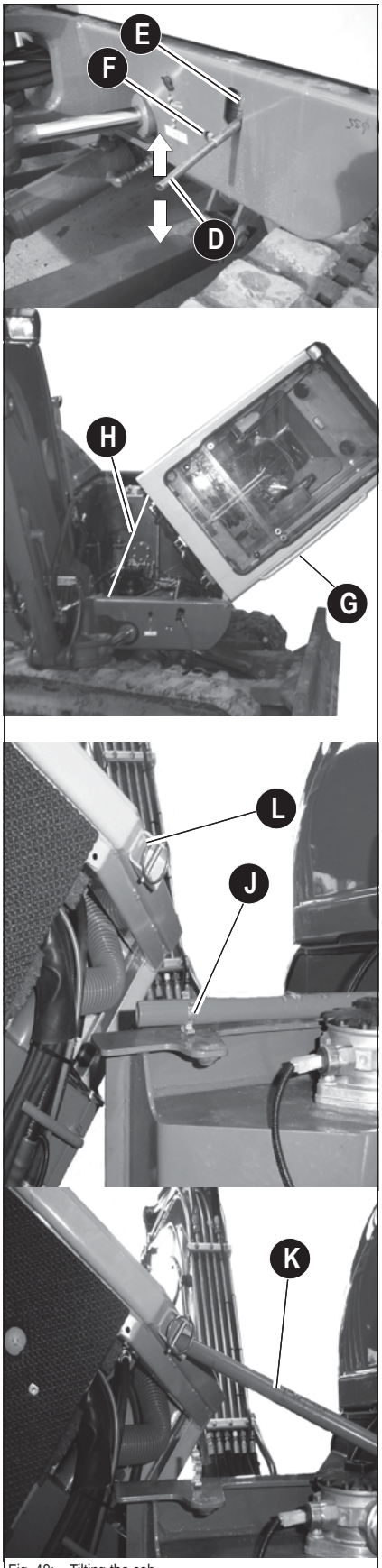


Fig. 40: Tilting the cab

Proceed as follows:

☞ *Insert tube **D** on valve **F.***

☞ *Turn tube **D** clockwise (to the right).*

☞ *Insert tube **D** onto guide pin **E** and pump as far as it will go.*

➥ (jack function)

➥ Pump the tube until the cab jack has reached the limit of tilt.

☞ *Finish tilting the cab by pulling on the left side handhold **G** until the cab tilt limiter **H** is tight as shown.*

➥ The cab is secured with safety cable **H.**

☞ *Release strut **K** from its storage bracket **J**. Insert the end into the cab support bracket **L**.*

➥ Secure strut K in bracket L with the pin stored for this purpose in bracket **L**.

Lowering the cab to the operating position

NOTICE

Make sure the piston of the lift pump is fully extended and that the valve is closed before lowering the cab.

↴ Turn valve **F** of the lift pump clockwise (to the right).

Proceed as follows, reversing the steps in the procedure for tilting the cab:

☞ *Remove the split pin from guide **L.***

➥ Slide tilt rod **K** into bracket **J.**

☞ *Use handle **G** to lower the cab until it is back on the pump.*

☞ *Insert tube **D** on valve **F.***

☞ *Slowly turn tube **D** counterclockwise (to the left).*

➥ The cab is lowered by its own weight.

☞ *Screw in lock screws **A** (front) and **B** (rear) with a suitable tool.*

NOTICE

Possibility of severe cab bearing damage. Once the cab is fully lowered by its own weight, do not close the valve of the lift pump.

☞ *Leave valve **F** open after you have lowered the cab.*

NOTICE

Possibility of equipment damage from cracks and cuts. Check tilt rod **K**, the split pin of safety cable **H**, and the fastening of the safety cable at regular intervals.

☞ Replace defective parts immediately.

3.22 Exit through the door

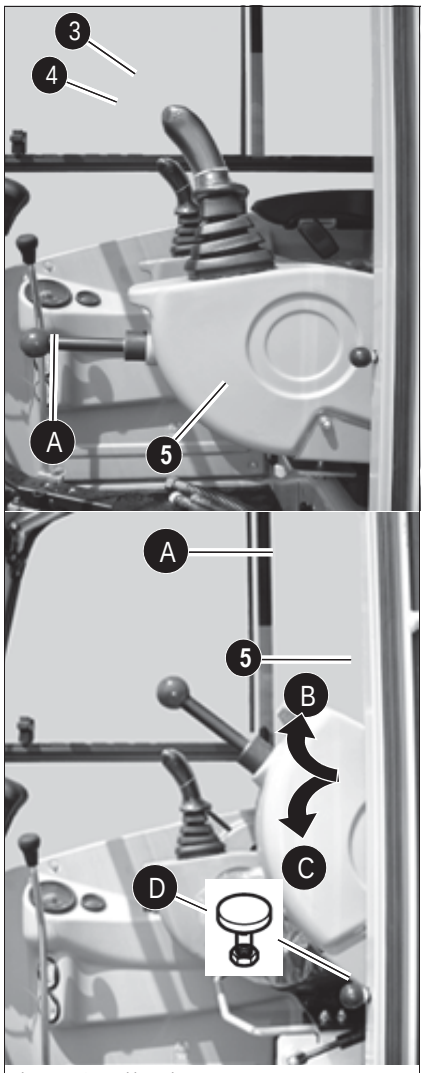


Fig. 41: Control lever base

Adjusting the left-hand side armrest

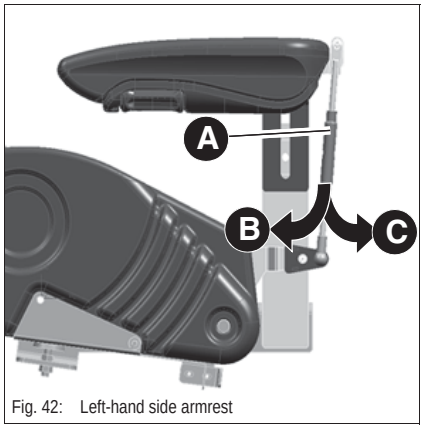


Fig. 42: Left-hand side armrest

Caution!

Personal injury hazard. Before entering or leaving the operator station confirm that the stepping surfaces are clean and firm to avoid slipping or tripping.

☞ *Take the following steps before leaving the cab:*

- Stop the machine and follow the parking procedures provided in "Parking the machine" 3-21.
- Move all controls to neutral.

☞ *Raise control lever base see 4 with handle **A** to position **B***

➥ The gas strut keeps the control lever base in the top position.

Important!

The control lever and console are not designed as a hand hold for exiting the cab.

☞ *Do not use the control handle in the console for assistance entering or leaving the cab.*

☞ *Use the hand hold brackets positioned at the front and rear of the cab door opening for support.*

➥ Fold control lever base *see 5* down to position **C** once you are in the cab

➥ The gas strut keeps the control lever base in the lower position

Important!

The height of the control lever base can be set with stop bolt **D**

Important!

Enter and leave the cab only through the door as a rule. You can enter and exit the cab through the front and the right-hand side window in an emergency.

NOTICE

Possibile loss of machine control from bumping the control lever.

☞ Make sure the armrest does not touch the control lever as you fold it up.

☞ Adjust the armrest accordingly.

Adjust the left-hand side armrest as follows:

☞ *Turn tubular turnbuckle nut **A** counter-clockwise **B.***

➥ The armrest can be lowered.

☞ *Turn nut **A** clockwise **C.***

➥ The armrest can be raised.

3.23 Towing the track excavator

NOTICE

Towing the machine is not recommended. Damage to the machine may occur. If the machine must be towed, follow the guidelines and procedures below.

Safety instructions:

- Make sure the excavator can be towed safely.
- Use towing bracket ***A*** for towing the machine.
- Use the towing bracket only for towing the machine.
- Use a clevis pin with a lock pin.
- Do not jerk the machine!
- Make sure no one is close to the towing equipment (towing bar, cable).

Towing

Warning!

Personal injury hazard. Use extreme caution during towing operations.

☞ *Keep people away from the danger zone around the towed and towing machine*

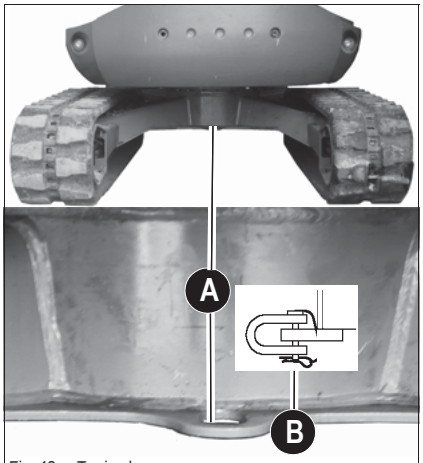


Fig. 43: Towing bore

NOTICE

Do not exceed the maximum admissible load of the towing bracket.

☞ The towing bracket has a maximum admissible load of 2330 daN (5238 ft.lbs. / 2375 kgf.)

☞ *Use towing bracket **A**.*

☞ *Secure clevis **B** with the clevis pin and a lock pin.*

☞ *Mount a towing bar or cable of adequate size to the towing bore.*

☞ *When towing the machine, do not exceed the maximum operating speed of the excavator.*

Important!

Follow the following instructions under all circumstances: Towing a disabled machine can damage the propulsion drive system. Do not tow a disabled machine.

- Do not tow away the machine if it is at a standstill or broken down, otherwise the machine's travelling drive can be damaged.
- The manufacturer's warranty shall not apply to accidents or damage caused by towing the excavator.
- No towing away other machines with towing bracket **A**.

3.24 Lifting excavator

Safety instructions

- The crane and the lifting gear must have suitable dimensions
- Lifting the machine requires suitable lifting gear
- Secure the machine against unintentional movement!

Warning!

Crushing hazard.

☞ *Do not lift the machine with someone in the operator seat/station or on the machine*

☞ *Persons responsible for attaching the lifting devices to the machine shall be experienced with crane operations and hand signals.The crane operator shall maintain sight of the personnel attaching, guiding, and unhooking the excavator.*

☞ *Use OSHA rated and approved lifting devices capable lifting the excavator, attachments, options and accumulated debris. Refer to the general weight guidelines in the specification section of this manual.*

☞ *Do not lift the machine with material in the bucket attachment.*

☞ *The crane operator shall observe the lift zone and lift the machine when the area is clear of people.*

☞ *Do not attempt to lift the excavator with any type of crane including wheel loaders unless the crane operator is qualified to lift loads in craning operations. The crane operator shall be knowledgable of OSHA 1910 craning regulations.*

☞ *The lifting devices must be the specified lengths **L1** and **L2**.*

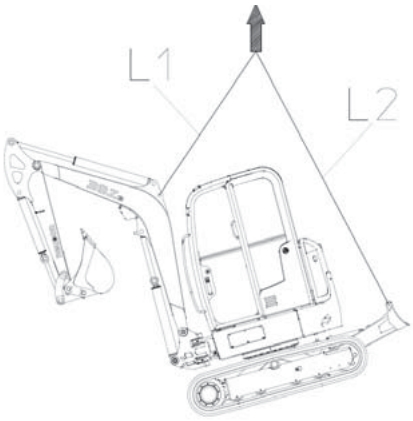


Fig. 44: Crane handling

☞ *Load the machine as follows:*

- Fit the standard bucket and lock it safely.
- Empty the standard bucket.
- Curl the standard bucket.
- Stop the engine.
- Fold the control lever base up.
- Remove the starter key.
- Do not allow anyone to stay in the cab, and close the doors and the engine cover.
- Use suitable lifting gear, chains, etc.

☞ Mount the lifting gear at the point on the boom provided for lifting the machine.

☞ Mount the lifting gear at the points on the stabilizer blade provided for lifting the machine.

☞ Make sure the lifting gear has the required lengths L1 and L2.

- Slowly raise the machine.

Required lengths L1 and L2 of the lifting gear:

Excavator	Length	Dimension
38Z3	L1	1910 mm (6'3'')
38Z3	L2	3150 mm (10'4'')

Authorised loads	Force
Boom lift eye	40 kN (8992 lbs.)
Stabilizer blade lift eye	40 kN (8992 lbs.)

3.25 Loading and transporting the machine

Loading and transporting instructions

- The transport vehicle must be of adequate size – refer to *Chapter 6 "Specifications"* for the machine's dimensions and weights!
- Remove any mud, snow or ice from the tracks so that the machine can be safely driven onto the ramps
- Secure the machine against unintentional movement *– see Parking the machine* on page 3-21!

Warning!

Improper loading and transporting can be hazardous.

☞ *Always make sure to load and transport the machine properly.*

☞ *Read the safety instructions at the beginning of this chapter and follow any other applicable safety instructions.*

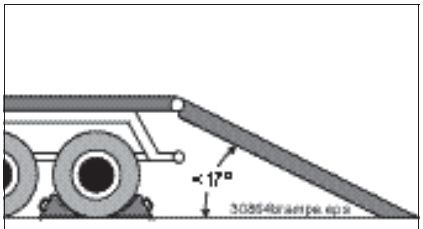


Fig. 45: Access ramps

☞ *Load as follows:*

- Secure the transport vehicle with chocks to prevent it from rolling.
- Place the access ramps at the smallest possible angle. Make sure the grade does not exceed 17° (30%). Use access ramps with an antiskid surface only.
- Make sure the loading area is clear and access to it is not obstructed – e.g. by superstructures.
- Make sure the ramps and the tracks of the excavator are free of oil, grease and ice.
- Start the engine of the excavator.
- Raise the bucket sufficiently so that it will not touch the ramps.
- Carefully drive the excavator onto the middle of the transport vehicle.
- Lower the bucket to the loading area.
- Stop the engine.
- Fold the control lever base up.
- Remove the starter key.
- Do not allow anyone to stay in the cab, and close the doors and the engine cover.

Important!

The manufacturer's warranty shall not apply to accidents or damage caused by loading or transporting the excavator.

3.26 Tying down the excavator

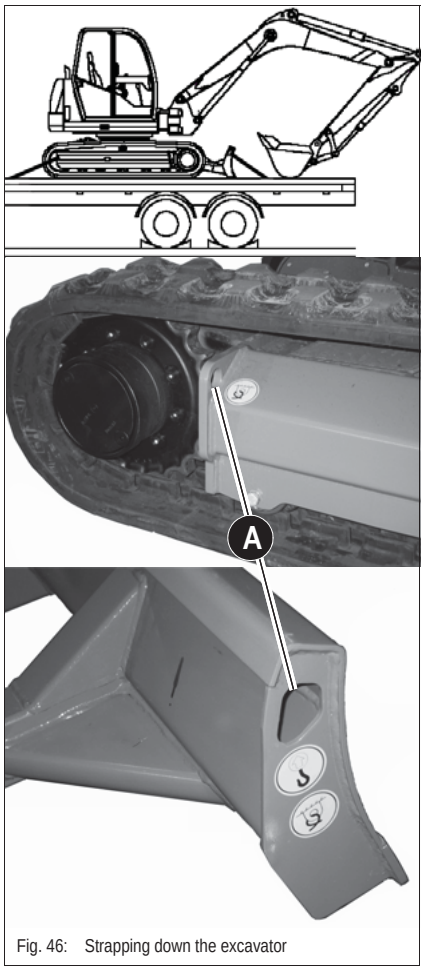


Fig. 46: Strapping down the excavator

Warning!

Improper loading, strapping, and transporting of the machine can be hazardous.

☞ *Ensure that the machine is properly strapped down.*

☞ *Read the safety instructions at the beginning of this chapter and follow any other applicable safety instructions.*

- Make sure the authorized maximum height is not exceeded.
- Secure the tracks of the excavator at the front, rear and at the sides.
- Lower the stabilizer blade and the boom.
- Firmly strap down the excavator at the eye hooks **A** onto the platform, with straps or chains of adequate size.
- Before transporting the machine through heavy rain, close the outlet of the exhaust muffler with a simple cap or suitable adhesive tape.
- Make sure the driver of the transport vehicle knows the overall height, width and weight of his vehicle (including excavator) before departure, as well as the legal transport regulations of the country or countries where transport is to take place!

3.27 Operating with the machine

General safety instructions

Avoiding cave-in or collapse:

- Do not operate at the edge of an open excavation!
- Do not undermine wall foundations!

Preventing tip-overs:

- Do not excavate deeply under the front side of the machine. The ground under the machine could collapse and cause the machine to tip.
- Do not perform demolition work below the machine.
- Doing so can cause the machine to tip.
- In general the machine is more likely to tilt if the attachment is positioned laterally than if it is positioned at the front or rear of the machine.
- The machine can become unstable and tip if a demolition hammer or other heavy attachment is used. To perform work both on level ground and on slopes:

  ☞ *Do not move the attachment rapidly in any direction.*

  ☞ *Avoid use on slopes.*

Avoiding falling debris:

- Do not create an overhang above the excavator. *– see chapter 86 Working with the machine's falling force* on page 3-60
- Do not create an overhang of debris during demolition.
- Install a front guard when working in areas with a risk of objects falling from the front (e.g. demolition work).

Increasing operator safety:

- In order to leave the cab more easily under especially difficult circumstances, position the tracks perpendicularly to the roadside or to the uphill slope with the drive pinion behind the driver.
- Prior to working on the structure surface, confirm that the floor or roof of a building is strong enough to support the excavator and any loads lifted by the excavator.
- Do not raise the bucket over the heads of other workers or over the driver seats of trucks or of other means of transport. The material can tilt, or the bucket can knock against the truck and cause severe injury or damage.
- Operation of the machine by unauthorised staff is prohibited!
- The hydraulic system of the machine is still pressurized even when the engine is not running! Release the pressure in the sections of the system and hydraulic lines which are to be opened before starting setup or repair work, e.g. fitting/removing an attachment with hydraulic functions *– see Lowering the boom with the engine switched off* on page 3-43

Preventing equipment damage:

- Do not use the impact force of the attachment to perform demolition work. Demolished parts can cause personal injury or damage to property or the equipment.
- Look out for high-voltage cables, underground cables, gas and water pipes during excavation work!

3.28 Control levers/control pattern ”A”: overview

Important!

Fast actuation of the control lever for the attachment moves the attachment fast. Slow actuation of the control lever moves the attachment slowly.

Left-hand side control lever

Warning!

Potential loss of machine control. The attachment will move in response to movement of the left hand control lever, potentially creating a hazardous condition affecting machine control.

☞ *Do not actuate the left hand control lever while the machine is traveling at maximum speeds on the work site.*

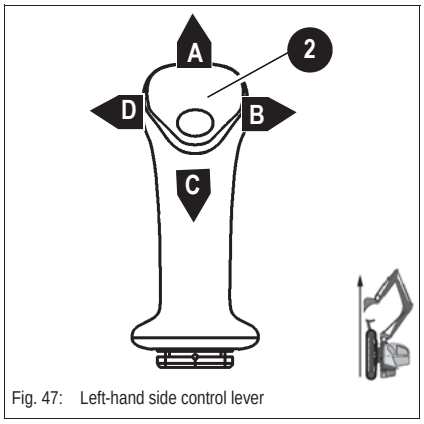


Fig. 47: Left-hand side control lever

Position	Lever	Function
• **A**	☞ *Forward*	➥ Stick is extended
• **B**	☞ *To the right*	➥ Upper carriage rotates to the right
• **C**	☞ *Backward*	➥ Stick is retracted
• **D**	☞ *To the left*	➥ Upper carriage rotates to the left

Important!

Always perform smooth control movements.

Boom swivel controls

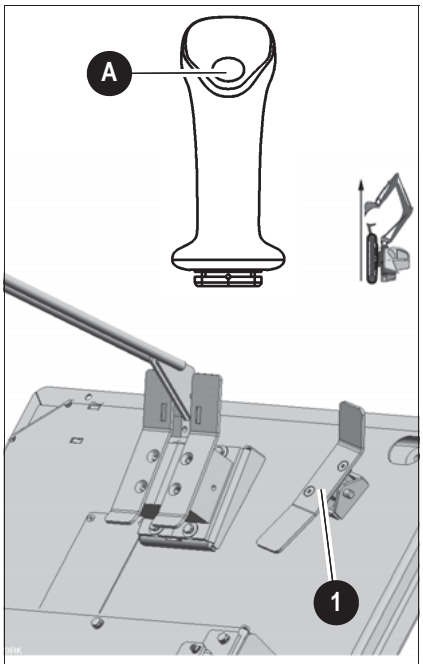


Fig. 48: Swivel controls

Swivel boom to the left:

☞ *Press and hold button A on the control lever.*

☞ Move hammer pedal **1** forwards at the same time.

Swivel boom to the right:

☞ *Press and hold button A on the control lever.*

☞ Move hammer pedal **1** backwards at the same time.

Right-hand side control lever

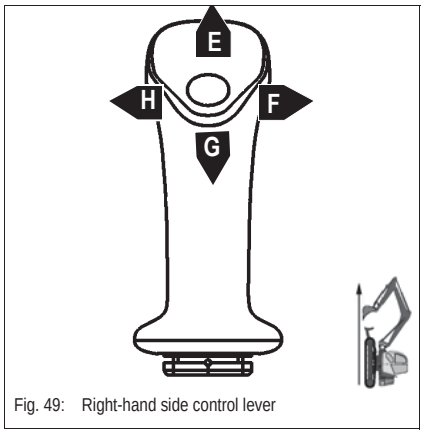


Fig. 49: Right-hand side control lever

Position	Lever	Function
• **E**	☞ *Forward*	➥ Boom is lowered
• **F**	☞ *To the right*	➥ Dumps bucket
• **G**	☞ *Backward*	➥ Boom is raised
• **H**	☞ *To the left*	➥ Fills bucket

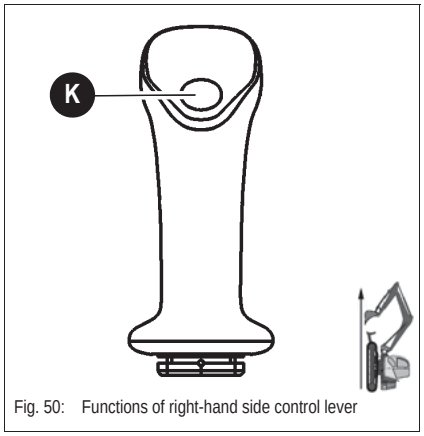


Fig. 50: Functions of right-hand side control lever

Button	Function
☞ *K*	➥ Horn

Lowering the boom with the engine switched off

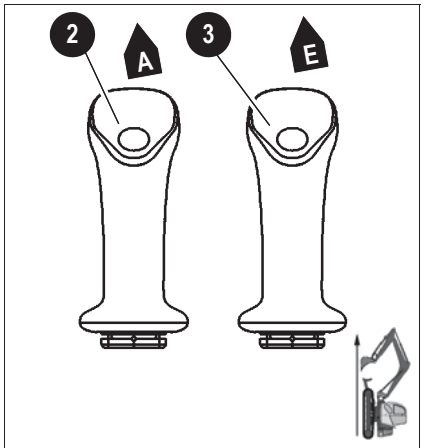


Fig. 51: Lowering the arm system with the engine switched off

Lower the boom as follows:

☞ *Make sure no one is dangerously close to the machine.*

☞ *Turn the starter key to position "**1**".*

☞ *Push forwards and hold the control lever (**A and E**).*

➥ Until the arm system is completely lowered.

☞ *Return the control lever to neutral.*

Releasing pressure

Proceed as follows:

☞ *Stop the engine.*

☞ *Move the control lever in all directions a few times.*

➥ This releases the pressure in the hydraulic system.

Rotating the upper carriage

Important!

- Until the hydraulic fluid reaches operating temperature, the upper carriage can creep slightly after the control is placed in the neutral position.
- Fast actuation of the control lever rotates the upper carriage fast, slow actuation of the control lever rotates the upper carriage slowly.
- If the upper carriage needs to be rotated on a slope, let the engine run at idling speed and actuate the control lever very slowly. Proceed with extreme care and avoid abrupt movements if the bucket is full.

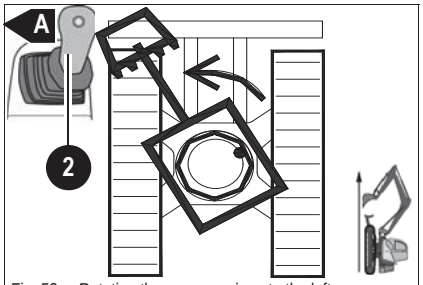


Fig. 52: Rotating the upper carriage to the left

Rotate the upper carriage to the left as follows:

☞ *Push the left-hand side control lever* **2** *to the left* ***A.***

➥ The upper carriage rotates to the left.

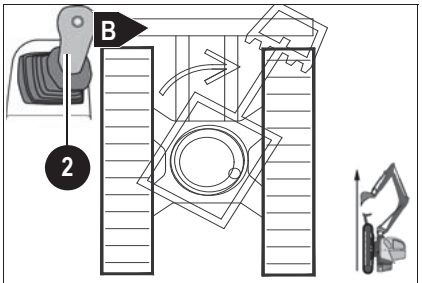


Fig. 53: Rotating the upper carriage to the right

Rotate the upper carriage to the right as follows:

☞ *Push the left-hand side control lever* **2** *to the right* ***B.***

➥ The upper carriage rotates to the right.

Rotating upper carriage unit brake

Upper carriage hydraulic brake:

The upper carriage's rotation is sufficiently braked by moving control lever **2** back to initial position. Moving the control lever in the opposite direction (counteraction) brakes the upper carriage with maximum hydraulic output.

Upper carriage mechanical brake:

This is a multi-disk mechanical brake that provides a secondary service brake and a primary parking brake function for the upper carriage. It is operated independently from the hydraulic brake of the upper carriage.

Important!

The mechanical brake functions only to prevent upper carriage rotation. It does not function as a machine propulsion brake.

3.29 Changeover valve for control pattern''B''(option)

Important!

Possible loss of machine control. Changing the control valve mode selection position will reverse the function control of the hand levers. The left hand lever controls the boom, not the stick. The right hand lever controls the stick.

☞ *Confirm the selected mode before starting the engine to avoid unintentional movement of the stick or boom.*

☞ *Always secure wing nut **J** on the directional valve's changeover lever.*

Left-hand side control lever

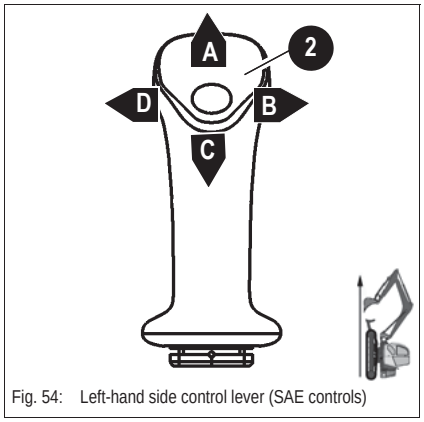


Fig. 54: Left-hand side control lever (SAE controls)

Position	Lever	Function
• A	☞ *Forward*	➥ Boom is lowered
• B	☞ *To the right*	➥ Upper carriage rotates to the right
• C	☞ *Backward*	➥ Boom is raised
• D	☞ *To the left*	➥ Upper carriage rotates to the left

Right-hand side control lever

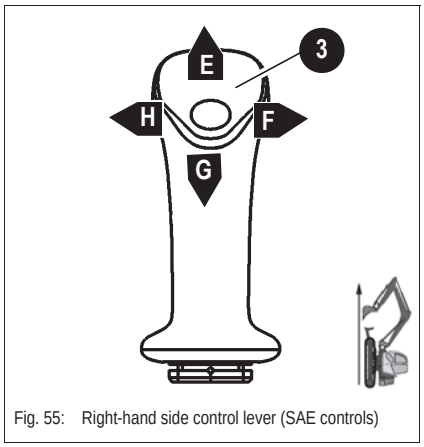


Fig. 55: Right-hand side control lever (SAE controls)

Position	Lever	Function
• **E**	☞ *Forward*	➥ Stick is extended
• **F**	☞ *To the right*	➥ Dumps bucket
• **G**	☞ *Backward*	➥ Stick is retracted
• **H**	☞ *To the left*	➥ Fills bucket

Directional valve position

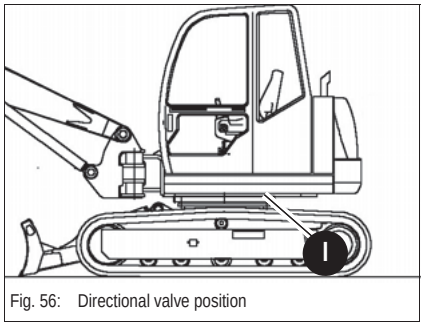


Fig. 56: Directional valve position

The directional valve is located on the left in base plate **I** of the chassis.

Directional valve

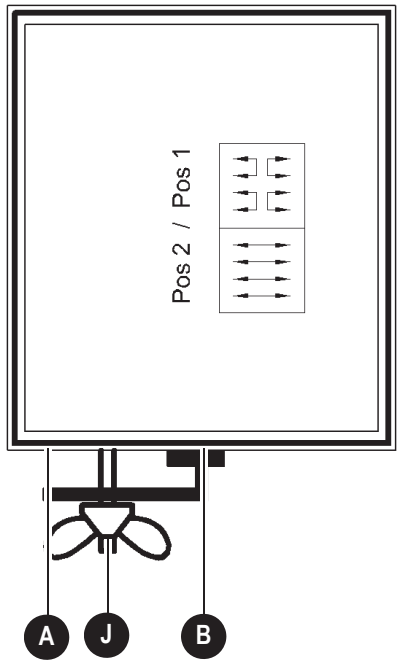


Fig. 57: Directional valve

The changeover valve switches from ISO to SAE controls and vice versa.

Position	Function
• A	➥ ISO controls
• B	➥ SAE controls

☞ *Tighten wing nut **J** after changing control mode.*

Warning!

Possible equipment damage or injury hazard. Never drive or work with the machine if wing nut **J** is defective or missing!

☞ *Immediately contact Wacker Neuson to replace a defective or missing wing nut.*

3.30 Control lever with proportional controls (option): overview

Important!

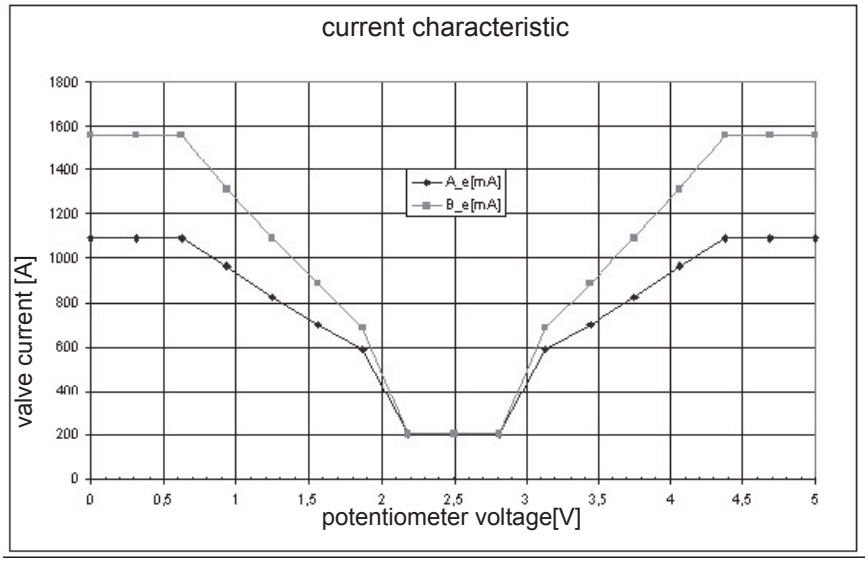
Fast actuation of the control lever for the attachment moves the attachment fast. Slow actuation of the control lever moves the attachment slowly.

Function

This control mode offers proportional operation of the auxiliary hydraulics circuit depending on the position of slide switch **B** on the joystick.

You can also modify the properties of the characterisitic curve. Precision work, for instance with the offset bucket, does not require the full throughput of the auxiliary hydraulics. Therefore we recommend setting the controls to the low characteristic curve 1 (slow movements).

The slide switch is not pressed fully in this position and you can move the machine more smoothly (flat characteristic curve).



If you require the full throughput then characteristic curve 2 will be the choice to make (slide switch pressed as far as it will go).

NOTICE

Always use button **C** on the joystick for hammer operation.

☞ Do not use characteristic curve 1 for hammer operation since as described above. Oil throughput is not set to maximum in this case and therefore the hydraulic output is not fully available for hammer operation.

☞ *Pressing button **C** ensures full throughput irrespective of the characteristic curve that has been selected.*

Measures to be taken in case of malfunctions

NOTICE

Possibility of uncontrolled valve function. The system still works correctly if only one component breaks down. However, if more than one component breaks down, the pressure regulating valves may possibly run uncontrollably.

☞ *Shut down the machine and call for service if more than one component breaks down.*

Warning!

Crushing hazard. In the unlikely event of a system breakdown:

☞ *Stop down the machine and call the service.*

☞ *Stay clear of areas with crushing hazards.*

☞ *Stay clear of areas between moving hydraulic components and fixed obstacles.*

Left-hand side control lever

Important!

Possible accidental machine movement. Left- and right-hand side levers must not be uses when traveling. Use only the traveling levers when traveling.

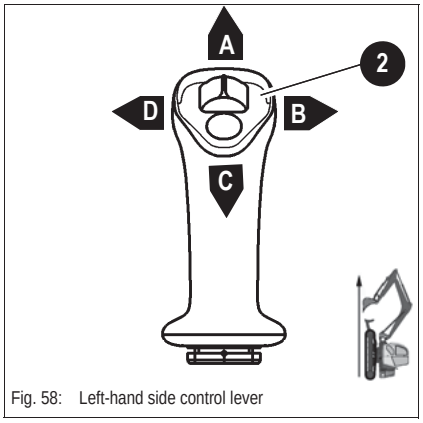


Fig. 58: Left-hand side control lever

Position	Lever	Function
• A	☞ *Forward*	➥ Stick is extended
• B	☞ *To the right*	➥ Upper carriage rotates to the right
• C	☞ *Backward*	➥ Stick is retracted
• D	☞ *To the left*	➥ Upper carriage rotates to the left

Important!

Always perform smooth control movements.

Changeover between auxiliary hydraulic system and boom swivel

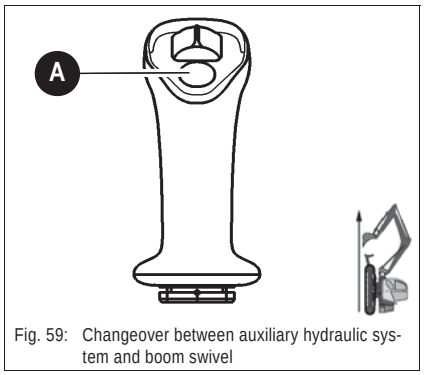


Fig. 59: Changeover between auxiliary hydraulic system and boom swivel

Starting the machine automatically engages the auxiliary hydraulics.

Engaging boom swivel:

☞ *Press button A* on the control lever.

Engaging on auxiliary hydraulic system:

☞ *Press button A* on the control lever.

Switching status display on/off for auxiliary hydraulics/boom swivel

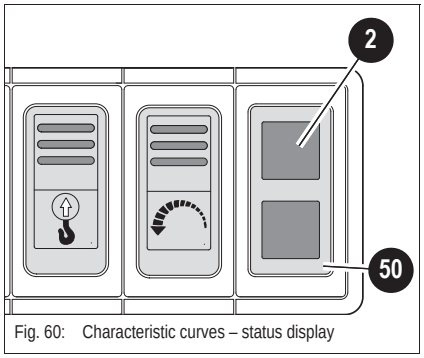


Fig. 60: Characteristic curves – status display

Boom swivel engages:

☞ *Indicator light **2** in status display **50** illuminates permanently.*

➥ Auxiliary hydraulic system is switched off and the boom can be swivelled.

Auxiliary hydraulic system engaged:

☞ *Indicator light **2** in status display **50** is out.*

➥ The boom cannot be swivelled and the auxiliary hydraulics is now operational.

Operating the boom/auxiliary hydraulics

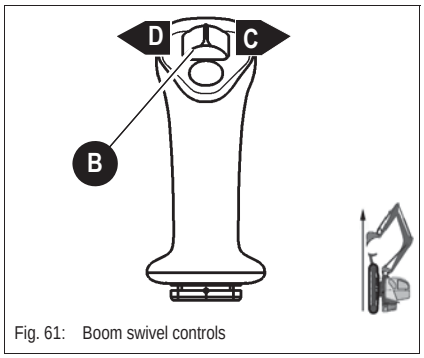


Fig. 61: Boom swivel controls

Movement to the left:

☞ *Move slide switch B on the control lever to the left **D.***

Movement to the right:

☞ *Move slide switch B* on the control lever to the right ***C.***

Hammer operation

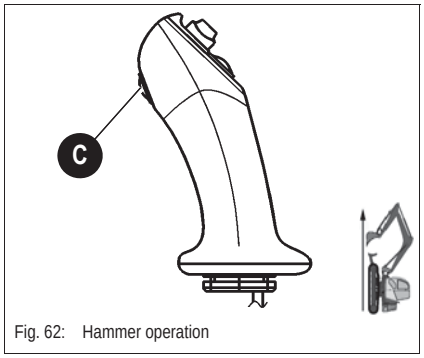


Fig. 62: Hammer operation

Engaging hammer operation:

☞ *Press and hold button C on the control lever.*

Disengaging hammer operation:

☞ *Release button C on the control lever.*

Adjusting control response:

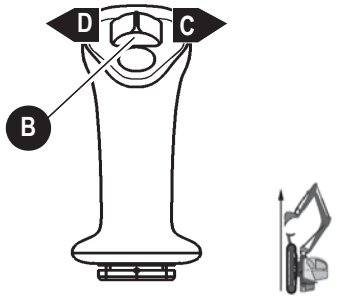


Fig. 63: Adjusting control response

Characteristic curve 1 (slow movements):

☞ *Turn off the starter.*

☞ *Then move slide switch B* to the left ***D.***

☞ *Hold slide switch B* to the left ***D*** and turn the starter key to position „***1***“ at the same time.

☞ *Wait 2 seconds and then release slide switch B.*

Status display **50** acknowledges by flashing once.

Characteristic curve 2 (fast movements – maximum throughput):

☞ *Switch off the starter.*

☞ *Then move slide switch B* to the right ***C.***

☞ *Hold slide switch B* to the right ***C*** *and turn the starter key to position „**1**“ at the same time.*

☞ *Wait 2 seconds and then release slide switch B.*

➥ Status display **50** acknowledges by flashing twice.

Characteristic curves – status display

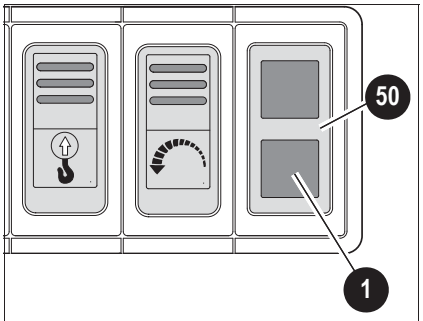


Fig. 64: Characteristic curves – status display

Displays the characteristic curve that has been selected for the control valve.

Characteristic curve 1 (slow movements):

*Indicator light **1** in status display **50** flashes once after turning thes starter key to position „**1**“.*

Characteristic curve 2 (fast movements – maximum throughput):

☞ *Indicator light **1** in status display **50** flashes twice after turning the starter key to position „**1**“.*

Important!

The characteristic curve that has been set last is active after the machine is started again.

Right-hand side control lever

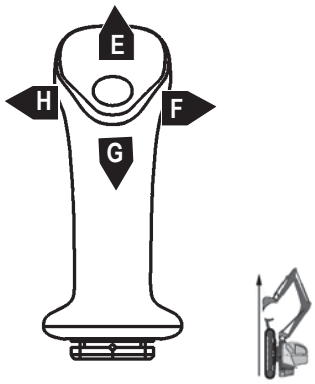


Fig. 65: Right-hand side control lever

Position	Lever	Function
• **E**	☞ *Forward*	➥ Boom is lowered
• **F**	☞ *To the right*	➥ Dumps bucket
• **G**	☞ *Backward*	➥ Boom is raised
• **H**	☞ *To the left*	➥ Fills bucket

Fig. 66: Functions of right-hand side control lever

Button	Function
☞ ***K***	➥ Horn

Lowering the boom with the engine switched off

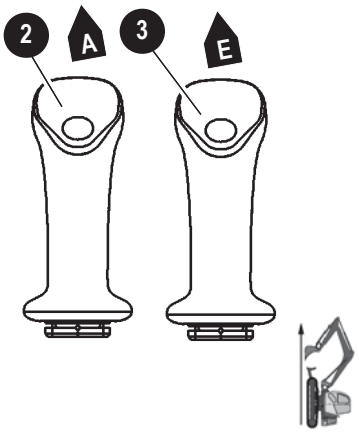


Fig. 67: Lowering the arm system with the engine switched off

Lower the boom as follows:

☞ *Make sure no one is close to the machine.*

☞ *Turn the starter key to position "**1**".*

☞ *Push forwards and hold the control lever (**A and E**).*

➥ Until the arm system is completely lowered.

☞ *Return the control lever to neutral.*

Releasing pressure

Proceed as follows:

☞ *Stop the engine.*

☞ *Move the control lever in all directions a few times.*

➥ This releases the pressure in the hydraulic system.

Rotating the upper carriage

Important!

Specific safety instructions

- Until the hydraulic fluid reaches operating temperature, the upper carriage can creep slightly after the control is placed in the neutral position.
- Fast actuation of the control lever rotates the upper carriage fast, slow actuation of the control lever rotates the upper carriage slowly.
- If the upper carriage needs to be rotated on a slope, let the engine run at idling speed and actuate the control lever very slowly. Proceed with extreme care and avoid abrupt movements if the bucket is full.

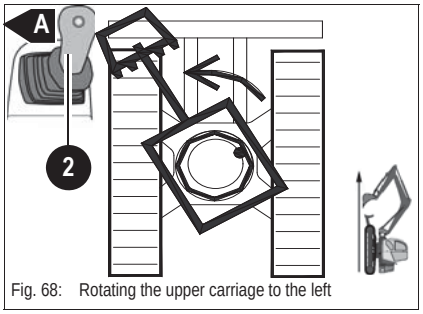


Fig. 68: Rotating the upper carriage to the left

Rotate the upper carriage to the left as follows:

☞ *Push the left-hand side control lever* **2** *to the left* ***A.***

➥ The upper carriage rotates to the left.

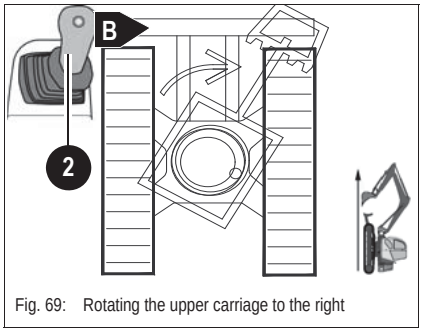


Fig. 69: Rotating the upper carriage to the right

Rotate the upper carriage to the right as follows:

☞ *Push the left-hand side control lever* **2** *to the right* ***B.***

➥ The upper carriage rotates to the right.

Rotating upper carriage

Upper carriage hydraulic brake:

This is a multi-disk mechanical brake that provides a secondary service brake and a primary parking brake function for the upper carriage. It is operated independently from the hydraulic brake of the upper carriage.

Upper carriage mechanical brake:

This is a multi-disk mechanical brake that provides a secondary service brake and a primary parking brake function for the upper carriage. It is operated independently from the hydraulic brake of the upper carriage.

Important!

The mechanical brake functions only to prevent upper carriage rotation. It does not function as a machine propulsion brake.

3.31 Control lever if equipped with 3rd control circuit (option): overview

Important!

Fast actuation of the control lever for the attachment moves the attachment fast. Slow actuation of the control lever moves the attachment slowly.

Left-hand side control lever

Warning!

Potential loss of machine control. The attachment will move in response to movement of the left hand control lever, potentially creating a hazardous condition affecting machine control.

☞ *Do not actuate the left hand control lever while the machine is traveling at maximum speeds on the work site.*

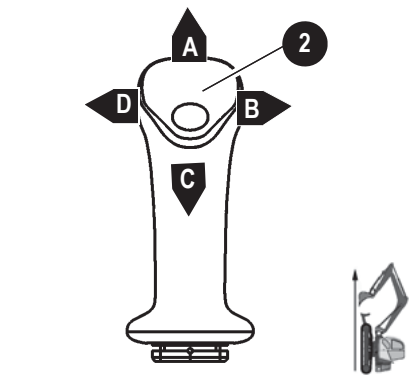


Fig. 70: Left-hand side control lever

Position	Lever	Function
• A	☞ *Forward*	➥ Stick is extended
• B	☞ *To the right*	➥ Upper carriage rotates to the right
• C	☞ *Backward*	➥ Stick is retracted
• D	☞ *To the left*	➥ Upper carriage rotates to the left

Important!

Always perform smooth control movements.

Boom swivel controls

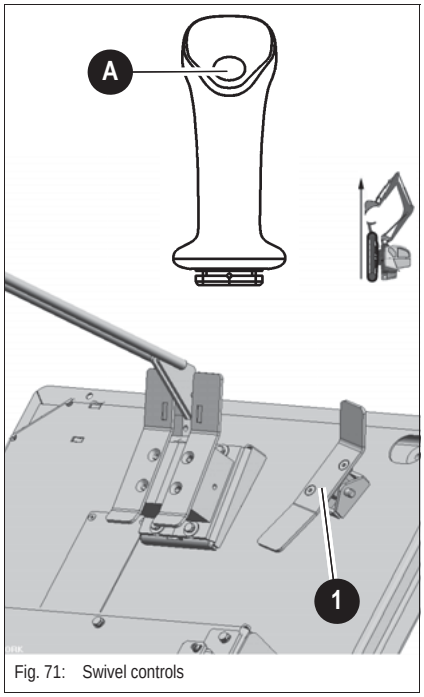


Fig. 71: Swivel controls

Swivel boom to the left:

☞ *Press and hold button A on the control lever.*

☞ Move hammer pedal **1** forwards at the same time.

Swivel boom to the right:

☞ *Press and hold button A on the control lever.*

☞ Move hammer pedal **1** backwards at the same time.

Right-hand side control lever

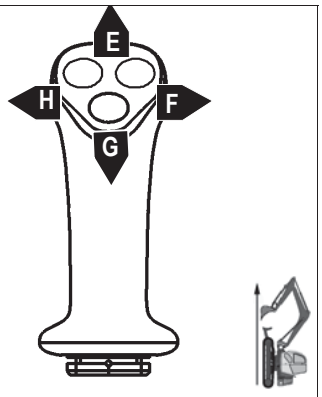


Fig. 72: Right-hand side control lever

Position	Lever	Function
• **E**	☞ *Forward*	➥ Boom is lowered
• **F**	☞ *To the right*	➥ Dumps bucket
• **G**	☞ *Backward*	➥ Boom is raised
• **H**	☞ *To the left*	➥ Fills bucket

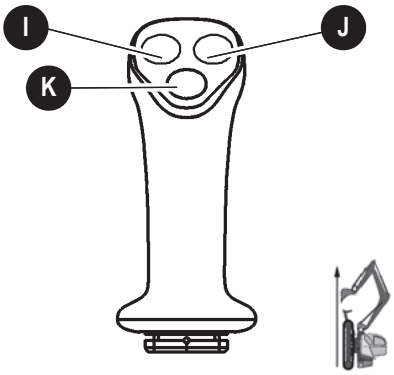


Fig. 73: Functions of right-hand side control lever

Button	Function
☞ *K*	➥ Horn
☞ *I*	➥ Operates the 3rd control circuit
☞ *J*	➥ Operates the 3rd control circuit

Lowering the boom with the engine switched off

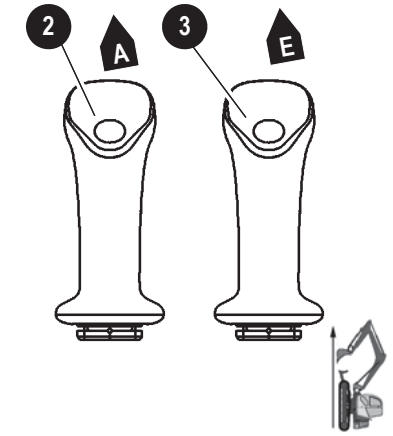


Fig. 74: Lowering the arm system with the engine switched off

Lower the boom as follows:

☞ *Make sure no one is dangerously close to the machine.*

☞ *Turn the starter key to position "**1**".*

☞ *Press forwards and hold the control lever (**A and E**).*

➥ Until the arm system is completely lowered.

☞ *Return the control lever to neutral.*

Releasing pressure

Proceed as follows:

☞ *Stop the engine*

☞ *Move the control lever in all directions a few times*

➥ This releases the pressure in the hydraulic system

Rotating the upper carriage

Specific safety instructions

- Until the hydraulic fluid reaches operating temperature, the upper carriage can creep slightly after the control is placed in the neutral position.
- Fast actuation of the control lever rotates the upper carriage fast, slow actuation of the control lever rotates the upper carriage slowly.
- If the upper carriage needs to be rotated on a slope, let the engine run at idling speed and actuate the control lever very slowly. Proceed with extreme care and avoid abrupt movements if the bucket is full.

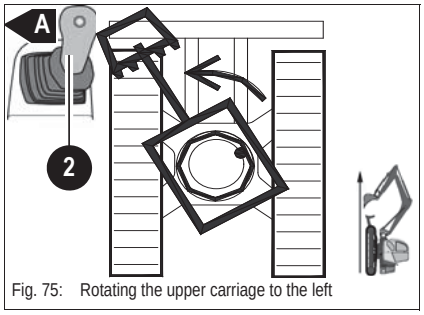


Fig. 75: Rotating the upper carriage to the left

Rotate the upper carriage to the left as follows:

☞ *Push the left-hand side control lever* **2** *to the left* ***A***

➥ The upper carriage rotates to the left

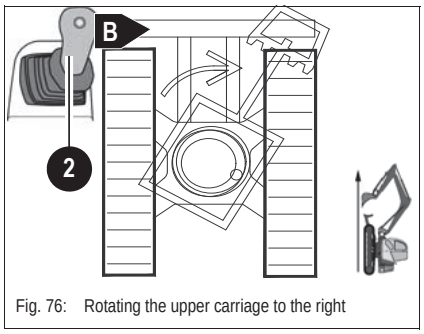


Fig. 76: Rotating the upper carriage to the right

Rotate the upper carriage to the right as follows:

☞ *Push the left-hand side control lever* **2** *to the right* ***B***

➥ The upper carriage rotates to the right

Rotating upper carriage brake

Upper carriage hydraulic brake:

The upper carriage's rotation is sufficiently braked by moving control lever **2** back to initial position. Moving the control lever in the opposite direction (counteraction) brakes the upper carriage with maximum hydraulic output.

Upper carriage mechanical brake:

This is a multi-disk mechanical brake that provides a secondary service brake and a primary parking brake function for the upper carriage. It is operated independently from the hydraulic brake of the upper carriage.

Important!

The mechanical brake functions only to prevent upper carriage rotation. It does not function as a machine propulsion brake.

3.32 Coupling and uncoupling attachments

Coupling and uncoupling the attachments is described below for a bucket. If you are fitting or removing attachments with their own hydraulic functions – e.g. damshell or offset bucket – you must follow the special information given in the Operator's Manual of the attachment. Also refer to the Operator's Manual of the attachment for the procedure to follow for fitting an attachment onto a quickhitch.

Specific safety instructions

Warning!

Personal injury hazard. Using improper tools or installation techniques while coupling attachments can cause injury.

☞ *Couple attachments only when the engine is stopped.*

☞ *Do not attempt to couple / uncouple attachments on sloping or uneven surfaces. The excavator and the attachment to be couple / uncouple shall be on firm surfaces to avoid sudden unintentional movement.*

☞ *Align the attachment holes in the bucket with a drift to facilitate sliding the pin into the respective holes provided for the connection between attachment and stick.*

☞ *Do not attempt to correct misalignment by using the connecting pin and a hammer. Striking the pin with a hammer can result in a steel chip or splinter being released.*

☞ *Always wear protective goggles, helmets, gloves, and other safety equipment when installing the attachment connecting pins.*

☞ *Do not remove the connecting pins from the bucket attachment unless the bucket has been stabilized to prevent motion when the connecting pins are removed. Do not stand on the closed (back) side of the bucket attachment when disconnecting the bucket.*

☞ *Do not attempt to disconnect the bucket attachment until it rests firmly on the ground or a stable surface. Removing the connecting pins of the bucket attachment with the attachment raised is an unsafe practice that will create a hazardous condition from the falling bucket.*

☞ *Do not align the connecting holes with fingers. Do not place fingers and hands over the connecting brackets to align the connecting hole to avoid potential shearing, pinching or crushing injuries.*

☞ *After the attachment is connected to the excavator stick and before resuming operation, make sure the attachment is safely locked with the stick and the tilt rod, or with the quick hitch option.*

Removing a bucket

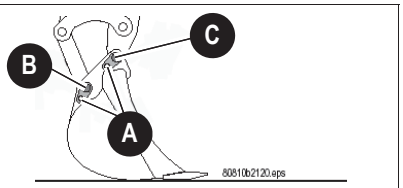


Fig. 77: Removing a bucket

☞ *Proceed as follows:*

- Lower the bucket to the ground with its flat side facing down.
- **Stop the engine.**
- Remove linch pin **A.**
- First remove pin **B**, and then pin **C**. Carefully expel pins that are stuck with a hammer and a brass punch.

If pin **C** is stuck:

- Start the engine.
- Slightly raise and lower the boom to take the load off the pin.
- Stop the engine.

Important!

Place the bucket only with minimum pressure on the ground as you remove the pins. The higher the pressure on the ground, the higher the resistance and the more difficult it is to remove the pins.

Mounting a bucket

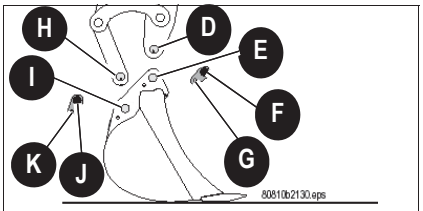


Fig. 78: Mounting a bucket

☞ *Proceed as follows:*

- Lower the bucket to the ground with its flat side facing down.
- Grease the joints and the pins before inserting them.
- Start the engine.
- Straighten the stick so that bores **D** and **E** are flush.
- Insert greased pin **F.**
- Tighten lock screw **G.**
- Actuate the stick hydraulic cylinder until bores **H** and **I** are flush.
- Insert the greased pin **J.**
- Lock linch pin **K.**

Quickhitch (option)

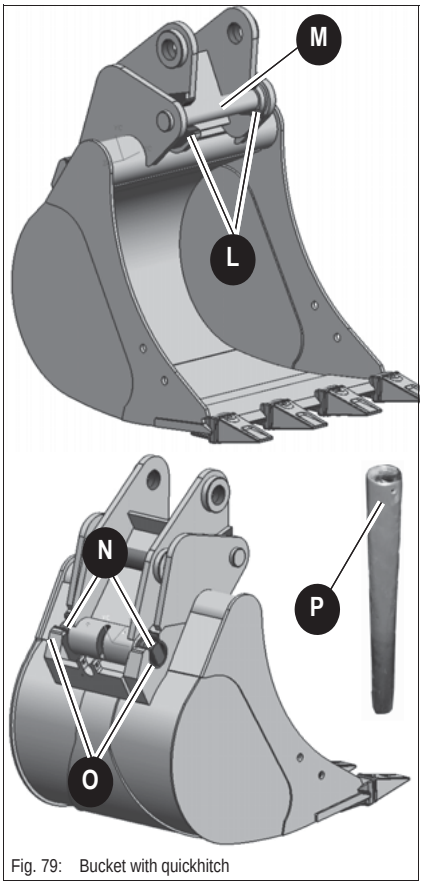


Fig. 79: Bucket with quickhitch

Warning!

Possibility of crushing / striking injury from attachments. An unlocked quick hitch attachment can move unexpectedly and strike nearby people or objects.

☞ *Before using the excavator, make sure the attachment is securely locked onto the quick hitch.*

☞ *The lock must be visible on either side of the mounting bore of the attachment to confirm the hitch is locked.*

☞ *Couple as follows:*

- Approach the machine to the attachment.
- Engage coupling bar **M** onto coupling claws **L** of the quickhitch to pick up the bucket.
- Engage lock mechanism **N** in mounting bores **O.**
- Place the bucket on level ground.

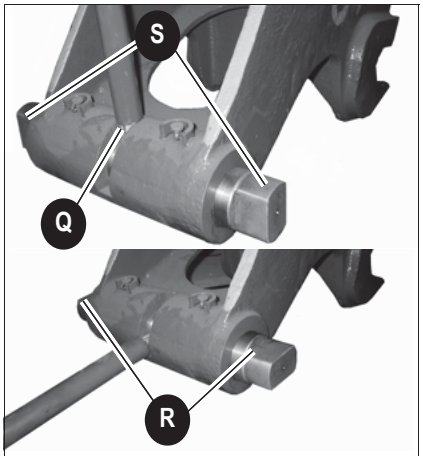


Fig. 80: Bucket with quickhitch

☞ *Lock as follows:*

- Stop the engine.
- Insert tube **P** (included in scope of delivery) in clamping sleeve **Q.**
- Press the tube downwards.
- The lock pins must be in position **R.**

☞ *Unlock as follows:*

- Stop the engine.
- Insert tube **P** (included in scope of delivery) in clamping sleeve **Q.**
- Press the tube upwards.
- The lock pins must be in position **S.**

Connections for auxiliary hydraulics

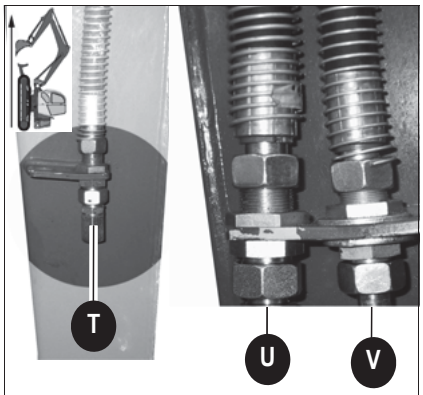


Fig. 81: Connections for auxiliary hydraulics

Port	Stick (left)	Stick (right)
T	☞ *Pressure line*	
U		☞ *Large reflux line*
V		☞ *Pressure line*

Important!

Follow the instructions in the Operator's Manual of the attachment manufacturer for connecting the auxiliary hydraulics to attachments.

Grab couplings

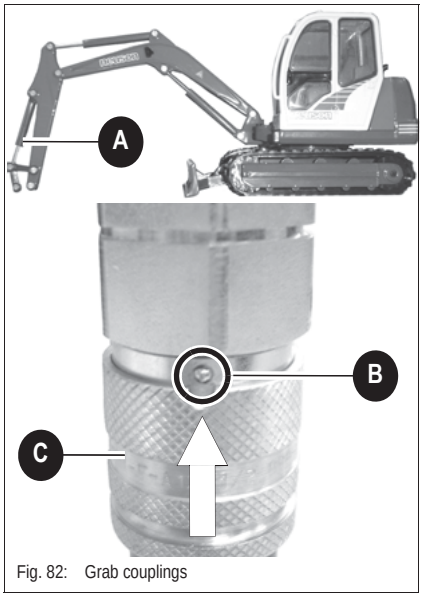


Fig. 82: Grab couplings

Connect and disconnect the hydraulic couplings as follows:

Removing the coupling:

☞ *Turn the starter key.*

☞ *Park the machine on firm and level ground.*

☞ *Extend stick hydraulic cylinder **A** halfway through.*

☞ *Stop the engine.*

☞ *Release the pressure on stick hydraulic cylinder **A** by moving the right-hand side control lever to the left and right.*

☞ *Fold the control lever base up.*

☞ *Turn lock sleeve **C** towards lock ball **B.***

☞ *Pull lock sleeve **C** upwards.*

☞ The coupling opens.

Connecting the coupling:

☞ *Clean the male and female ends of the coupling.*

☞ Align the male and female ends of the coupling and push them together until movement stops.

☞ Pull the coupling sleeve away from the ball (Fig. 82) until it stops moving.

☞ *Rotate the sleeve (Fig. 82) to misalign the slot in the sleeve with the ball in the opposite half of the coupling. This will prevent unintended sleeve movement that may cause the coupling to disconnect unintentionally.*

Attachments

Important!

Refer to the Operator's and maintenance manual of the attachment manufacturer for using and performing maintenance on attachments such as hammers, grabs etc.

3.33 Load holding control valve (option)

Important!

The load holding control valve limits boom drop in the event of a boom hydraulic hose assembly or fitting failure (reference ISO 8643).

☞ *In the event of damage, proceed as follows:*

- Immediately stop the machine.
- Move the boom to transport position.
- Fold up the left-hand side control lever base.
- Switch off the engine.
- Remove the ignition key and lock the cab.
- Lock the machine and the attachment.
- Have damage to the hydraulic system and to the hose burst valve itself immediately repaired and checked by technical staff with suitable training.

Environment!

Collect the spilled hydraulic oil in a suitable container.

☞ Dispose of spilled hydraulic oil by an ecologically safe method.

☞ Always contact the relevant authorities or commercial establishments in charge of oil disposal before disposing of biodegradable oil.

3.34 Working with the excavator

Working with the standard bucket

The following section describes work operations with the machine equipped with the standard bucket.

The standard bucket is mainly used for digging earth, and for loosening, picking up, digging and loading loose or solid material.

Inadmissible work

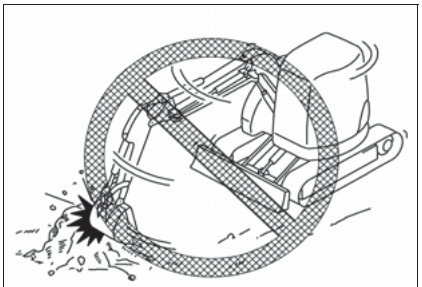


Fig. 83: Working with the swivel force

Working with the swivel force

☞ *Do not use the swivel force of the boom to compact the ground or tear down piles or walls.*

☞ *Do not allow the bucket teeth to penetrate into the ground as you rotate the upper carriage or swivel the boom.*

➥ Working this way damages the attachments.

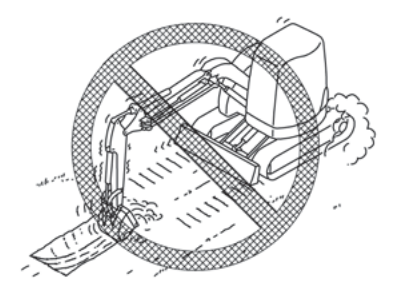


Fig. 84: Working with the drive force

Working with the travel force

☞ *Do not allow the bucket to penetrate into the ground and do not excavate by using the drive force of the machine.*

➥ Working this way can damage the machine or the attachments.

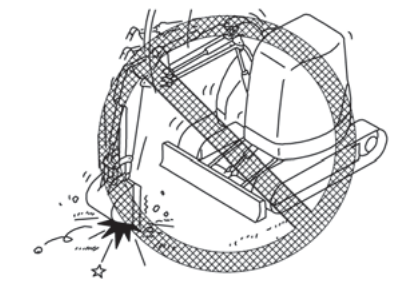


Fig. 85: Avoid impact during operation

Avoid impact during operation to avoid damage to the excavator bucket and machine components

☞ *Do not suddenly drop the bucket to increase penetration, break material, or compact material.*

➥ Working this way can greatly reduce the machine's service life.

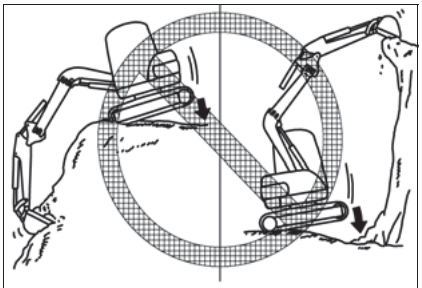


Fig. 86: Working with the machine's falling force

Avoid tipping the machine and then releasing the boom hydraulics to break up material or compact the work surface.

☞ *This is not only hazardous operation; it is abusive operation.*

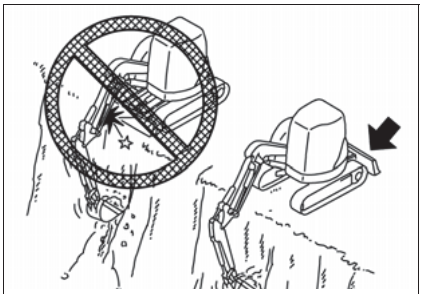


Fig. 87: No thrusting the stabilizer blade

Stabilizer blade fully lowered

☞ *Fully lower the stabilizer blade when using it on the side opposite the excavation side.*

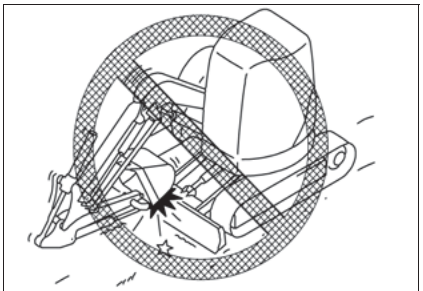


Fig. 88: Retracting attachments

Retracting attachments

☞ *Make sure the bucket does not hit the stabilizer blade as you retract attachments for operating or transport.*

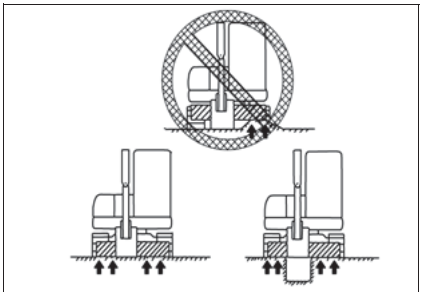


Fig. 89: stabilizer blade fully lowered

Working with the stabilizer blade

☞ *Do not ram objects with the stabilizer blade.*

☞ *Do not pry objects with the stabilizer blade.*

☞ *Do not support the excavator on one corner of the stabilizer blade.*

Excavator work position

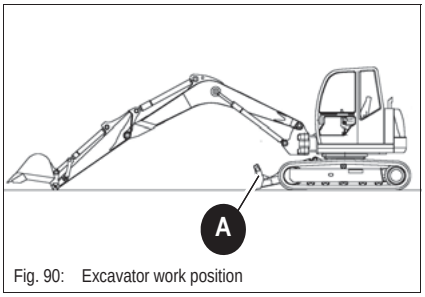


Fig. 90: Excavator work position

Proceed as follows:

☞ *Place stabilizer blade A on the side you want to dig.*

Bucket position when digging

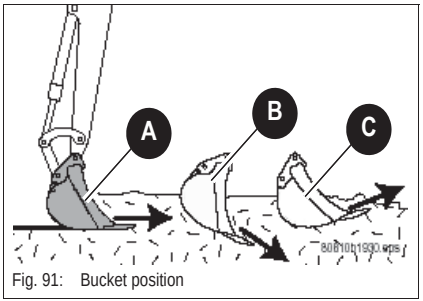


Fig. 91: Bucket position

☞ *Move the bucket as shown in **A.***

➥ Move the flat side of the bucket parallel to the ground.

Important!

Position **B** causes the bucket to penetrate into the ground. Work slows down, and the engine and the hydraulic pump are subject to overload if this position is used over a longer period of time!
Position **C** causes the bucket to be forced upwards and not to be filled completely. This slows down work, too.

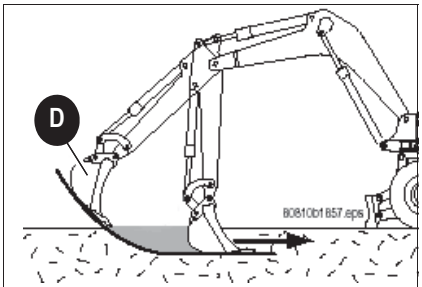


Fig. 92: Penetrating into the ground with the bucket and aligning it

☞ *Dig as follows:*

- Penetrate into the ground with the bucket **D.**

Lower the stick, and at the same time:

- Align the bucket so that the flat side is parallel to the ground (see bucket position (Fig. 45)).
- Lower the bucket if necassary to reach the required digging depth.

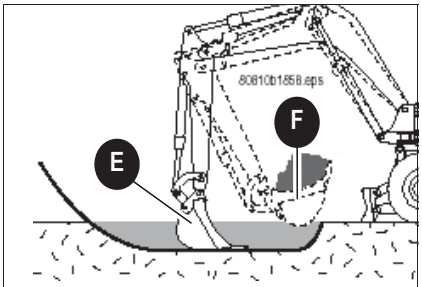


Fig. 93: Filling the bucket

☞ *Pull bucket* **E** *parallel to the ground towards the excavator. At the same time, if possible:*

- Move the stick towards the excavator.
- Lower the boom.

☞ *With a sufficiently full bucket* **E***:*

- Continue moving the stick towards the excavator.
- At the same time, curl the bucket to complete the filling operation as the stick is moved toward the machine.

Excavating trenches

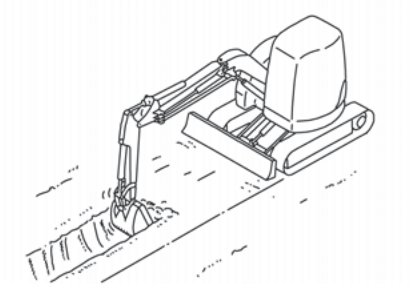


Fig. 94: Excavating trenches

- Excavating trenches is more efficient:
  - ☞ By using a suitable bucket for this work and positioning the track tracks parallel to the side of the trench.
  - ☞ In case of large trenches, first excavate the side sections and then the center section.

Loading

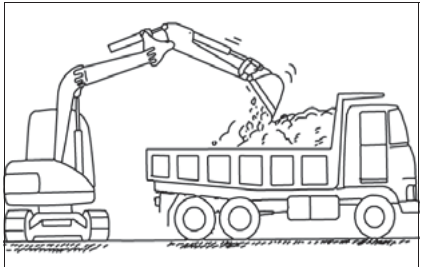


Fig. 95: Loading

- Loading in confined areas with a limited angle of rotation is more efficient:
  - ☞ By positioning the truck so as to ensure maximum visibility for the driver of the excavator.
- Loading material on trucks is easier and faster if the hydraulic excavator is placed at the rear end of the truck and not at the sides.

Grading

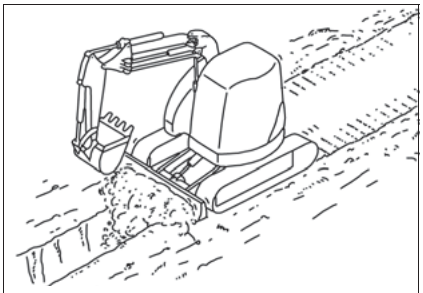


Fig. 96: Grading

- Use the stabilizer blade to fill in trenches and to grade surfaces.

Important!

Work on level ground. Grade with the stabilizer blade first in case of sloping ground.

Excavating trenches sideways

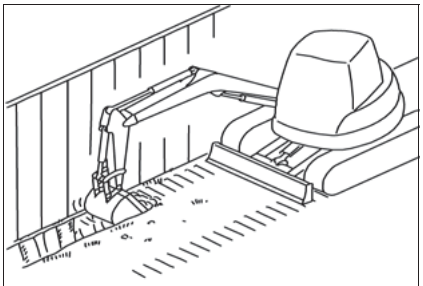


Fig. 97: Excavating trenches sideways

- The machine can be used for excavating trenches sideways in confined areas

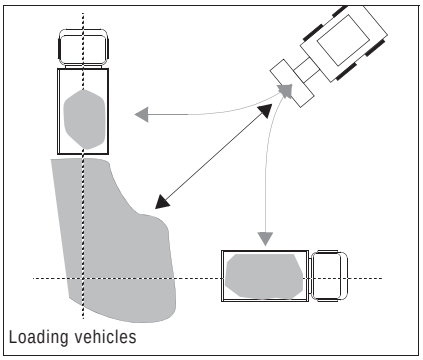
  ☞ By rotating the upper carriage and swivelling the main boom (combined position and movement of both).

Recommendations for digging

When planning and performing digging work, we recommend that you observe the following points:

- Exits from pits must be outside the excavation face and as level as possible.
- Dig by removing adjacent strips if possible.
- Always travel out of an excavation up the grade, with the bucket on the up slope side of the machine.
- When entering an excavation down a slope with a loaded bucket, always travel with the bucket on the up slope side.

Loading vehicles



Loading vehicles

When loading vehicles, we recommend taking the following into account:

- If possible, the truck and the working direction of the bucket should form an angle of 45°.
- Only raise the full bucket to dump height when you are driving in a straight line towards the truck.
- If possible dump with the wind behind you to keep the dust away from your eyes, air filters and fans!.

Freeing the machine

If your machine gets stuck in the ground:

☞ *Dump the contents of the bucket.*

☞ *Extend the boom, stick, and bucket to the maximum reach and lower the bucket to the ground surface..*

☞ *Slowly uncurl the bucket to push the machine away from the bucket. While doing this, operate the track propulsion system slowly to assist the action of the bucket.*

☞ *Under alternate circumstances, the bucket can be curled to free the machine in the direction of the curling action.*

☞ *Once the machine has reached a firm surface, maneuver away from the unstable surface conditions.*

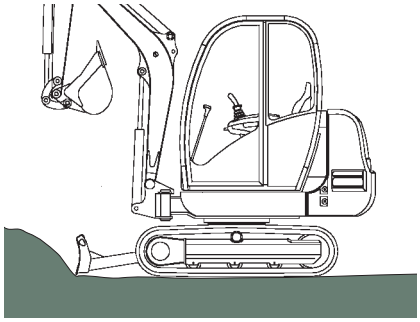
3.35 Grading

Warning!

Possibility of crushing/striking injury from a moving stabilizer blade.

☞ *Make sure no one is in the area of danger when working with the stabilizer blade.*

Grading



☞ *Lower the stabilizer blade to the ground – see chapter Stabilizer blade operation on page 3-20.*

☞ *Set the depth of the layer you want to remove with the stabilizer blade lever.*

➥ Do not raise the machine with the stabilizer blade.

➥ The clearance between the stabilizer blade and the ground should be about 1 cm (0.4 in).

Working alongside trenches

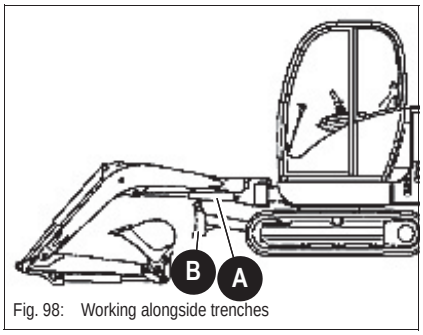


Fig. 98: Working alongside trenches

NOTICE

Possible piston rod damage. Risk of damaging piston rod **A** of the boom ram when working alongside trenches, slopes etc. and operating the stabilizer blade and the boom incorrectly.

☞ Always use stabilizer blade **B** for stabilisation during excavation work.

☞ Make sure stabilizer blade **B** never touches piston rod **A** (*Fig. 98*).

☞ If you perform deep excavations with stabilizer blade **B** at the front, make sure piston rod **A** does not touch or rest on stabilizer blade **B** (*Fig. 99*).

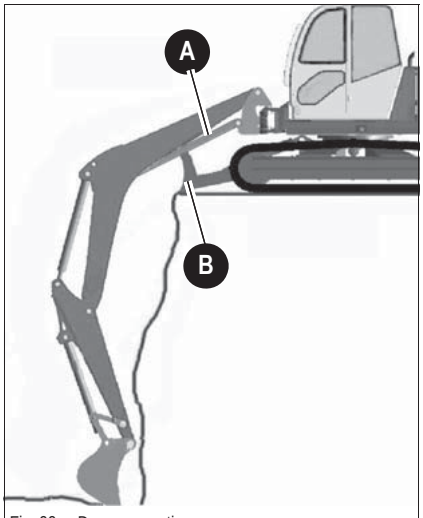


Fig. 99: Deep excavation

Stabilizer blade at rear

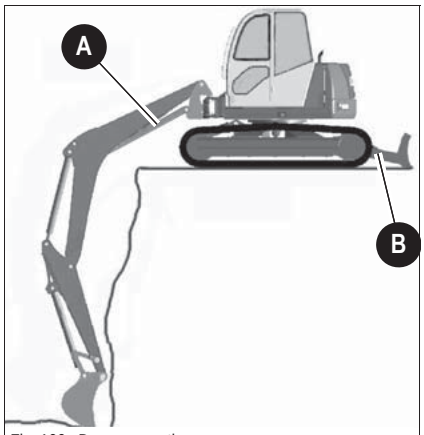


Fig. 100: Deep excavation

Warning!

Personal injury hazard. Improperly operating the machine with the stabilizer blade B at the rear when working alongside trenches, slopes, etc. can cause the machine to tip or fall.

☞ *Use this work position (Fig. 100) only in an extreme emergency since the machine can tilt forwards into the trench.*

☞ *We recommend using the first work position (Fig. 99) described above.*

☞ *Make sure piston rod **A** does not touch stabilizer blade **B** under any circumstances.*

3.36 Safe load indicator (option)

Warning!

Possibility of personal injury or equipment damage from an inaccurate or non-functioning safe load indicator.

☞ *Always switch on the safe load indicator!*

☞ *Contact your* Wacker *Neuson dealer if the safe load indicator is not adjusted correctly.*

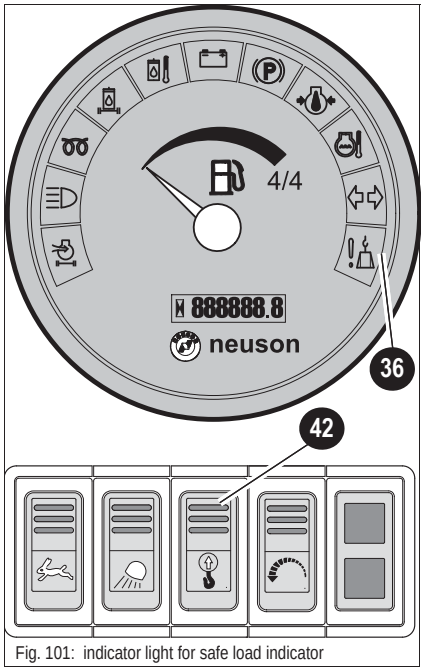


Fig. 101: indicator light for safe load indicator

Engage the safe load indicator as follows:

☞ *Press switch **42** on the instrument panel.*

➥ The indicator light in switch 42 illuminates the lift symbol if an overload is sensed.

The safe load indicator light's indicator light illuminates, and an acoustic warning is given, to warn the operator he has reached the maximum admissible load. Any further increase of the load moment can cause the machine to overturn in this situation. Therefore the operator must immediately reduce the load moment as follows:

☞ *Reduce the distance between the upper carriage and the load until both the acoustic signal and the indicator light in the round display element go out.*

4 Troubleshooting

The information given in this chapter is provided for maintenance staff, for fast and reliable detection of malfunctions and their appropriate repair.

Repairs must be performed by authorised staff.

4.1 Engine trouble

Problem	Possible causes	See
Engine does not start or is not easy to start	Wrong SAE grade of engine lubrication oil	*5-32*
	Fuel grade does not comply with specifications	*5-32*
	Defective or discharged battery	*5-27*
	Loose or oxidized cable connections in starter circuit	
	Defective starter, or pinion does not engage	
	Wrong valve clearance	
	Defective fuel injector	
Engine starts, but does not run smoothly	Fuel grade does not comply with specifications	*5-32*
	Wrong valve clearance	
	Injection line leaks	
	Defective fuel injector	
Engine overheats. Temperature warning system responds	Oil level too low	*5-5*
	Oil level too high	*5-5*
	Dirty air filter	*5-11*
	Dirty oil cooler fins	*5-7*
	Defective fan, torn or loose V-belt	*5-13*
	Resistance in cooling system too high, flow capacity too low	
	Defective fuel injector	
Insufficient engine output	Oil level too high	*5-32*
	Fuel grade does not comply with specifications	*5-32*
	Dirty air filter	*5-11*
	Defective air filter maintenance switch or gauge	*3-10*
	Wrong valve clearance	
	Injection line leaks	
	Defective fuel injector	
Engine does not run on all cylinders	Injection line leaks	
	Defective fuel injector	
Insufficient or no engine oil pressure	Oil level too low	*5-5*
	Machine inclination too high (max. 15°)	
	Wrong SAE grade of engine lubrication oil	*5-32*

Problem		Possible causes	See
Engine oil consumption too high		Oil level too high	*5-5*
		Machine inclination too high (max. 15°)	
Engine smoke	Blue	Oil level too high	*5-5*
		Machine inclination too high (max. 15°)	
	White	Engine starting temperature too low	
		Fuel grade does not comply with specifications	*5-32*
		Wrong valve clearance	
		Defective fuel injector	
	Black	Dirty air filter	*5-11*
		Defective air filter maintenance switch or gauge	*3-10*
		Wrong valve clearance	
		Defective fuel injector	

5 Maintenance

5.1 Introduction

Operational readiness and the service life of machines are heavily dependent on maintenance.

It is therefore in the interest of the machine owner to perform the prescribed maintenance work.

Before performing service and maintenance work, always read, understand and follow the instructions given in:

- Chapter 2 “SAFETY INSTRUCTIONS” of this Operator's Manual
- The Operator's Manuals of the attachments.

Perform the prescribed inspections and rectify any disorders before putting the machine into operation.

Secure open (engine) covers appropriately. Do not open (engine) covers on slopes or in strong wind.

Dirt can be blown away and cause severe injuries when using compressed air. Always wear protective goggles, masks and clothing.

Daily service and maintenance work, and maintenance according to maintenance plan **“A”** must be performed by a specifically trained driver. All other maintenance work must be performed by trained and qualified staff only.

The maintenance plans indicate when the maintenance work mentioned below must be performed – *see Maintenance plan (overview)* on page 5-34.

5.2 Fuel system

Specific safety instructions

Warning!

Fire and fume inhalation hazards.
☞ *Do not refuel in closed rooms.*
☞ *Never perform maintenance or repair work on the fuel system in the vicinity of open flames or sparks.*
☞ *Never smoke when working on the fuel system or when refueling.*
☞ *Before refueling, stop the engine and remove the starting key.*
☞ *Wipe up any fuel spills immediately.*
☞ *Remove spilled fuel from the machine components and surfaces before use to reduce the risk of fire.*

Refueling

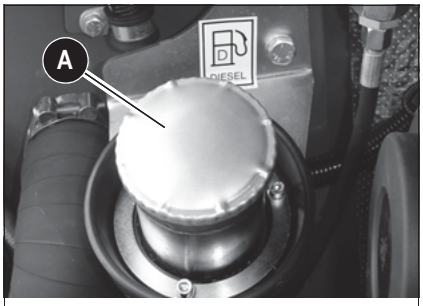


Fig. 1: Fuel filler inlet

The fuel fill inlet A in Fig. 1 is located under the engine cover on the right rear side of the machine.

Environment!

Use a suitable container to collect the fuel as it drains and dispose of it in an environmentally friendly manner!

Important!

Do not run the fuel tank completely dry. Otherwise, air is drawn into the fuel system. This requires bleeding the fuel system – *see Bleeding the fuel system* on page 5-4.

Important!

Fill the tank with the correct fuel type at the end of each working day. This prevents condensation water from forming in the fuel tank over night. Do not fill the tank completely but leave some space for the fuel to expand.

Draining the fuel

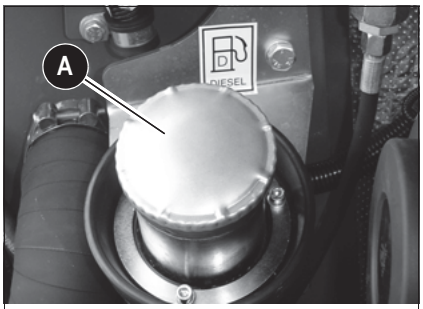


Fig. 2: Fuel filler inlet

Warning!

Fire hazard. Draining fuel may ignite if it comes into contact with hot engine parts or the muffler system.
☞ *Never bleed the fuel system if the engine is hot.*

Environment!

Use a suitable container to collect the fuel as it drains and dispose of it in an environmentally friendly manner!

Proceed as follows:
☞ Open filler inlet **A.**
☞ Drain the fuel with a suitable pump.
➥ Collect the fuel in a suitable container.

Stationary fuel pumps

General

Only refuel from stationary fuel pumps. Fuel from barrels or cans is usually contaminated.

Even the smallest particles of dirt can cause

- Increased engine wear
- Malfunctions in the fuel system and
- Reduced effectiveness of the fuel filters

Refueling from barrels

If refueling from barrels cannot be avoided, note the following points (see fig. 3):

- Barrels must neither be rolled nor tilted before refuelling
- Protect the suction pipe opening of the barrel pump with a fine-mesh strainer
- Immerse the suction pipe into the barrel until there is 15 cm (6") of clearance from the end of the pipe to the bottom of the barrel.
- Only fill the tank using refueling aids (funnels or filler pipes) with integral microfilter
- Keep all refueling containers clean at all times

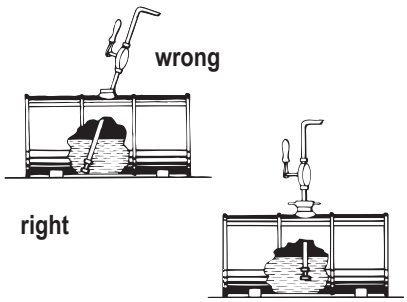


Fig. 3: Refuelling from a barrel

Diesel fuel specification

Use only high-grade fuels

Grade	Use
• 2-D ASTM D975 – 94	USA
• 1-D ASTM D975 – 94	
• EN 590 : 96	EU
• ISO 8217 DMX	International
• BS 2869 – A1	England
• BS 2869 – A2	

Bleeding the fuel system

Warning!

Fire and burn hazard. Draining fuel may ignite if it comes into contact with hot engine parts or the exhaust system. Hot fuel may cause burns.

☞ *Always wear protective equipment and safety glasses when working with fuel.*

☞ *Never bleed the fuel system if the engine is hot.*

Bleed the fuel system in the following cases:

- After removing and fitting the fuel filter, prefilter or the fuel lines back on again.
- After running the fuel tank empty.
- After running the engine again, after it has been out of service for a longer period of time.

☞ *Bleed the fuel system as follows:*

- Fill the fuel tank.
- Turn the starter key to the first position.
- Wait about 5 minutes while the fuel system bleeds itself automatically.
- Start the engine.

If the engine runs smoothly for a while, and then stops; or if it does not run smoothly:

- Stop off the engine.
- Bleed the fuel system again as described above.
- Have this checked by a qualified technician if necessary.

Fuel prefilter with water separator

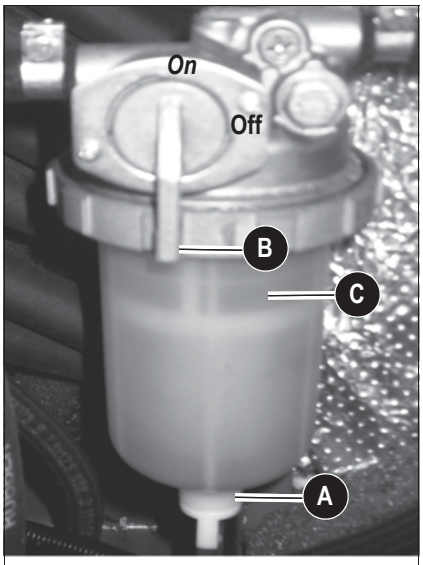


Fig. 4: Fuel prefilter

Interrupt fuel supply as follows:

☞ *Turn ball-type cock **B** to the **OFF** mark.*

➥ Fuel supply is interrupted.

☞ *Turn ball-type cock **B** to the **ON** mark.*

Fuel supply is open again.

Check the fuel prefilter as follows:

☞ *If the red indicator ring rises to position **C**.*

☞ *Unscrew thread **A**.*

➥ The water drains.

➥ Wait until the indicator ring returns to the bottom of the water separator.

☞ *Screw thread **A** back on again.*

Environment!

Thread **A** is fitted with a hose. Collect the water as it drains with a suitable container and dispose of it in an environmentally friendly manner.

5.3 Engine lubrication system

NOTICE

Possibility of equipment damage. If the engine oil level is too low or if an oil change is overdue, this can cause engine damage or loss of power.

☞ Have the oil changed by an authorized service facility.

☞ Refer to chapter 5.15 “Maintenance Plan (Overview).

Checking the oil level

Important!

Check the oil level once a day.
We recommend checking it before starting the engine. After stopping a warm engine, wait at least 5 minutes before checking.

Checking the oil level

☞ *Proceed as follows:*

- Park the machine on level ground.
- Stop the engine!
- Fold the control lever base up.
- Let the engine cool down.
- Open the engine cover.
- Clean the area around the oil dipstick with a lint-free cloth.
- Remove the dipstick **A** (Fig. 4).

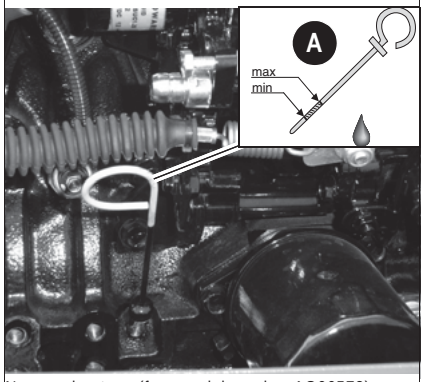
☞ Wipe it with a lint-free cloth.

☞ Push it back in as far as possible.

☞ Withdraw it and read off the oil level.

☞ *Do not allow the engine oil level to fall below the MIN mark on the dipstick* **A.**

Old engine type (up to serial number AG00572):



New engine type (from serial number AG00573):

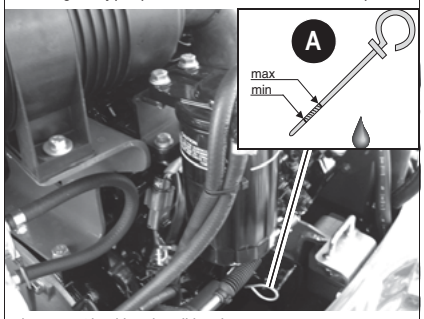


Fig. 5: Checking the oil level

Filling up engine oil

NOTICE

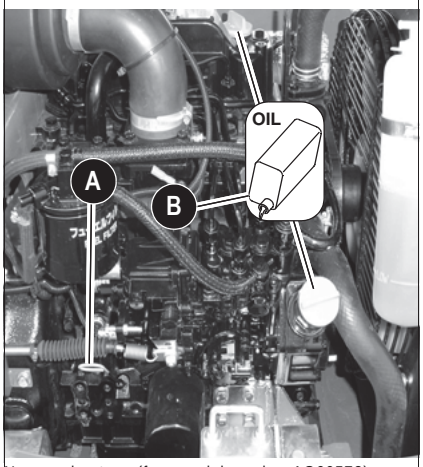
Possibility of engine damage from too much oil or incorrect engine oil.

☞Do not add engine oil above the MAX mark of oil dipstick 6/**A.**
☞Use only the specified engine oil.

Environment!

Use a suitable container to collect the engine oil as it drains and dispose of it in an environmentally friendly manner!

Old engine type (up to serial number AG00572):



New engine type (from serial number AG00573):

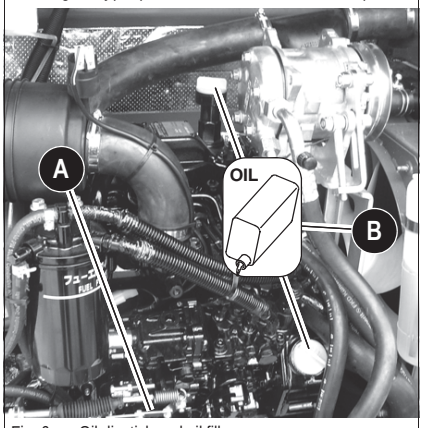


Fig. 6: Oil dipstick and oil filler cap

Adding engine oil

☞ *Proceed as follows:*

- Clean the area around oil filler cap **B** with a lint-free cloth.
- Open filler cap **B.**
- Raise oil dipstick **A** slightly to allow any trapped air to escape.
- Add engine oil.
- Wait about 3 minutes until all the oil has run into the oil sump.
- Check the oil level – *see Checking the oil level* on page 5-5.
- Add oil if necessary and check the oil level again.
- Close filler cap **B.**
- Push oil dipstick **A** back in as far as possible.
- Completely remove all oil spills from the engine.

5.4 Engine and hydraulics cooling system

The hydraulic fluid cooler and engine coolant radiator are located in the engine compartment next to the engine. The cooling system maintains the optimum operating temperature in the hydraulic work and propulsion systems as well as the diesel engine.

The expansion tank for the coolant is also located in the engine compartment, in front of and above the oil cooler.

Checking / adding coolant

NOTICE

Improperly maintaining the cooling system can cause engine damage.

- *Dirt on the radiator fins reduces the cooler's heat dissipation capacity.*
  - ☞ Clean the outside of the radiator at regular intervals. Use oil-free compressed air (2 bar = 29 psi max.) to clean. Maintain distance from the radiator to avoid damage to the radiator fins. Refer to the maintenance plans for the cleaning intervals.
  - ☞ In dusty or dirty work conditions, clean more frequently than indicated in the maintenance plans.
- *An insufficient coolant level reduces the heat dissipation capacity and can lead to engine damage:*
  - ☞ Check the coolant level at regular intervals. Refer to the maintenance plans in the appendix for the intervals.
  - ☞ If coolant must be added frequently, check the cooling system for leaks and/or contact your dealer.
  - ☞ To avoid potential mechanical damage to the system, do not add cold water or coolant to the engine radiator unless the system components are cool.
  - ☞ After filling the expansion tank, make a test run with the engine and check the coolant level again after switching off the engine.
- *The use of the wrong coolant can destroy the engine and the cooler.*
  - ☞ Add enough antifreeze compound to the coolant – but never more than 50 %. If possible use brand-name antifreeze compounds with anticorrosion additives.
  - ☞ Observe the coolant compound table – *see chapter 6.10 Coolant compound table* on page 6-5.
  - ☞ Do not use cooler cleaning compounds if an antifreeze compound has been added to the coolant – otherwise this causes sludge to form, which can damage the engine.
- *Follow the procedure below after filling the expansion tank:*
  - ☞ Test run the engine.
  - ☞ Stop the engine.
  - ☞ Let the engine cool down.
  - ☞ Check the coolant level again.

Environment!

Use a suitable container to collect the coolant as it drains and dispose of it in an environmentally friendly manner!

Specific safety instructions

Warning!

Burn hazard. The coolant in the system is hot under normal operating conditions and under about 1 bar (15 psi) pressure.

☞ *Never open the coolant tank or drain coolant if the engine is hot.*

☞ *Wait at least 15 minutes after stopping the engine.*

☞ *Wear protective glasses, gloves and clothing.*

☞ *Open filler cap B – see chapter 7 Radiator on page 5-9 to the first notch and allow the pressure to escape.*

☞ *Do not proceed with checking, maintaining or repairing the cooling system unless the components are comfortable to touch (less than 49°C (120°F)).*

Warning!

Hazardous material. Coolant mixtures are poisonous and flammable. Contact with skin and eyes should be avoided.

☞ *Wash skin immediately to remove coolant mixture from the skin to avoid irritation.*

☞ *Wash eyes immediately if coolant comes in contact with the eye. Seek medical attention immediately.*

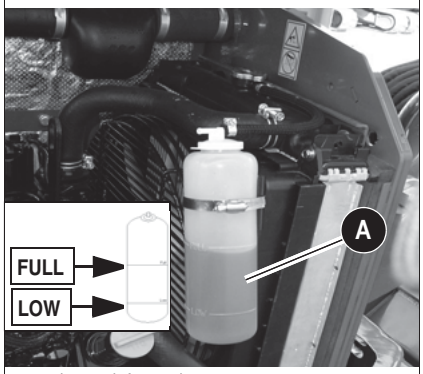
☞ *Store coolant concentrate and mixtures in a secure space to prevent unauthorized contact.*

☞ *Do not store or use coolant or coolant mixtures near open flames including smoking materials.*

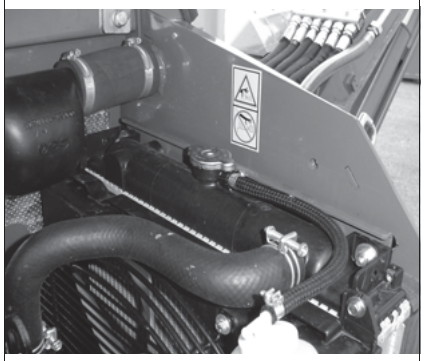
☞ *Dispose of used coolant through approved methods for recycling. Do not dispose of coolant or mixtures in sewers, toilets or dumping on the ground.*

5.5 Checking the coolant level

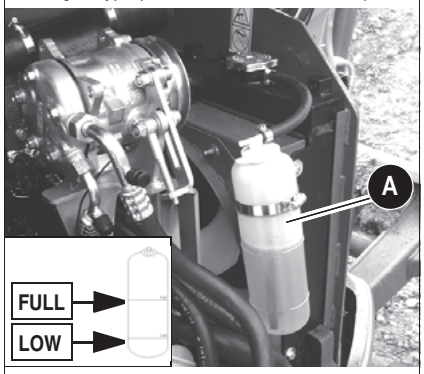
Old engine type (up to serial number AG00572):



Expansion tank for coolant



New engine type (from serial number AG00573):



Expansion tank for coolant

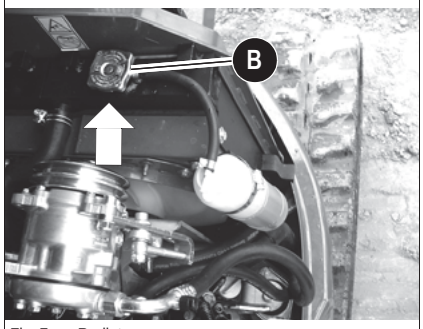


Fig. 7: Radiator

☞ *Proceed as follows:*

- Park the machine on level ground.
- Stop the engine!
- Fold the control lever base up.
- Remove the key and carry it with you.
- Let the engine and the coolant cool down.
- Open the engine cover.
- Check the coolant level on the transparent coolant tank **A** and on the radiator **B.**

☞ If the coolant level is below the **LOW** seam or if there is no coolant at the radiator's filler inlet:

➥ Add coolant.

Important!

Check the coolant level once a day.
We recommend checking it before starting the engine.

Adding coolant

After the engine has cooled down:

☞ *Release overpressure in the radiator.*

☞ *Carefully open the cap to the first notch and fully release the pressure.*

☞ *Open filler cap B.*

☞ *Add coolant up to the lower edge of the filler inlet (radiator).*

☞ *Close filler cap B.*

☞ *Start the engine and let it warm up for about 5 – 10 minutes.*

☞ *Stop the engine.*

☞ *Remove the key and carry it with you.*

☞ *Let the engine cool down.*

☞ *Check the coolant level again.*

➥ The coolant level must be between the **LOW and FULL** tank seams.

☞ *If necessary, add coolant and repeat the procedure until the coolant level remains constant.*

Important!

Check the antifreeze every year before the cold season sets in.

Draining coolant

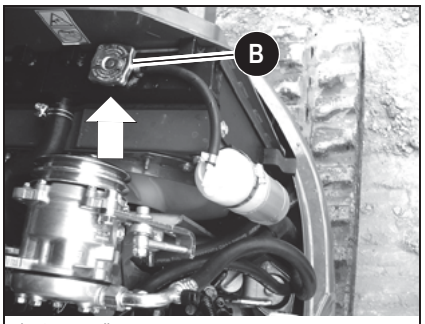


Fig. 8: Radiator

Warning!

Burn hazard. Coolant is flammable and very hot.

☞ *Always wear appropriate protective equipment such as gloves.*

☞ *Do not smoke while draining coolant.*

Environment!

Use a suitable container to collect the coolant as it drains and dispose of it in an environmentally friendly manner!

Proceed as follows:

☞ Stop the engine.

☞ Let the coolant cool down.

☞ Open filler inlet **B**.

☞ Drain the coolant with a suitable pump.

➥ Collect the coolant in a suitable container.

5.6 Air filter

NOTICE

Possible equipment damage. The filter cartridge will be damaged if it is washed or brushed out.

Keep in mind the following to avoid premature engine wear:

- ☞ Do not clean the filter cartridge.
- ☞ Replace the filter cartridge when the indicator light comes on.
- ☞ Never reuse a damaged filter cartridge.
- ☞ Ensure cleanliness when replacing the filter cartridge.

Replace the air filter element(s) as specified by the maintenance schedule or more often if indicator light 31 is red!

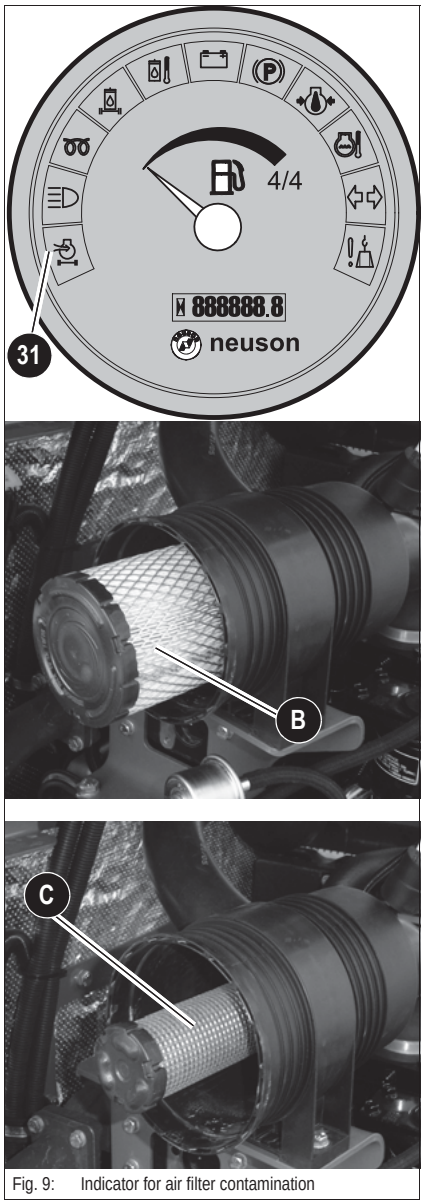


Fig. 9: Indicator for air filter contamination

Important!

For applications in especially dusty environment, the air filter is fitted with a secondary filter C. Do not clean inside filter C.

NOTICE

Filter cartridge degradation. Filter cartridges degrade prematurely in environments with acidic air, such as acid production facilities, steel and aluminum mills, chemical plants, and other non-ferrous metal plants.

- ☞ Replace outside filter **B** and inside filter **C** after no more than 50 service hours in acidic air.

General instructions for air filter maintenance:

- Store filters in their original packaging and in a dry place.
- Do not knock the filter against other objects as you install it.
- Check air filter attachments, air intake hoses and air filters for damage, and immediately repair or replace if necessary.
- Check the screws at the induction manifold and the clamps for tightness.
- Check the function of the dust valve, replace if necessary.

Replacing the filter

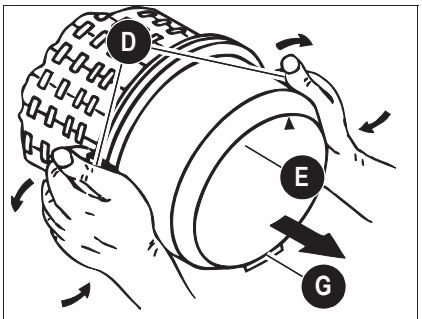


Fig. 10: Removing the lower housing section

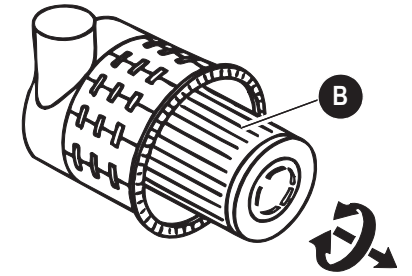


Fig. 11: Removing the filter element

- Replace primary filter *B* as follows:

☞ *Stop the engine.*

☞ *Remove the key and carry it with you.*

☞ *Let the engine cool down.*

☞ *Open the engine cover.*

☞ *Remove dirt and dust from the air filter and the area around the air filter.*

☞ *Fold both bow clips* **D** *on lower housing section* **E** *to the outside.*

☞ *Remove lower housing section* **E.**

☞ *Carefully remove outside filter* **B** *with slightly turning movements.*

☞ **Make sure** *all dirt (dust) inside the upper and lower housing sections (***F** *and* E*), including the dust ejection valve, has been removed.*

☞ Clean the parts with a clean lint-free cloth, do not use compressed air.

☞ *Check the air filter cartridges for damage, Install only a new or undamaged serviceable primary filter element..*

☞ *Carefully insert new the primary filter* **B** *in the upper housing section* **F.**

☞ *Position lower housing section* **E** *(make sure it is properly seated).*

☞ *Close both bow clips* **D.**

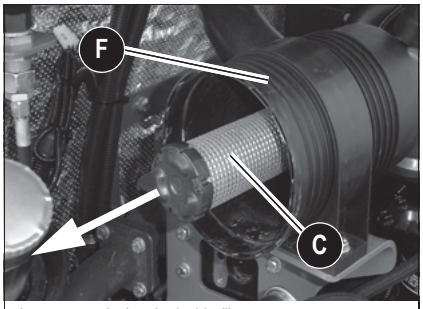


Fig. 12: Replacing the inside filter

- Replace secondary filter *C* as follows:

☞ > *Remove the primary filter to access the secondary filter. Use the previous instructions for removing the primary filter – see chapter 11 Removing the filter element on page 5-12 and – see chapter 12 Replacing the inside filter on page 5-12.*

☞ *Carefully remove secondary filter* **C.**

☞ Cover the air supply at the end of the filter with a clean lint-free cloth to prevent dust from entering the engine.

☞ **Make sure** *all dirt (dust) inside the upper and lower housing sections (***F** *and* **E***), including dust ejection valve* **G,** *has been removed.*

☞ Clean the parts with a clean lint-free cloth, do not use compressed air.

☞ Remove the cloth from the air supply.

☞ *Check the air filter cartridges for damage, Install only a new or undamaged serviceable secondary filter element..*

☞ *Carefully insert the new secondary filter* **C** *in the inside housing section* **F.**

☞ *Carefully insert the primary filter* **B** *in the upper housing section* **F.**

☞ *Position lower housing section* **E** *(make sure it is properly seated) .*

☞ *Close both bow clips* **D.**

Important!

Make sure the dust ejection valve G *– see chapter 11 Removing the filter element* on page 5-12 is aimed downward after installation!

5.7 V-belt

Caution!

Crushing, cutting, or burn hazards.

☞ *Stop the engine and permit a cool down time. Wait until the engine is comfortable to touch.*

☞ *Only check, retighten, or replace the V-belt when the engine is stopped.*

☞ *Disconnect the battery or the battery master switch before proceeding with work on the V-belt.*

NOTICE

Cracked and stretched V-belts cause engine damage.

☞ *Have the V-belt replaced by a Wacker Neuson service center.*

Check the V-belt once a day or every 10 service hours, and retighten if necessary!
Retighten new V-belts after about 15 minutes of running time.

Checking V-belt tension

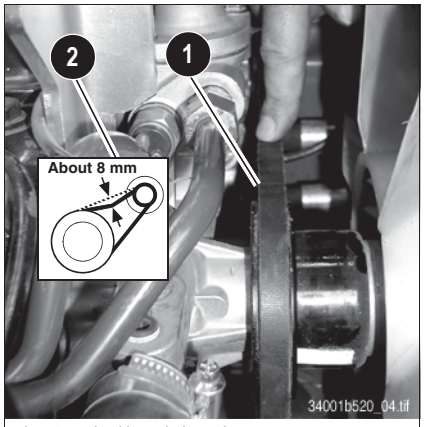


Fig. 13: Checking V-belt tension

- Check as follows:
  - ☞ Stop the engine.
  - ☞ Fold the control lever base up.
  - ☞ Remove the key and carry it with you.
  - ☞ Disconnect the battery or the battery master switch.
  - ☞ Let the engine cool down.
  - ☞ Open the engine cover.
  - ☞ Carefully check V-belt **1** for damage, cracks or cuts.
  - ☞ Replace the V-belt if it touches the base of the V-belt groove or the discs of the pulley.
- If the V-belt is damaged:
  - ☞ Have the V-belt replaced by authorized staff.
  - ☞ Press with your thumb about 100 N (22.5 lbs.) to check the deflection of the V-belt between the crankshaft disc and the fan wheel. A new V-belt should have a deflection of
    6 to 8 mm(0.24'' to 0.31''), a used V-belt (after about 5 minutes running time) should have a deflection of 7 to 9 mm(0.28'' to 0.35'') **2.**
  - ☞ Retighten the V-belt if necessary.

Retightening the V-belt

NOTICE

Possible engine damage. Overtightening the V-belt can damage the V-belt, the V-belt guide and the water pump bearing.

☞ Avoid contact of oil, grease or similar substances.

☞ Check V-belt tension – *see Checking V-belt tension* on page 5-13

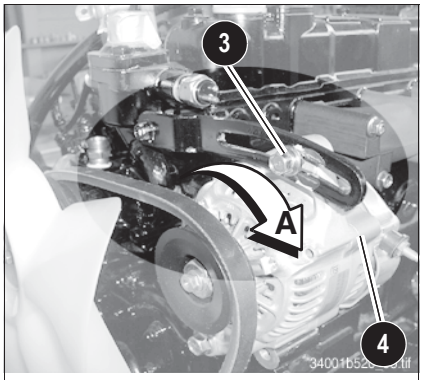


Fig. 14: Retightening the V-belt

- Retighten as follows:

☞ Stop the engine.

☞ Fold the control lever base up.

☞ Remove the key and carry it with you.

☞ Disconnect the battery or the battery master switch.

☞ Let the engine cool down.

☞ Open the engine cover.

☞ Loosen fastening screws **3** of alternator **4.**

☞ Use a suitable tool to push the alternator in the direction of arrow **A** until reaching the correct V-belt tension (fig. 14).

☞ Keep the alternator in this position, and at the same time retighten fastening screws **3.**

☞ Check V-belt tension again and adjust it if necessary.

☞ Connect the battery or the battery master switch.

☞ Close the engine cover.

Checking the cab air conditioning drive V-belt

NOTICE

Possible engine damage. Excessive or insufficient tension of the V-belt can cause damage to the V-belt or to the compressor of the air conditioning system.

☞Always make sure the V-belt has the correct tension.

☞Replace V-belts with damage, cracks, cuts, etc.

☞Avoid contact of oil, grease or similar substances with the V-belt.

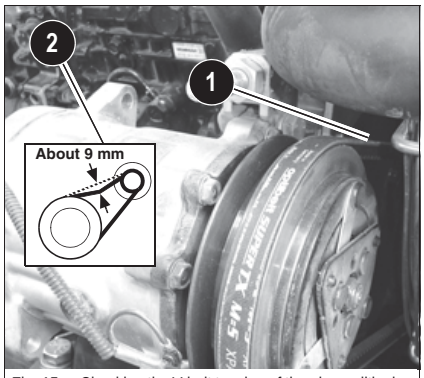


Fig. 15: Checking the V-belt tension of the air conditioning system

- Check as follows:
  - ☞ Switch off the engine.
  - ☞ Fold the control lever base up.
  - ☞ Remove the key and carry it with you.
  - ☞ Disconnect the battery or the battery master switch.
  - ☞ Let the engine cool down.
  - ☞ Open the engine cover.
  - ☞ Carefully check V-belt **1** for damage, cracks or cuts.
  - ☞ Replace the V-belt if it touches the base of the V-belt groove or the discs of the pulley.
- If the V-belt is damaged:
  - ☞ Have the V-belt replaced by authorized staff.
  - ☞ Press with your thumb about 100 N (22.5 lbs.) to check the deflection of the V-belt. A new V-belt should have a deflection of 7 to 9 mm (0.28" to 0.35"), a used V-belt (after about 5 minutes running time) should have a deflection of 9 to 11 mm(0.35" to 0.43") **2.**
  - ☞ Retighten the V-belt if necessary.

Tightening the V-belt of the air conditioning system

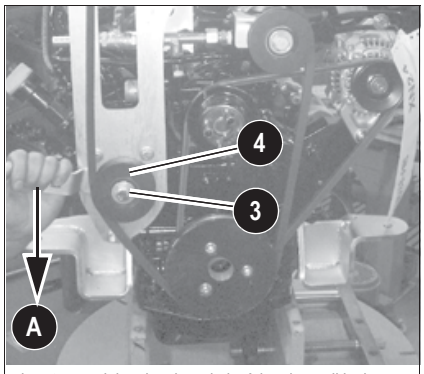


Fig. 16: Retightening the V-belt of the air conditioning system

- Retighten as follows:
  - ☞ Switch off the engine.
  - ☞ Fold the control lever base up.
  - ☞ Remove the key and carry it with you.
  - ☞ Disconnect the battery or the battery master switch.
  - ☞ Let the engine cool down.
  - ☞ Open the engine cover.
  - ☞ Loosen fastening screw **3** of spacer washer **4.**
  - ☞ Press the belt tensioner in the direction of arrow **A** until reaching the correct V-belt tension (fig. 16).
  - ☞ Keep the belt tensioner in this position, and at the same time retighten fastening screw **3.**
  - ☞ Check V-belt tension again and adjust it if necessary.
  - ☞ Connect the battery or the battery master switch.
  - ☞ Close the engine cover.

5.8 Hydraulic system

Specific safety instructions

Warning!

Pressurized hydraulic oil hazard. Hydraulic oil escaping under high pressure can catch fire, damage property, penetrate the skin and cause severe burns and injuries.

☞ *Do not operate the machine with leaking or damaged hydraulic system components.*

☞ *Use a piece of cardboard to diagnose the source of hydraulic leaks.*

☞ *Hydraulic oil can be hot and can cause serious burns if contact is made with skin. If contact occurs with hot oil, seek immediate medical attention and treatment for the burn.*

☞ *Wear safety glasses/goggles to avoid eye contact. If oil contacts the eye flush immediately with clean water and seek emergency medical treatment.*

☞ *Seek immediate medical attention if oil penetrates the skin. Oil can cause serious infections.*

- Release the pressure in all lines carrying hydraulic oil prior to any maintenance and repair work. To do this:
  - Lower all hydraulically controlled attachments to the ground.
  - Move all control levers of the hydraulic control valves several times.
- Fold the control lever base up.
- If the hydraulic oil in the sight glass is cloudy, this indicates that water or air has penetrated the hydraulic system. This can cause damage to the hydraulic pump.
- Replace the hose or line if one of the problems mentioned below is detected.

☞ Damaged or leaky hydraulic seals.

☞ Worn or damaged hose covering or uncovered reinforcement branches.

☞ Bulging hose coverings in several positions.

☞ Entangled or crushed movable parts.

☞ Foreign bodies jammed or stuck in protective layers.

NOTICE

Possible equipment damage. Contaminated hydraulic oil, lack of oil, or the wrong hydraulic oil can severely damage to the hydraulic system.

☞ Take care to avoid contamination when working.

☞ Always use the filling screen when refilling hydraulic oil.

☞ Only use authorized oils of the specified type. – *see chapter 5.16 Fluids and lubricants* on page 5-32

☞ Always add hydraulic oil before the level gets too low. – *see Adding up hydraulic oil* on page 5-18

☞ If the hydraulic system is filled with biodegradable oil, then only use biodegradable oil of the same type for refilling. Observe the label on the hydraulic oil reservoir.

☞ Contact your Wacker Neuson dealer immediately if the hydraulic system filter is contaminated with metal shavings.

Environment!

Collect drained hydraulic oil and biodegradable oil in a suitable container!
Dispose of drained oil and used filters by an ecologically safe method.
Always contact the relevant authorities or commercial establishments in charge of oil disposal before disposing of biodegradable oil.

Checking the hydraulic oil level

Warning!

Pressurized hydraulic oil hazard. Overfilling the hydraulic system with hydraulic oil can lead to high pressures and escaping hydraulic oil. This escaping hydraulic oil can cause severe injury.

☞ *Do not overfill the hydraulic system.*

Fig. 17: Parking the excavator

- If the attachment is not positioned as shown:

☞ Start the engine and let it run at idling speed.

☞ Retract the bucket and boom hydraulic cylinders, lower the boom and the bucket teeth to the ground.

☞ Extend the stabilizer blade hydraulic cylinder, lower the stabilizer blade to the ground.

☞ Stop the engine again.

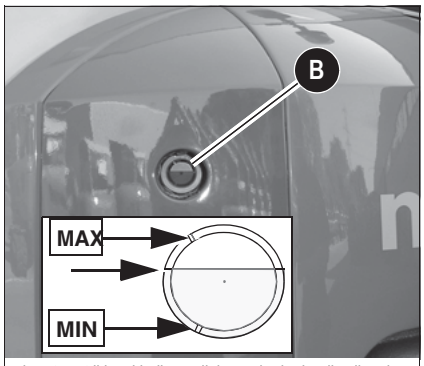


Fig. 18: Oil level indicator light on the hydraulic oil tank

☞ *Proceed as follows:*

- Park the machine on level ground.
- Retract the bucket and boom hydraulic cylinders, lower the boom and the bucket teeth to the ground.
- Extend the stabilizer blade hydraulic cylinder, lower the stabilizer blade to the ground.
- Straighten the boom.
- Stop the engine.
- Fold the control lever base up.
- Sight glass **B** is located in the rear left corner of the machine in the trim.
- Check the oil level on sight glass **B.**
- The oil level must be about 1 cm (3/8") over the center, between positions **MIN** and **MAX**, as shown by the arrows in fig. 18.

➥ The **MIN** level is marked by the lower joint.

➥ The **MAX** level is marked by the upper joint.

If the oil level is lower

- Add hydraulic oil.

The oil level varies according to the machine's operating temperature:

Machine condition	Temperature	Oil level
• Before putting into operation	Between 10 and 30 °C (50 and 86°F)	**LOW** mark
• Normal operation	Between 50 and 90 °C (122 and 194°F)	**FULL** mark

Important!

Measure the oil level of the hydraulic system only after the machine reaches its operating temperature.

Adding up hydraulic oil

Warning!

Pressurized hydraulic oil hazard. Removing the hydraulic filter plug can cause pressurized oil to escape. Escaping oil may cause serious injuries.

☞ *Permit the hydraulic oil to cool to a temperature that is comfortable to the touch.*

☞ *Slightly loosen the breather plug on the hydraulic reservoir enough to relieve pressure in the tank.*

Do not add hydraulic oil unless the engine is stopped. Otherwise, hydraulic oil will overflow at the filler opening on the hydraulic reservoir.

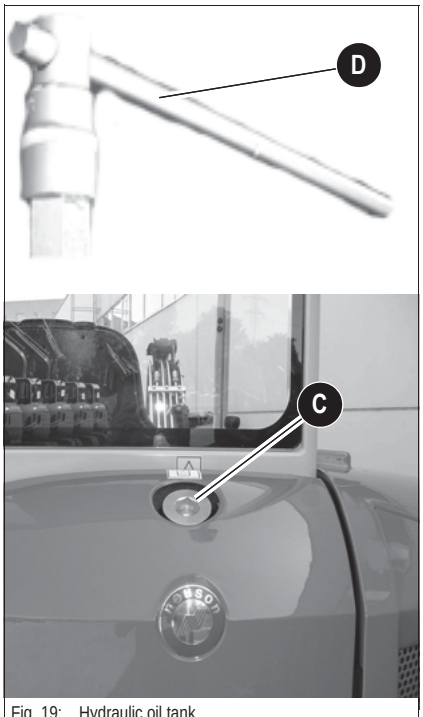


Fig. 19: Hydraulic oil tank

☞ *Fill up as follows:*

- Park the machine on level ground.
- Retract the bucket and boom hydraulic cylinders, lower the boom and the bucket teeth to the ground.
- Lower the stabilizer blade to the ground.
- Straighten the boom.
- Stop the engine.
- Fold the control lever base up.
- Let the engine cool down.
- Slowly open plug C with tool D included in the tool kit.

With the filter insert in place:

- Add hydraulic oil
- Check the hydraulic oil level on sight glass **B.**
- Add oil if necessary and check again.
- Tightly close plug **C** again with tool **D.**

Important!

The tool kit is in the engine compartment!

Important information for the use of biodegradable oil

- Use only the biodegradable hydraulic fluids which have been tested and approved by Wacker Neuson Linz GmbH. Always contact Wacker Neuson Linz GmbH for the use of other products which have not been recommended. In addition, ask the oil supplier for a written declaration of guarantee. This guarantee is applicable to damage occurring on the hydraulic components, which can be proved to be due to the hydraulic fluid
- Use only biodegradable oil of the same type for filling up. In order to avoid misunderstandings, a label providing clear information is located on the hydraulic oil tank (next to the filler inlet) regarding the type of oil currently used! Replace missing labels!
  The combined use of two different biodegradable oils can affect the quality of one of the oil types. Therefore, make sure the remaining amount of initial hydraulic fluid in the hydraulic system does not exceed 8 % when changing biodegradable oil (manufacturer indications)
- Do not fill up with mineral oil – the content of mineral oil should not exceed 2 % in order to avoid foaming problems and to ensure biological degradability
- When running the machine with biodegradable oil, the same oil and filter replacement intervals are valid as for mineral oil – *see chapter 5.17 Maintenance plan (overview)* on page 5-34
- Always have the condensation water in the hydraulic oil tank drained by an authorised service facility before the cold season. The water content may not exceed 0.1 % by weight
- The instructions in this Operator's Manual concerning environmental protection are also valid for the use of biodegradable oil
- If additional hydraulic attachments are mounted or operated, use the same type of biodegradable oil for these attachments to avoid mixtures in the hydraulic system

Subsequent change from mineral oil to biodegradable oil must be performed by a Wacker Neuson service center.

5.9 Pilot valve

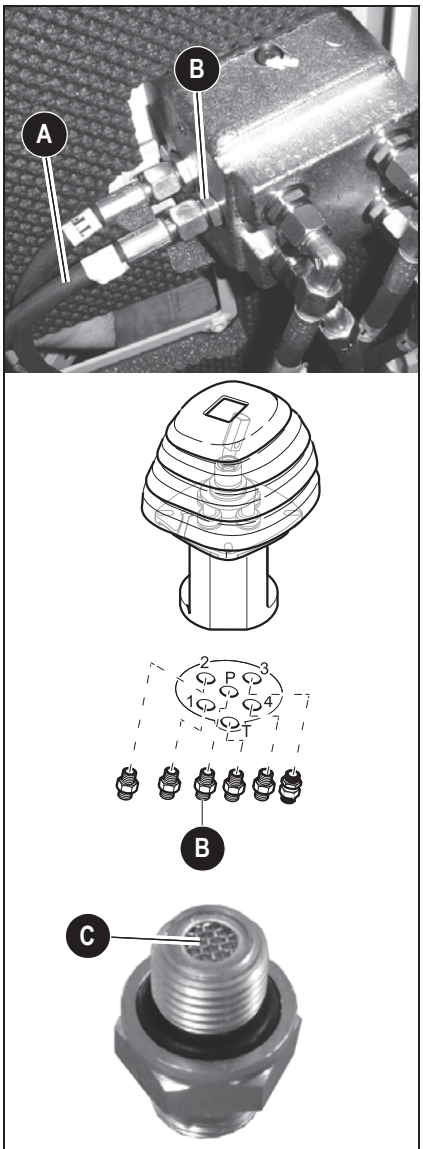


Fig. 20: Pilot valve

NOTICE

Possible equipment damage. Dirty oil can damage the piston valves within the pilot valves.

☞Check the pilot control filter every 1000 s/h and clean it if necessary.

Check the pilot valve as follows:

☞ *Park the machine on level ground.*

☞ *Retract the bucket and boom hydraulic cylinders, lower the boom and the bucket teeth to the ground.*

☞ *Lower the stabilizer blade to the ground.*

☞ *Straighten the boom.*

☞ *Stop the engine.*

☞ *Move the control levers in all directions repeatedly.*

☞ *Turn off the starter and remove the starting key.*

☞ *Fold up the control lever base.*

☞ *Let the engine cool down.*

☞ *Slowly open the breather filter.*

➥ Release the pressure.

☞ *Install the vacuum pump.*

☞ Stop the pump before routing the hoses.

☞ Tilt the cab/remove the joystick.

☞ *Remove pilot control hose **A** from the drive pilot valve/the joystick.*

☞ *Remove pilot control filter **B** from the drive pilot valve/the joystick.*

☞ *Check pilot control filter screen **C** for dirt and clean it if necessary. Replace it with a new filter if it is damaged!.*

☞ *Assemble in the reverse order.*

Checking hydraulic pressure lines

Specific safety instructions

Warning!

Pressurized hydraulic oil hazard. Hydraulic oil escaping under high pressure can catch fire, damage property, penetrate the skin and cause severe burns and injuries.

☞ *Do not operate the machine with leaking or damaged hydraulic system components.*

☞ *Use a piece of cardboard to diagnose the source of hydraulic leaks.*

☞ *Hydraulic oil can be hot and can cause serious burns if contact is made with skin. If contact occurs with hot oil, seek immediate medical attention and treatment for the burn.*

☞ *Wear safety glasses/goggles to avoid eye contact. If oil contacts the eye flush immediately with clean water and seek emergency medical treatment.*

☞ *Seek immediate medical attention if oil penetrates the skin. Oil can cause serious infections.*

☞ *Retighten leaking threaded fittings and hose connections only when the system is not under pressure; i.e. release the pressure before working on pressurized lines.*

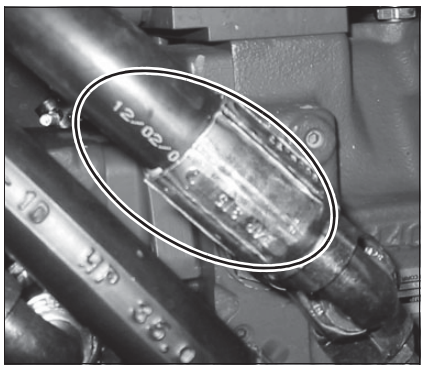
☞ *Never weld or solder damaged or leaking pressure lines and threaded connections. Replace damaged parts with new ones.*

- Do not check for leaks with an incandescent light or open flame due to explosive fire risk from vaporized oil mist.

- Leaks and damaged pressure lines must be immediately repaired or replaced by an authorized service facility or after-sales staff.
  This not only increases the operating safety of your machine but also helps to protect the environment
- Replace hydraulic hoses every 6 years from the date of manufacture, even if they do not seem to be damaged

In this respect, we recommend that you observe all the relevant safety standards for hydraulic lines, as well as the safety regulations regarding accident prevention and occupational health and safety in your country.

The article number is marked on the clamping section, and the date of manufacture is indicated on the hose of each hose connection.



5.10 Tracks

- Track wear can vary according to work and ground conditions.

☞ We recommend checking track wear and tension once a day.

☞ Park the machine on firm and level ground to check and perform maintenance.

Checking track tension

Warning!

Crushing hazard. Do not work under the machine unless it has been raised and supported properly.

☞ *Raising the machine with the stabilizer and working attachments is not an acceptable stable platform to elevate the machine for work underneath the machine!*

Check track tension as follows:

- The rubber track has a mark **B** as shown in *Fig. 21*.

☞ *Place the excavator so that mark **B** of the rubber track is between the drive pinion **C** and the track tension roller **D.***

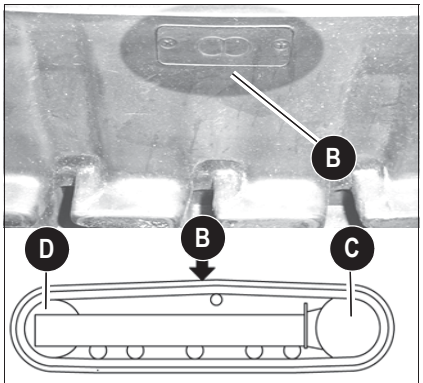


Fig. 21: Rubber track mark

Important!

There is no mark on the steel tracks (options). Positioning the steel tracks is not possible.

- No specific position is required for the steel tracks (option)

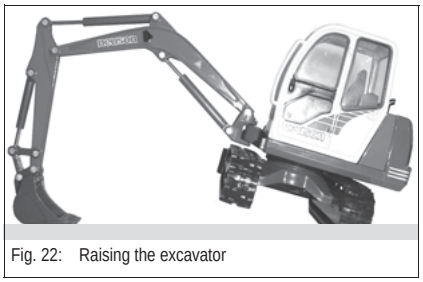


Fig. 22: Raising the excavator

☞ *Park the machine on firm and level ground.*

☞ *Raise the excavator with the boom and the stick.*

☞ Slowly and carefully actuate the control levers.

☞ *Stop the engine.*

☞ *Remove the key and carry it with you.*

☞ *Fold the control lever base up.*

☞ *Support the raised machine with blocks and cribbing adequate to provide a stable position while working on the track system.*

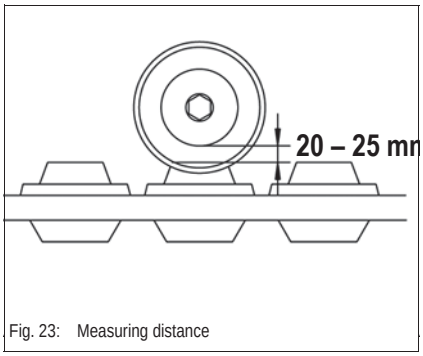


Fig. 23: Measuring distance

- Standard play between the sliding block's shoulder and the contact area of the second support roller of the drive pinion is 20 – 25 mm (0.39'' - 0.98'').

☞ Set the tension as follows if it is not in accordance with the rated value.

Adjusting the track tension

Caution!

Projectile hazard.The grease fitting for track adjustment is subject to high pressure. The grease fitting can become a projectile if pressure caused by track tension is not properly relieved.

☞ *Do not remove the grease fitting.*

☞ *Wear safety goggles, gloves and protective clothing to reduce skin exposure to grease. Wipe grease from skin and seek immediate attention if grease contacts eyes.*

☞ *When relieving the pressure in the track tension system, do not turn the grease fitting farther than one counter-clockwise turn.*

☞ *Do not loosen any part of the track tension system until the pressure has been released from the track tension system.*

☞ *Keep your face away from the lubricating valve connection.*

☞ *Do not use auxiliary force on the track or idler in an effort to force grease from the loosened fitting. Contact your Wacker Neuson dealer and wait for a qualified technician to determine the problem and how to solve it.*

NOTICE

Possibility of equipment damage. Excessive tension of the tracks causes severe damage to the ram and the track.

☞ *Tighten the tracks only up to the prescribed measuring distance.*

Tightening the tracks

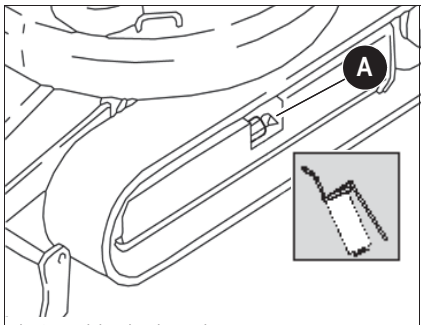


Fig. 24: Tightening the tracks

☞ *Inject grease with the pump through lubricating valve **A.***

☞ *Check the tension is correct by starting the engine, letting it run at idling speed and slowly moving the machine forwards and reverse and switching it off again.*

☞ *Check the tension of the track tracks again .*

➥ If it is not correct:

☞ Adjust again.

☞ *Contact your Wacker Neuson dealer if the procedure for tightening the tracks does not correct the track tension.*

Reducing tension

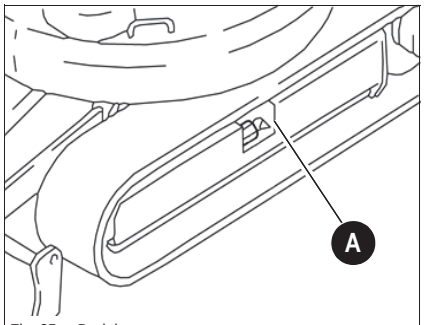


Fig. 25: Draining grease

- Drain the grease as described below. Do not drain it in any other way. Also bear in mind the safety instructions on this page.

☞ *Slowly open the lubricating valve **A** by 1 turn to allow the grease to flow out.*

☞ Place a suitable container underneath to collect the grease.

➥ The grease flows out of the groove of the lubricating valve.

☞ *Retighten the lubricating valve **A.***

☞ *Check the tension is correct by starting the engine, letting it run at idling speed and slowly moving the machine forwards and reverse and switching it off again.*

☞ *Check the tension of the track tracks again .*

➥ If it is not correct:

☞ Adjust again.

Environment!

Use a suitable container to collect the grease as it flows out and dispose of it in an environmentally friendly manner.

5.11 Track propulsion final drive

Warning!

Burn hazard. The traveling drive and the oil inside can remain hot and under pressure even after the engine has been stopped. This hot oil may leak from the traveling drive.

☞ *Wait until the engine has cooled down before beginning maintenance work.*

NOTICE

Possibility of equipment damage from mixing gearbox oils. The Q8 T55 SAE 85W-90 gearbox oil is no longer produced.

↴ Only the Q8 T55 80W-90 gearbox oil is used from 10/2006 onwards.

↴ Do not mix both oils under any circumstances!

Checking the oil level and filling up oil

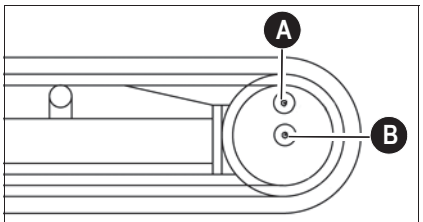


Fig. 26: Checking the oil level

☞ *Park the machine on firm and level ground.*
☞ *Place the machine so that filler plug **A** is at the top.*
☞ *Stop the engine.*
☞ *Let the engine cool down.*
☞ *Fold the control lever base up.*
☞ *Loosen and remove screws **A** and **B** with a suitable tool.*
☞ *A small quantity of oil must flow out of opening **B.***
➥ If the oil does not flow out of opening **B**, add oil:
☞ Add oil through opening **A**,
➥ until a small quantity of oil flows out of opening **B.**
☞ *Screw screws **A** and **B** back in again.*
☞ *Move the machine a few meters or feet..*
☞ *Check the oil level again.*
➥ If the oil level is not correct:
☞ Repeat the procedure.

Draining oil

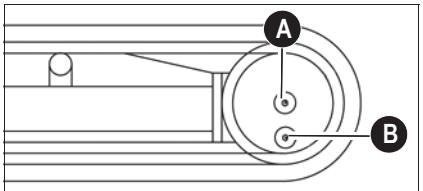


Fig. 27: Draining oil

☞ *Park the machine on firm and level ground.*
☞ *Place the machine so that filler plug **B** is at the bottom.*
☞ *Stop the engine.*
☞ *Let the engine cool down.*
☞ *Fold the control lever base up.*
☞ *Loosen and remove screws **A** and **B** with a suitable tool.*
➥ The oil now flows out of opening **B.**
☞ Use a suitable container to collect the oil as it drains.

Environment!

Collect the oil with a suitable container and dispose of it in an environmentally friendly manner.

5.12 Maintenance of attachments

Important!

Correct maintenance and service is absolutely necessary for smooth and continuous operation, and for an increased service life of the attachments. Please observe the lubrication and maintenance instructions in the Operator's Manuals of the attachments

5.13 Electric system

Specific safety instructions

Warning!

Batteries can explode or cause chemical burns. A battery contains sulfuric acid and emits explosive gases when heavily discharged.

☞ *Do not smoke or use an open flame near the battery.*

☞ *Do not handle the battery recklessly, causing acid to leak or spill.*

☞ *Do not add circuits or electrical accessories that exceed the system capacity.*

☞ *Do not connect a circuit without a correctly-rated fuse or circuit breaker.*

NOTICE

Possible equipment damage from improper battery connections.

☞ When connecting the battery leads, make sure the poles +/– are not reversed, otherwise sensitive electric components will be damaged

☞ Use only 12 V power sources. Higher voltages will damage the electric components.

☞ Do not interrupt voltage-carrying circuits at the battery terminals because of the risk of sparking.

☞ To prevent short circuits, never place tools or other conductive articles on the battery.

☞ Disconnect the negative (**–**) battery terminal from the battery before starting repair work on the electric system.

Important!

Dispose of used batteries properly.

Service and maintenance work at regular intervals

Before driving the machine

☞ *Check every time before operating the machine:*

- Is the light system OK?
- Is the signalling and warning system OK?

Every week

☞ *Check once a week:*

- Electric fuses – *see chapter Fuse box under the seat on the left* on page 6-3
- Cable and ground connections
- Battery charge condition – *see Battery* on page 5-27
- Condition of battery terminals

Instructions concerning specific components

Cables, bulbs and fuses

Always observe the following instructions:

- Defective components of the electric system must always be replaced by an authorised expert.
- When performing maintenance work on the electric system, pay particular attention to ensuring good contact in leads and fuses
- Blown fuses indicate overloading or short circuits. The electric system must therefore be checked before installing the new fuse
- Only use fuses with the specified load capacity (amperage) – *see chapter Fuse box under the seat on the left* on page 6-3

Alternator

Always observe the following instructions:

- Only test run the engine with the battery connected.
- When connecting the battery, make sure the poles (+/–) are not inverted.
- Always disconnect the battery before performing welding work or connecting a quick battery charger.
- Replace defective charge indicator light light immediately – *see chapter 32 Indicator light (red) – alternator charge function* on page 3-10.

Battery

Warning!

Battery acid hazard. The battery contains highly caustic sulphuric acid. This acid must not be allowed to come into contact with the skin, the eyes, clothing, or the machine.

☞ *When recharging and/or working near the battery, always wear goggles and protective clothing with long sleeves.*

☞ *If acid is spilled, thoroughly rinse affected skin immediately with clean water and seek medical attention immediately.*

Warning!

Battery explosion hazard. Lead acid batteries can generate a potentially explosive hydrogen and oxygen mixture. Batteries can explode or rupture during jump starting, particularly if the electrolyte is low or has been frozen.

☞ *Avoid open flames and sparks in the vicinity of the battery. Do not smoke.*

☞ *Before jump-starting, take the battery to the dealer for appraisal by a qualified technician.*

☞ *Replace a dead battery with a new one equivalent to the original.*

☞ *Always disconnect the negative terminal (–) from the battery before starting repair work on the electric system.*

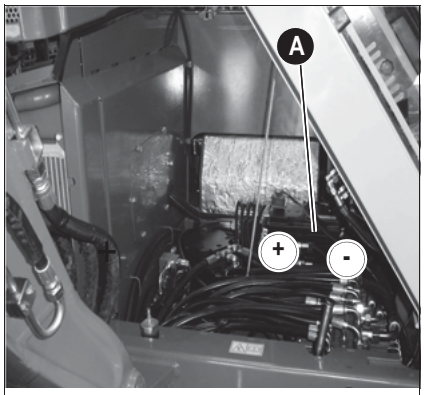


Fig. 28: Battery

Battery **A** is located under the cab, in front of the fuel tank. The battery is “maintenance-free”. However have the battery checked at regular intervals to make sure the electrolyte level is between the MIN and MAX marks.

Checking the battery requires it to be removed and must be performed by an authorised workshop.

Always follow the specific battery safety instructions!

Important!

Do not disconnect the battery while the engine is running.

5.14 General maintenance work

Cleaning

Cleaning the machine is divided into 3 separate areas:

- Inside the cab
- Exterior of the machine
- Engine compartment

To avoid personal injury and damage to the machine, always follow the recommendations for cleaning the machine.

General instructions for all areas of the machine

When using washing solvents.

- Ensure adequate room ventilation.
- Wear suitable protective clothing.
- Do not use flammable liquids, such as petrol or diesel.

When using compressed air

- Work carefully.
- Wear goggles and protective clothing.
- Do not aim the compressed air at the skin or at other people.
- Do not use compressed air for cleaning your clothing.

When using a high-pressure cleaner or steam jet

- Electric components and damping material must be covered and not directly exposed to the jet.
- Cover the vent filter on the hydraulic oil tank and the filler caps for fuel, hydraulic oil etc.
- Protect the following components from moisture:
  - Engine.
  - Electric components such as the alternator etc.
  - Control devices and seals.
  - Air intake filters etc.

When using volatile and easily flammable anticorrosion agents and sprays:

- Ensure adequate room ventilation.
- Do not use unprotected lights or naked flames.
- Do not smoke!

Inside the cab

NOTICE

Possible equipment damage from high-pressure cleaning. Water under high pressure can penetrate the electrical system, cause short circuits, damage seals, and disable the controls.

↴ Never use high-pressure cleaners, steam jets or high-pressure water to clean inside the cab.

We recommend using the following aids to clean the cab:

- Broom
- Vacuum cleaner
- Damp cloth
- Bristle brush
- Water with mild soap solution

Cleaning the seat belt:

- Clean the seat belt (which remains fitted in the machine) only with a mild soap solution; do not use chemical agents as they can destroy the fabric!

Exterior of the machine

The following articles are generally suitable:

- High-pressure cleaner
- Steam jet

Engine compartment

Caution!

Cutting, crushing, or burn hazards.
☞ *Stop the engine before cleaning.*

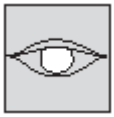
NOTICE

Possibility of sensor damage. Water or steam jet cleaners can penetrate sensitive electronic components, leading to sensor failure and possible engine damage.

☞ Allow the machine to cool completely before cleaning the engine with a water or steam jet.

☞ Do not point the jet directly at electric sensors such as the oil pressure switch.

Threaded connections and fasteners



All threaded connections must be checked regularly for tightness, even if they are not listed in the maintenance schedules.

☞ *Engine fastening bolts.*

☞ *Threaded couplings on the hydraulic system.*

☞ *Line, bucket teeth and pin fastenings on the attachment.*

Retighten loose connections immediately. Contact an authorised workshop if necessary.

Pivots and hinges

All mechanical pivot points on the machine (e.g. door hinges, joints) and fittings (e.g. door arresters) must be lubricated regularly, even if they are not listed in the lubrication plan.

5.15 Extended storage

NOTICE

Possibility of equipment damage from improper maintenance.

☞ If the machine is out of operation, run it once a month without load. Remove the grease from the piston rods first!

Preparatory work before taking the machine out of service

☞ *Carefully clean and dry the entire machine.*

☞ *Apply grease to all lubrication points.*

☞ *Change the engine oil.*

☞ *Apply grease to the piston rods of the hydraulic cylinders.*

☞ *Check and if necessary, fill up all oil levels such as in the gearbox and other units.*

☞ *Check and if necessary, add hydraulic oil.*

☞ *Fill the fuel tank completely to avoid corrosion on the walls.*

☞ *Check the antifreeze in the coolant, change as required.*

☞ *Check the tire pressure for the prescribed value and protect the tires from direct sunlight.*

☞ *Remove the grounding strap from the battery, or remove the battery and store it in a safe place. Charge the battery and perform battery maintenance at regular intervals.*

☞ *Close the exhaust pipe and the air intake opening of the air filter system.*

Important!

Store the machine indoors if possible. If storing the machine outdoors cannot be avoided, place it on wooden boards and cover it with a tarpaulin.

Putting the machine into operation again

☞ *Remove the grease from the piston rods.*

☞ *Install or connect the battery.*

☞ *Remove the seals from the exhaust pipe and the air filter intake.*

☞ *Check the condition of the air filter cartridges and replace them if necessary.*

☞ *If the machine was out of service for over 6 months, change the oil in the gearbox and other units.*

☞ *Also replace hydraulic oil filters (return, suction and breather filters) if the machine has been out of service for over 6 months.*

☞ *Lubricate the machine according to the lubrication plan.*

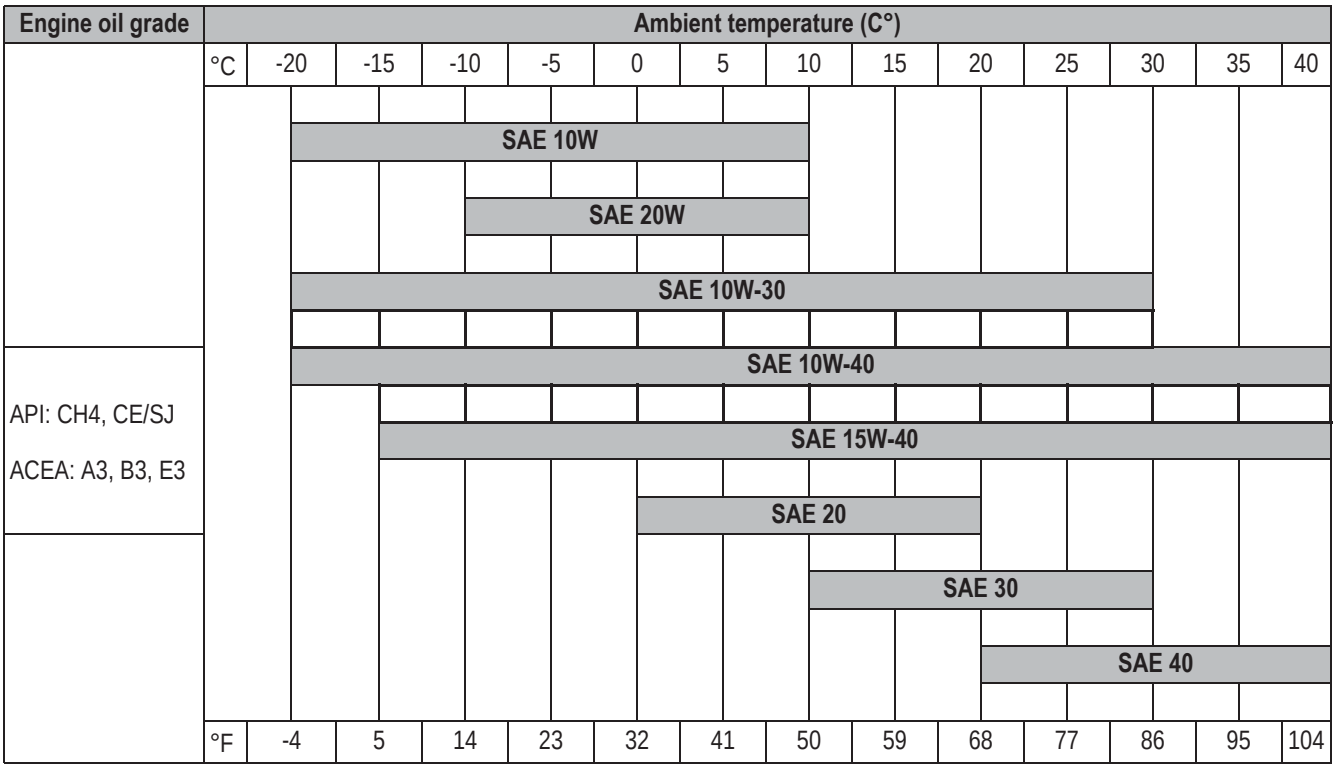
☞ *Start the engine and let it run without load.*

5.16 Fluids and lubricants

Component / application	Engine / machine fluid	Specification	Season / temperature	Capacities [1]
Diesel engine	Engine oil	Q8 T660, SAE10W-40 [2]	-20 °C (-4°F) +40 °C (104°F)	7.1 l (1.9 gal)
Traveling drive	Gearbox oil [3]	Q8 T 55, SAE 85W-90 [4]	Year-round	About 1.3 l (0.3 gal) each
		Q8 T 55, SAE 80W-90 [5]		
		FINA PONTONIC GLS, SAE85W-90		
Hydraulic oil tank	Hydraulic oil	HVLP46 [6] 200 Hydraulic	Year-round	45 l (11.9 gal)
	Biodegradable oil [7]	PANOLIN HLP Synth 46		
		FINA BIOHYDRAN SE 46		
		BP BIOHYD SE-46 404 Biodegradeable Hydraulic 32/46		
Grease	Roller and friction bearings [8]	FINA Energrease L21M Mobilgrease CM-P	Year-round	As required
	Open gear [9] (live ring gears)	BP Energrease MP-MG2	Year-round	As required
Grease nipples	Multipurpose grease [10]	FINA Energrease L21M Mobilgrease CM-P	Year-round	As required
Battery terminals	Acid-proof grease [11]	FINA Marson L2 Mobilux EP2	Year-round	As required
Fuel tank	Diesel fuel	2-D ASTM D975 – 94 (USA)	Depending on outside temperatures Summer or winter diesel fuel	44 l (11.6 gal)
		1-D ASTM D975 – 94 (USA)		
		EN 590 : 96 (EU)		
		ISO 8217 DMX (International)		
		BS 2869 – A1 (GB)		
		BS 2869 – A2 (GB)		
Radiator	Coolant	Soft water + antifreeze ASTM D4985	Year-round	l
		Distilled water + antifreeze ASTM D4985		
Air conditioning	Refrigerating agent	R134a[12]	Year-round	750 g (1.7 lb)
	Compressor oil	Sanden SP10	Year-round	116.5 cm^3 (7.1 in^3)
Washer system	Cleaning agent	Water + antifreeze	Year-round	2.0 l (0.5 gal)

1. The capacities indicated are approximative values; the oil level check alone is relevant for the correct oil level
   Capacities indicated are no system fills
2. As per DIN 51502; API CH4, CE/SJ; ACEA A3, B3, E3
3. Hypoid gearbox oil based on basic mineral oil (SAE85W-90 according to DIN 51502), (API GL-4, GL5)
4. The Q8 T55 SAE 85W-90 gearbox oil is no longer produced.
5. The Q8 T55 SAE 80W-90 gearbox oil is used from 10/2006 onwards. Do not mix both gearbox oils!
6. According to DIN 51524 section 3
7. Hydraulic ester oils (HEES)
8. KF2K-25 according to DIN 51502 multipurpose lithium grease with MoS^2 additive
9. KP2N-20 according to DIN 51502 EP multipurpose calcium sulphonate complex grease
10. KF2K-25 according to DIN 51502 multipurpose lithium grease with MoS^2 additive
11. Standard acid-proof grease
12. According to DIN 8960

Oil grades for the diesel engine, depending on temperature



Additional oil change and filter replacement (hydraulics)

NOTICE

Possible hydraulic component damage. An additional oil change and filter replacement can be required depending on how the machine is used. Failure to observe these replacement intervals can cause damage to hydraulic components.

↴ Observe the following intervals:

Application		Hydraulic oil	Hydraulic oil filter insert
Normal work (excavation work)		Every 1000 s/h	Replace the first time after 50 s/h, then every 500 s/h
Percentage of hammer work	20 %	Every 800 s/h	300 s/h
	40 %	Every 400 s/h	
	60 %	Every 300 s/h	100 s/h
	Over 80 %	Every 200 s/h	

Important!

Please refer to the maintenance plan on page *5-34* for additional maintenance work.

5.17 Maintenance plan (overview)

Work description

For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	50 s/h service	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorised workshop
Fluid and filter changes ( ):							
Perform the following oil and filter changes (check oil levels after test run):							
• Engine oil [1]		●	●				●
• Engine oil filter [2]		●	●				●
• Fuel filter [3]		●	●				●
• Air filter element as indicated by indicator light						●	
• Coolant				●			●
• Hydraulic oil filter insert [4]		●	●				●
• Hydraulic oil				●			●
• Hydraulic oil tank breather				●			●
• Gearbox oil [5]		●		●			●
Inspection work ( ):							
Check the following material. Refill if necessary:							
• Engine oil	●					●	
• Engine coolant	●					●	
• Hydraulic oil	●					●	
• Gearbox oil		●					●
Clean water ducts [6]				●			●
Check engine/hydraulic oil radiator and air conditioning for contamination. Clean if necessary	●					●	
Check cooling systems, heating and hoses for leaks and pressure (visual check)	●					●	
Replace cab filter for heating and air conditioning			●				●
Check the pilot control filter for dirt, clean it if necessary				●			●
Air filter (damage)	●					●	
Prefilter with water separator: drain water	●					●	
• Clean			●				●

5.17 Maintenance plan (overview)

Work description

For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	50 s/h service	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorised workshop
Check V-belt condition and tension	●					●	
Check exhaust system for damage and condition	●					●	
Check valve tip clearance. Adjust if necessary				●			●
Clean and adjust the fuel injection pump [7]				●			●
Check and adjust the injection pressure of the injection nozzles, clean the injection needles/nozzles				●			●
Check and adjust injection time [8]				●			●
Empty diesel fuel tank			●				●
Check battery electrolyte. Fill up with distilled water if necessary		●	●			●	
Check alternator, starter and electric connections, bearing play and function			●				●
Check preheating system and electric connections			●				●
Check correct function of air filter contamination gauge			●				●
Pressure check of primary pressure limiting valves [10]		●	●				●
Check tracks for cracks and cuts	●					●	
Check chain tension. Retighten if necessary	●					●	
Check bearing play of tread rollers, track carrier rollers, front idlers			●				●
Check piston rods for damage	●					●	
Check screws for tightness [10]		●	●				●
Check pin lock	●					●	
Check line fixtures	●					●	
Check indicator light for correct function		●	●				●
Check cab tilt lock, cables and cable holders for damage and correct function		●	●				●
Couplings, dirt pile-up on hydraulic system dust caps	●					●	
Check insulating mats in the engine compartment for damage/condition		●					●

5.17 Maintenance plan (overview)

Work description

For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	50 s/h service	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorised workshop
Ensure grease supply of central lubrication system (option)	●					●	
Check labels and Operator's Manual for completeness and condition		●					●
Check function of engine cover gas strut	●					●	
Lubrication service ( ):							
Lubricate the following assemblies/components:– *see Maintenance label* on page 5-38							
• Stabilizer blade	●					●	
• Swivelling console	●					●	
• Boom	●					●	
• Stick	●					●	
• Attachments	●					●	
• Grease strip on chassis – *see Maintenance label* on page 5-38	●					●	
Air conditioning ( ):							
Perform the following maintenance and inspection work:							
• Function of air conditioning [11]		●					●
Replace cab filter			●				●
Check dehumidifier for corrosion, condensation and air bubbles		●					●
Replace dehumidifier and refrigerating agent [12]					●		●
Compressor oil [9]					●		●
Check refrigerating agent			●				●

5.17 Maintenance plan (overview)

Work description

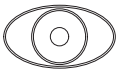
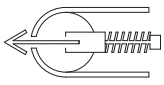
For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	50 s/h service	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorised workshop
Functional check ():							
Check the function of the following assemblies/components. Rectify if necessary:							
• Lights, signalling system, acoustic warning system [10]		●	●				●
• Heating function [10]		●	●				●
Leakage check ():							
Check for tightness, leaks and chafing: pipes, flexible lines and screw connections of the following assemblies and components. Rectify if necessary:							
• Visual check	●					●	
☞ Engine and hydraulic system	●					●	
☞ Cooling and heating circuit	●					●	
☞ Travelling drive	●					●	

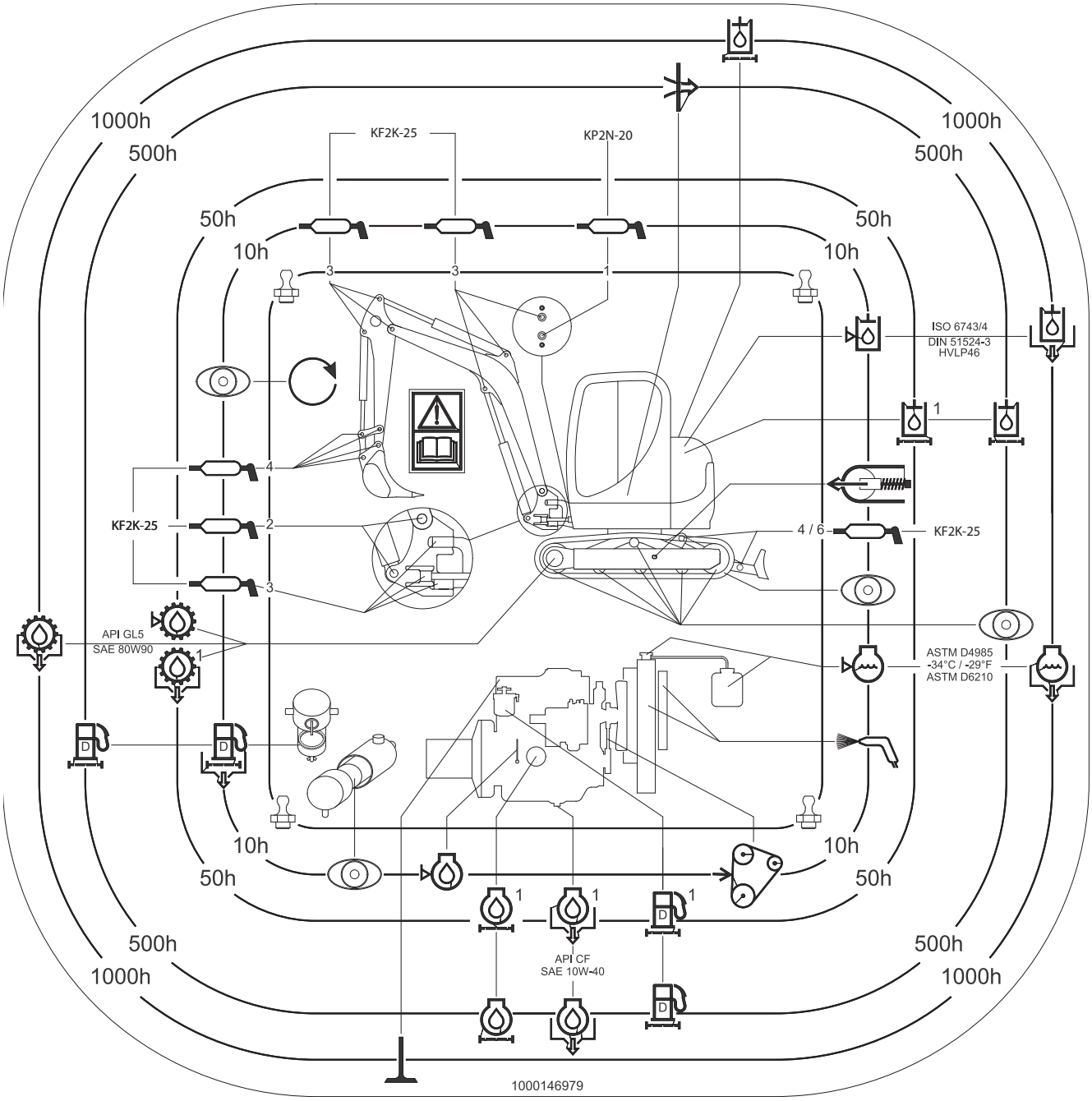
1. Drain engine oil the first time after 50 s/h, then every 500 s/h
2. Replace the engine oil filter the first time after 50 s/h, then every 500 s/h
3. Replace the fuel filter the first time after 50 s/h, then every 500 s/h
4. Replace the hydraulic oil filter insert the first time after 50 s/h, then every 500 s/h
5. Drain the gearbox oil the first time after 50 s/h, then every 1000 s/h
6. Clean the water ducts every other 1000 s/h servicing
7. Clean and adjust the fuel injection pump every other 1000 s/h servicing
8. Check and adjust injection time every other 1000 s/h servicing
9. Replace the compressor oil every other 1500 s/h servicing or every 2 years
10 Check the first time at 50 s/h, then every 500 s/h
11 Switch on once every week
12 Replace the dehumidifier and the refrigerating agent every 1500 s/h or every 2 years

5.18 Maintenance label

Explanation of symbols on the maintenance label

Symbol	Assembly	Explanation
	General	Visual check
	General	Grease instructions
	Fuel system	Drain condensation water
	Fuel system	Replace the fuel filter, clean the fuel prefilter
	Radiator	Check the coolant level
	Radiator	Drain and fill in new coolant
	Engine	Check valve clearance. Adjust if necessary
	Engine	Check the engine oil level
	Engine	Change engine oil
	Engine	Replace the oil filter
	Engine	Check V-belt tension
	Travelling drive	Change oil
	Travelling drive	Check oil level
	Undercarriage	Check chain tension
	Hydraulic system	Check oil level
	Hydraulic system	Change hydraulic oil
	Hydraulic system	Replace the hydraulic oil filter, replace the breather filter

Symbol	Assembly	Explanation
	Radiator fins	Clean
	Heating, air conditioning	Replace the recirculated air filter



6 Specifications

6.1 Chassis

Sturdy steel sheet chassis, rubber-mounted engine

6.2 Engine

	Model 38Z3	
Engine type	**Tier II**	**Tier III**
	Up to serial number AG00572	From serial number AG00573
Product	Yanmar diesel engine	
Type	3TNV88-PNS	3TNV88-BPNS
Design	Water-cooled 4 stroke diesel engine	
No. of cylinders	3	
Displacement	1642 cm³ (100.2 in³)	
Nominal bore and stroke	88 x 90 mm (3.46 x 3.54")	
Output	21,0 kW (28.2 hp) at 2400 rpm	
Max. torque	101.5 – 110.5 Nm (74.9 - 81.5 ft.lbs.) at 1100 rpm	106.6 Nm (78.6 ft.lbs.) at 1440 rpm
Max. engine speed without load	2500 ± 10 rpm	
Idling speed	1100 ± 50 rpm	
Fuel injection system	Direct injection	
Starting aid	Glow plug (preheating time 10 – 15 seconds)	Glow elements (preheating time 10 – 15 seconds)
Max. inclined position (engine no longer supplied with oil):	30° in all directions Observe the machine's climbing ability (30°/58%)!	
Exhaust values according to	97/68/EC Tier 2 EPA Tier 2	97/68/EC Tier 3A EPA Tier 4 interim

6.3 Hydraulic system

Hydraulics	**Model 38Z3**
Pump	Double variable displacement + gear pump 2 x 16 + 10.5 + 4.5 cm³ (2 x 1.0 + 0.64 + 0.27 in³)
Flow rate	2 x 40 + 26.3 + 11.3 l/min (2 x 11 + 7 + 3 gpm) at 2500 rpm
Service pressure for work and drive hydraulics	240 bar (3481 psi)
Swivel unit service pressure	210 bar (3046 psi)
Hydraulic oil cooler	Standard
Hydraulic tank capacity	45 l (12 gal)

6.4 Undercarriage and swivel unit

Undercarriage/swivel unit	Model $38Z_3$
2 speed ranges	2.8/4.6 km/h (1.7/2.9 mph)
Climbing ability	30°/58 %
Chain width	300 mm (11.8")
No. of track rollers on either side	4
Ground clearance	280 mm (11")
Ground pressure	0.34 kg/cm² (4.8 psi)
Upper carriage swivel speed	8.8 rpm

6.5 Stabilizer blade

Stabilizer blade	Model $38Z_3$
Width / height	1740/345 mm (5'9"/1')
Max. lift over / under subgrade	390/450 mm (1'3"/1'6")

6.6 Work hydraulics

Work hydraulics	Model $38Z_3$
Hydraulic pump displacement:	2 x 40 + 26.3 + 11.3 l/min (2x 10,6 + 6,9 + 3 gpm) at 2500 rpm
Control valve	11 sections/ 12 sections (3rd control circuit)
Max. service pressure	240(±5)bar (3481(±73)psi)
Main pressure restriction for boom/bucket/stick	240(+3/-3)bar (3481(+44/-44) psi)
Main pressure restriction for stabilizer blade	210(±3)bar (3046(±44)psi)
Main pressure restriction for pilot control pressure	34(+3/-0) bar (493(+44/-0)psi)
Main pressure restriction for swivel drive (hydraulic motor pressure restriction)	200 bar (2901 psi)
Filter	Reflux filter
Hydraulic oil reservoir	45 l (12 gal)

6.7 Electric system

Electric system	
Alternator	12 V 55 A
Starter	12 V 1.7 kW
Battery	12 V 71 Ah, 640 CCA
Socket	E.g. for 12V power outlet, 15 A max.

Fuse box under the seat on the left

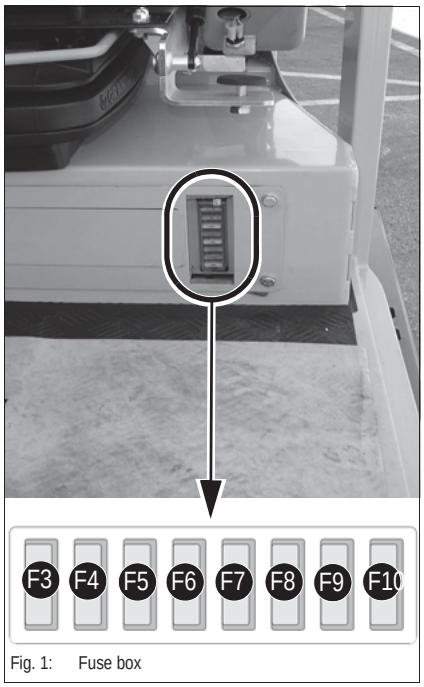


Fig. 1: Fuse box

Fuse no.	Rated current (A)	Protected circuit
F3	10 A	– Indicator light, cutoff solenoid, relays
F4	10 A	– Boom light
F5	15 A	– Roof lights
F6	10 A	– Valves, horn
F7	15 A	– Heating, air conditioning
F8	10 A	– Wiper, interior light
F9	10 A	– Rotating beacon, radio
F10	15 A	– Socket, 12V power outlet,

Main fuse box with relays at the upper left in the engine compartment

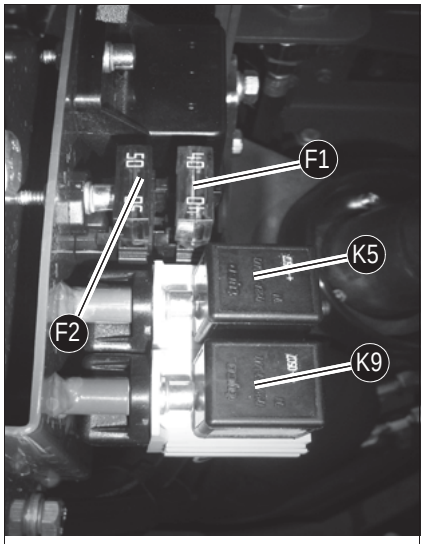


Fig. 2: Relay box under the cab

Fuse no.	Rated current (A)	Protected circuit
F1	40 A	– Start, preheat, cutoff solenoid
F2	50 A	– Fuel-filling pump, main fuse, ignition lock

Relay no.	Protected circuit
K 9	– Cutoff solenoid
K 5	– Preheating

Relays

The relays are located in the relay box under the cab, next to the swivelling console

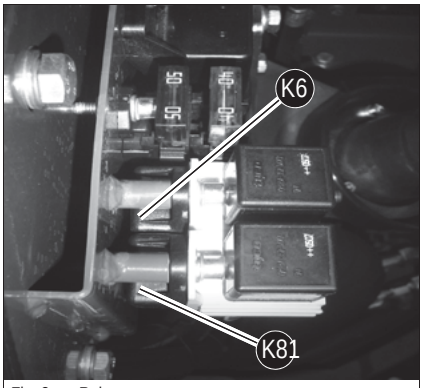


Fig. 3: Relays

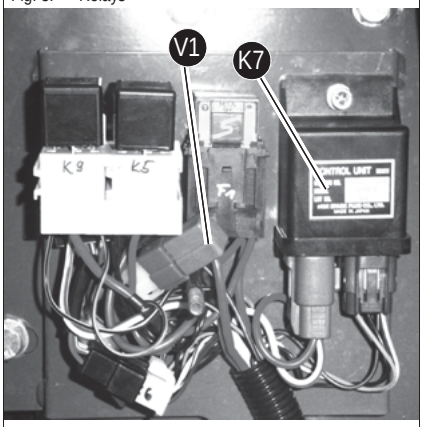


Fig. 3: Relays

Switching relay no.	Protected circuit
K 6	– Preheating timer
K 7	– Starting relay
K 8	– Cutoff solenoid timer
V 1	– Diode

6.8 Noise levels

Sound power level	Model 38Z$_3$
Sound power level (L_{WA})	95 dB (A)
Sound pressure level (L_{PA}) at the driver's ear	75 dB (A)

Important!

Measurement of sound power level according to EC Directive 2000/14 EC.
Noise level at the driver's ear measured according to EC Directives 84/532/EEC, 89/514/EEC and 95/27/EEC.
Measurements performing on asphalted surface.

6.9 Vibration

Vibration	
Effective acceleration value for the upper extremities of the body *	< Trigger value
Effective acceleration value for the body *	< Trigger value

* Measurements as per 2002/44/EC (excavating, driving and hammering with a Wacker Neuson hammer). Machine and attachment
operation and maintenance as per Operator's Manual.

6.10 Coolant compound table

Outside temperature	Coolant			
	Water	Anticorrosion agent		Antifreeze agent
Up to °C (°F)	% by volume	cm³/l (in^3/gal)	% by volume	% by volume
4 (39.2)	99	10 (2.6)	1	–
-10 (14)	79			20
-20 (-4)	65			34
-25 (-13)	59			40
-30 (-22)	55			44

6.11 Dimensions model 38Z3

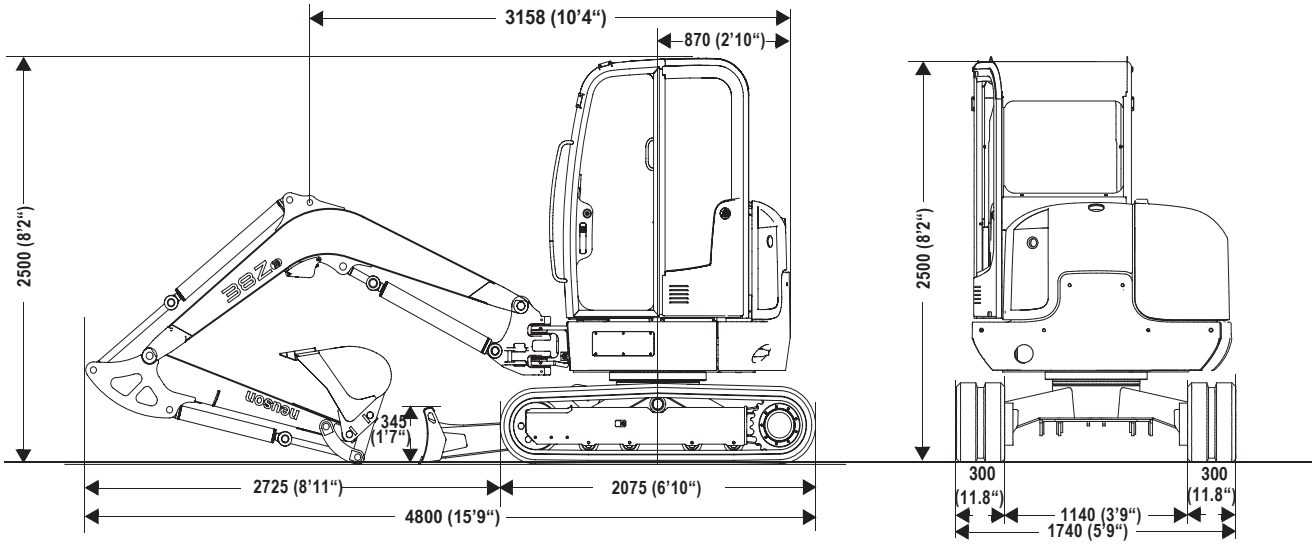
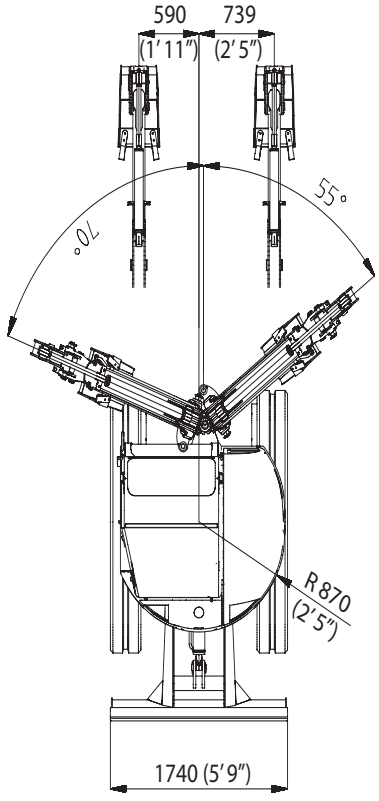


Fig. 4: Machine dimensions (model 38Z3)



Main data	Model 38
Service weight with cab/canopy	3630 kg (8003 lbs)
Height	2500 mm (8'2")
Width	1740 mm (5'9")
Transport length	4800 mm (15'9")
Max. digging depth	3110 mm (10'2")
Stick length (standard)	1500 mm (4'11")
Stick length (long version)	1750 mm (5'9")
Max. digging depth for long stick (+ 300 mm)	3360 mm (11'0")
Max. vertical digging depth	2430 mm (7'11")
Max. vertical digging depth (long stick)	2670 mm (8'9")
Max. digging height	4530 mm (14'10")
Max. digging height (long stick)	4660 mm (15'3")
Max. dump height	3220 mm (10'7")
Max. dump height (long stick)	3350 mm (11'0")
Max. digging radius	5300 mm (17'5")
Max. digging radius (long stick)	5540 mm (18'2")
Max. reach at ground level	5300 mm (17'5")
Max. reach at ground level (long stick)	5430 mm (17'10")
Max. breakout force at bucket tooth	25,70 kN (5778 lbf)
Max. tearout force (standard stick)	21,90 kN (4923 lbf)
Max. tearout force (long stick)	19,40 kN (4361 lbf)
Min. tail end slewing radius	870 mm (2'10")
Max. tail end lateral projection (90° rotation of upper carriage)	0 mm (0')
Max. boom displacement to bucket center (right-hand side)	740 mm (2'5")
Max. boom displacement to bucket center (left-hand side)	590 mm (1'11")

6.12 Lift capacity table 38Z3

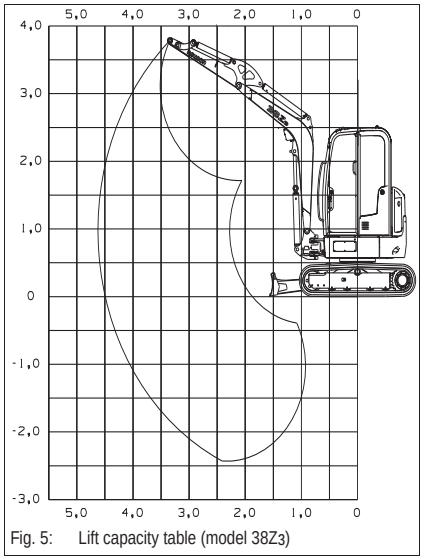
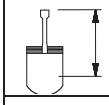
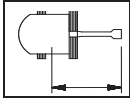


Fig. 5: Lift capacity table (model 38Z3)

A	max		4,5 m (14'9")		3,5 m (11'6")		2,5 m (8'2")	
B								
3,0 m (9'10")					660* (1455*)	660* (1455*)		
2,0 m (6'7")			790* (1742*)	425 (937)	785* (1731*)	640 (1411)		
1,0 m (3'3")	825* (1819*)	395 (871)	840* (1852*)	410 (904)	1050* (2315*)	600 (1323)	1735* (3825*)	975 (2150)
0,0 m (0'0")	805* (1775*)	385 (849)	855* (1885*)	400 (882)	1210* (2668*)	570 (1257)	2025* (4464*)	925 (2039)
-1,0 m (-3'3")					1160* (2557*)	565 (1246)	1875* (4134*)	915 (2017)
-2,0 m (-6'7")							1440* (3175*)	945 (2083)

max	Admissible load on extended stick
A	Reach from live ring center
B	Load hook height
*	Lift capacity limited by hydraulics

All table indications in kg (lbs)and horizontal position on firm ground without bucket.

	With the stabilizer blade in driving direction
	Without the stabilizer blade, 90° to driving direction

If equipped with a bucket or other attachments, lift capacity or tilt load is reduced by bucket or attachment dead weight.

Calculation basis: according to ISO 10567

The track excavator's lift capacity is restricted by the settings of the pressure limiting valves and the hydraulic system's stabilising features.

Neither 75 % of the static tilt load nor 87 % of the hydraulic lift capacity is exceeded.

6.13 Lift capacity table 38Z3, counterweight option

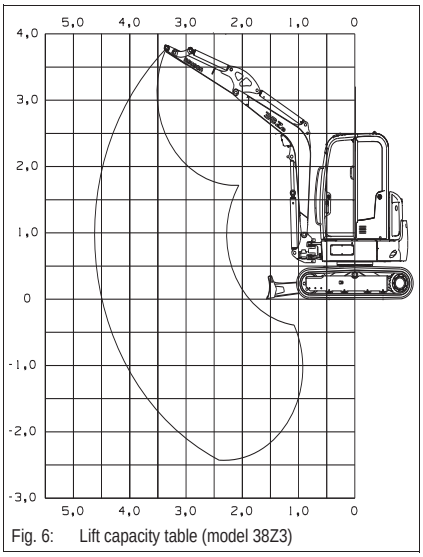
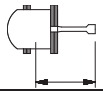


Fig. 6: Lift capacity table (model 38Z3)

A	max		4,5 m (14'9")		3,5 m (11'6")		2,5 m (8'2")	
B								
3,0 m (9'10")					660* (1455*)	660* (1455*)		
2,0 m (6'7")			790* (1742*)	480 (1058)	785* (1731*)	715 (1576)		
1,0 m (3'3")	825* (1819*)	450 (992)	840* (1852*)	465 (1025)	1050* (2315*)	675 (1488)	1735* (3825*)	1095 (2414)
0,0 m (0'0")	805* (1775*)	440 (970)	855* (1885*)	455 (1003)	1210* (2668*)	645 (1422)	2025* (4464*)	1040 (2039)
-1,0 m (-3'3")					1160* (2557*)	640 (1411)	1875* (4134*)	1035 (2282)
-2,0 m (-6'7")							1440* (3175*)	1060 (2337)

max	Admissible load on extended stick
A	Reach from live ring center
B	Load hook height
*	Lift capacity limited by hydraulics

All table indications in kg (lbs)and horizontal position on firm ground without bucket.

	With the stabilizer blade in driving direction
	Without the stabilizer blade, 90° to driving direction

If equipped with a bucket or other attachments, lift capacity or tilt load is reduced by bucket or attachment dead weight.

Calculation basis: according to ISO 10567

The track excavator's lift capacity is restricted by the settings of the pressure limiting valves and the hydraulic system's stabilising features.

Neither 75 % of the static tilt load nor 87 % of the hydraulic lift capacity is exceeded.

6.14 Lift capacity table 38Z3, long stick option

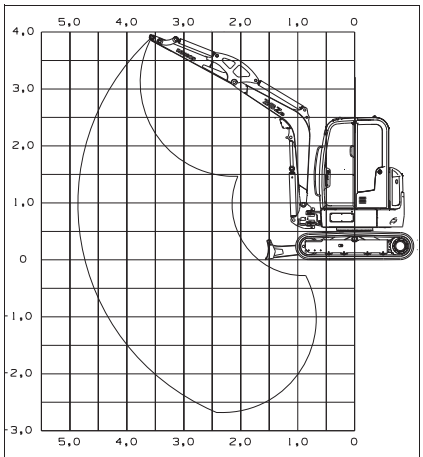


Fig. 7: Lift capacity table (model 38Z3)

A	max		4,5 m (14'9")		3,5 m (11'6")		2,5 m (8'2")	
B								
3,0 m (9'10")								
2,0 m (6'7")			705* (1554*)	425 (937)	670* (1477*)	645 (1422)		
1,0 m (3'3")	755* (1664*)	360 (794)	790* (1742*)	410 (904)	965* (2127*)	600 (1323)	1520* (3351*)	985 (2172)
0,0 m (0'0")	750* (1653*)	350 (772)	845* (1863*)	395 (871)	1170* (2579*)	565 (1246)	1975* (4354*)	910 (2006)
-1,0 m (-3'3")					1175* (2590*)	550 (1213)	1920* (4243*)	895 (1973)
-2,0 m (-6'7")							1570* (3461*)	915 (2017)

max	Admissible load on extended stick
A	Reach from live ring center
B	Load hook height
*	Lift capacity limited by hydraulics

All table indications in kg (lbs)and horizontal position on firm ground without bucket.

	With the stabilizer blade in driving direction
	Without the stabilizer blade, 90° to driving direction

If equipped with a bucket or other attachments, lift capacity or tilt load is reduced by bucket or attachment dead weight.

Calculation basis: according to ISO 10567

The track excavator's lift capacity is restricted by the settings of the pressure limiting valves and the hydraulic system's stabilising features.

Neither 75 % of the static tilt load nor 87 % of the hydraulic lift capacity is exceeded.

6.15 Lift capacity table 38Z3, long stick, counterweight option

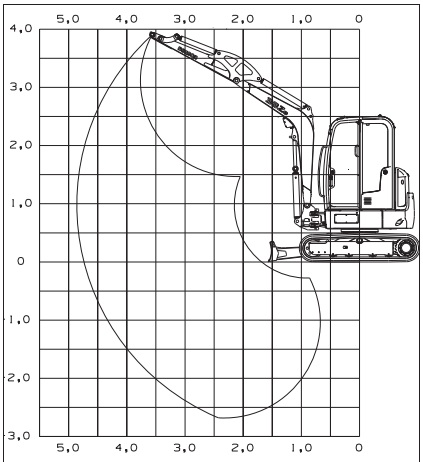
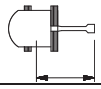


Fig. 8: Lift capacity table (model 38Z3)

A	max		4,5 m (14'9")		3,5 m (11'6")		2,5 m (8'2")	
B								
3,0 m (9'10")								
2,0 m (6'7")			705* (1554*)	475 (1047)	670* (1477*)	670* (1477*)		
1,0 m (3'3")	755* (1664*)	405 (893)	790* (1742*)	460 (1014)	965* (2127*)	670 (1477)	1520* (3351*)	1095 (2414)
0,0 m (0'0")	750* (1653*)	400 (882)	845* (1863*)	445 (981)	1170* (2579*)	635 (1400)	1975* (4354*)	1020 (2249)
-1,0 m (-3'3")					1175* (2590*)	620 (1367)	1920* (4243*)	1005 (2216)
-2,0 m (-6'7")							1570* (3461*)	1025 (2260)

max	Admissible load on extended stick
A	Reach from live ring center
B	Load hook height
*	Lift capacity limited by hydraulics

All table indications in kg (lbs)and horizontal position on firm ground without bucket.

	With the stabilizer blade in driving direction
	Without the stabilizer blade, 90° to driving direction

If equipped with a bucket or other attachments, lift capacity or tilt load is reduced by bucket or attachment dead weight.

Calculation basis: according to ISO 10567

The track excavator's lift capacity is restricted by the settings of the pressure limiting valves and the hydraulic system's stabilising features.

Neither 75 % of the static tilt load nor 87 % of the hydraulic lift capacity is exceeded.

Wacker Neuson Corporation
P. O. Box 9007
Menomonee Falls, WI 53052-9007
Telephone: (262) 255-0500
Fax: (262) 255-0550
Telephone: (800) 770-0957
www.wackerneuson.com

Wacker Neuson Rhymney Ltd.
Crown Business Park
Tredegar
Gwent South Wales NP22 4EF
Telephone +44 (0) 1495 723083
Fax +44 (0) 1495 713941
E-mail: office@liftondumpers.com
www.neusonkramer.com

Wacker Neuson Linz GmbH
Haidfeldstr. 37
A-4060 Linz/Leonding
Telephone +43 (0) 732/90590-0
Fax +43 (0) 732/90590-0
E-mail: office@neuson.com
www.neusonkramer.com