5200005459	1.0
0312	

Track Excavator

28Z3

OPERATOR'S MANUAL

5200005459

The cover features the machine with possible optional equipment.

Wacker Neuson Linz GmbH
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Document: OM 28Z3 US

1.1 Tilting the upper carriage – Vertical Digging System 28z3 (option)

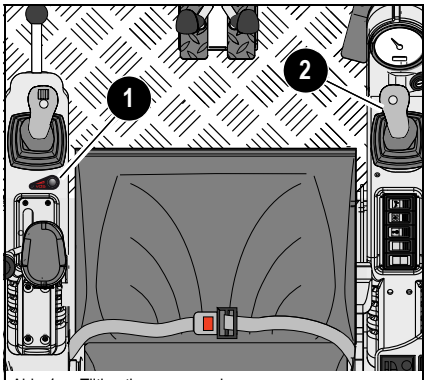

Abb. 1: Tilting the upper carriage

Vertical digging on slopes is possible by tilting the upper carriage hydraulically by 15° with the VDS.

Tilting the upper carriage:

☞ Hold button **1**

☞ *Press control lever* **2** *to the right*

➥ The upper carriage is tilted

Lowering the upper carriage:

☞ Hold button **1**

☞ *Push control lever* **2** to the left

➥ The upper carriage is lowered.

Bear in mind the following when working with the machine:

Danger!

Tilting the machine in the immediate vicinity of walls or parts of buildings carries a danger of crushing.

Danger of severe crushing of body!

☞ *All persons must stay clear of the hazard zone when tilting the machine.*

Caution!

☞ *Tilt the machine only on firm ground.*

☞ *Tilt the machine only if it is at a standstill and if the attachment is empty.*

☞ *All doors and covers must be closed when tilting the machine.*

☞ *Never turn, lower or set down the attachment abruptly.*

☞ *Do not extend or retract the boom abruptly. Otherwise there is danger of tipping over!*

☞ *When working in the immediate vicinity of a wall or parts of a building, make sure the upper carriage does not touch anything when it is tilted.*

☞ *On a slope, position the machine so that the upper carriage is tilted towards the slope. Otherwise there is danger of tipping over!*

– *see chapter* ***General safety instructions***

– *see chapter* ***Warning of special hazards***

– *see chapter* ***Working with the excavator***

VDS lubrication points (option)

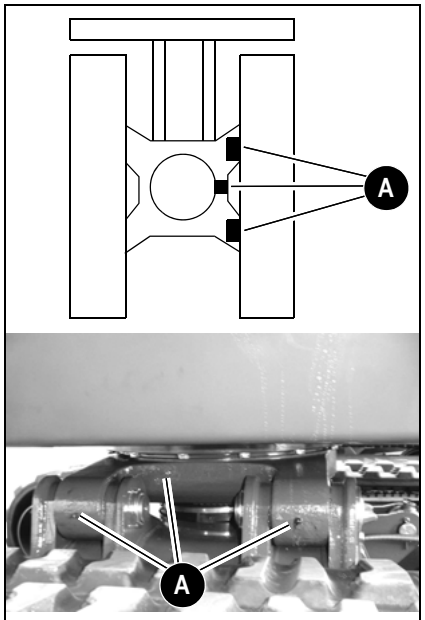

Abb. 2: VDS lubrication points

Apply grease to lubrication points **A** once a week.

Supplementary Operator's Manual for Protective Structures for Excavators

Edition	**1.0**
Language	**us**
Article number	**1000293107**
Valid for machine model	803, 1403, 1404, 1503, 1703, ET18, 1903, 2003, ET20, 2203, 2404, ET24, 2503, 28Z3, 3003, 3503, 3703, 38Z3, 5002, 50Z3, 6002, 6003, 6502, 6503, 75Z3, 8002, 8003, 9503, 12002, 14504

1.1 Supplementary Operator's Manual

Important

This Supplementary Operator's Manual must be added to the original Operator's Manual of which it forms part. Read, understand and follow this Supplementary Operator's Manual and all other manuals supplied with the machine.

Legend	
Supplementary Operator's Manual for original Operator's Manual	–
Supplementary Operator's Manual for translation of original Operator's Manual	x

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Definition of the term "Protective Structure"

Protective structures are additional elements that protect the operator or user against risk. These elements can be installed later on or as standard equipment.

Explanation of abbreviations

ROPS:

Roll Over Protective Structure

TOPS:

Tip Over Protective Structure

FOPS:

Falling Objects Protective Structure

FGPS:

Front Guard Protective Structure. Called "Front Guard" in this Supplementary Operator's Manual.

1.2 Safety Symbols Found In This Manual

Important indications regarding the safety of the personnel and the machine are identified in this Supplementary Operator's Manual with the following terms and symbols:

DANGER

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

Potential consequences of the hazard.

- Obey all safety messages that follow this symbol to avoid injury or death.

WARNING

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

Potential consequences of the hazard.

- 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.

Potential consequences of the hazard.

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

NOTICE

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.

1.3 Mechanical integrity

WARNING

Accident hazard due to modified cab and protective structures.

Incorrect work on the cab and protective structures could causes serious injury or death.

- No drilling, cutting or grinding on the cab and protective structures.
- Welding, straightening or bending work on the cab and protective structures is prohibited.
- Immediately have a damaged cab or protective structure replaced.

Important

Check the cab/canopy/rollbar and all protective structures once a day for damage.

Important

Protective structures may only be installed or removed by an authorized Wacker Neuson Service Center.

1.4 Differentiation of protective structures

Important

- Machine operation is only allowed with a correctly installed and intact cab, correctly installed and intact canopy or rollbar for the 803 (option).
- For additional protection, only use correctly installed and intact Wacker Neuson protective structures that have been released for the machine.

Rollbar (valid for 803)

The rollbar has been specially designed for protection in case of an accident.

- ROPS/TOPS tested rollbar (option).
- Shatter protection (option from AI00967); protective structure against falling objects (fragments or splinters) projected from front of machine.

Cab/canopy (valid for 1403/1404/1503/1703/ET18/1903/2003/ET20/2203/2404/ ET24/2503/28Z3/3003/3503/3703/38Z3/50Z3)

The cab/canopy have been specially designed for protection in case of an accident.

- ROPS/TOPS tested canopy (open version).
- ROPS/TOPS tested cab (closed version/option).
- Protective FOPS structure (option) for cab/canopy; protective structure against falling objects.
- Front Guard (option) for cab/canopy; protective structure against objects from the front (for instance pipes, tree trunks etc.).
- Shatter protection (option) for canopy; protective structure against falling objects (fragments or splinters) projected from front of machine.

Important

Unless otherwise specified, the term "Cab" refers both to the open and closed variants.

Cab (valid for 5002/6002/6003/6502/6503/75Z3/8002/8003/9503/12002/14504)

The cab has been specially designed for protection in case of an accident:

- ROPS/TOPS tested cab.
- Protective FOPS structure (option) for cab; protective structure against falling objects.
- Front Guard (option) for cab; protective structure against objects from the front (for instance pipes, tree trunks etc.).

Not all protective structures are available for all machines, and not all protective structures can be combined with each other. If you are not sure, contact a Wacker Neuson service center.

Definition of FOPS/Front Guard categories

Category I:

FOPS and Front Guard to protect against small falling objects or small objects penetrating the cab from the front of the machine, such as bricks, small pieces of concrete, tools, for machines that are used for repairing roads, landscaping work and for working on other construction sites, for instance.

Category II:

FOPS or Front Guard to protect against heavy falling objects or heavy objects penetrating the cab from the front of the machine, such as trees, pieces of rock, for machines that are used for clearance work, demolition work and forestry work.

Responsibility for machine equipped with protective structures

The decision regarding the necessary protective structures (type and category I or II) must be made by the machine operator and depends on the specific work situation.

The operator must observe the national regulations and he must inform the user on the protective structure to be used in a specific work situation.

Protective FOPS structure/small screen – category I (option)

DANGER

Crushing hazard. Falling objects.

Objects will cause severe injury or death.

- Machine operation is prohibited in areas with risks of falling objects, without a protective FOPS structure.

Important

The protective FOPS structure corresponds to category I according to ISO 3449:1992 (valid for 1404 from AG02423) or ISO 10262:1998 (valid for ET18/ ET20/ET24/2503/28Z3/3503/38Z3/50Z3/6003/6503/75Z3/8003/9503/14504).

- Follow all local, state, or national regulations covering falling objects.
- The operator must ensure that only work is performed that does not require any higher protection.
- Accidents cannot be fully avoided despite equipping a machine with protective structures.

Important

Protective structures may only be installed or removed by an authorized Wacker Neuson Service Center.

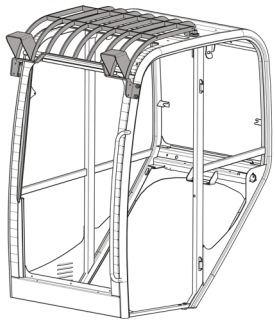

Fig. 1: FOPS category I (symbolic representation)

Protective FOPS structure/large screen – category I (option)

DANGER

Crushing hazard. Falling objects.

Objects will cause severe injury or death.

- Machine operation is prohibited in areas with risks of falling objects, without a protective FOPS structure.

Important

The protective FOPS structure corresponds to category I according to ISO 3449:1992 (valid for 38Z3) or according to ISO 3449:2008 (valid for 28Z3).

- Follow all local, state, or national regulations covering falling objects.
- The operator must ensure that only work is performed that does not require any higher protection.
- Accidencts cannot be fully avoided despite equipping a machine with protective structures.

Important

Protective structures may only be installed or removed by an authorized Wacker Neuson Service Center.

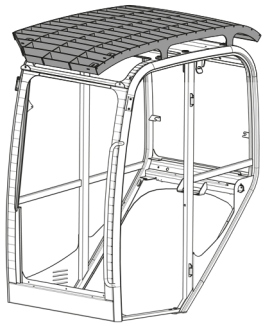

Fig. 2: FOPS category I (symbolic representation)

Protective FOPS structure/canopy – category I (option)

DANGER

Crushing hazard. Falling objects.

Objects will cause severe injury or death.

- Machine operation is prohibited in areas with risks of falling objects, without a protective FOPS structure.

Important

The protective FOPS structure corresponds to category I according to ISO 3449:1992 (valid for 1403/1503/1703 (up to AF05530)/1903/2003 (up to AF05530)/2203/2503/3003/3503/3703/5002/6002/6502).

- Follow all local, state, or national regulations covering falling objects.
- The operator must ensure that only work is performed that does not require any higher protection.
- Accidencts cannot be fully avoided despite equipping a machine with protective structures.

Important

Protective structures may only be installed or removed by an authorized Wacker Neuson Service Center.

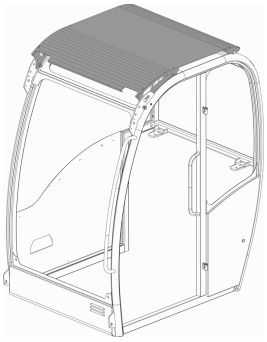

Fig. 3: FOPS category I (symbolic representation)

Protective FOPS structure/large screen – category II (option)

DANGER

Crushing hazard. Falling objects.

Objects will cause severe injury or death.

- Machine operation is prohibited in areas with risks of falling objects, without a protective FOPS structure.

Important

The protective FOPS structure corresponds to category II according to ISO 3449:1992 (valid for 1404/1703 (from AG02503)/2003 (from AG02503)/2404/50Z3/6003/6503/75Z3/8002/8003/9503/12002) or according to ISO 3449:2005 (valid for 14504).

- Follow all local, state, or national regulations covering falling objects.
- The operator must ensure that only work is performed that does not require any higher protection.
- Accidencts cannot be fully avoided despite equipping a machine with protective structures.

Important

Protective structures may only be installed or removed by an authorized Wacker Neuson Service Center.

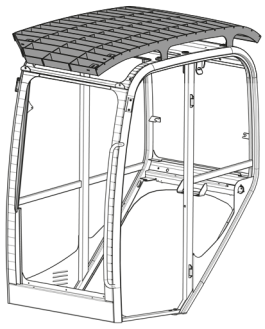

Fig. 4: FOPS category II (symbolic representation)

Protective Front Guard structure with integrated FOPS/category I respectively (option)

DANGER

Stabbing/puncture/crushing hazard from falling objects (fragments or splinters) projected from front of machine.

Objects will cause severe injury or death.

- Machine operation is prohibited in areas with risks of objects penetrating the cab from the front of the machine, for instance pipes, tree trunks etc. and of falling objects, without a protective Front Guard structure with an integrated FOPS.

Important

The protective Front Guard structure with integrated FOPS corresponds to category I according to ISO 10262:1998 (valid for ET18/ET20/ET24).

- Follow all local, state, or national regulations covering falling objects.
- The operator must ensure that only work is performed that does not require any higher protection.
- Accidencts cannot be fully avoided despite equipping a machine with protective structures.

Important

Protective structures may only be installed or removed by an authorized Wacker Neuson Service Center.

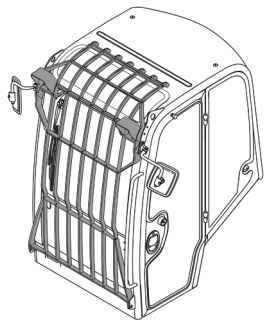

Fig. 5: Front Guard with integrated FOPS (symbolic representation)

Protective Front Guard structure category I (option)

DANGER

Stabbing/puncture/crushing hazard from falling objects (fragments or splinters) projected from front of machine.

Objects will cause severe injury or death.

- Machine operation is prohibited in areas with risks of objects penetrating the cab from the front of the machine, for instance pipes, tree trunks etc. and of falling objects, without a protective Front Guard structure with an integrated FOPS.

Important

The protective Front Guard structure corresponds to category I according to ISO 10262:1998 (valid for 2503/28Z3/3003/3503/3703/38Z3).

- Follow all local, state, or national regulations covering falling objects.
- The operator must ensure that only work is performed that does not require any higher protection.
- Accidencts cannot be fully avoided despite equipping a machine with protective structures.

Important

Protective structures may only be installed or removed by an authorized Wacker Neuson Service Center.

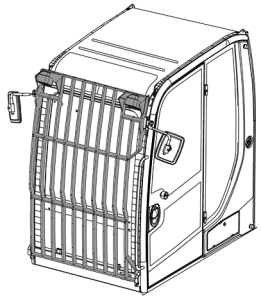

Fig. 6: Protective Front Guard structure (symbolic representation)

Protective Front Guard structure category II (option)

DANGER

Stabbing/puncture/crushing hazard from falling objects (fragments or splinters) projected from front of machine.

Objects will cause severe injury or death.

- Machine operation is prohibited in areas with risks of objects penetrating the cab from the front of the machine, for instance pipes, tree trunks etc. and of falling objects, without a protective Front Guard structure with an integrated FOPS.

Important

The protective Front Guard structure corresponds to category II according to ISO 10262:1998 (valid for 50Z3/6003/6503/75Z3/8002/8003/9503/12002/14504).

- Follow all local, state, or national regulations covering falling objects.
- The operator must ensure that only work is performed that does not require any higher protection.
- Accidencts cannot be fully avoided despite equipping a machine with protective structures.

Important

Protective structures may only be installed or removed by an authorized Wacker Neuson Service Center.

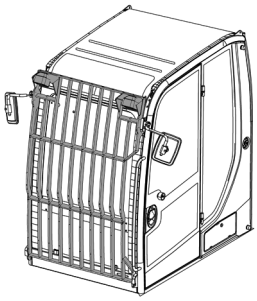

Fig. 7: Protective Front Guard structure (symbolic representation)

Emergency exit for cab equipped with protective Front Guard structure

WARNING

Cutting Hazard. Risk of injury due to broken glass.

Risk of personal injury.

- Only smash windows in an absolute emergency.
- Protect face and eyes sufficiently from glass splinters before breaking a window pane.
- Remove all broken glass from the window frame before exiting the cab.

WARNING

Tripping/Slipping/Falling hazard. Use the rear window as an exit only in an emergency.

Risk of personal injury.The machine has no footholds or handles at the rear for a safe exit. Therefore injuries may arise when exiting in an emergency.

- Exit the machine through the rear window only in an absolute emergency.

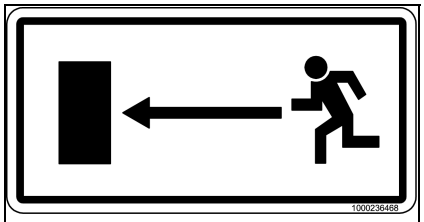

Fig. 8: Emergency exit label

Meaning (option)

This label identifies the emergency exit for a cab equipped with protective Front Guard structure.

Position

Inside the cab, above the rear window

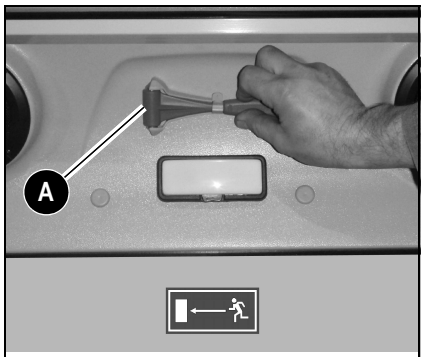

Fig. 9: Position of emergency hammer (symbolic representation)

The rear window can be used as an exit if the door is blocked.

Smash the rear window with emergency hammer **A**.

Shatter protection (option)

DANGER

Stabbing/puncture/crushing hazard from falling objects (fragments or splinters) projected from front of machine.

Objects will cause severe injury or death.

- A shatter protection must be installed on a canopy version if an attachment (a hammer, for instance) causes fragments to fly. This shatter protection takes over the function of a front window.
- Pay attention to the restricted work range (see fig. 13 and 14).
- For 803 machines up to serial number AI00966, operation with an attachment causing fragments to fly is absolutely prohibited.

WARNING

Accident hazard in conditions of restricted visibility due to rain, snowfall, dust etc..

Could causes severe injury or death.

- Stop work immediately.

Important

The shatter protection (canopy option) protects the driver against fragments from the front.

- Follow all local, state, or national regulations covering falling objects.
- The operator must ensure that only work is performed that does not require any higher protection.
- Accidents cannot be fully avoided despite equipping a machine with protective structures.

Important

Do not use brushes, steel wool or other abrasive cleaners for cleaning the polycarbonate disc. Do not wipe dust in a dry state.

Important

Protective structures may only be installed or removed by an authorized Wacker Neuson Service Center.

Important

A shatter protection must be installed on a canopy version if an attachment (a hammer, for instance) causes fragments to fly. Pay attention to the restricted work range (see fig. 13 and 14).

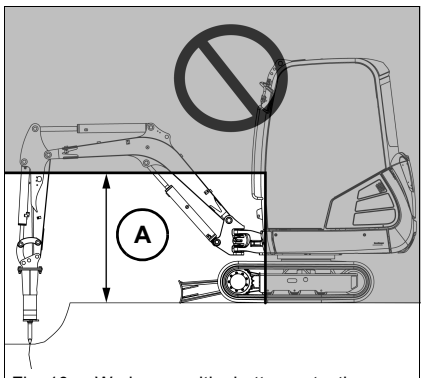

Fig. 10: Work area with shatter protection

Work area with shatter protection

Height of work area **A**: 120 cm (47 in).

Figures 13 and 14 refer to work with a Wacker Neuson hydraulic hammer.

Important

Working with another attachment can modify the height of the work area.

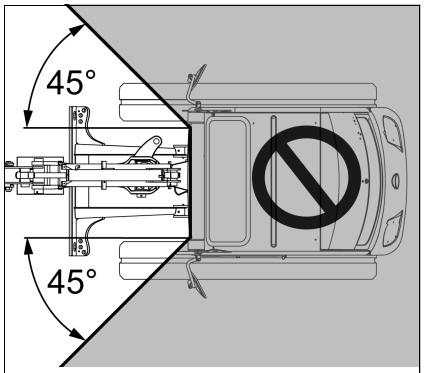

Fig. 11: Work area with shatter protection (top view)

Table of Contents

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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 instruction 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. As a rule, keep the following in mind:

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

Special Instructions

- 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 Wacker Neuson's written authorization, 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.

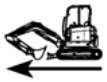
☞ *This symbol requires you to perform the activity described.*

➥ Description of the effects or results of an activity.

n. s. = not shown

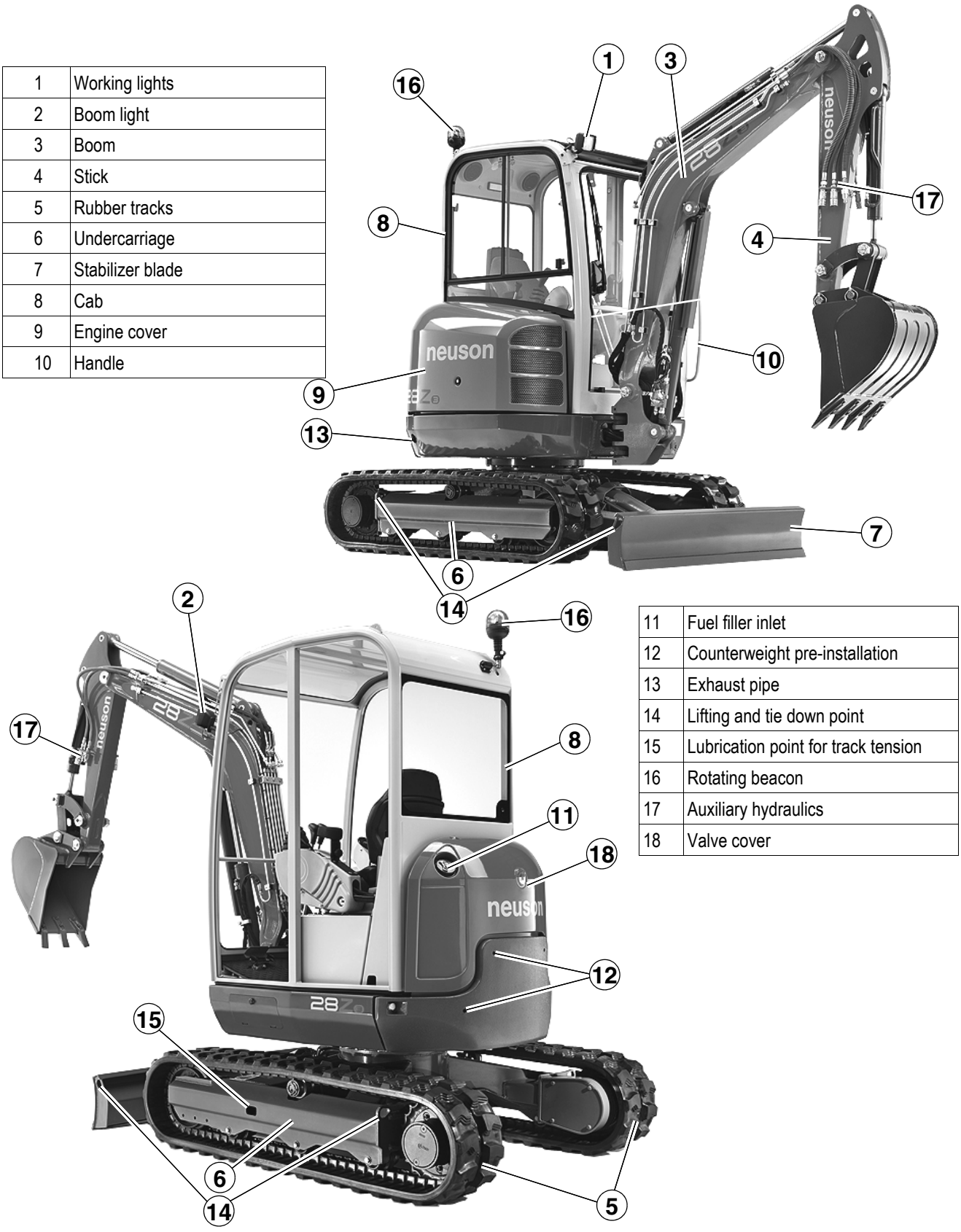
“Opt” = option

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	Working lights
2	Boom light
3	Boom
4	Stick
5	Rubber tracks
6	Undercarriage
7	Stabilizer blade
8	Cab
9	Engine cover
10	Handle



11	Fuel filler inlet
12	Counterweight pre-installation
13	Exhaust pipe
14	Lifting and tie down point
15	Lubrication point for track tension
16	Rotating beacon
17	Auxiliary hydraulics
18	Valve cover

Fig. 1: Machine outside views

1.3 Brief description

The model 28Z3 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 *1.4 Fields of application, attachments* for further applications.

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 28Z3: water-cooled Yanmar three 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 unit.

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

Coolant temperature is monitored with the indicator light on the machine's instrument panel.

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 operating 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.*

Caution!

Personal injury or equipment damage hazards. Using other manufactures' attachments, or attachments not designed for this excavator, can greatly reduce the machine's stability and output. Unapproved attachments may damage the machine or injure the operator or those in the surrounding area.

- Only use attachments that have been approved by Wacker Neuson. Consult your Wacker Neuson dealer for assistance.

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

Possible attachments

Description of attachment	Capacity	Item no.:	Excavator	Remarks
Complete quickhitch	-	1000018479	28Z3	Required for operation of Wacker Neuson quickhitch systems
Bucket B = 300 mm (11.8'')	50 l (1.8 ft^3)	1000093755	28Z3	
	50 l (1.8 ft^3)	1000017130	28Z3	For quickhitch
Bucket B = 400 mm (1'4'')	69 l (2.4 ft^3)	1000093756	28Z3	
	69 l (2.4 ft^3)	1000017125	28Z3	For quickhitch
Bucket B = 500 mm (1'8'')	88 l (3.1 ft^3)	1000093757	28Z3	
	88 l (3.1 ft^3)	1000017127	28Z3	For quickhitch
Bucket B = 600 mm (2')	107 l (3.8 ft^3)	1000093758	28Z3	
	107 l (3.8 ft^3)	1000017134	28Z3	For quickhitch
Bucket B = 700 mm (2'4'')	127 l (4.5 ft^3)	1000093759	28Z3	
	127 l (4.5 ft^3)	1000017128	28Z3	For quickhitch
Offset bucket B = 1000 mm (3'4'') short stick	111 l (3.9 ft^3)	1000096567	28Z3	
	111 l (3.9 ft^3)	1000017131	28Z3	For quickhitch

Description of attachment	Capacity	Item no.:	Excavator	Remarks
Offset bucket B = 1400 mm (4’7’’) short stick	158 l (5.6 ft^3)	1000096568	28Z3	
	158 l (5.6 ft^3)	1000017132	28Z3	For quickhitch
Offset bucket B = 1000 mm (3’4’’) long stick	111 l (3.9 ft^3)	1000096569	28Z3	
	111 l (3.9 ft^3)	1000096571	28Z3	For quickhitch
Offset bucket B = 1400 mm (4’7’’) long stick	158 l (5.6 ft^3)	1000096570	28Z3	
	158 l (5.6 ft^3)	1000096572	28Z3	For quickhitch
Ditch cleaning bucket B = 1000 mm (3’4’’)	117 l (4.1 ft^3)	1000096563	28Z3	
	116 l (4.1 ft^3)	1000096549	28Z3	For quickhitch
Ditch cleaning bucket B = 1400 mm (4’7’’)	166 l (5.9 ft^3)	1000096564	28Z3	
	164 l (5.9 ft^3)	1000096550	28Z3	For quickhitch
Hammer mount console	-	1000070743	28Z3	

1.5 Operator Qualifications

Requirements to be met by the operator

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 reliably.
- They have been appointed by the contractor for operating and servicing the earth moving machine.
- Get informed on and follow the legal regulations of your country.

1.6 EC Declaration of Conformity for machines delivered before the 29th December 2009

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	Track excavator 28Z3
Model	28Z3
Version	28Z3
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		Administrative unit reported according to Appendix 6
2000/14/EC	information Noise level	dBA	TÜV München (Munich/Germany Industrial Supervisory Board) Westendstr. 199 D-80686 Munich
	Measured value	91.3	
	Guaranteed value	93	

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, EN292-1, EN 292-2, 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/Managing Director
Wacker Neuson Linz GmbH

1.7 EC Declaration of Conformity for machines delivered after the 29th December 2009

EC Declaration of Conformity

According to Machine Directive 2006/42/EC, appendix II A

Manufacturer

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

Product

Machine designation:	Hydraulic excavator
Machine model:	28Z3
Serial no.:	_____
Output (kW):	15.2 kW
Measured sound power level:	91.5 dB (A)
Guaranteed sound power level:	93 dB (A)

Conformity assessment procedure

Notified body according to Directive 2006/42/EC, appendix XI:
Fachausschüsse Bau und Tiefbau
Prüf- und Zertifizierungsstelle im BG-PRÜFZERT
Landsberger Str. 309
D-80687 Munich
Distinguishing EU number 0036

Notified body according to Directive 2000/14/EC, appendix VI:
TÜV SÜD Industrie Service GmbH
Westendstr. 199
D-80686 Munich

Directives and standards

We hereby declare that this product corresponds to the relevant regulations and requirements of the following Directives and standards:
2006/42/EC (old 98/37 EC), 2004/108/EC (old 89/336/EEC), 2002/44/EC, 2005/88/EC, 2000/14/EC;
DIN EN ISO 12100-1 and 2, DIN EN 474-1 and 5, DIN EN 14121,
DIN EN 3471, DIN EN 13510, EN ISO 3744, EN ISO 3746, DIN EN ISO 3449

Leonding, _____		
Place, date	Thomas Köck, Responsible for documentation	Josef Erlinger, Managing director

1.8 Declaration of Conformity for machines without the CE mark at the type plate

Declaration of Conformity

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

Product

Machine designation:	Hydraulic excavator
Machine model:	28Z3
Serial no.:	_____
Output (kW):	15.2 kW
Measured sound power level:	91.5 dB (A)
Guaranteed sound power level:	93 dB (A)

Conformity assessment procedure
Notified body according to Directive 2006/42/EC, appendix XI:
Fachausschüsse Bau und Tiefbau
Prüf- und Zertifizierungsstelle im BG-PRÜFZERT
Landsberger Str. 309
D-80687 Munich
Distinguishing EU number 0036

Notified body according to Directive 2000/14/EC, appendix VI:
TÜV SÜD Industrie Service GmbH
Westendstr. 199
D-80686 Munich

Directives and standards
We hereby declare that this product corresponds to the relevant regulations and requirements of the following Directives and standards:
2006/42/EC (old 98/37 EC) except 1.7.3., 2004/108/EC (old 89/336/EEC), 2002/44/EC, 2005/88/EC, 2000/14/EC;
DIN EN ISO 12100-1 and 2, DIN EN 474-1 (except 7.3.) and 5, DIN EN 14121,
DIN EN 3471, DIN EN 13510, EN ISO 3744, EN ISO 3746, DIN EN ISO 3449

1.9 Type labels and component numbers

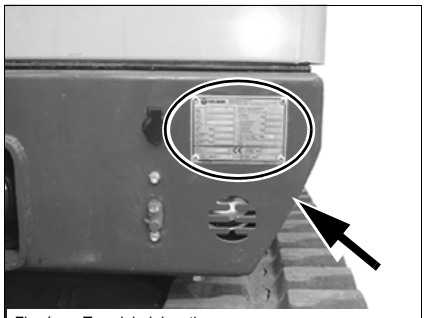


Fig. 1: Type label: location

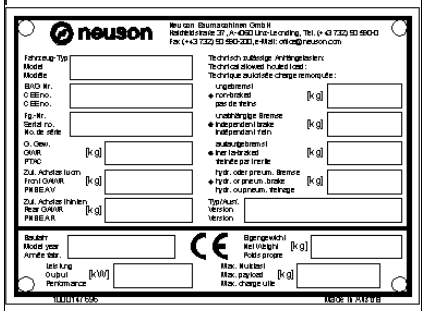


Fig. 2: Type label

Serial number

The serial number is stamped on the machine chassis. It is also located on the type label.

The type label is located at the front right on the machine chassis (at cab level)

Type label information

Example: 28Z3

Model:	28Z3
Year:	2010
PIN:	AE 000000
Output:	15.2 kW (20,4 hp)
Mass:	2670 kg (5886 lb)
Load:	----------
Max. gross mass:	----------
Max. axle load:	----------

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

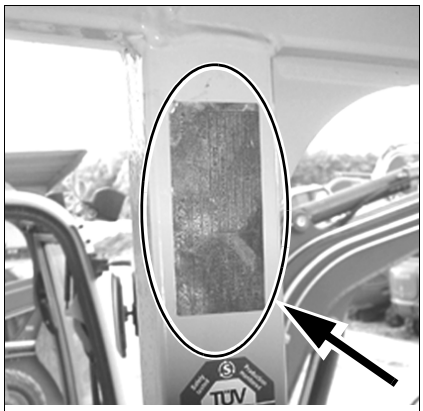


Fig. 3: Cab type label

Cab compliance certification number

The cab compliance certification number(arrow) is located on the chassis of the cab, at the upper left beside the door. This number indicates compliance with TOPS (ISO 12117), ROPS(ISO 3471) or FOPS (ISO 3449).

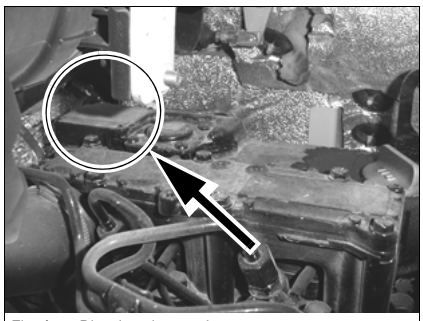


Fig. 4: Diesel engine number

Engine number

The type label (arrow) is located on the valve cover (engine).

Example: Yanmar 46557

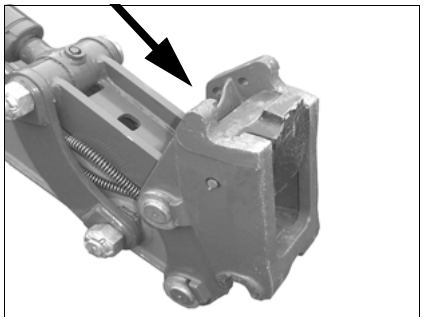


Fig. 5: Type label (hydraulic quickhitch system)

Hydraulic quickhitch system

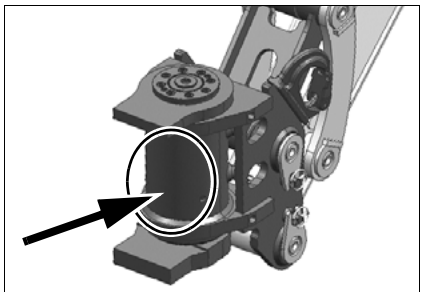


Fig. 6: Powertilt type label

Powertilt

1.10 Symbols (up to AG01685)

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.

...on the outside of the machine

Fig. 7: Eye hook label

Description

Locates the lifting points for hoisting the excavator with lifting devices (slings,tracks,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. 8: Label for points used for tying down the machine

Description

Tie down points.

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

– *see chapter 3.22 Tying down the excavator* on page 3-38

Location

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

Fig. 9: Noise level label

Description

Noise levels produced by the machine.

L_{WA} = sound power level

Other information – *see chapter 6.8 Noise levels* on page 6-4

Location

Next to the cab door

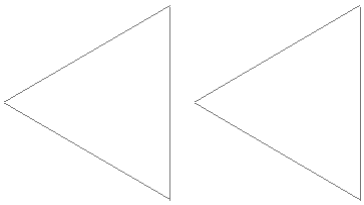


Fig. 10: Direction indicator

Description

This label shows the forward driving direction.

Location

On either side of the undercarriage at the idler end of the structure

Fig. 11: Safety alert symbol

Description

Safety alert symbol.

This label warns persons standing or working near the excavator of an existing safety hazard within the area around the machine.

Location

On either side of the arm system

Fig. 12: CE mark

Description

The CE mark means that the machine meets the requirements of the Machine Directive and that the conformity procedure has been performed. The machine meets all the health and safety requirements of the Machine Directive.

Location

On the type label

Fig. 13: Prohibitory label

Description

Do not open engine cover before engine is stopped!

Do not touch any moving or turning parts!

Location

At the rear on the engine cover of the machine, in the engine compartment

Fig. 14: Hot surfaces

Description

Do not touch hot surfaces, wait for parts to cool down.

Location

In the engine compartment

Fig. 15: Diesel

Description

Fill location for diesel fuel only.

Location

On the fuel tank

Fig. 16: Hydraulic oil

Description

Hydraulic oil reservoir. Use hydraulic fluid only.

– see chapter Adding hydraulic oil on page 5-18

Location

On the hydraulic oil reservoir

Fig. 17: Hydraulic oil reservoir under pressure

Description

Burn hazard. The tank is hot and under pressure!

Location

In the engine compartment on the partition wall on the right next to the battery master switch, at the rear of the cab behind the hydraulic oil filler neck

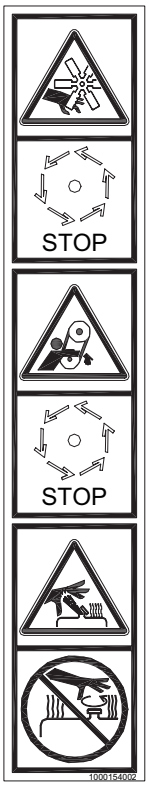


Fig. 18: Warning label

Description

This safety label warns of the following dangers:

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 entangled in the engine V-belt when the engine is running. Stop engine before working on the engine.

Hot surface! Do not touch.

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

Location

In the engine compartment

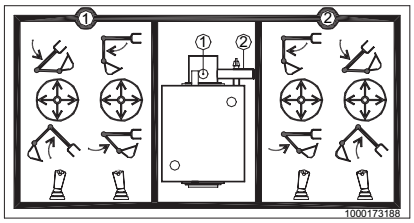


Fig. 19: Changeover valve for controll pattern options

Description

Explains at which positon of the selection valve which control pattern is chosen (control pattern “A“ or “B“). Check before starting the machine which controll pattern you have chosen!

– *see chapter 3.25 Changeover valve for control pattern”B”(option)* on page 3-44

Location

Inside the cab

Fig. 20: Read the Operator's Manual

Description

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

Location

Inside the cab on the right-hand side lining.

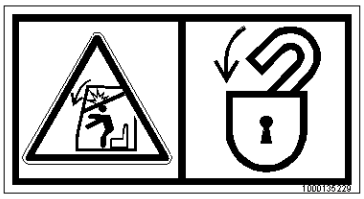


Fig. 21: Opening and closing the front window

Description

Pinch point hazard. Always use the handles to open and close the front window! Always lock the front window with both locks!

Location

In the upper right of the cab.

Fig. 22: Parking the machine correctly

Description

Press the boom and the stabilizer blade into the ground as you leave the machine, remove the starting key and place chocks on the left and right under the tracks. – *see Parking checklist* on page 3-8

Location

Cab roof lining

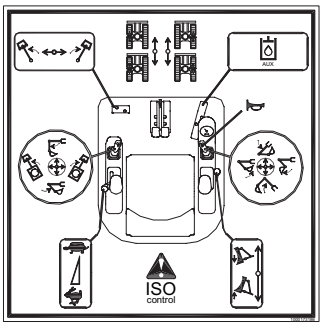


Fig. 23: Control functions

Description

Explains the function 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!

– *see Control levers/control pattern ”A”: overview* on page 3-40

Location

Cab roof lining

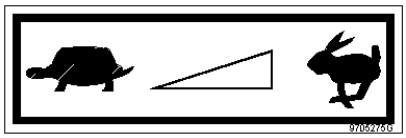


Fig. 24: Describes the throttle lever function

Description

Describes the throttle lever function.

– *see Throttle lever: overview* on page 3-9

Location

Below the throttle lever

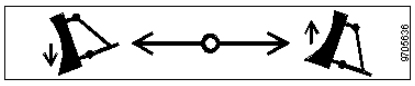


Fig. 25: Stabilizer blade lever function

Description

Describes the stabilizer blade lever function

Location

Inside the cab

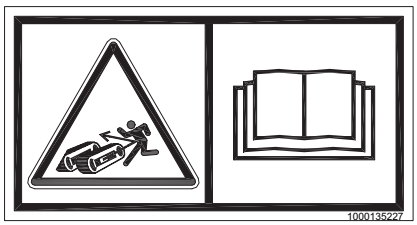


Fig. 26: Tighten tracks

Description

The label means following:

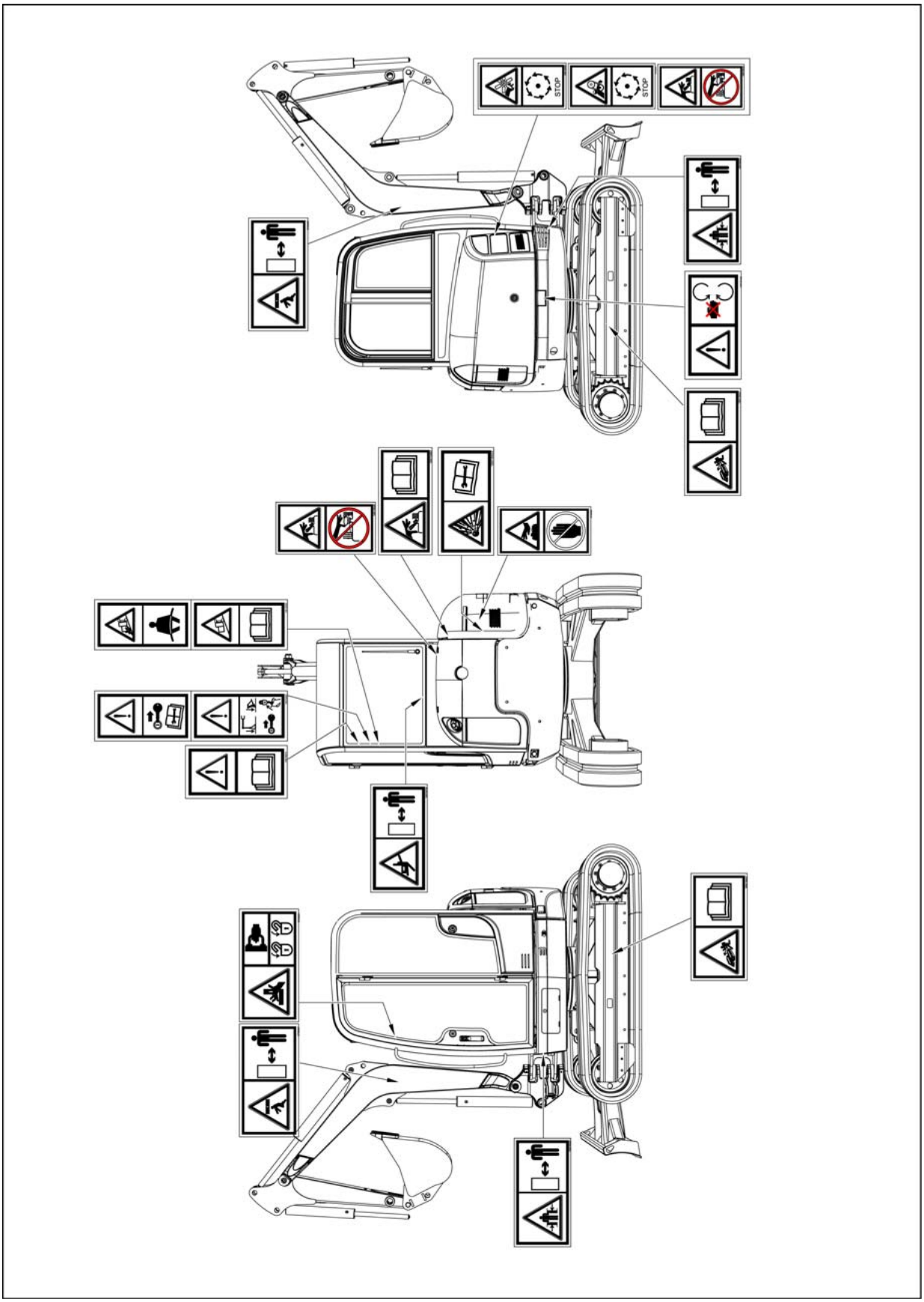
- Potential high pressure grease discharge from the track tension adjustment fitting.
- Always read the Maintenance section of this Operator’s Manual before releasing or tightening the tracks to avoid potential injury from ejected grease.

Location

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

1.11 Symbols (from AG01686)

Overview



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. 27: Eye hook label

Description

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

Location

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

Fig. 28: Label for points used for tying down the machine

Description

Tie down points.

Points for tying down 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. 29: Noise level label

Description

Noise levels produced by the machine.

L_{WA} = sound power level

Location

Cabine: on the left window.
Canopy: on the right canopy wall.

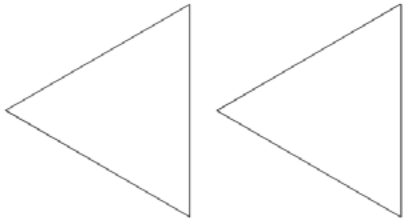


Fig. 30: Direction arrows

Description

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

Location

On either side of the undercarriage at the supporting rollers.

Fig. 31: Diesel

Description

Fill location for diesel fuel.

Location

Near the fuel filler neck in engine compartment.

Fig. 32: Hydraulic oil

Description

Hydraulic oil reservoir. Use hydraulic fluid only.

Location

On the filler cap.

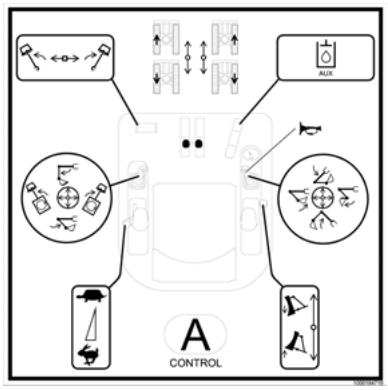


Fig. 33: Control pattern A

Description

Explains the functions of the joysticks (control pattern ”A”) and of other controls. If the machine is fitted with a “changeover valve”, check before starting the machine the control pattern that has been chosen!

Location

On the cab roof.

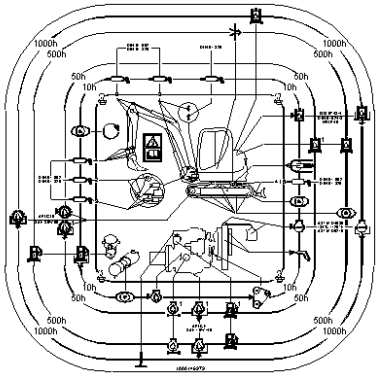


Fig. 34: Maintenance label

Description

Shows the main maintenance intervals. For a complete list of the maintenance intervals, see chapter “Maintenance” of the Operator's Manual.

Location

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

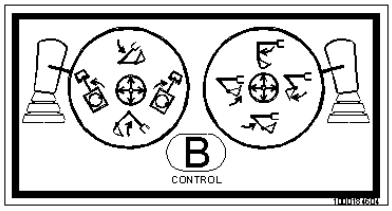


Fig. 35: Control pattern B (option)

Description

Explains the joystick functions (control pattern ”B”).
Check before starting the machine the control pattern that has been chosen!

Location

On the cab roof.

Safety labels

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

Fig. 36: Tighten tracks

Description

The label means the following:

- Grease may be ejected under high pressure the track tension system.
- Always read the Operator's Manual before loosening or tightening the tracks to avoid potential injury from ejected grease.

Location

On the undercarriage near the lubrication system.

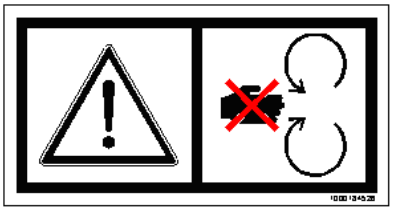


Fig. 37: Prohibitory label

Description

Stop the engine before opening or dismounting the safety devices (e. g. engine cover, fan guard ...)

Location

On the chassis near the engine cover handle.

Fig. 38: Rotating V-belt

Description

This safety label warns of the following dangers:

Rotating fan. Stay clear of the engine compartment if the fan is still running.

Stay clear of the engine compartment with the engine running!

Hot surface and burn hazards. Do not touch.

The radiators are under pressure, allow them to cool down!

Carefully and slowly open the cover only after the radiator has cooled down, to allow the pressure to escape. Wear safety goggles and gloves when opening the cover.

Location

In the engine compartment.

Fig. 39: Hot surfaces

Description

Hot surface! Do not touch.

Location

Engine compartment near exhaust system.

Fig. 40: Hydraulic oil reservoir 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 radiator has cooled down, to allow the pressure to escape.

  Wear safety goggles and gloves when opening the cover.

Location

On the filler cap.

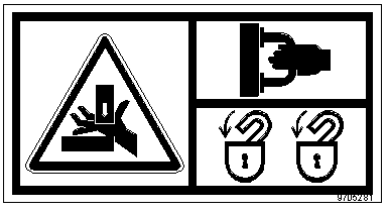


Fig. 41: Front window

Description

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. 42: Read the Operator's Manual

Description

Read and understand the Operator's Manual before starting, working, adjusting, performing maintenance or repairing the machine.

Location

On the B pillar in the cab.

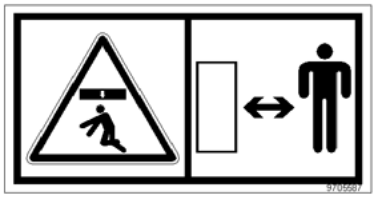


Fig. 43: Keep distance 1

Description

This label alerts persons standing or working near the machine of an existing danger within the area of increased danger around the machine. Stay clear of machine!

Location

On either side of the boom.

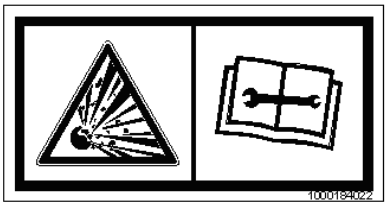


Fig. 44: Under pressure

Description

Accumulator is under high pressure. Always read the Operator's Manual before performing maintenance or repairs

Location

On the accumulator.

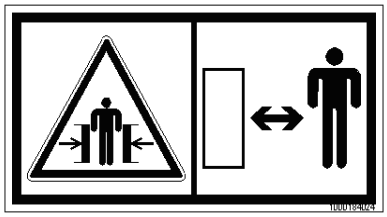


Fig. 45: Keep distance 2

Description

Indicates that persons other than the driver must keep a safe distance to the machine during operation. Stay clear of machine!

Location

On the boom swivelling console on either side of the chassis.

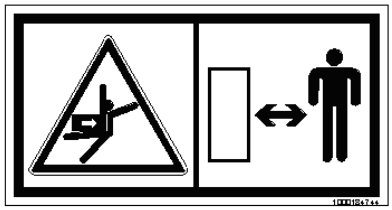


Fig. 46: Keep distance 3

Description

Indicates that persons other than the driver must keep a safe distance to the machine during operation. Stay clear of machine!

Location

On the rear window.

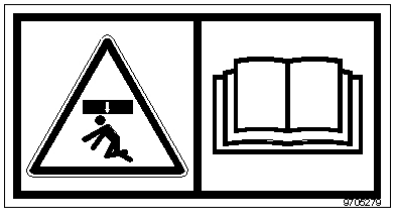


Fig. 47: Tilting the cab

Description

Read and understand the instructions in the Operator's Manual and the service manual before tilting the cab.

Location

On the left front of the chassis.

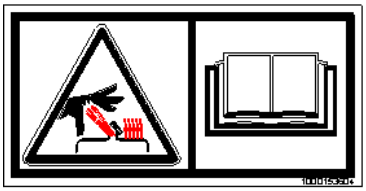


Fig. 48: High pressure

Description

Under high pressure. Allow the tank to cool down. Carefully and slowly open the bleed screw only after the tank has cooled down, to allow the pressure to escape. Wear safety googles and gloves when opening the bleed screw.

Location

Over the relay box in the engine compartment.

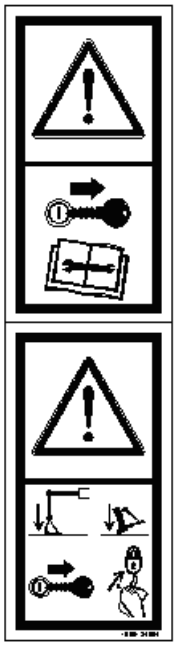


Fig. 49: Read the manual before performing maintenance or repairs.

Description

Before performing maintenance or repairs on the machine, stop the engine, remove the key, and read and understand the Operator's Manual and the service manual.

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

Location

On the B pillar in the cab.

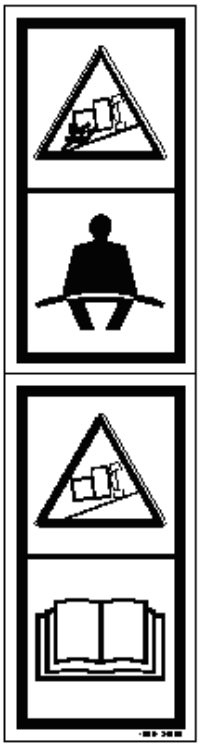


Fig. 50: Seat, fastening the seat belt

Description

Operate only from the seat and fasten the seat belt to prevent falling out of the machine.

Operate within the stability limits of machine, do not overload, use only approved attachments and operate only on solid ground. Follow the instructions in the Operator's Manual.

Location

On the B pillar in the cab.

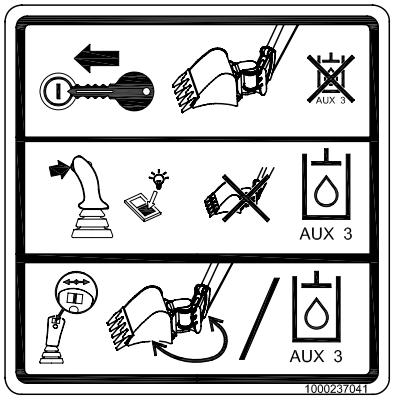


Fig. 51: Cab label

Meaning

The Powertilt function is enabled once the excavator is started.

This function is not assigned.

The Powertilt unit can be rotated with the slide switch on the right-hand side control lever.

1.12 Fire extinguisher

Fig. 52: 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. 52*).

☞ *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.

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

NOTICE indicates a situation which, if not avoided, could result in property damage.

Note: *Contains additional information important to a procedure.*

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.
5. 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.
6. Read and understand this Operator’s Manual before starting, moving, operating, servicing or repairing the machine. Observe all safety instructions.
7. 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 malfunctioning 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 malfunctioning 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 up 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.
- The user/owner commits himself to operate and keep the machine in perfect condition, and, if necessary or required by law, to require the operating or servicing persons to wear protective clothing etc.
- In the event of safety-relevant modifications or changes on the machine or of its behavior, stop the machine immediately and report the malfunction to the competent authority/person.
- Safety-relevant damage or malfunctions of the machine must be rectified immediately.

Applications with lifting gear

Lifting gear applications are procedures involving raising, transporting and lowering loads with the help of slings and load-securing devices (e.g. ropes, chains).

No applications with lifting gear under any circumstances!

Machines with a maximum authorized lifting capacity of over 1000 kg (2205 lbs.) or an overturning moment of over 40,000 Nm (29,500 ft. lbs.) may be used for lifting gear applications if the following conditions are fulfilled:

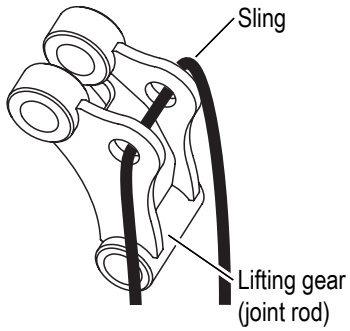


Fig. 1: Lifting gear – joint rod

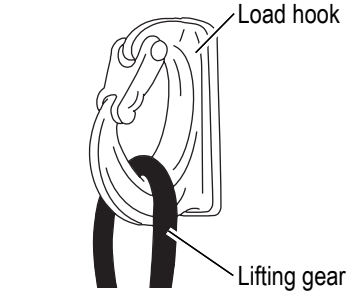


Fig. 2: Load hook

- Acoustic and optical warning device
  – *see chapter 3.20 Safe load indicator (option)* on page 3-72
- Hose burst valve – *see chapter 3.17 "Hose burst valve" safety feature (option)* on page 3-65
- Proper equipment for slinging and securing the load must be available (joint rod enabling loads to be picked up, Powertilt unit with load hook).
- The lift capacity table must be observed – *see chapter 6 Specifications* on page 6-1.
  - Get informed on and follow the legal regulations of your country.

Instructions on fastening loads

- The help of an accompanying person is necessary for securing and detaching the load.
- The load must be secured so as to prevent it from falling or slipping.
- Fasten the lifting gear so that it is not possible to unhook the sling unintentionally.
- Position the lifting gear ensuring the sling is not deflected by other parts.
- Do not use any lifting gear and slings that are damaged or not sufficiently dimensioned.
- The lifting gear must be designed to withstand the loads that can arise in the different positions of the work equipment or parts of the boom. Lateral loads and diagonal tensile forces must also be taken into account.
- The lifting gear must be checked regularly by a technician, at least once a year.
- Replace damaged lifting gear immediately.
- Fasten lifting gear and slings avoiding danger (rotating parts, crushing or shearing) for the person securing the load. Furthermore, neither must the work equipment be affected by the lifting gear, nor must the functions of the lifting gear be affected by external influences (e.g. dirt that cannot be removed by simple means).
- Do not place slings over sharp edges.
- Always wear protective gloves and a hard hat when working with lifting gear and slings.
- The persons attaching or securing loads may approach the boom from the side only, and only after the machine operator has given his permission. The machine operator may give his permission only after the machine is at a standstill and the work attachment no longer moves!

General instructions

- Staying under suspended loads, in the danger area or under the machine's attachment is forbidden.
- The machine operator and the person attaching or securing the load must have visual contact.
- Persons guiding the load or securing it must stay in visual contact with the machine operator! Should this not be possible, ask another person to guide.
- The machine operator must guide the load the nearest possible to the ground and avoid any oscillating or swinging movements!
- The machine may be driven with a raised load only if the path of the machine is level!
- The machine operator must not raise loads over persons.
- The machine operator may not leave his seat as long as the load is raised.

2.5 Operator and Technician Qualifications and Basic Responsibilities

User/owner responsibility

- Only allow trained and experienced individuals to drive, maintain, or repair the machine. NEVER let unauthorized or underaged persons operate with 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.
- Before working on or with the machine, remove jewelery, such as rings, wristwatches, bracelets etc., and tie back long hair and do not wear loose-fitting garments, such as unbuttoned or unzipped jackets, ties or scarves.
- Injury can result from being caught up in the machinery or from rings catching on moving parts!

Repair person qualifications

- Work on the electric system and equipment, on the undercarriage and the steering and brake systems can 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

- The machine must only be used in technically perfect 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. Any functional disorders, especially those affecting the safety of the machine, must therefore be rectified immediately!
- Before starting up the machine, inspect the machine for safety in work and road operation!
- In addition to the Operator's Manual, observe and instruct the operator in all other generally applicable legal and other mandatory regulations relevant to accident prevention and environmental protection.
- These compulsory regulations may also deal with handling hazardous substances, issuing and/or wearing personal protective equipment, or traffic regulations.
- With regard to specific operational features, e.g. those relevant to job organization, work sequences or the persons entrusted with the work, supplement the Operator's Manual by corresponding instructions, including those relevant to supervising and reporting duties.
- Careful and prudent working is the best way to avoid accidents!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 driving or working!
- 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 starting and stopping 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 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".
- Use the rearview mirror to stay aware of work area obstacles and personnel.
- 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'') 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.
- Install a front guard when working in areas with a risk of objects falling from the front (e.g. demolition work).
- On sloping terrain always adapt your drive speed to the prevailing ground conditions! Never change to lower gear on a slope but always before reaching it!

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, mufflers, 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 tracks). 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, track, 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.
- Mount the attachments only if the engine and the drive have been stopped.
- Especially when driving or working with machines equipped with a quickhitch for the attachments, make sure the attachment is securely locked in the quickhitch. The lock pin must be visible on either side of the bores on the attachment. Check before starting work.

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 lights 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 *3.19 Towing the track excavator* (page 34).

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 malfunctioning 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 muffler 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 startup and shutdown 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.
- Prior to performing assembly work on the machine, make sure no movable parts will roll away or start moving.
- To avoid the risk of accidents, parts and large assemblies being moved for replacement purposes must be carefully attached and secured to lifting gear.
- Use only suitable lifting gear and suspension systems in a technically perfect state with adequate load-bearing capacity! Stay clear of suspended loads!
- Clean the machine, especially connections and threaded unions, of any traces of oil, fuel or preservatives before performed maintenance/repair work!
  Do not use aggressive detergents!
  Use lint-free cleaning rags!
- Before cleaning the machine with water, steam jet (high-pressure cleaner) or detergents, cover or tape up all openings which – for safety and functional reasons – must be protected against water, steam or detergent penetration. Special care must be taken with the electrical system.
- After cleaning, remove all covers and tapes applied for that purpose!
- After cleaning, examine all fuel, lubricant and hydraulic oil lines for leaks, chafe marks and damage!
- Rectify all defects without delay!
- Always tighten any screw connections that have been loosened during maintenance and repair!
- Any safety devices removed for set-up, maintenance or repair purposes must be refitted and checked immediately upon completion of the maintenance and repair work
- Make sure all consumables and replaced parts are disposed of safely and with minimum environmental impact!

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.
- Before taking up work on machine parts hazardous for life and limb (bruising, cutting), always ensure safe blocking/support of these areas
- Perform maintenance and repair work beneath a raised machine, attachments or additional equipment only if a safe and secure support has been provided for (the sole use of hydraulic cylinders, jacks etc. does not sufficiently secure raised machines or equipment/attachments)

- Avoid contact with hot parts, such as the engine block or the exhaust system during the operation of the machine and for some time afterwards – danger of burns!
- Retainer pins can fly out or splinter when struck with force – danger of personal injury!
- Do not use starting fuel! This especially applies to those cases in which a heater plug (intake-air preheating) is used at the same time – danger of explosions!
- Apply special care when working on the fuel system – increased danger of fire!

Tracks

- Repair work on the tracks must be performed only by trained technical staff or by an authorized workshop.
- Malfunctioning 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!
- In accordance with the Operator's Manual/instructions for the respective assembly, release the pressure in all system sections and pressure lines (hydraulic system) to be opened before perform any implementing/repair work!
- Hydraulic and compressed-air lines must be laid and fitted properly. Make sure no connections are interchanged. The fittings, lengths and quality of the hoses must comply with the technical requirements

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).

Gas, dust, steam, smoke

- Operate the machine only on adequately ventilated premises! Before starting internal combustion engines or operating fuel-operated heating systems on enclosed premises, make sure there is sufficient ventilation!
- Observe the regulations in force at the respective site!
- Perform welding, flame-cutting and grinding work on the machine only if this has been expressly authorized. There can be a risk of explosion and fire, for example!
- Before performing welding, flame-cutting and grinding work, clean the machine and its surroundings from dust and other flammable substances, and make sure the premises are adequately ventilated – danger of explosions!

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 muffler 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 muffler 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 lights 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.

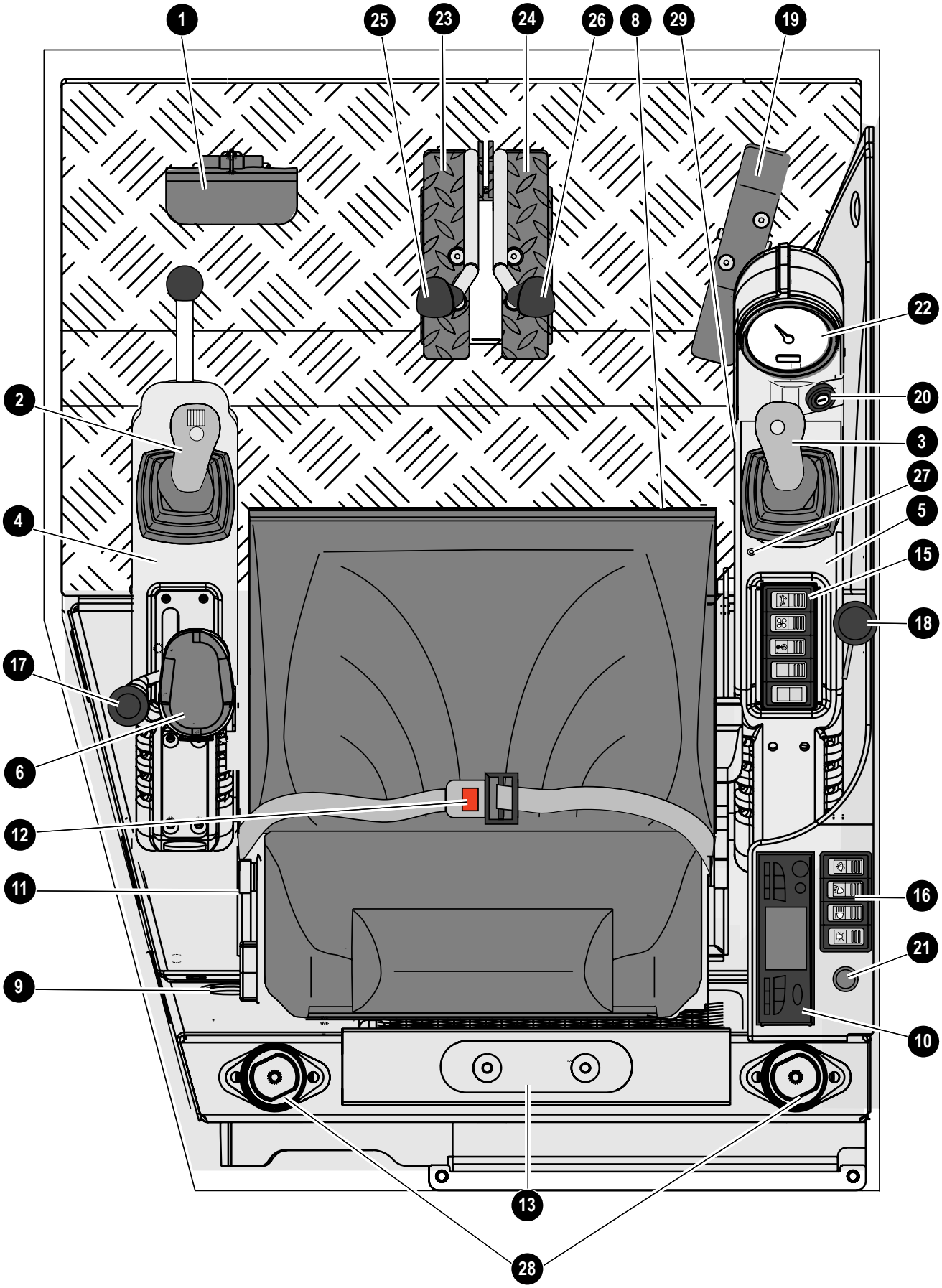
The symbols used in the description have the following meanings:

- 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.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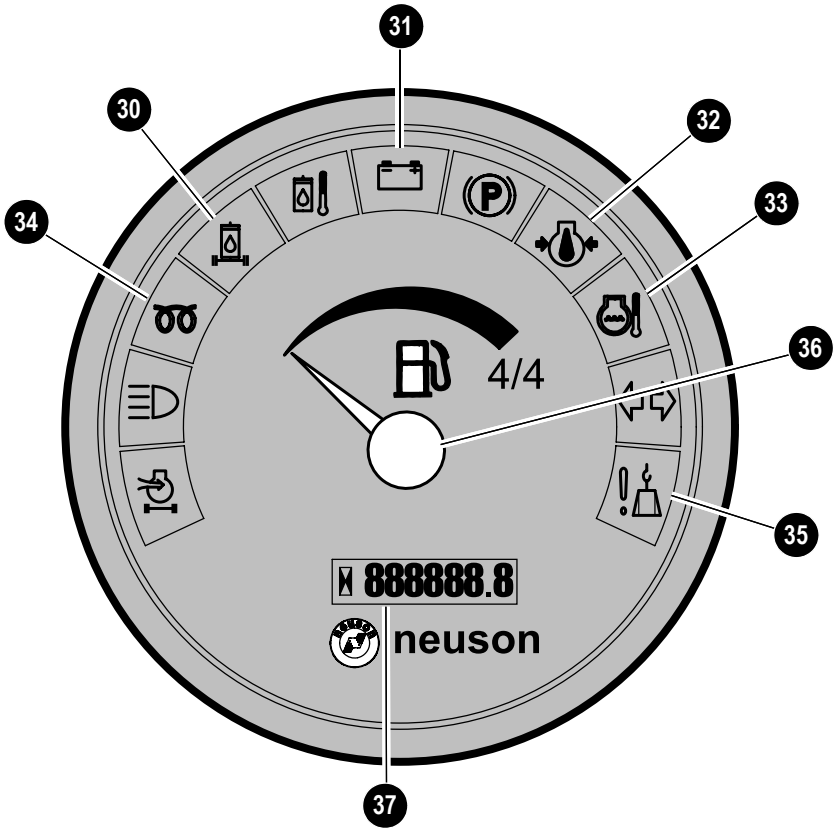
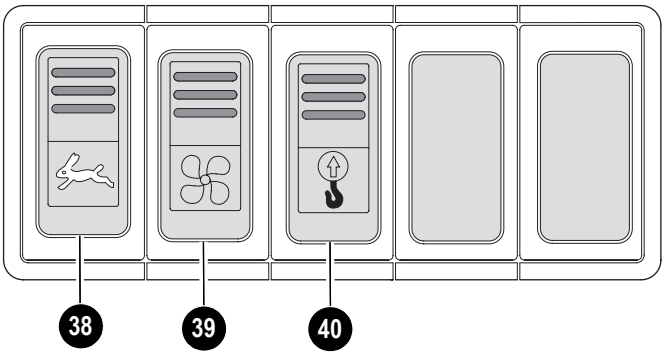
3.1 Cab overview

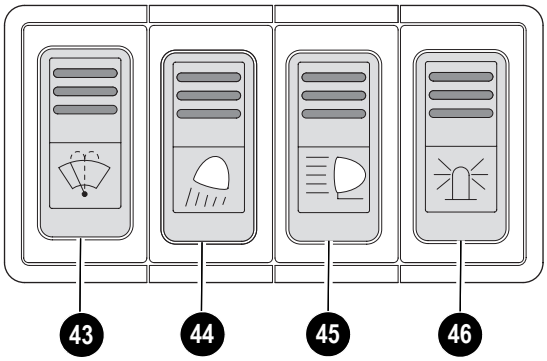
Pos.	Description	For more information see page
1	Hammer pedal for boom swivel	3-40
2	Control lever (left)	3-44
3	Control lever (right)	3-44
4	Control lever base (left)	
5	Control lever base (right)	
6	Armrest (left)	
7	Armrest on the right (not shown)	
8	Lever (horizontal seat adjustment)	3-27
9	Changeover valve for alternate control pattern (option)	3-44
10	Radio (option)	
11	Seat (backrest adjustment)	3-27
12	Seat belt (lock)	3-28
13	Cup holder	
14	Document storage (underneath the seat console)	
15	Console switch panel	3-23
16	Cab switch panel	3-23
17	Throttle	3-9
18	Stabilizer blade lever	3-20
19	Auxiliary hydraulics pedal	6-3
20	Preheating start switch	3-9
21	12V power outlet	
22	Round display element	3-5
23	Drive pedal (left)	3-16
24	Drive pedal (right)	3-16
25	Drive lever (left)	3-16
26	Drive lever (right)	3-16
27	Drive interlock status indicator (option)	3-13
28	Cab isolation mount	3-24
29	Drive interlock emitter/receiver unit	3-13



Control element on control console

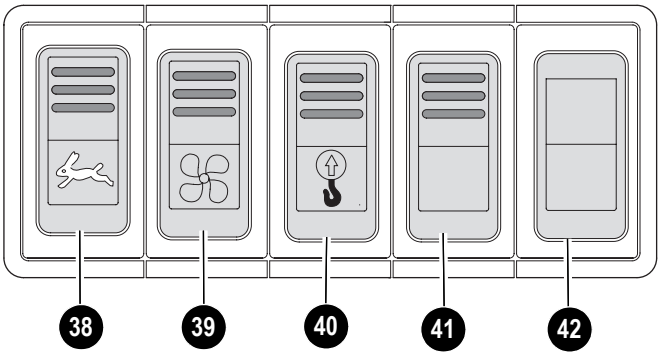


Control element on cab wall

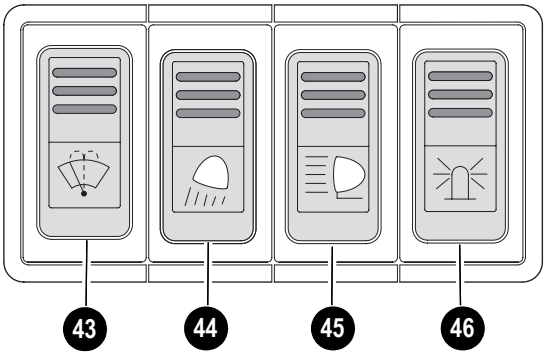


Control elements for proportional controls version (option):

Control element on control console



Control element on cab wall



3.2 Instrument panel overview

Pos.	Description	For more information see page
30	Hydraulic oil filter indicator light (red)	3-10
31	Indicator light (red) – alternator charge function	3-10
32	Engine oil pressure indicator light (red)	3-10
33	Coolant temperature indicator light (red)	3-10
34	Cold starter indicator light (yellow)	3-11
35	Indicator light (red) – safe load indicator (option)	3-11
36	Fuel level indicator	3-11
37	Hour meter	3-11
38	High speed	3-17
39	Ventilation	3-24
40	Safe load indicator light (option)	3-75
41	Hydraulic quickhitch switch (option)	3-61
42	Proportional control status indicator lights (option)	3-46
43	Washer system	3-25
44	Working lights	3-23
45	Roof lights (option)	3-23
46	Rotating beacon (option)	3-24

3.3 Operating the excavator

Caution!

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 qualified operators only – *see chapter 2.6 Safety instructions Regarding Operation* on page 2-5 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 may 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 “Start-up” checklist in the following chapter.

Running-in period

Operate the machine carefully during its first 50 operating hours.

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 speed 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 rpm for extended periods.
- Strictly observe the maintenance schedules in the appendix.
  – *see chapter 5.15 Maintenance plan (overview)* on page 5-35

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.

Start-up 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? (➠ *5-9*)	
3	Water drained from the water separator? (➠ *5-5*)	
4	Engine oil level OK? (➠ *5-6*)	
5	Oil level in hydraulic reservoir OK? (➠ *5-17*)	
6	Water level in washer tank OK? (➠ *3-25*)	
7	V-belt condition and tension checked? (➠ *5-14*)	
8	Lubrication points greased? (➠ *5-25*)	
9	Tracks checked for cracks, cuts etc. ? (➠ *5-23*)	
10	Lights, signals, indicators, warning lights OK? (➠ *3-23*)	
11	Windows, mirrors, lights and steps clean?	
12	Control lever base folded down? (➠ *3-33*)	
13	Attachment safely locked? (➠ *3-57*)	
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 lights for engine oil pressure and alternator charge function gone out? (➠ *3-10*)	
3	Temperature indicator for engine coolant in normal range? (➠ *3-10*)	
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? (➠ *3-39*)	
2	Control lever base folded up? (➠ *3-33*)	
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: overview

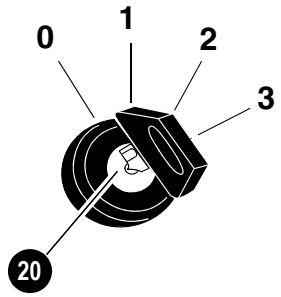


Fig. 3: Preheating start switch

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 starting key	None
1	ON/drive position	All functions are operational ➥ Indicator lights illuminate ➥ Shrill sound
2	Preheats the engine (10 – 15 seconds)	
3	Starts the engine	➥ Starter is actuated ➥ Indicator lights must go out

Throttle lever: overview

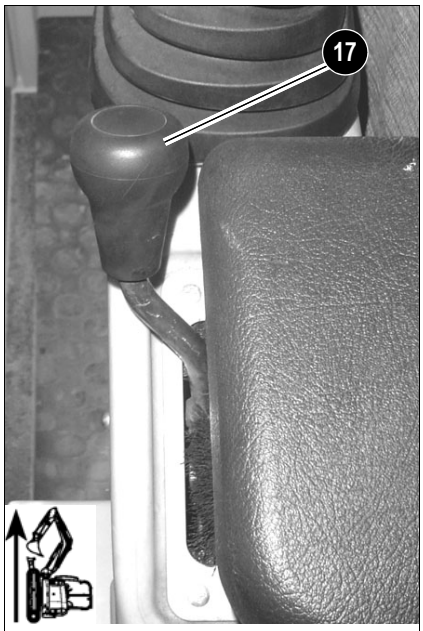


Fig. 4: Revs control

The throttle lever controls the engine speed as follows:

- Continuously (throttle lever **17**)

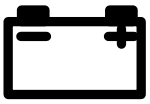
Indicator lights and warning lights: overview

30 Hydraulic oil filter indicator light (red)

Indicates inadmissibly high pressure in the hydraulic return line to the reservoir. 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 come on briefly if the hydraulic oil is cold, but goes out again once operating temperature is reached.*



31 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 comes on with the engine running:

☞ *Stop the engine immediately.*

☞ *Have the cause repaired by an authorized Wacker Neuson service center.*

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

32 Engine oil pressure indicator light (red)

Comes on 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 comes on when the ignition is turned on and goes out as soon as the engine runs.

33 Coolant temperature indicator light (red)

Warning!

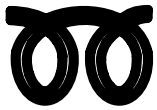
Burn hazard. The engine coolant is under pressure at high temperature. Failure to observe specific instructions to check the coolant level in the radiator of the cooling system can cause serious injury from burns or pressure spray of the coolant.

☞ *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.*



34 Cold starter indicator light (yellow)

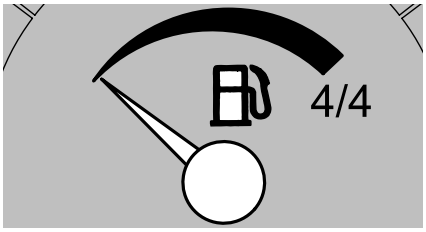
Comes on if the key in the preheating start switch is in position **2**.

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

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

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

☞ *Reduce the load until the indicator light goes out*



36 Fuel level indicator

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

37 Hour meter

Records the engine service hours with the engine running.

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 adjustment on page 3-26.*

☞ *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.*

Starting the engine: general

- The starter cannot be actuated if the engine is already running (start repeat interlock).
- Do not engage 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 may damage the preheater.

- *Never preheat the engine more than 20 seconds*

After you have completed the starting preparations:

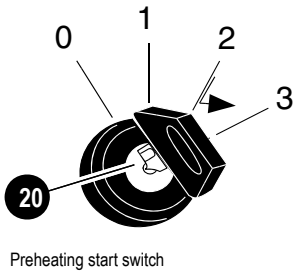


Fig. 5: Preheating start switch

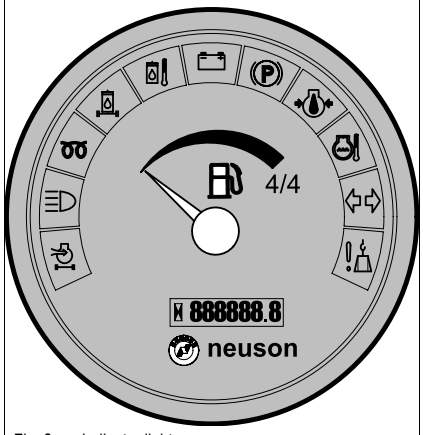


Fig. 6: Indicator lights

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

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

☞ *Check whether all indicator lights come on:*

☞ *Replace malfunctioning indicator lights immediately.*

☞ *Turn the starting 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 starting key.*

Starting with the drive interlock (option)

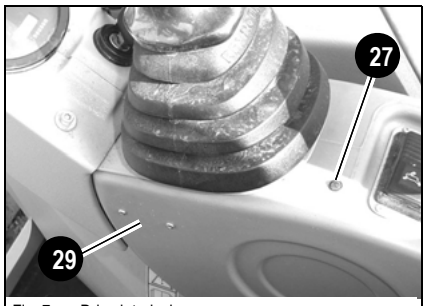


Fig. 7: Drive interlock

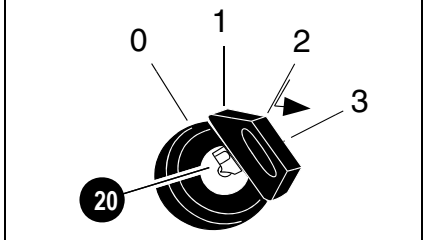


Fig. 7: Preheating start switch

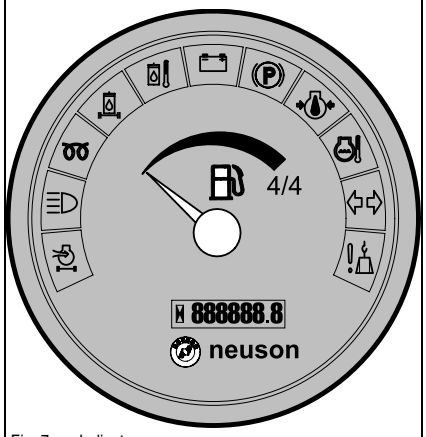


Fig. 7: Indicator

After you have completed the starting preparations:

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

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

3 Insert the starting key in the preheating start switch **20** within 30 seconds and

4 Turn the starting key at least to position "**1**"

5 Check whether all indicator lights come on:

6 Replace malfunctioning indicator lights immediately

7 Turn the starting key to position "**2**" and hold it in this position for about 5 seconds

➥The intake air is preheated

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

➥If the engine does not start after 10 seconds

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

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

10 Contact a Wacker Neuson service center for troubleshooting

➥As soon as the engine runs:

11 Release the starting key

Starting at low temperatures

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

➥Engine is preheated.

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

➥If the engine does not start after 10 seconds.

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

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

4 Contact a Wacker Neuson service center for troubleshooting.

5 Release the starting 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.

When the engine has started ...

☞ *Check whether all indicator lights 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.

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.

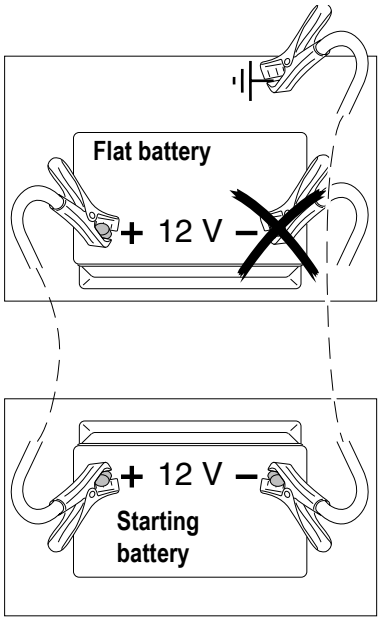


Fig. 8: Starting aid with jump leads

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 may ignite if sparks are formed!*

☞ *Start the engine of the machine with the flat 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!*

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 is folded down.

After starting the engine:

☞ *The alternator charge indicator light goes out.*

☞ *Press the drive pedal slowly.*

➥ Machine moves off.

Drive levers

Important!

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

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

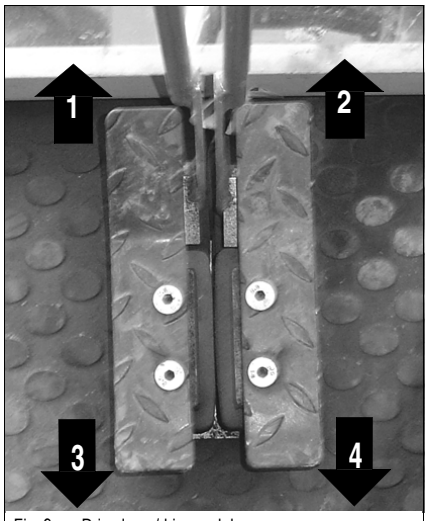


Fig. 9: Drive lever/drive pedal

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 forward Push forward	Track excavator moves forward
• 3 • 4	Pull backward Pull backward	Track excavator moves backward
• 3 • 2	Pull backward Push forward	Track excavator turns to the left
• 1 • 4	Push forward Pull backward	Track excavator turns to the right

Forward 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 speed

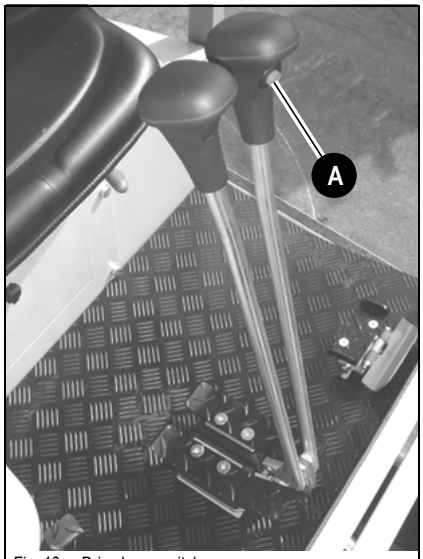


Fig. 10: Drive lever switch

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

☞ *Press switch – see Instrument panel overview on page 3-5*

➥ The machine now moves at higher speed

or

☞ *Press and hold switch **A** on the left-hand side drive lever*

➥ This briefly changes over to high speed when driving the machine

Important!

Reduced tractive power in high speed can affect machine handling when cornering.

Hydraulic brake

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

When travelling downhill, the automatic hydraulic brake valves prevent the machine from “racing”. The machine does not run any faster than the rated maximum drive speed.

Important!

Use the drive pedals to reduce the drive 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.

3.5 Operating on slopes

Specific safety instructions

Warning!

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

- Raise the bucket about 20 – 30 cm (8''—12'') off the ground as you move the machine. Avoid reversing downhill.
- When traveling through hollows or crossing obstacles, keep the attachment close to the ground and travel slowly.
- Do not steer or drive across slopes.
- Always change your driving direction on level ground. This may take more time but is decisively safer.
- When operating the machine, make sure you can stop safely any time if the machine starts to skid or if it becomes unstable.
- Swivelling or operating the attachment on slopes can cause the machine to lose its balance and to tip over. Avoid this under all circumstances.
- Rotating the upper carriage when traveling 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 in horizontal position.
- Do not operate on slopes steeper than 15°, otherwise the machine can tip over.
- If the sliding blocks slip as you travel uphill and if it is no longer possible to move on with the force of the tracks alone
- Do not apply pressure with the boom to move the machine.

Operating on slopes

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

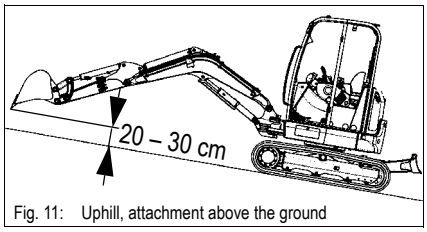


Fig. 11: Uphill, attachment above the ground

☞ *When traveling uphill, keep the attachment about 20 – 30 cm (8"—12")above the ground. In an emergency, lower the attachment immediately to the ground so you can stop the machine more easily.*

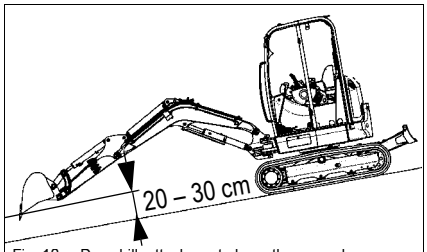


Fig. 12: Downhill, attachment above the ground

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

☞ *When traveling downhill, extend the attachment to improve stability, and keep it about 20 – 30 cm (8"—12") above the ground. Drive slowly.*

☞ *Reduce engine speed when traveling downhill. Keep the drive lever next to neutral position and travel slowly.*

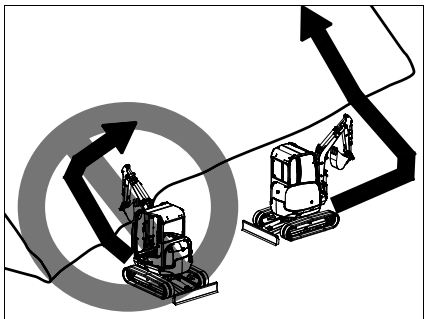


Fig. 13: Driving diagonally or at an angle

☞ *Always move 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

Important!

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 can create a resistance – *see Grading* on page 3-75.

- *Slightly raise the stabilizer blade*

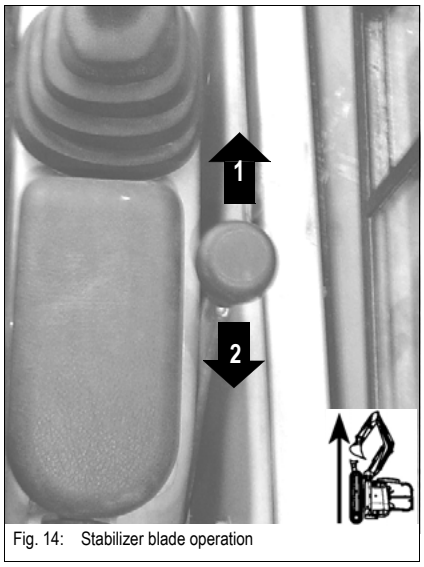


Fig. 14: Stabilizer blade operation

Position	Function	
• 1	Push forward	Stabilizer blade is lowered
• 2	Pull backward	Stabilizer blade is raised

Important!

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

3.6 Stopping and 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.

Stop the machine

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

☞ *Reduce engine speed to low idle setting.*

☞ *Switch off 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.*
- *Fold up the control lever.*
- *Remove starter key.*

Parking the machine on slopes

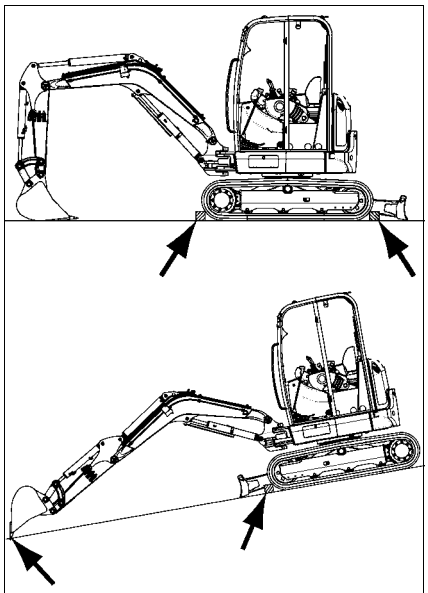


Fig. 15: Parking the machine on slopes

☞ *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 under the tracks and lower the attachment *into* the ground to prevent the machine from moving.

- Serious accidents can be caused by unintentionally actuating the control levers, and accidentally moving the attachment or the entire machine.

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

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

3.7 Light system

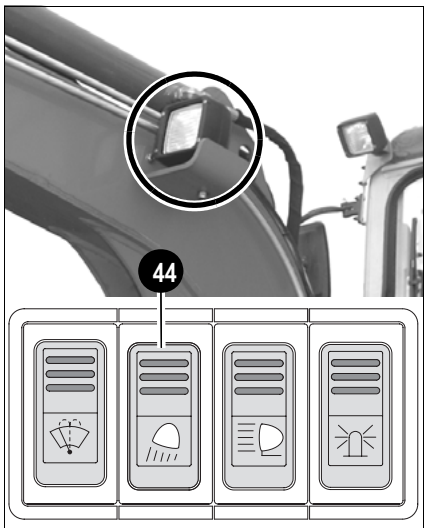


Fig. 16: Light system switches

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

Boom light		
ON	☞ *Press the light symbol on switch **44***	➥ Indicator light in switch **44** comes on
OFF	☞ *Press the ribbed end of switch **44***	➥ Indicator light in switch **44** goes out

Roof lights (option)

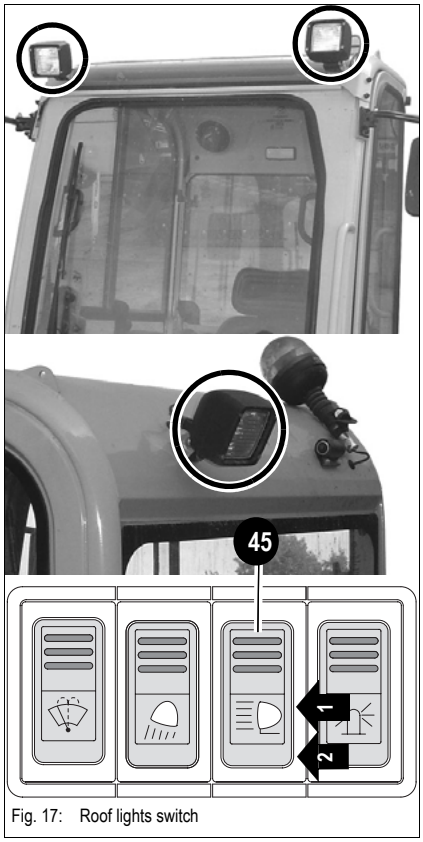


Fig. 17: Roof lights switch

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 **45** to the **1st** position* ☞ *Press the light symbol on switch **45** to the **2nd** position*	➥ Indicator light in switch comes on
OFF	☞ *Press the ribbed end of switch 45 up*	➥ Indicator light in switch goes out

Interior light

Fig. 18: Switch for interior light

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

Rotating beacon (option)

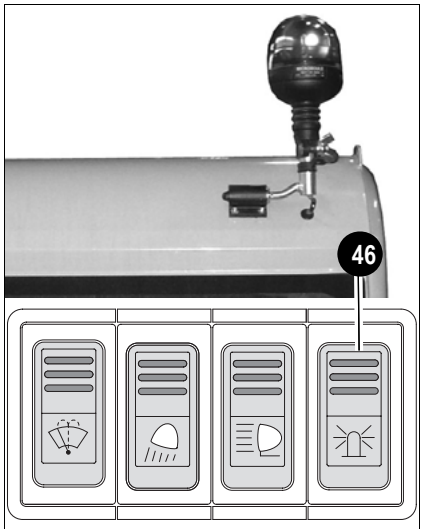


Fig. 19: Switch for rotating beacon

Rotating beacon (option)		
ON	☞ *Press the beacon symbol on switch **46***	➥ Indicator light in switch ***46*** comes on
OFF	☞ *Press the ribbed end of switch **46***	➥ Indicator light in switch ***46*** goes out

Important!

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

3.8 Cab heating and ventilation

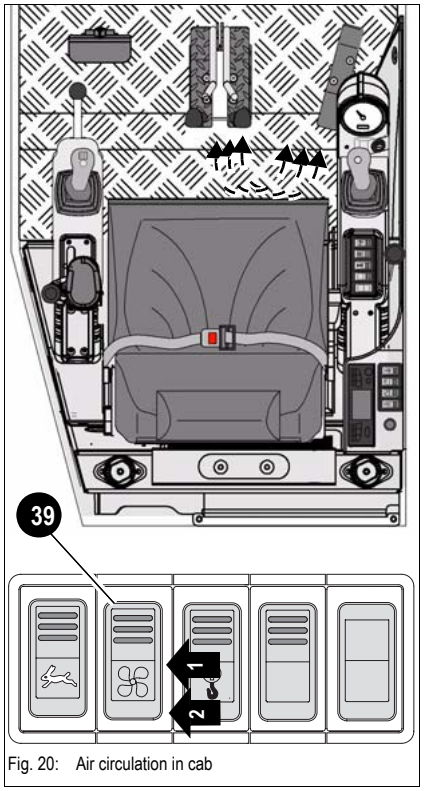


Fig. 20: Air circulation in cab

Important!

- *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 **39** to the first position*	➥ Low fan speed
2nd speed	☞ *Press the fan symbol on switch **39** to the second position*	➥ High fan speed
OFF	☞ *Press the ribbed end of switch **39***	➥ Fan OFF

Heating adjustment

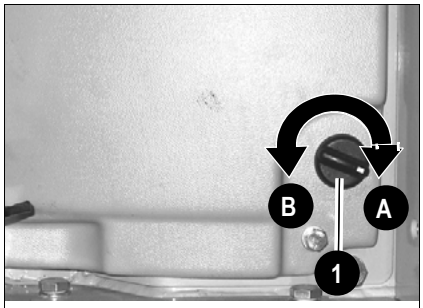


Fig. 21: Heating adjustment

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!

To increase cab temperature to the desired level, make small adjustments for a quicker response.

3.9 Washer system

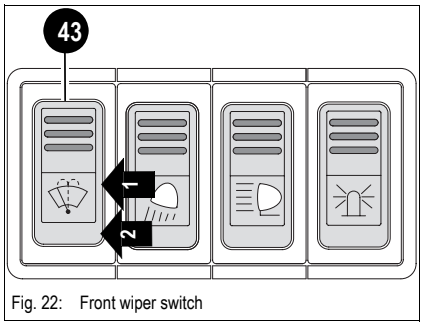


Fig. 22: Front wiper switch

Front window wiper		
ON	☞ *Press the wiper symbol on switch **43***	➥ Front wiper is on
OFF	☞ *Press the ribbed end of switch **43***	➥ Front wiper returns to base position
1st speed	☞ *Press the wiper symbol on switch **43** to the **1st** position*	➥ Front wiper is on
2nd speed	☞ *Press the wiper symbol on switch **43** to the **2nd** 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 may damage the electric pump.

Tank for washer system

Fig. 23: 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.

3.10 Seat

Seat adjustment

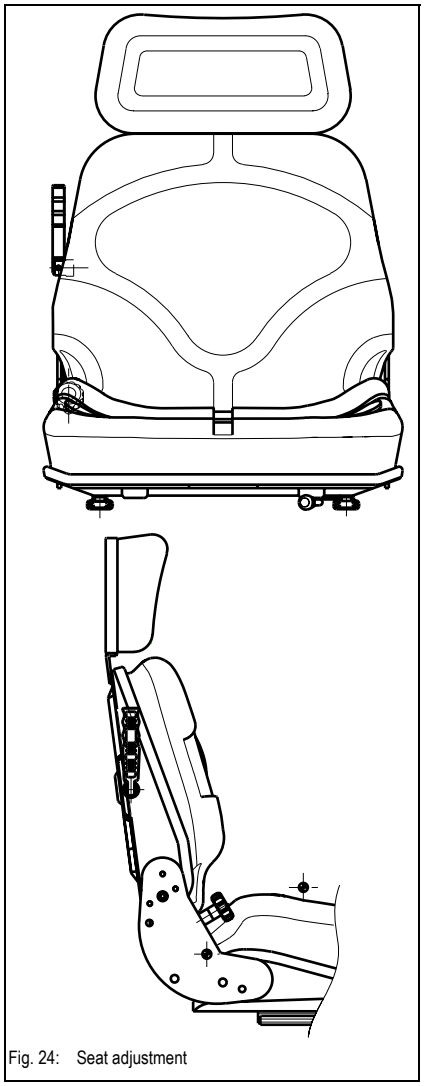


Fig. 24: Seat adjustment

Caution!

Possible loss of machine control while adjusting the seat.

- Do not adjust the seat position during machine operation or travel.
  – *see Before starting the engine* on page 3-12
- Adjust the seat before moving the machine.

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.
Adjust the seat only without load!

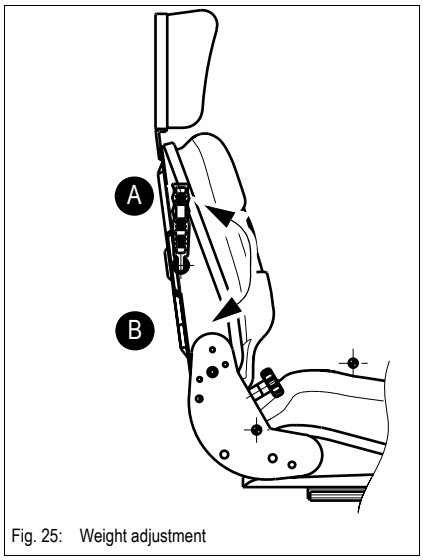


Fig. 25: Weight adjustment

Adjust the seat to the driver's weight as follows:

➥ Less spring action:

☞ Push the lever down.

➥ More spring action:

☞ Push the lever up.

Horizontal adjustment

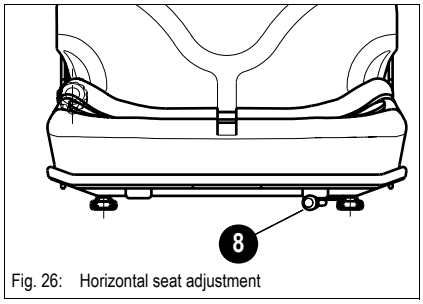


Fig. 26: Horizontal seat adjustment

☞ *Sit in the seat.*

☞ *Pull lever 8* ***upward and at the same time****, move the seat forward or backward.*

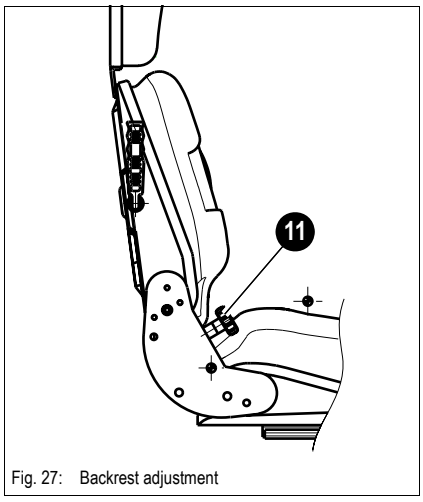


Fig. 27: Backrest adjustment

☞ *Sit in the seat.*

☞ *Pull handle 11* forward and, at the same time, lean back to push the backrest into the required position.

☞ *Release handle 11* and allow it to lock into place.

3.11 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.

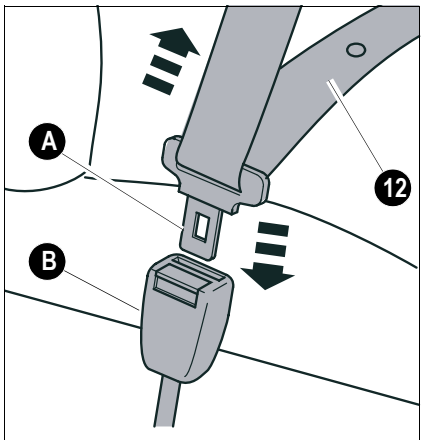


Fig. 28: Fastening the seat belt

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

Fastening the seat belt:

☞ *Fasten seat belt 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!

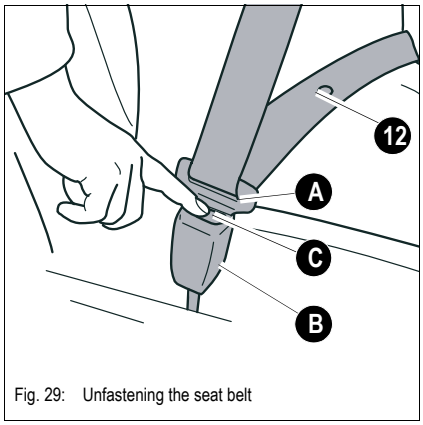


Fig. 29: Unfastening the seat belt

Unfastening the seat belt:

☞ *Unfasten seat belt 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.

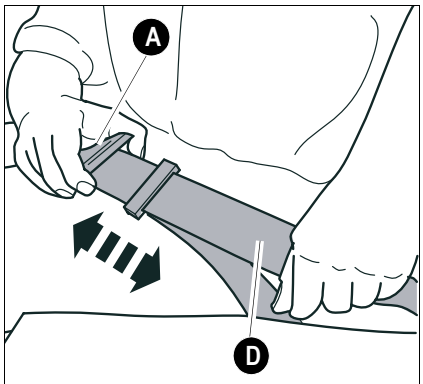


Fig. 30: Longer/shorter seat belt adjustment

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.

3.12 Emergency exit

You can enter and exit the cab through the front window 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 front window completely:

☞ – *see Front window on page 3-30*

3.13 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 upward with both handles ***B***!

Always let levers *A* lock into place on either side in locks **F** or **C**!

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!

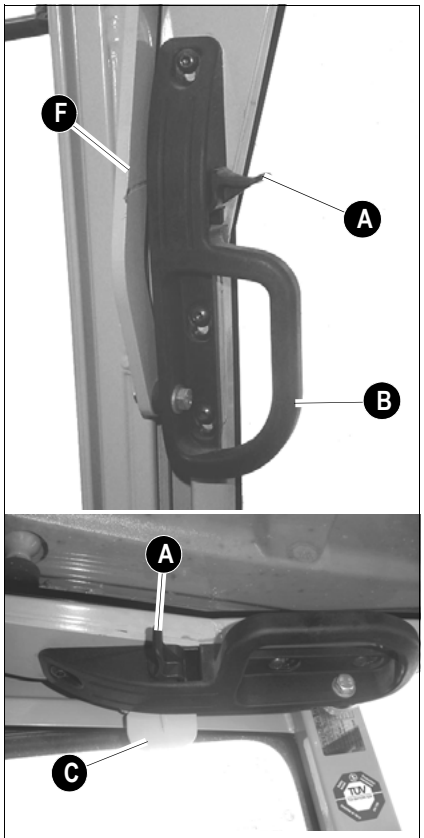


Fig. 31: Front window

Open the front window as follows:

- The front window is fitted with handles and small levers on either side.

☞ *Push levers **A** down on either side.*

☞ *Pull the front window upward.*

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

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

☞ Pull levers **A** to the rear to do this.

☞ Check whether both levers **A** are actually locked in rails **C**.

Fold down the front window as follows:

☞ *Push levers **A** forward on either side.*

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

☞ *Lock the front window again by means of levers* **A** in lock **F**.

☞ Pull levers **A** upward to do this.

☞ Check whether both levers **A** are actually locked in rails **F**.

3.14 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 closed before moving the machine.*

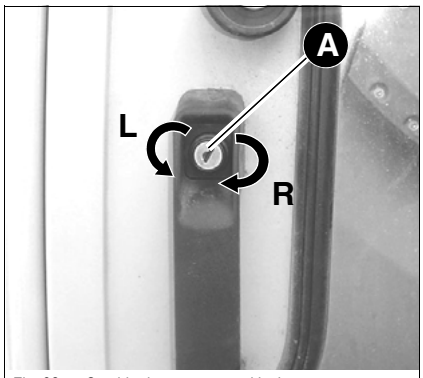


Fig. 32: Outside door opener and lock

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.

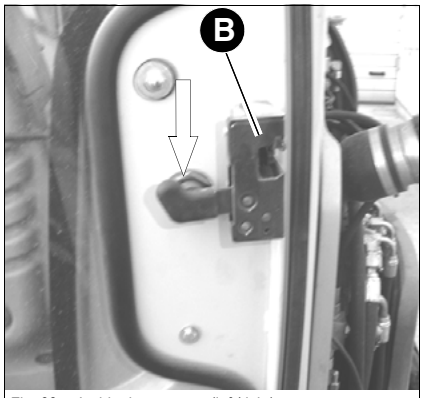


Fig. 33: Inside door opener (left/right)

Opening the door from the inside:

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

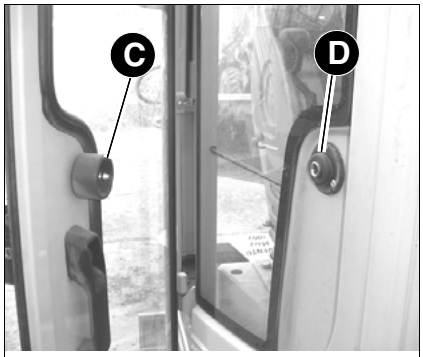


Fig. 34: Door arrester

Securing an open door:

☞ *Press the door against bracket C of latch D with an audible click.*

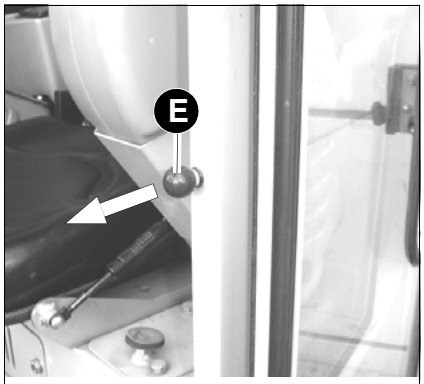


Fig. 35: Releasing the door arrester

Releasing the door opener:

Pull button **E** to release the door from the latch.

3.15 Side window

Fig. 36: Side window

Opening the side window:

☞ *Press button F up.*

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

3.16 Engine cover

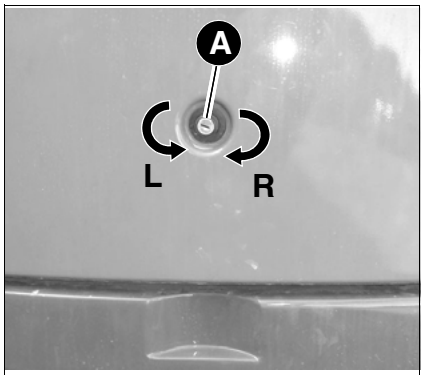


Fig. 37: Engine cover lock

Opening:

☞ *Press lock A.*

☞ *Pull the engine cover upward.*

Closing:

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

Locking and unlocking:

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

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

➥ Engine cover locked.

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

➥ Engine cover unlocked.

3.17 Exit through the door

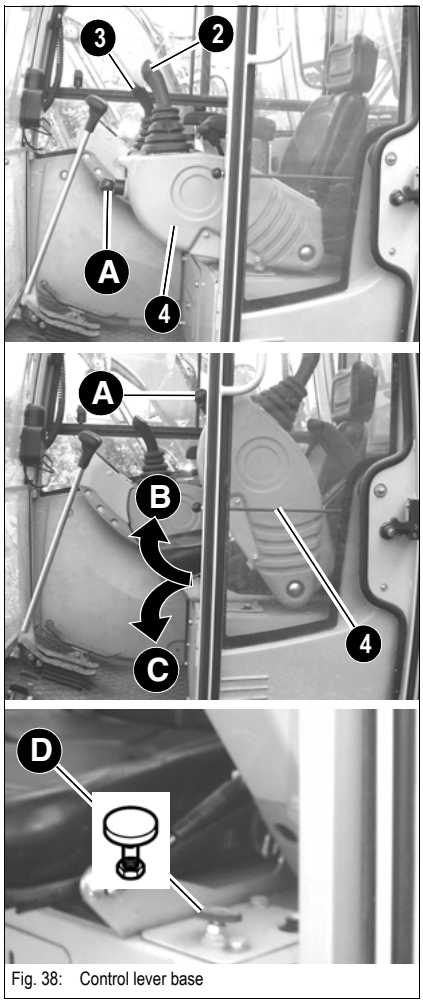


Fig. 38: Control lever base

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 entering or leaving the cab:*

- Stop and secure the machine.
  – *see* *Stopping and parking the machine* on page 3-21
- Lower the boom.
- Stop the engine.
- Remove the starting key.
- Move control levers **2** and **3** repeatedly in all directions.

☞ *Raise control lever base 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 handle **A** on the control lever base as a support while 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 4 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. – *see chapter 3.12 Emergency exit* on page 3-29

3.18 Armrest adjustment

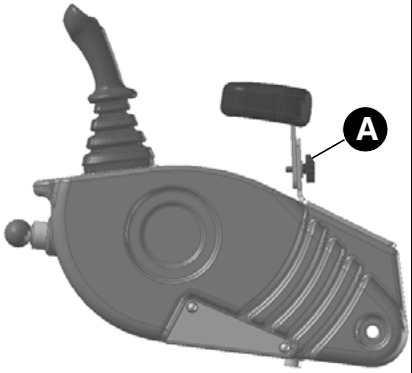


Fig. 39: Armrest

Adjust the armrest as follows:

☞ *Loosen knurled screw **A.***

➥ The armrest can be adjusted by raising or lowering it.

☞ *Retighten knurled screw **A.***

3.19 Towing the track excavator

Towing

Warning!

Personal injury hazard. Use extreme caution during towing operations.

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

Important!

Follow the following instructions under all circumstances:

- **Towing a disabled machine can damage the propulsion drive system. Do not tow a disabled machine.**
- 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**.

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.

The towing bracket **A** has a maximum admissible load of 1750 daN (3934 ft.lbs. / 1784,5 kgf.)

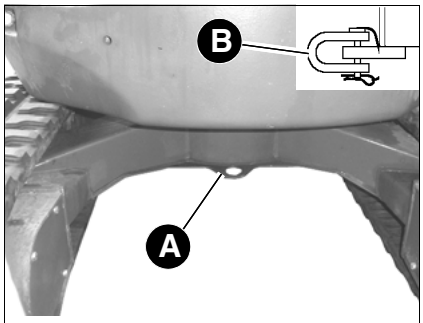


Fig. 40: Towing bracket

☞ *Make sure the excavator can be towed safely.*
☞ *Use towing bracket **A** for towing the machine.*
☞ *Do not use towing bracket **A** to tow another machine, other equipment, or trailers.*
☞ *Secure clevis **B** with the clevis pin and a lock pin.*
☞ *Mount a towing bar or cable of adequate size to the towing bracket.*
☞ *Make sure no one is close to the towing equipment (towing bar, cable).*
☞ *Do not jerk the machine.*
☞ *When towing the machine, do not exceed the maximum operating speed of the excavator.* *– see 2 speed ranges on page 6-2*

3.20 Lifting excavator

Safety instructions

- The crane and the lifting gear must have suitable capacity and dimensions.
- Lifting the machine requires suitable lifting gear.
- Secure the machine against unintentional movement!
- Check the cab for damage.

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.*

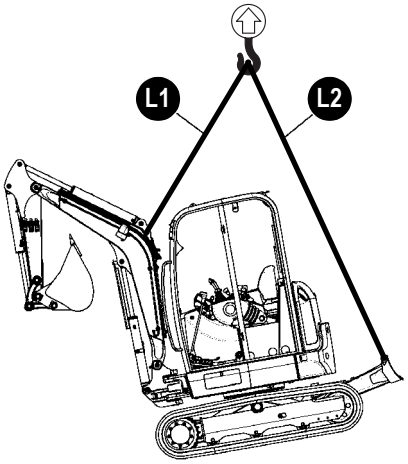


Fig. 41: Craning operation

☞ *Load the machine as follows:*

- Fit the standard bucket and lock it safely.
- Empty the standard bucket.
- Tilt in the standard bucket.
- Stop the engine.
- Fold the control lever base up.
- Remove the starting key.
- Do not allow anyone to stay in the cab, and close the doors and the engine cover.
- Use suitable lifting gear, tracks 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
28Z3	L1	2000 mm (6’ 7“)
28Z3	L2	3470 mm (11' 5”)

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

3.21 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 Stopping and 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.
- It is essential that you read the safety instructions at the beginning of this chapter and follow any other safety instructions relevant in your country!

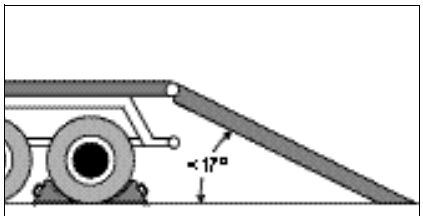


Fig. 42: Access ramps

☞ *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 move 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 starting 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.

3.22 Tying down the excavator

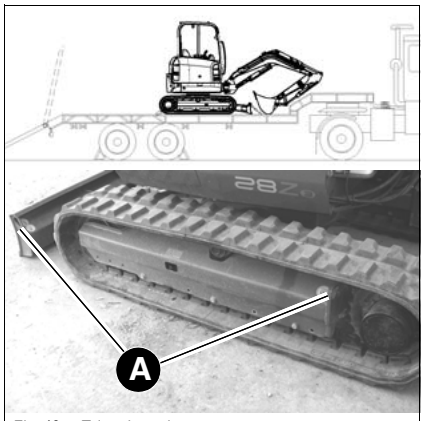


Fig. 43: Tying down the excavator

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 tie down the excavator at the eye hooks **A** onto the platform, with belts or tracks of adequate size
- Before transporting the machine through heavy rain:
  close the outlet of the 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!

3.23 Operating 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 over.*
- *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.*
- *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 unauthorized 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 stopped on page 3-42.*
- *Never lower, turn or set down the attachment abruptly.*
- *Do not extend or retract the main boom cylinder abruptly, otherwise the machine can tip over.*

Preventing equipment damage:

- *Do not use the impact force of the attachment to perform demolition work. Dislodged debris can cause personal injury or damage to property and/or equipment.*

Look out for high-voltage cables, underground cables, gas and water pipes during excavation work!

3.24 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.*

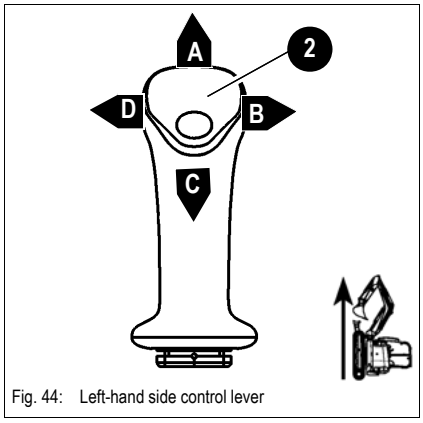


Fig. 44: Left-hand side control lever

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

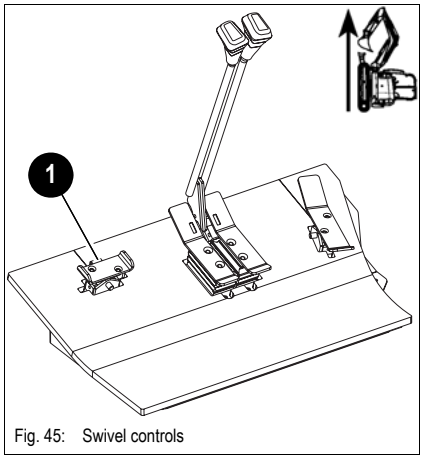


Fig. 45: Swivel controls

Swivel boom to the left:

☞ *Move hammer pedal **1** to the left.*

Swivel boom to the right:

☞ *Move hammer pedal **1** to the right.*

Auxiliary hydraulics

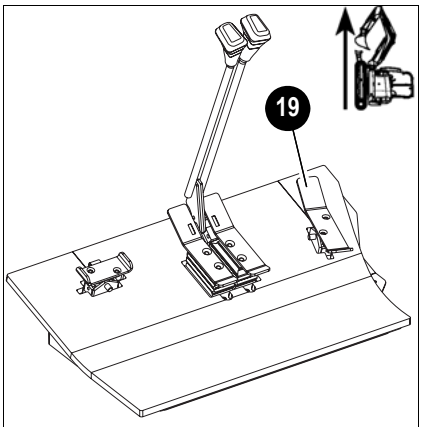


Fig. 46: Auxiliary hydraulics

Actuating the auxiliary hydraulics:

Oil flow in 1st direction:

☞ *Move hammer pedal **19** to the left.*

Oil flow in 2nd direction:

☞ *Move hammer pedal **19** to the right.*

Right-hand side control lever

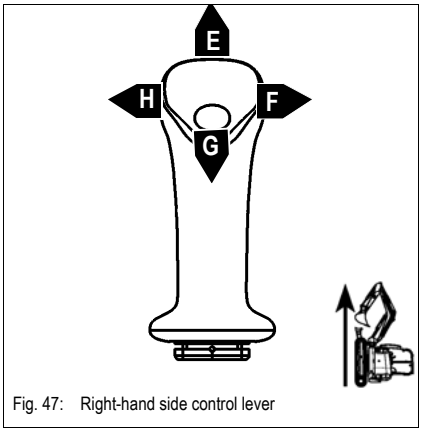


Fig. 47: Right-hand side control lever

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

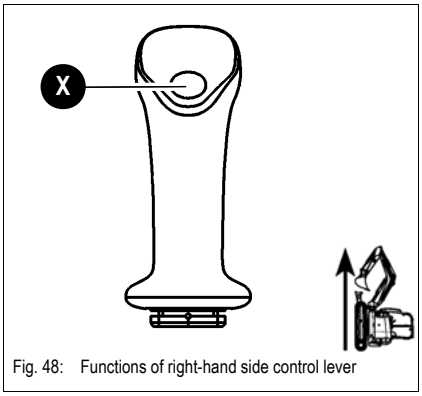


Fig. 48: Functions of right-hand side control lever

Button	Function
☞ *X*	➥ Horn

Lowering the boom with the engine stopped

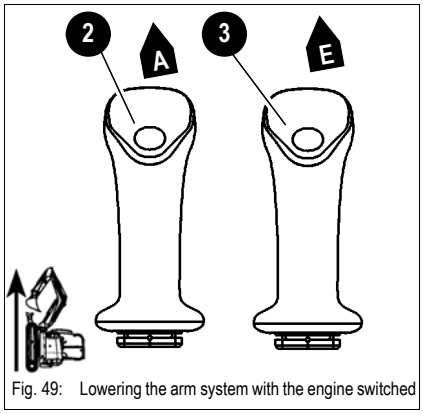


Fig. 49: Lowering the arm system with the engine switched

Lower the boom as follows:

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

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

☞ *Press forward 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.*

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

☞ *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.*

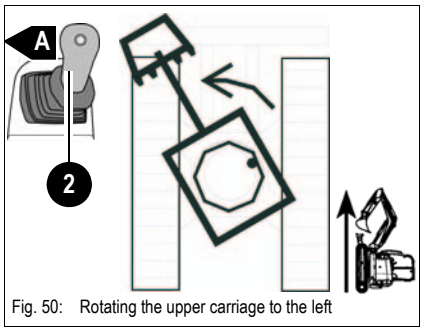


Fig. 50: Rotating the upper carriage to the left

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

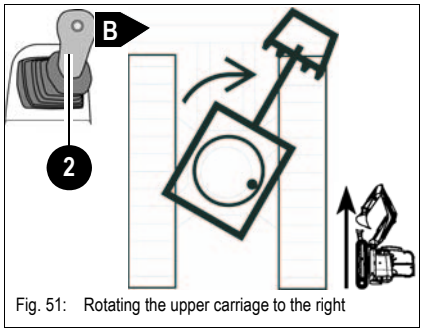


Fig. 51: Rotating the upper carriage to the right

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

Swivel 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.

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

Fig. 52: Directional valve

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

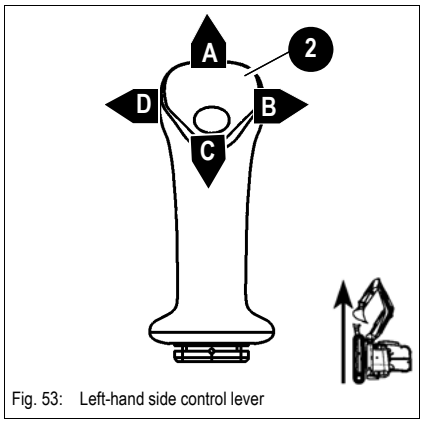


Fig. 53: Left-hand side control lever

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

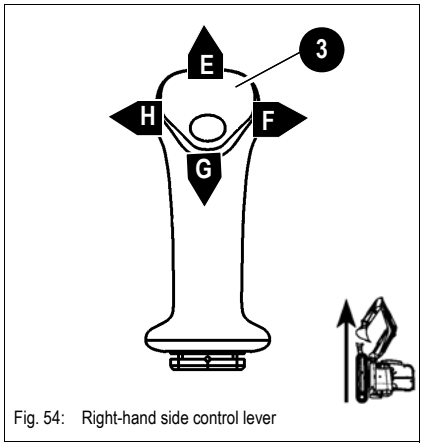


Fig. 54: Right-hand side control lever

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

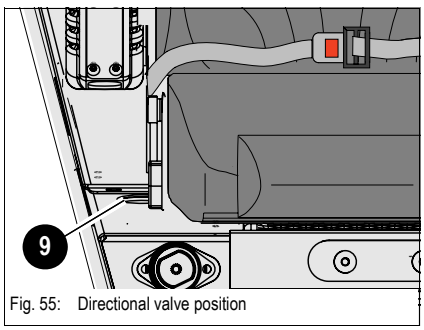


Fig. 55: Directional valve position

The directional valve is located at the left behind the seat.

Directional valve

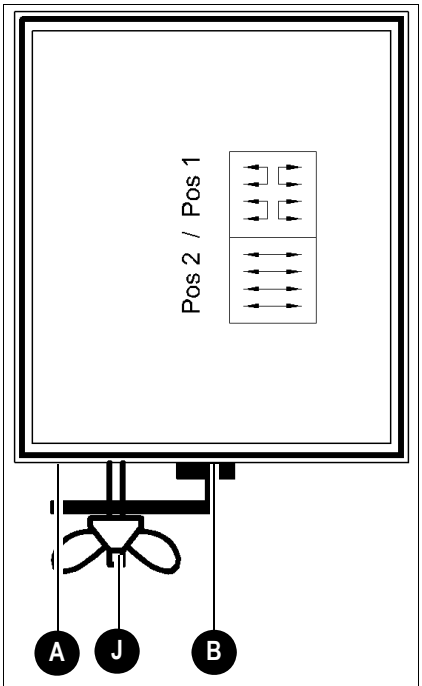


Fig. 56: Directional valve

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 malfunctioning or missing!

- *Immediately contact Wacker Neuson to replace a malfunctioning or missing wing nut.*

3.26 Control lever with proportional controls (option): overview

Important!

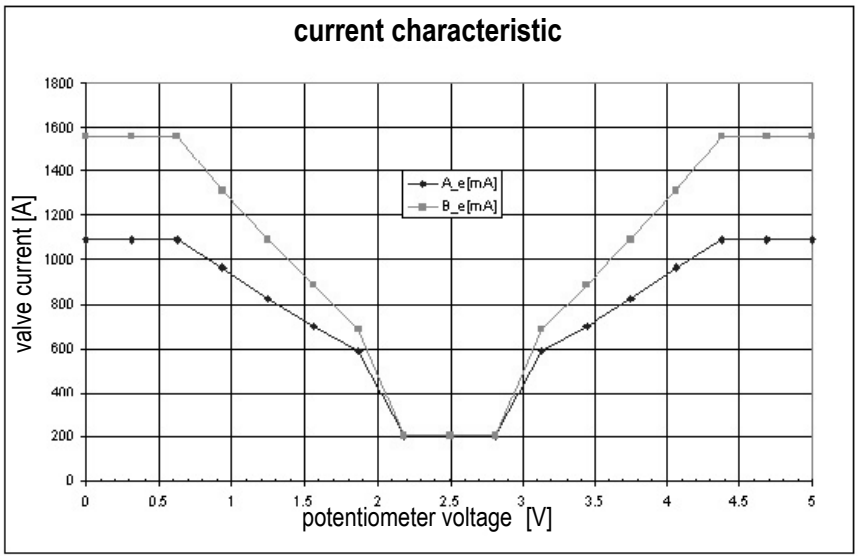
Fast actuation of the control lever for the attachment moves the attachment quickly. Slow actuation of the control lever moves the attachment slowly.

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 regardless 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.

- Stop 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 the machine and call for service.*
- *Stay clear of areas with danger of crushing.*
- *Stay clear of areas between moving hydraulic components and fixed obstacles.*
- *The operator of the machine or hydraulic system must be aware of possible machine or system errors.*

Left-hand side control lever

Important!

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

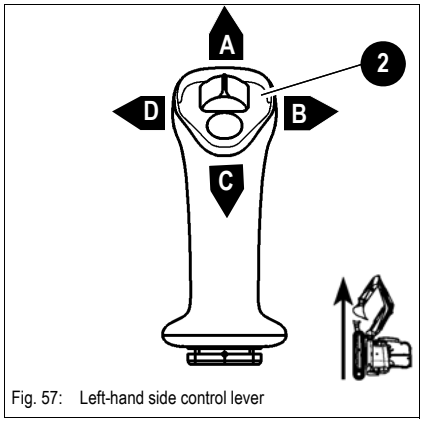


Fig. 57: Left-hand side control lever

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

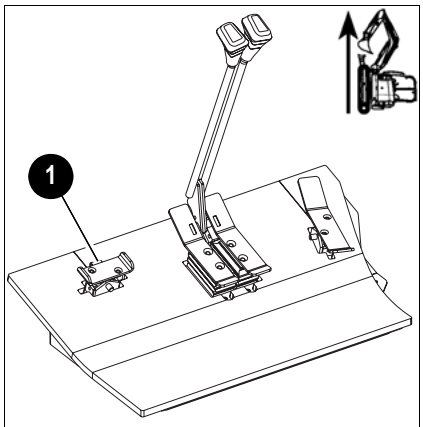


Fig. 58: Swivel controls

Swivel boom to the left:

☞ *Move hammer pedal **1** to the left.*

Swivel boom to the right:

☞ *Move hammer pedal **1** to the right.*

Auxiliary hydraulics

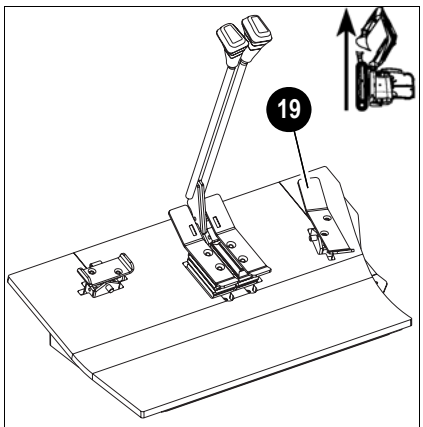


Fig. 59: Auxiliary hydraulics

Actuating the auxiliary hydraulics:

Oil flow in 1st direction:

☞ *Move hammer pedal **19** to the left.*

Oil flow in 2nd direction:

☞ *Move hammer pedal **19** to the right.*

Hammer operation

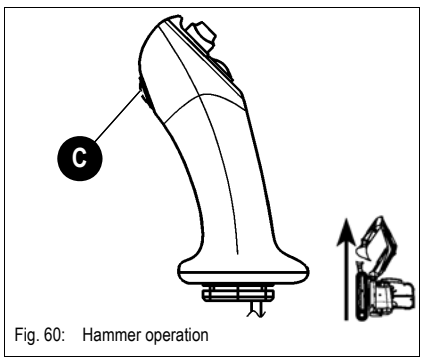


Fig. 60: Hammer operation

Switching on hammer operation:

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

Switching off hammer operation:

☞ *Release button C on the control lever.*

Adjusting control response:

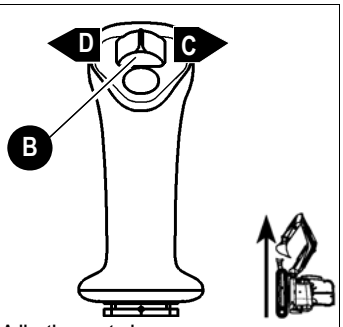


Fig. 61: Adjusting control response

Characteristic curve 1 (slow movements):

☞ *Disengage the starter.*
better Switch off ignition

☞ *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.*
better Hold slide switch B to the left ***D*** *and switch on ignition*

☞ *Then release slide switch B.*

Status display **42** acknowledges by flashing once.

Characteristic curve 2 (fast movements – maximum throughput):

☞ *Disengage the starter.*
better Switch off ignition

☞ *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.*
Hold slide switch B to the right C and switch on ignition.

☞ *Then release slide switch B*

➥ Status display **42** acknowledges by flashing twice

Characteristic curves – status display

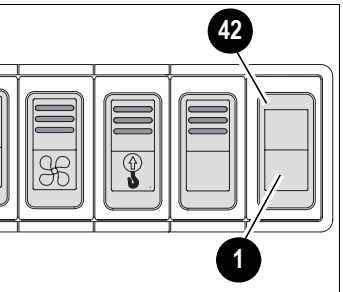


Fig. 62: Characteristic curves – status display

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

Characteristic curve 1 (slow movements):

➥ Indicator light 1 in status display 42 flashes once after turning the starter key to position "**1**".
better
Indicator light 1 in status display 42 flashes once after switching on ignition.

Characteristic curve 2 (fast movements – maximum throughput):

➥ Indicator light **1** in status display **42** flashes twice after turning the starter key to position "**1**".
better
Indicator light **1** in status display **42** flashes twice after switching on ignition.

Important!

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

Right-hand side control lever

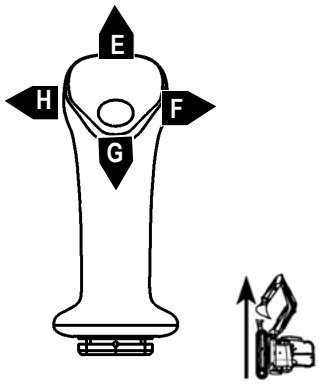


Fig. 63: Right-hand side control lever

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

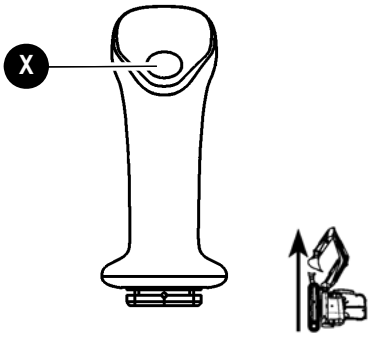


Fig. 64: Functions of right-hand side control lever

Button	Function
☞ *X*	➥ Horn

Lowering the boom with the engine switched off

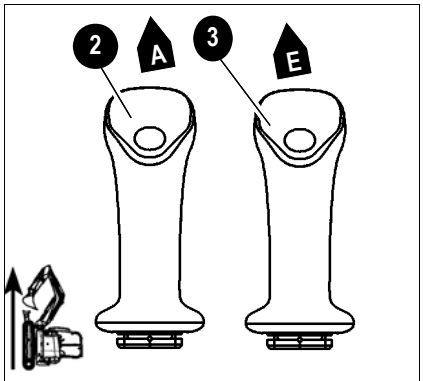


Fig. 65: Lowering the arm system with the engine switched

Lower the boom as follows:

☞ *Make sure no one is within the hazardous area of the machine.*

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

☞ *Press forward 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

Rotating the upper carriage is described with standard ISO controls.

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.*

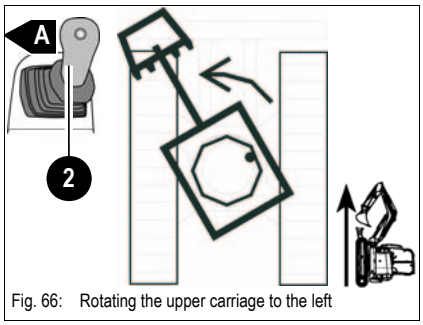


Fig. 66: Rotating the upper carriage to the left

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.

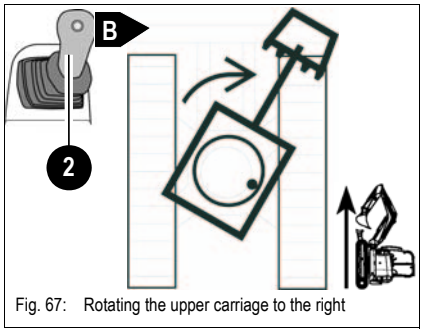


Fig. 67: Rotating the upper carriage to the right

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 neutral 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.

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

Important!

Fast actuation of the control lever for the attachment moves the attachment quickly. 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.

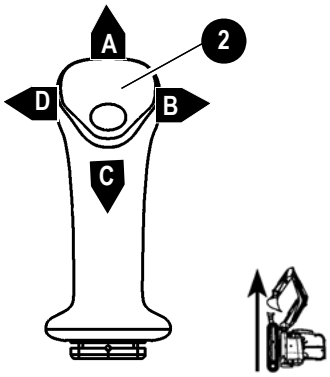


Fig. 68: Left-hand side control lever

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

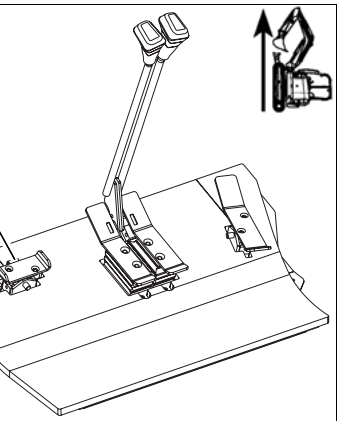


Fig. 69: Swivel controls

Swivel boom to the left:

☞ *Move hammer pedal **1** to the left.*

Swivel boom to the right:

☞ *Move hammer pedal **1** to the right.*

Auxiliary hydraulics

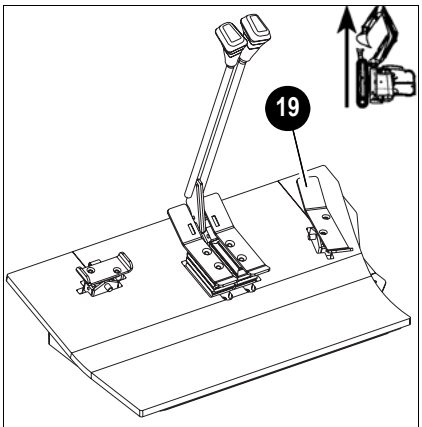


Fig. 70: Auxiliary hydraulics

Actuating the auxiliary hydraulics:

Oil flow in 1st direction:

☞ *Move hammer pedal **19** to the left.*

Oil flow in 2nd direction:

☞ *Move hammer pedal **19** to the right.*

Right-hand side control lever

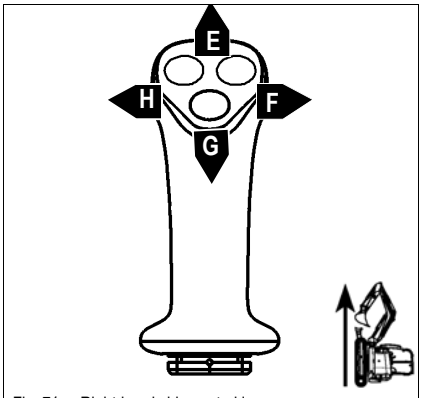


Fig. 71: Right-hand side control lever

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

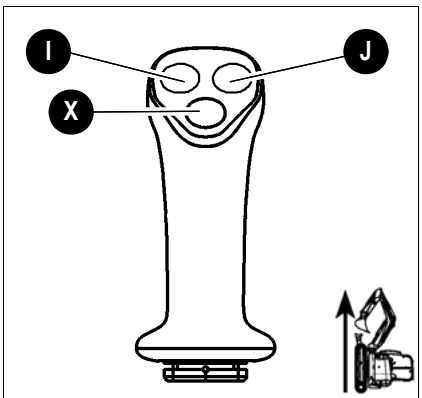


Fig. 72: Functions of right-hand side control lever

Button	Function
☞ *H*	➥ Horn
☞ *I*	➥ Operates the 3rd control circuit
☞ *X*	➥ Operates the 3rd control circuit

Lowering the boom with the engine switched off

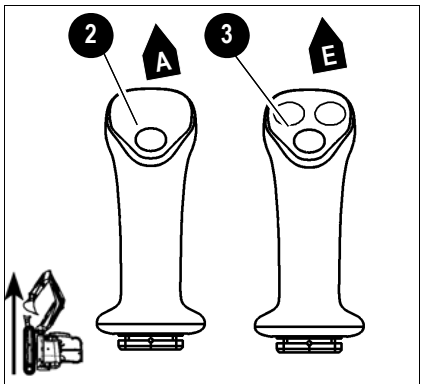


Fig. 73: Lowering the arm system with the engine switched

Lower the boom as follows:

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

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

☞ *Press forward 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

Rotating the upper carriage is described with standard ISO controls.

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.*

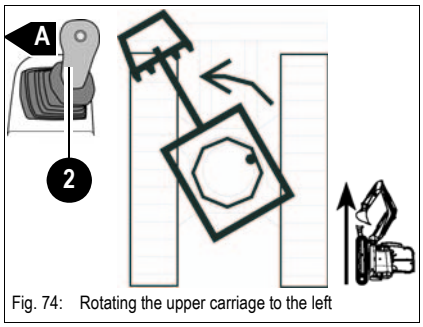


Fig. 74: Rotating the upper carriage to the left

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.

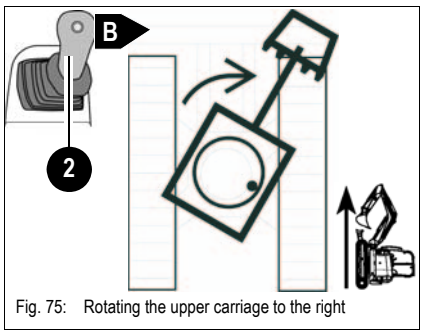


Fig. 75: Rotating the upper carriage to the right

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:

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.

3.28 Releasing the pressure on the work hydraulics

Caution!

Before connecting or removing hydraulic lines from the attachment, make sure the work hydraulics is not under pressure!

Important!

The hydraulic system of the machine is still pressurized even when the engine is not running! The hydraulic quick-couplers can be released, however they cannot be re-attached due to the residual pressure in the lines.

- 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!

Releasing pressure

Release the pressure as follows:

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

☞ *Lower the attachment completely to the ground.*

☞ *Stop the engine.*

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

☞ *Move the control lever or the pedal of the hydraulic circuit in all directions repeatedly.*

➥ The pressure in the system sections that have been actuated is released. This can be seen by the brief movement the hoses make as the pressure is actually released.

➥ Uncouple the attachment immediately after the pressure has been released, otherwise pressure can be created again!

Pressure release with proportional controls (option)

Release the pressure as follows:

☞ *Park the machine on firm and horizontal ground*

☞ *Lower the attachment completely to the ground!*

☞ *Stop the engine*

☞ *Turn the ignition key to position **1***

➥ Release the load only after you have sstarted ignition and waited 2 seconds (otherwise if actuated too early, the characteristic curve is shifted and the load is not released)!

☞ *Release the pressure on the auxiliary hydraulics by pressing the pedal connected with the left or right-hand side proportional joystick to the left and right*

➥ The pressure in the system sections that have been actuated is released. This can be seen by the brief movement the hoses make as the pressure is actually released.

Uncouple the attachment immediately after the pressure has been released, otherwise pressure can be created again!

3.29 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. grab 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 coupled / uncoupled 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

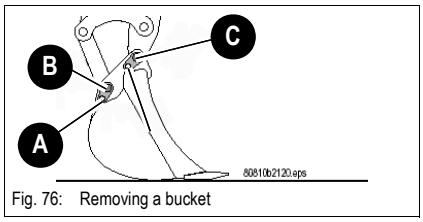


Fig. 76: Removing a bucket

☞ *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 release pins that are stuck with a hammer and a brass punch.

If pin **C** is stuck:

- Start the engine.
- Slighty 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

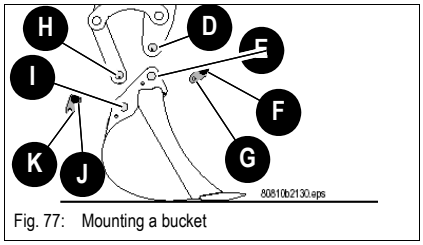


Fig. 77: Mounting a bucket

☞ *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 ram until bores **H** and **I** are flush.
- Insert the greased pin **J**.
- Lock linch pin **K**.

3.30 Quickhitch (option)

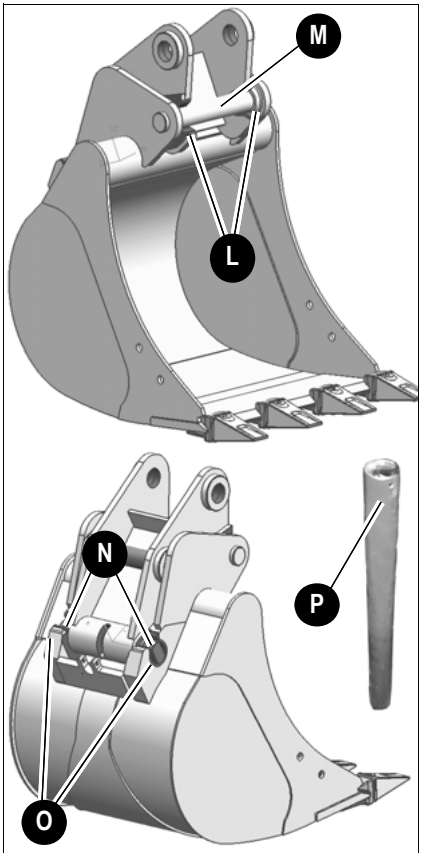


Fig. 78: Bucket with quickhitch

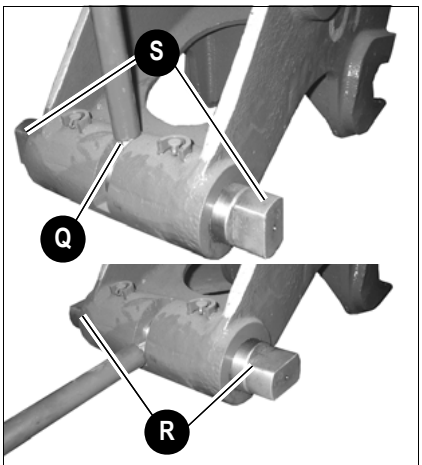


Fig. 79: Bucket with quickhitch

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.

☞ *Proceed as follows:*

- Approach the machine to the attachment.
- Hitch 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.

☞ *Lock as follows:*

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

3.31 Hydraulic quickhitch (option)

Caution!

Before putting this feature into operation, specific training must be performed by authorized technical staff and must be understood by the operator. For reasons of safety, the quickhitch must be operated with two control elements! This avoids opening the quickhitch unintentionally during work operation.

Maintenance

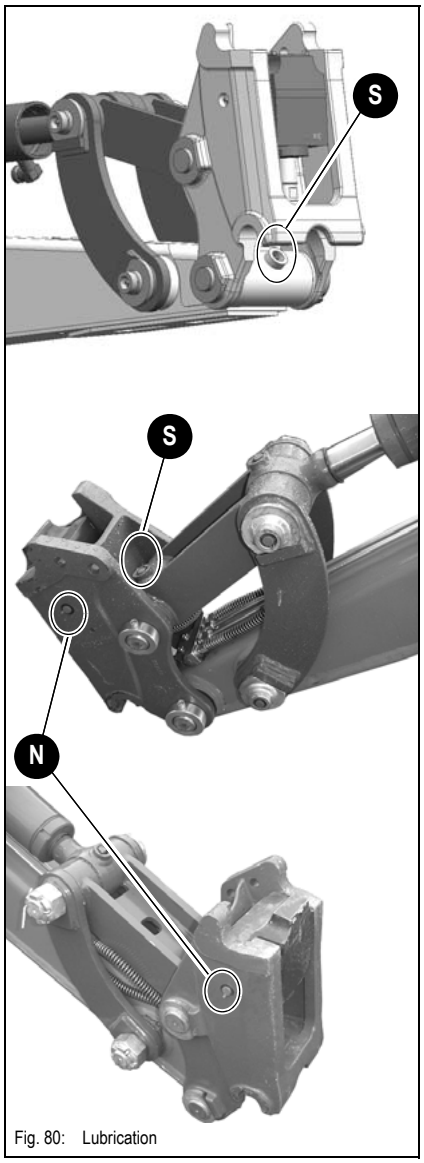


Fig. 80: Lubrication

Important!

Before picking up an attachment, the operator must make sure it can be hitched correctly by removing all dirt on either claw of the quickhitch.
Perform maintenance on the quickhitch system once a day with the other maintenance work for the machine.

Perform visual checks for possible defects, damage or cracks.

Remove all dirt on and around moving parts.

The claws must be clean and slightly greased.

Apply grease to the pins via grease nipples **S**.

Apply grease to the friction surfaces of the lock mechanism via 2 further grease nipples **N** on either side of the quickhitch (see *Fig. 80*).

Before starting work, check the acoustic signal which must be audible when pressing switch **B**.

Operation

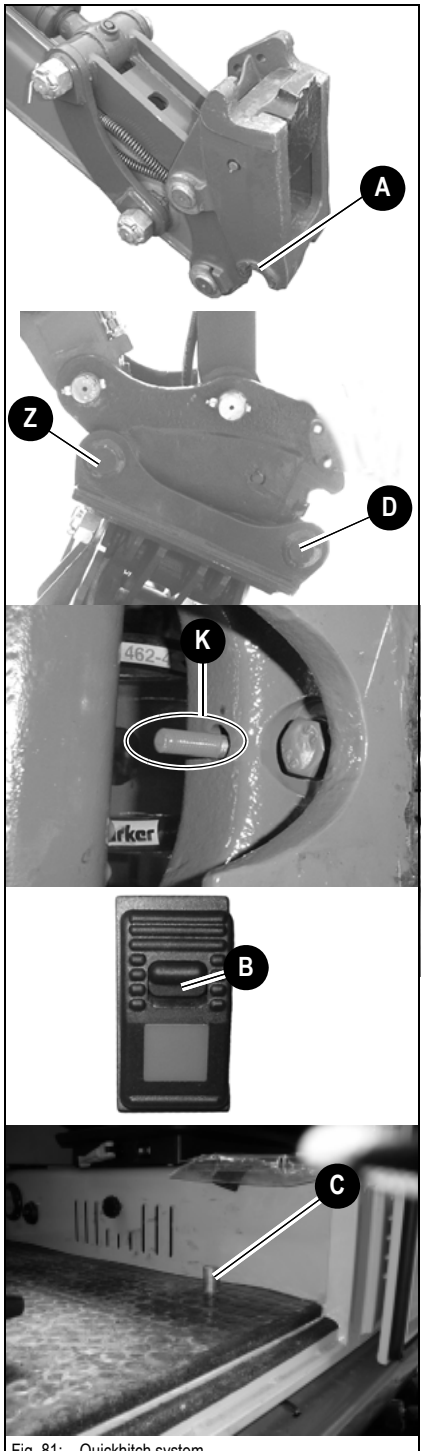


Fig. 81: Quickhitch system

Picking up an attachment

Caution!

Personal injury or equipment damage hazards. An improperly connected attachment can detach or fall unexpectedly.

- Before connecting an attachment, clear all personnel from the work area.
- Make sure the attachment is mounted correctly and fully functional before operating. Test the functionality with a short and rapid succession of stick and bucket movements as close as possible to the ground.
- Never operate an attachment with a malfunctioning lock.

Important!

For system-specific reasons, the hydraulic quickhitch opens and closes with the functions “Stabilizer blade”, “Auxiliary hydraulics”, “Boom swivel”, “3rd control circuit (option)” and “Rotate upper carriage”.

While connecting attachments, only use the function “Raise stabilizer blade” to open or close!

Caution!

The optical check pin **K** must be fully retracted.
If it can still be seen, or if you are unsure whether the bucket is mounted on the machine without any play:

- *Troubleshoot and rectify immediately!*

Proceed as follows:

☞ *Engage claws **A** (on the side of the excavator) into pins **Z** of the bucket mount.*

☞ *Move the attachment inwards with a turning movement by actuating the bucket hydraulic cylinder, so that the second pin **D** of the attachment also makes contact with quickhitch.*

☞ *Actuate switch **B**.*

➥ The buzzer sounds.

➥ The hydraulic quickhitch is enabled and can be operated.

☞ *Press and hold the foot-operated tip switch **C**.*

☞ *Operate the stabilizer blade (raise as far as it will go).*

➥ The quickhitch opens.

➥ Check pin **K** (red) indicates that the quickhitch is fully open.

➥ The second pin ***D*** of the bucket falls into the quickhitch claw.

☞ *Check whether the bucket touches the quickhitch with the second pin **D**.*

☞ *Release the foot-operated tip switch **C**.*

☞ *Operate the stabilizer blade (raise as far as it will go).*

➥ The quickhitch closes.

☞ *Disengage switch **B**.*

➥ The buzzer is mute.

➥ The hydraulic quickhitch is disabled.

☞ *Check the bucket and make sure it is firmly installed!*

Setting down an attachment

Proceed as follows:

☞ *Lower the attachment to about 5 – 10 cm (2” - 4”) above the ground*

☞ *Actuate switch **B***

➥ The buzzer sounds

☞ *Press and hold the foot-operated tip switch **C***

☞ *Operate the stabilizer blade (raise as far as it will go).*

➥ The quickhitch opens and releases the attachment.

➥ Check pin **K** (red) indicates that the quickhitch is fully open.

☞ *Retract the bucket hydraulic cylinder*

➥ Set down the bucket

☞ *Raise the boom*

☞ *Release the foot-operated tip switch **C***

☞ *Operate the stabilizer blade (raise as far as it will go).*

➥ The quickhitch closes.

☞ *Disengage switch **B***

➥ The buzzer is mute

Shovel bucket operation

With some restrictions, Wacker Neuson backhoe buckets can also be used for shovel bucket operation.

Fig. 82: Possible damage

NOTICE

Possibility of machine damage. Do not tilt the bucket fully back in shovel bucket operation (see *Fig. 82*), otherwise the bucket base may touch and damage the stick.

3.32 Powertilt (option)

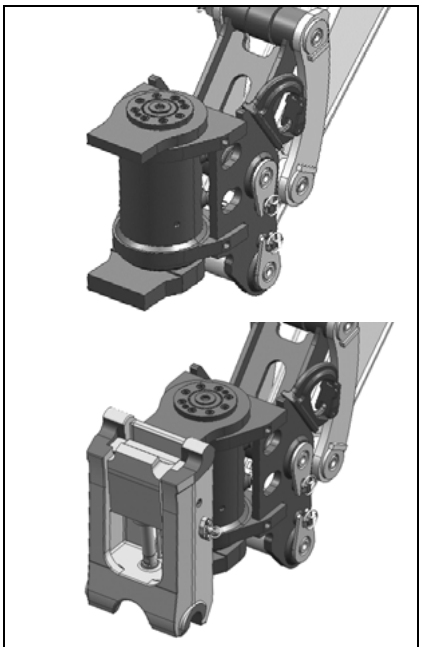


Fig. 83: Powertilt versions

Two versions are available:

- Powertilt with hydraulic quickhitch (option)
  – *see chapter 3.31 Hydraulic quickhitch (option)* on page 3-60
- Powertilt welded onto an attachment.

  Danger of crushing due to the rotating movements of the Powertilt unit.

  Danger of severe crushing of body and of death!

  ☞ *Do not allow anyone to stay in the danger area!*

Do not put the Powertilt unit into operation unless:

☞ The machine is equipped with an acoustic and optical warning device – *see chapter 3.38 Safe load indicator (option) on page 3-75*

☞ The machine is equipped with a hose burst valve – *see chapter 3.35 Load holding control valve (option) on page 3-68*

☞ *You read, understand and follow the instructions in the following chapter* – *see chapter Applications with lifting gear on page 2-7*

Important!

When using the Powertilt unit, the maximum bucket width is limited to 1200 mm.

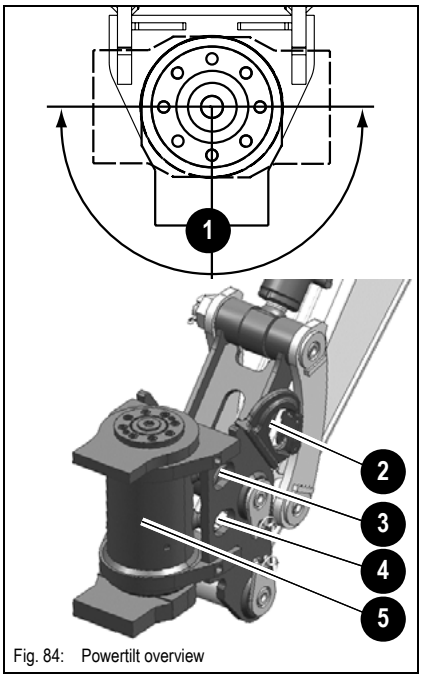


Fig. 84: Powertilt overview

1 Slewing range 180°
2 Load hook
3 Hydraulic connection 1/4”
4 Hydraulic connection 1/4”
5 Type label

Caution!

Welding work may be performed only by an authorized workshop or customer service!

Re-equipping

Warning!

Re-equipping attachments –

Danger of personal injury!

☞ *Observe the following instructions:*

- Stop the engine.
- Fold the control lever base up.
- Re-equip attachments only with suitable tools.
- Do not align components with your fingers or your hands but use suitable tools – danger of crushing!

☞ *Once you have re-equipped the attachments, or before starting work, make sure the attachment is safely locked with the stick and the tilt rod, or with the Powertilt unit (option).*

☞ *Release the pressure – see chapter 3.28 Releasing the pressure on the work hydraulics on page 3-56.*

☞ *Follow the safety instructions .*
– see chapter 3.29 Coupling and uncoupling attachments on page 3-57.

Mounting the Powertilt unit

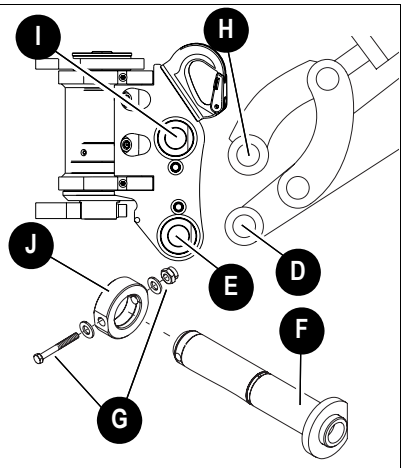


Fig. 85: Fitting the wheels

Proceed as follows:

☞ *Lower the Powertilt unit 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**.*

☞ *Mount ring **J** and tighten the securing elements **G**.*

☞ *Actuate the stick cylinder until bores **H** and **I** are flush.*

☞ *Insert greased pin **F**.*

☞ *Mount ring **J** and tighten the securing elements **G**.*

Removing the Powertilt unit

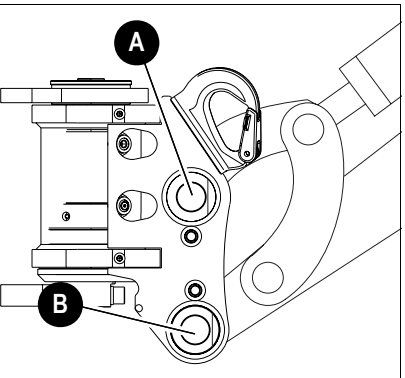


Fig. 86: Removing

Re-equip as follows:

☞ *Lower the Powertilt unit to the ground with its flat side facing down.*

☞ *Stop the engine.*

☞ *Fold the control lever base up.*

☞ *Remove the ring and the securing elements.*

☞ *First remove pin **A**, and then pin **B**. Carefully expel pins that are stuck with a hammer and a brass punch.*

If pin **A** is stuck:

☞ *Start the engine.*

☞ *Slighty raise and lower the boom to take the load off the pin.*

☞ *Stop the engine.*

☞ *Fold the control lever base up.*

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.

Port

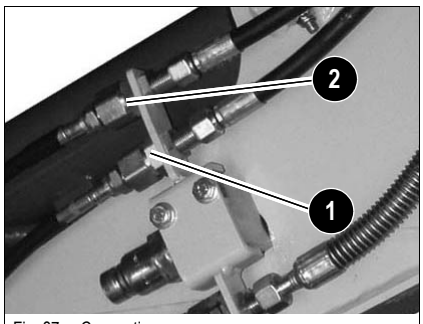


Fig. 87: Connections

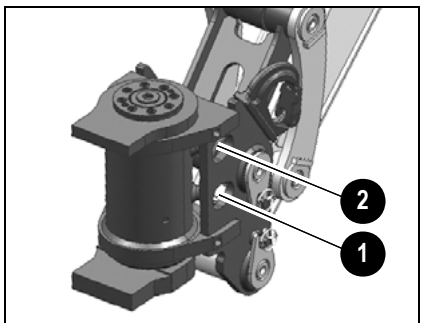


Fig. 88: Powertilt unit ports

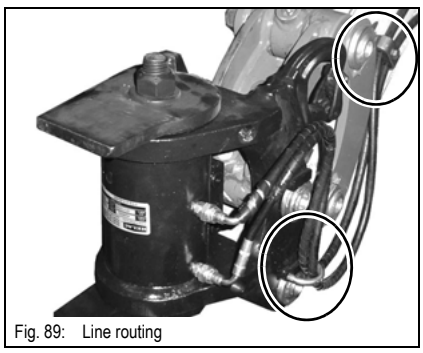


Fig. 89: Line routing

☞ *Remove the covers on ports **1** and **2** on the boom and the Powertilt unit*

☞ *The following connections are possible:*

- 3rd control circuit with quick-connect coupling
- Two different port sizes each

☞ *Connection of line between boom **1** and port **1** on the Powertilt unit*

☞ *Connection of line between boom **2** and port **2** on the Powertilt unit*

Route the hydraulic line through the duct and fasten it with a clamp.

Important!

In order to avoid possible damage to the lines, check the Powertilt unit in all positions before putting it into operation.

Operation

The Powertilt function is only available with proportional controls.

Danger!

Before any work, make sure the attachment is mounted correctly and that it is fully functional.

Do not allow anyone to stay in the danger area!

☞ *Do not operate an attachment with a malfunctioning lock !*

Right-hand side control lever (Powertilt)

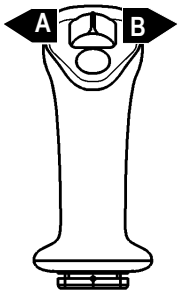


Fig. 90: Right-hand side control lever

The Powertilt functions are operated with the right-hand side control lever.

Position	Lever	Function
• A	☞ *To the left*	➥ Powertilt turns to the left
• B	☞ *To the right*	➥ Powertilt turns to the right

3.33 Connections for auxiliary hydraulics

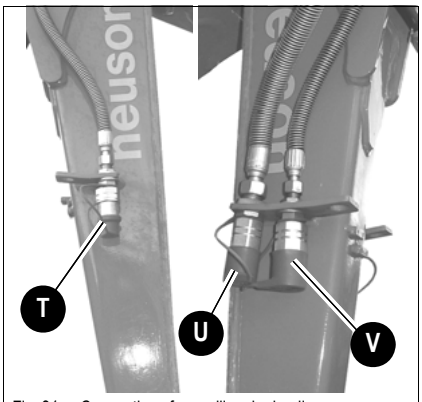


Fig. 91: Connections for auxiliary hydraulics

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

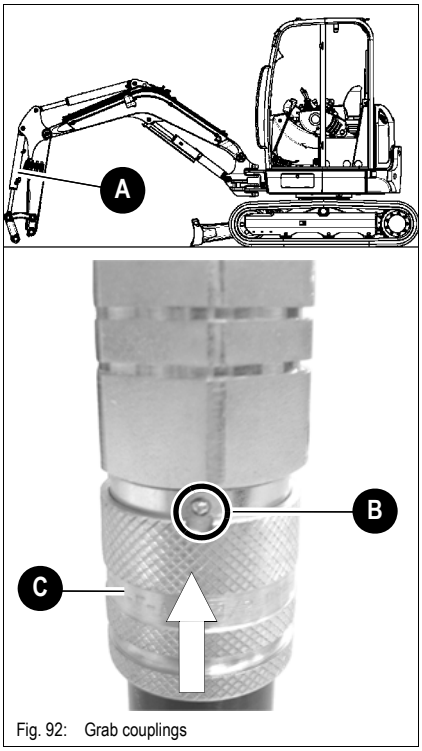


Fig. 92: Grab couplings

Connect and disconnect the hydraulic couplings as follows:

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

☞ *Extend stick ram **A** halfway through.*

☞ *Stop the engine.*

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

☞ *Release the pressure on bucket ram **A** by moving the right-hand side control lever to the left and right.*

☞ *Fold the control lever base up.*

☞ *Align lock sleeve **C** with lock ball **B**.*

☞ *Pull lock sleeve **C** upward.*

☞ 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. 43) until it stops moving.

☞ Rotate the sleeve (Fig. 43) 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.

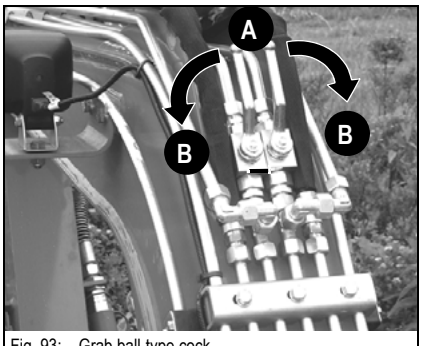


Fig. 93: Grab ball-type cock

Changing over the ball-type cock:

Bucket operation:

☞ *Set the ball-type cocks to position **A**.*

Grab operation:

☞ *Set the ball-type cocks to position **B**.*

3.34 Attachments

Important!

Please refer to the Operator's and maintenance manual of the attachment manufacturer for using and performing maintenance on attachments such as hammers, grapple forks etc.

3.35 Load holding control valve (option)

NOTICE

The “load holding control valve” safety feature avoids the boom from being lowered or dumped out without being braked, in the event of a bursting hose or pipe.

Danger!

The “load holding control valve” safety feature is activated as soon as a hose or a pipe bursts –

Danger of accidents!

← *Have damage to the hydraulic system and to the load holding control valve itself immediately repaired and checked by technical staff with suitable training!*

Important!

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

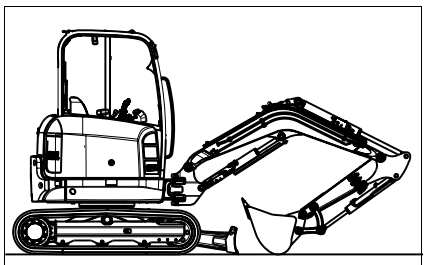


Fig. 94: Transport position

☞ *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.
- Stop the engine.
- Remove the starting key and lock the cab.
- Lock the machine and the attachment.
- Have damage to the hydraulic system and to the load holding control valve itself immediately repaired and checked by an authorized Wacker Neuson service technician.

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.

3.36 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.

Prohibited operation

Fig. 95: Working with the swivel force

Working with the swivel force

☞ *Do not use the swivel force of the upper carriage 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.*

➥ Working this way damages the attachments.

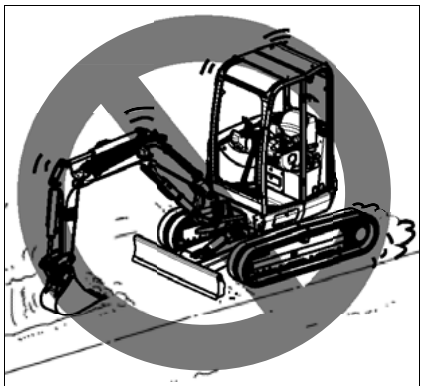


Fig. 96: Working with the drive force

Working with the drive 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 may damage the machine or the attachments.

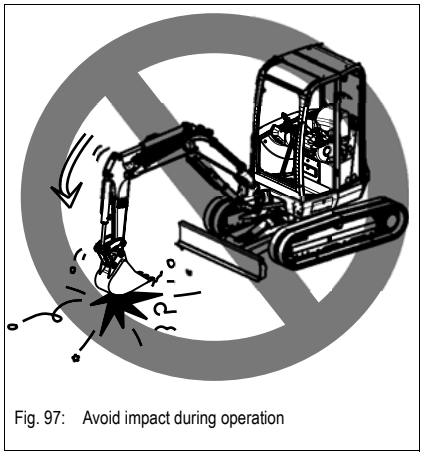


Fig. 97: Avoid impact during operation

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.

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.

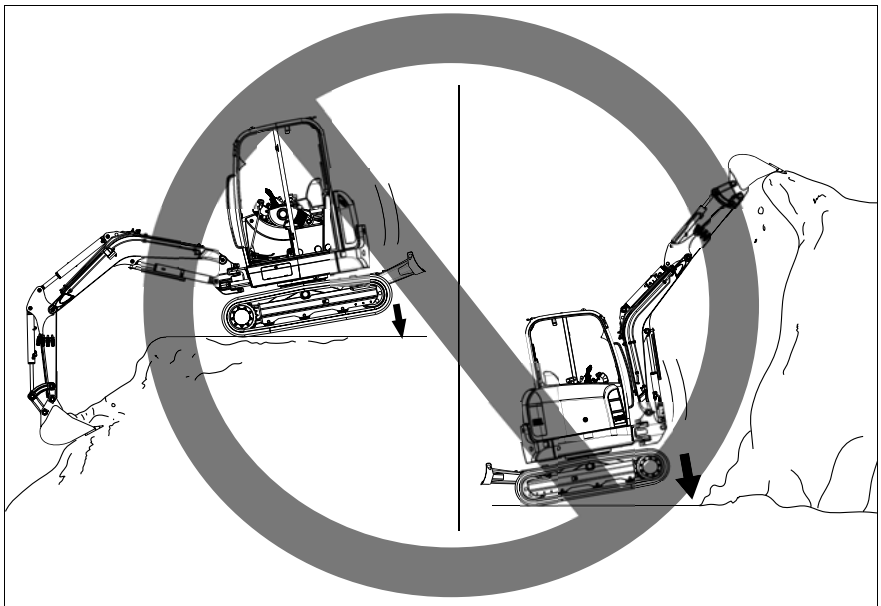


Fig. 98: Avoid tipping the machine while excavating

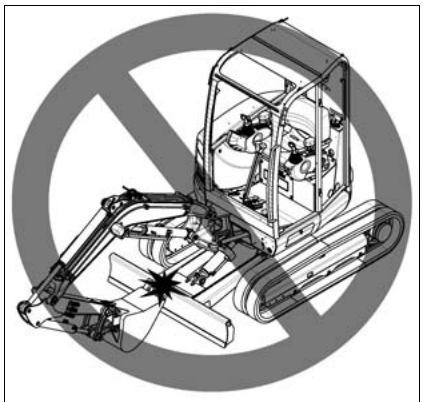


Fig. 99: Retracting attachments

Retracting attachments

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

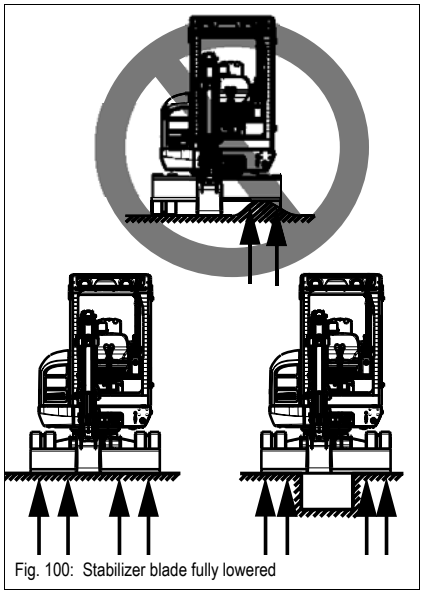


Fig. 100: Stabilizer blade fully lowered

Working with stabilizer blade

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

☞ *Do not pry objects with the stabilizer.*

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

Excavator work position

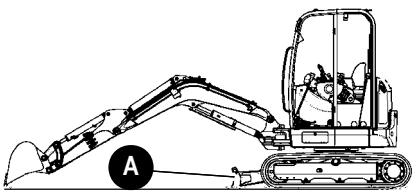


Fig. 101: Excavator work position

Proceed as follows:

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

Bucket position when digging

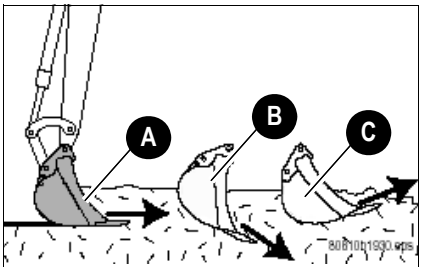


Fig. 102: Bucket position

☞ *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 upward and not to be filled completely. This slows down work, too.

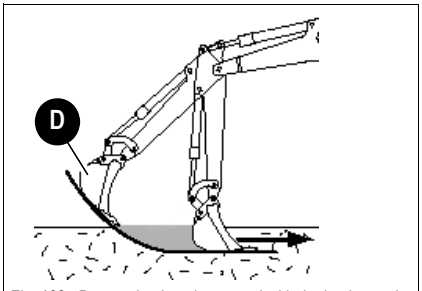


Fig. 103: Penetrating into the ground with the bucket and

☞ *Dig as follows:*

- Penetrate into the ground with the bucket **D**
- Lower the stick and at the same time align bucket until
- Reaching the required digging depth and
- The flat side of the bucket is parallel to the ground (see bucket position).

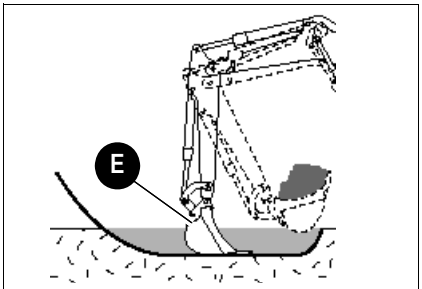


Fig. 104: Filling the bucket

☞ *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***:*

- Keep on moving the stick towards the excavator and at the same time.
- Curl the bucket to complete the filling operation as the stick is moved toward the machine.

Excavating trenches

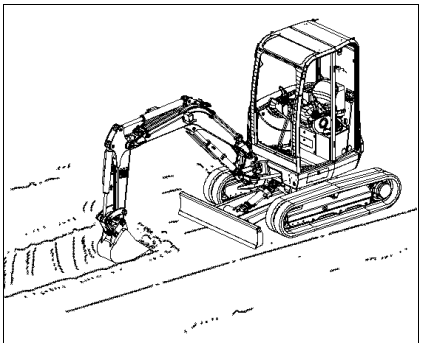


Fig. 105: Excavating trenches

☞ *Excavating trenches is more efficient*

☞ y using a suitable bucket for this work and positioning the tracks parallel to the side of the trench.

☞ In case of large trenches, first excavate the side sections and then the center section.

Loading

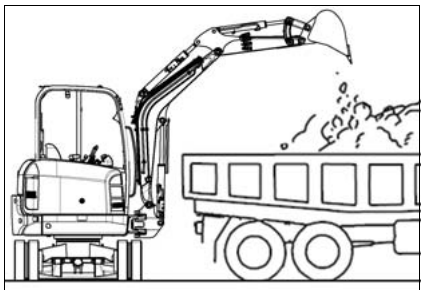


Fig. 106: Loading

- 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

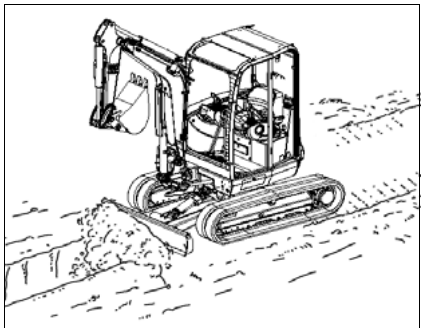


Fig. 107: Grading

- 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

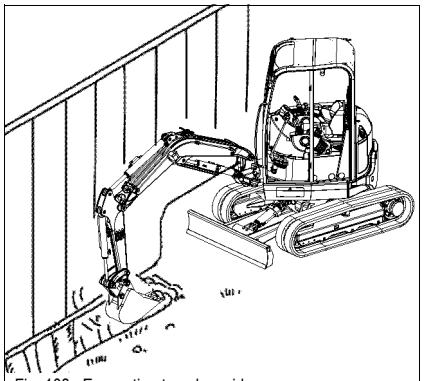


Fig. 108: Excavating trenches sideways

- 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).

Working alongside trenches

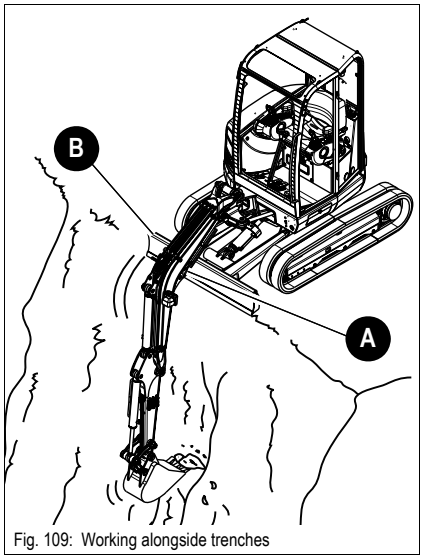


Fig. 109: Working alongside trenches

Stabilizer blade at rear

NOTICE

Possible piston rod damage. To avoid damage to the boom cylinder, do not raise the stabilizer blade with the boom lift cylinder in the retracted position shown in Fig. 60.

- *Always use stabilizer blade **B** for stabilization during excavation work*
- *Make sure stabilizer blade **B** never touches piston rod **A** (Fig. 109).*
- *Avoid maximum depth trench excavation from the stabilizer end of the machine. (Fig. 110).*

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 work position (Fig. 110) only in an extreme emergency since the machine can tilt forward into the trench.*
- *We recommend using work position (Fig. 109) described above for optimum machine stability. However, make sure piston rod **A** does not touch stabilizer blade **B** under any circumstances.*

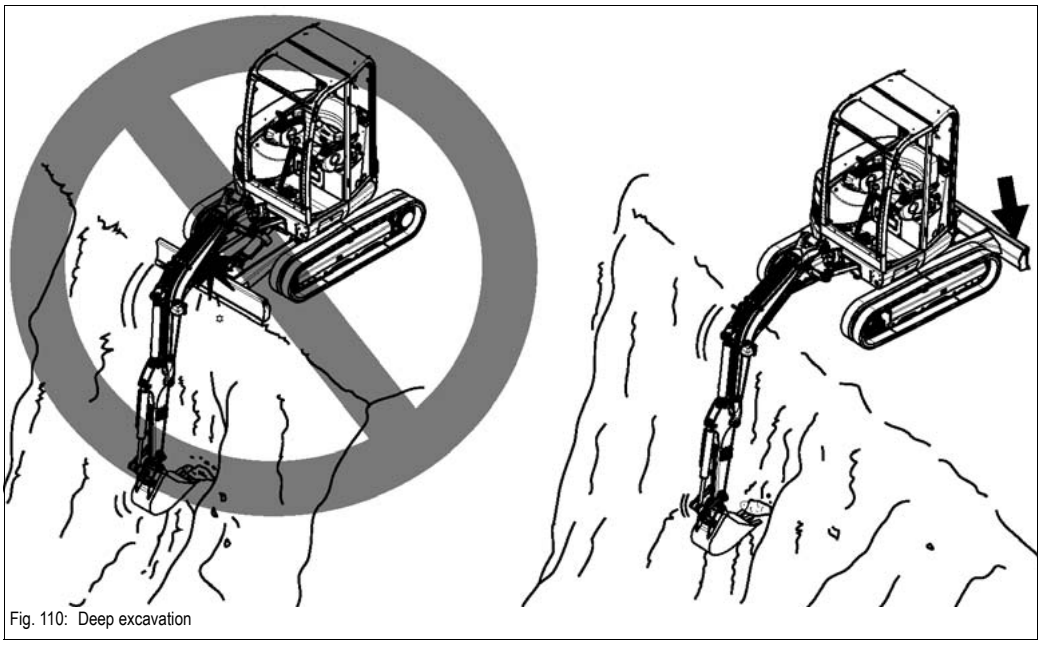


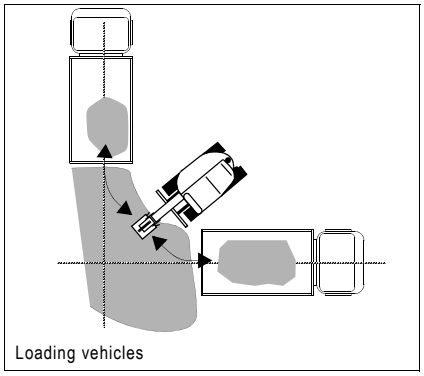
Fig. 110: Deep excavation

Recommendations for digging

When planning and performing digging work, 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, take the following into account:

- *If possible, the truck and the working direction of the bucket should form an angle of 45°.*
- *Raise the full bucket to dump height only as you rotate 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 out 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.

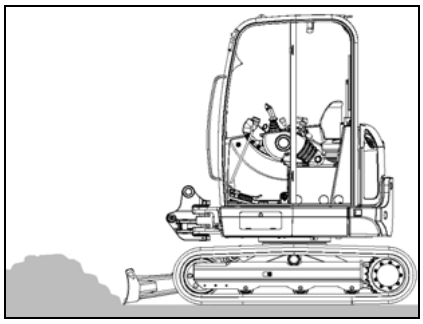
3.37 Grading

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 by lowering the stabilizer blade

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

3.38 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.

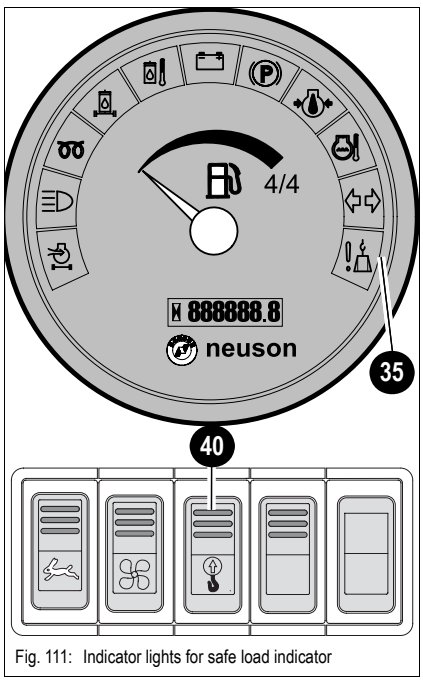


Fig. 111: Indicator lights for safe load indicator

Engage the safe load indicator as follows:

☞ *Press switch* **40** *on the instrument panel.*

➥ Indicator light **35** illuminates the lift symbol if an overload is sensed.

The safe load indicator light illuminates, and an alarm sounds, 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 alarm and the indicator light in the round display element go out*

4 Troubleshooting

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

Repairs must beperformed by an authorized Wacker Neuson service center.

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	*5-34*
	Fuel grade does not comply with specifications	*5-34*
	Malfunctioning or flat battery	*5-29*
	Loose or oxidized cable connections in starter circuit	
	Malfunctioning starter, or pinion does not engage	
	Wrong valve clearance	
	Malfunctioning fuel injector	
	Malfunctioning cutoff solenoid	
	Malfunctioning fuse	
Engine starts, but does not run smoothly	Fuel grade does not comply with specifications	*5-34*
	Dirty fuel filter	
	Wrong valve clearance	
	Injection line leaks	
	Malfunctioning fuel injector	
Engine overheats. Temperature warning system responds	Oil level too low	*5-6*
	Oil level too high	*5-6*
	Dirty air filter	*5-12*
	Dirty cooler fins	*5-8*
	Coolant level too low	
	Cooling system leaks	
	Malfunctioning fan, torn or loose V-belt	*5-14*
	Resistance in cooling system too high, flow capacity too low	
	Malfunctioning fuel injector	
Insufficient engine output	Oil level too high	*5-34*
	Fuel grade does not comply with specifications	*5-34*
	Dirty fuel filter	
	Dirty air filter	*5-12*
	Wrong valve clearance	
	Injection line leaks	
	Malfunctioning fuel injector	
Engine does not run on all cylinders	Injection line leaks	
	Malfunctioning fuel injector	
Insufficient or no engine oil pressure	Oil level too low	*5-6*
	Machine inclination too high	
	Wrong SAE grade of engine lubrication oil	*5-34*

Problem		Possible causes	See
Engine oil consumption too high		Oil level too high/wrong oil	5-6
		Worn oil scraper ring	
		Machine inclination too high	
Engine smoke	Blue	Oil level too high/wrong oil	5-6
		Machine inclination too high	
	White	Engine starting temperature too low	
		Fuel grade does not comply with specifications	5-34
		Wrong valve clearance	
		Malfunctioning fuel injector	
		Malfunctioning cylinder-head gasket	
	Black	Dirty air filter	5-12
		Wrong valve clearance	
		Malfunctioning fuel injector	

4.2 Malfunctions of the Powertilt unit

Problem	Possible causes	See
Powertilt does not maintain its position.	If the excavator applies too much pressure against an obstacle, this can build up pressure in the Powertilt swivel device that activates the internal decompression valve.	
	Oil escapes from the control valve.	
	Defective decompression valve.	
	Oil escapes from the seals.	
Powertilt turns only in one direction.	A one-way valve has been installed.	
	Malfunctioning internal decompression valve.	
	Both lines are connected to either the P1 or P2 ports of the Powertilt swivel device.	
Inexact lateral Powertilt movements.	Air in Powertilt swivel device or hydraulic system.	
	Hose/pipe diameter/length is larger/longer than recommended.	
Reverse and eliminate movement of shaft in housing (axial play of shaft).	Worn or missing pressure discs.	
Lateral bucket movement.	A little play due to necessary spacing between teeth is normal.	
Grease cannot be applied to Powertilt grease nipples.	Malfunctioning grease decompression valve of lubrication system, or grease decompression valve has been replaced by a grease nipple or plug.	

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 malfunctions 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 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 an qualified operator. All other maintenance work must be performed by an authorized Wacker Neuson service center.

The maintenance plans indicate when the maintenance work mentioned below must be performed – *see Maintenance plan (overview)* on page 5-35.

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

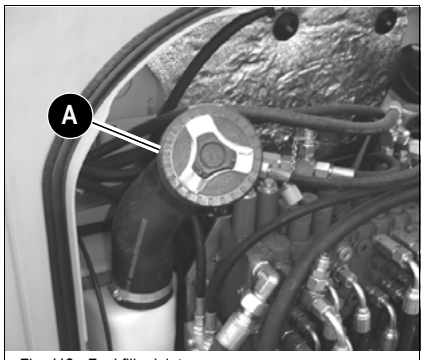


Fig. 112: Fuel filler inlet

The fuel fill inlet **A** in fig. 102 is located behind the cab, on the right in driving direction.

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 will be drawn into the fuel system. This requires bleeding the fuel system – *see Bleeding the fuel system* on page 5-4.

Important!

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

Draining the fuel

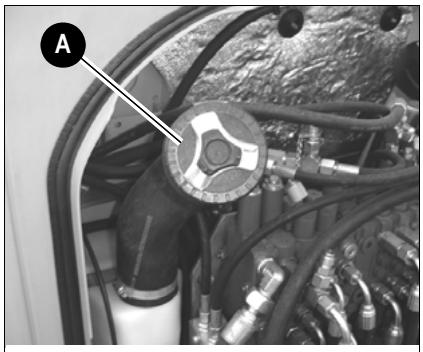


Fig. 113: Fuel tank

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.

Environment!

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

Filler inlet **A** (Fig. 103) for the fuel tank is located in the valve compartment, on the left in driving direction.

Proceed as follows:

☞ Open filler inlet **A**

☞ Pump out 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 dirty.

Even the smallest particles of dirt may 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. 114):

- Barrels must neither be rolled nor tilted before refueling
- Protect the suction pipe opening of the barrel pump with a fine-mesh screen
- 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

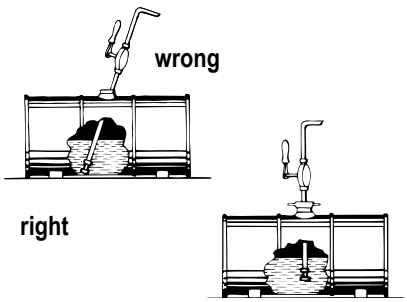


Fig. 114: Refueling from a barrel

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.

- Stop the engine before draining fuel.
- 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 reinstalling the fuel filter, prefilter or the fuel lines.
- 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 starting 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 the engine.
- Bleed the fuel system again as described above.
- Have this checked by a qualified technician if necessary.

Water separator

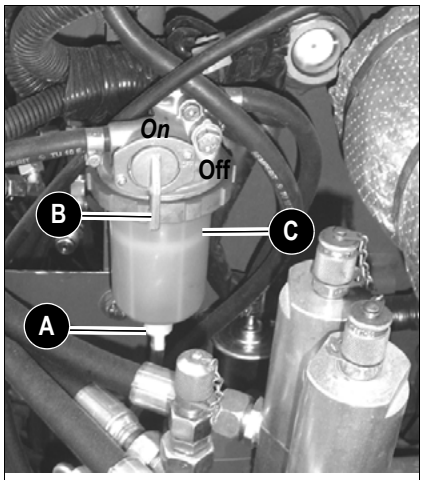


Fig. 115: Water separator

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 water separator 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.
- – see chapter 5.15 *Maintenance plan (overview)* on page 5-35

Checking the oil level

Important!

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

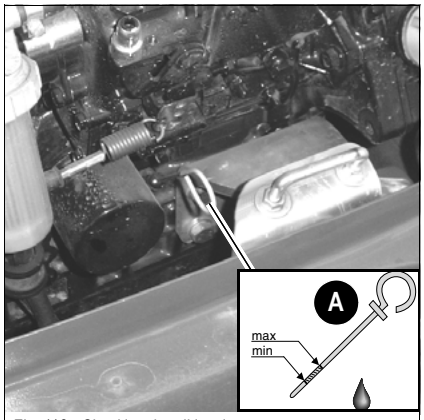


Fig. 116: Checking the oil level

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.
- Oil dipstick **A**:

☞ Pull it out.

☞ Wipe it with a lint-free cloth.

☞ Push it back in as far as possible.

☞ Withdraw it and read the oil level.

☞ *If necessary, add oil at the latest when the oil reaches the MIN mark on the oil dipstick* **A.**

Adding 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 117/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!

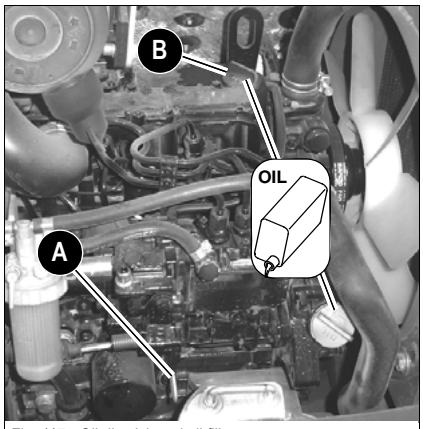


Fig. 117: Oil dipstick and oil filler cap

Filling up 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 5-6
- 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.

Checking / filling up 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 as well 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.*
- *Never add cold water/coolant if the engine is warm!*

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 figure 102* 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).

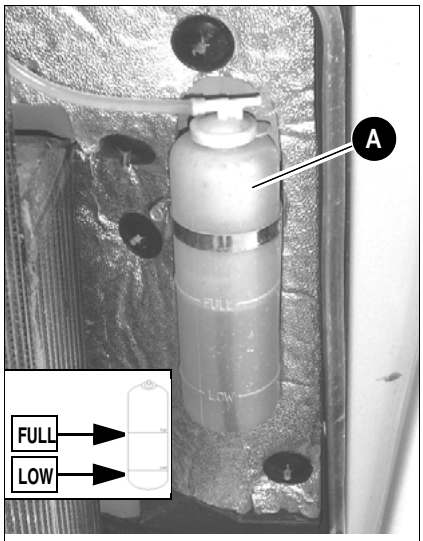
Warning!

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

- *Antifreeze is flammable and poisonous*

- 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.*



Expansion tank for coolant

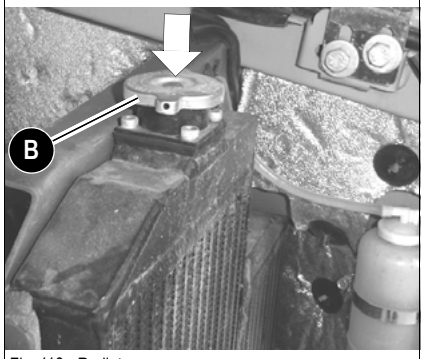


Fig. 118: Radiator

Checking the coolant level

☞ *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:

➥ Fill up coolant.

Important!

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

Filling up 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

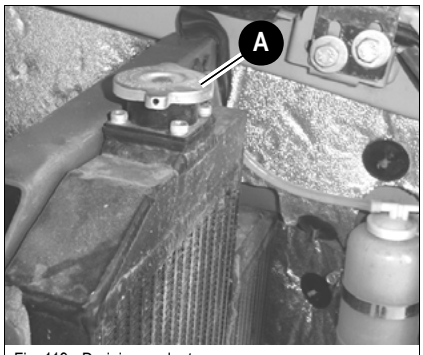


Fig. 119: Draining coolant

Warning!

Burn hazard. The coolant in the system is flammable and becomes very hot under normal operating conditions.

- Always use appropriate protective equipment, e.g. protective gloves!
- Do not drain the cooling system unless the components are comfortable to the touch (less than 49'C (120°F)).
- 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 **A** (Fig. 109)

☞ Drain the coolant with a suitable pump

➥ Collect the coolant in a suitable container

5.5 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 according to the maintenance plan*
- *Never reuse a damaged filter cartridge*
- *Ensure cleanliness when replacing the filter cartridge!*

Replace the air filter as indicated in the maintenance plan or if fouling indicator **A** drops to “Service”!

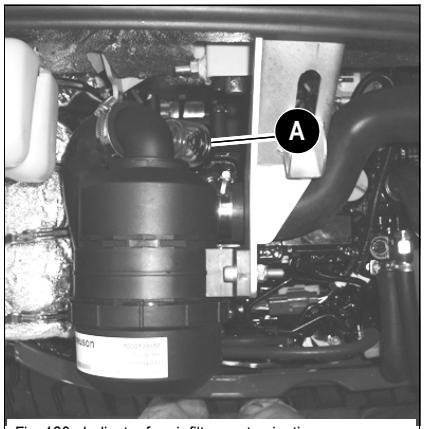


Fig. 120: Indicator for air filter contamination

Important!

For applications in especially dusty environment, the air filter is fitted with an extra secondary filter **C** (Fig. 112, page 5-14). Do not clean secondary filter **C**.

NOTICE

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

- *Replace primary filter B and secondary 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

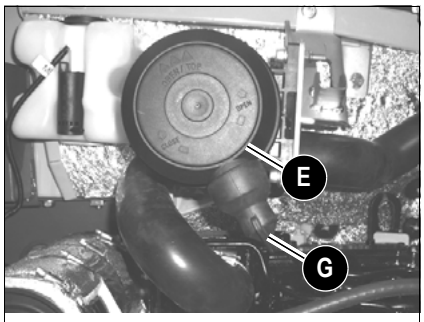


Fig. 121: Removing the lower housing sectiont

- 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.*
☞ *Rotate the filter end housing* **E** *(Fig. 111) counter-clockwise to remove it.*
☞ *Remove lower housing section* **E**.
☞ *Carefully remove primary filter* **B** *with slightly turning movements.*
☞ **Make sure** *all dirt (dust) inside the upper and lower housing sections (***F** *and* **E***), including dust ejection valve* **G,** *has been removed.*

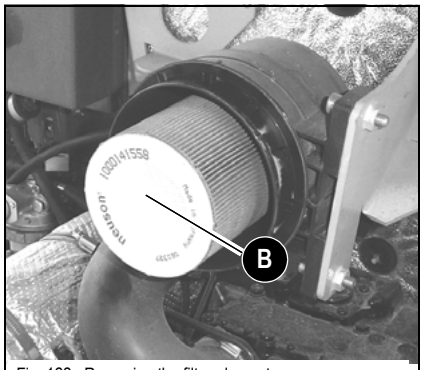


Fig. 122: Removing the filter element

☞ 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 the new primary filter* **B** *in the upper housing section* **F**.
☞ *Position lower housing section* **E** *(make sure it is properly seated).*
☞ *Install the filter end housing* **E** *with the dust ejector valve* ***G*** *aimed downwards.*
☞ *To complete the installation, align the notches in the end and body housing and rotate the end housing clockwise until the joint is tightly seated.*

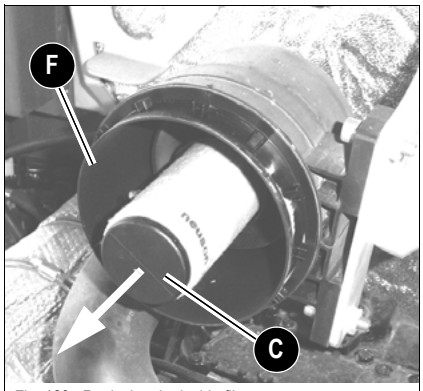


Fig. 123: Replacing the inside filter

- Replace secondary filter ***C*** 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.*
☞ *Turn the lower housing section E to the left.*
☞ *Remove lower housing section.E*
☞ *Carefully remove outside filter B with slightly turning movements.*
☞ *Remove the primary filter to access the secondary filter. Use the previous instructions for removing the primary filter (Fig. 121 and Fig. 122).*
☞ *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 upper 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).*
☞ *Install the filter end housing* **E** *with the dust ejector valve aimed downwards.*
☞ *To complete the installation, align the notches in the end and body housing and rotate the end housing clockwise until the joint is tightly seated.*

Important!

Make sure the dust valve **G** (Fig. 111) is aimed downward after installation.

5.6 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

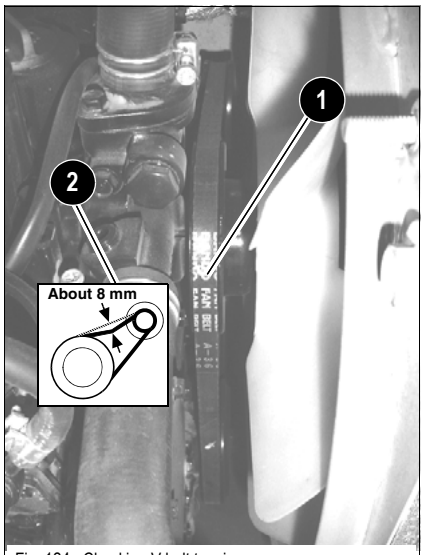


Fig. 124: Checking V-belt tension

- 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 a qualified technician.
  - ☞ 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 may damage the V-belt, the V-belt guide, the alternator bearing and the water pump bearing.

- *Avoid contact of oil, grease or similar substances with the V-belt.*
- *Check V-belt tension – see Checking V-belt tension on page 5-14*

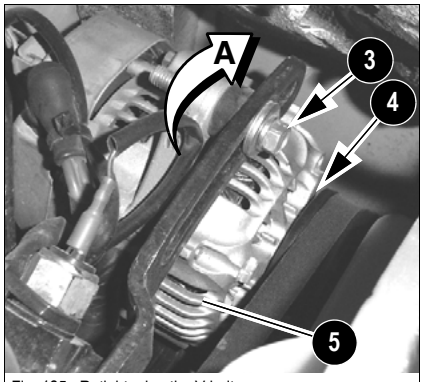


Fig. 125: Retightening the V-belt

- 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** and **4** (below) of alternator **5.**
  - ☞ Use a suitable tool to push alternator **5** in the direction of arrow **A** until reaching the correct V-belt tension (fig. 125).
  - ☞ Keep alternator **5** in this position, and at the same time retighten fastening screws **3** and **4** (below).
  - ☞ Check V-belt tension again and adjust it if necessary.
  - ☞ Connect the battery or the battery master switch.
  - ☞ Close the engine cover.

5.7 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 may 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.
- To avoid dirt contamination, use the screened inlet when adding oil.
- Only use authorized oils of the specified type. – *see chapter 5.14 Fluids and lubricants* on page 5-34
- Always add hydraulic oil before the level gets too low. – *see Adding 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 filling up. 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.

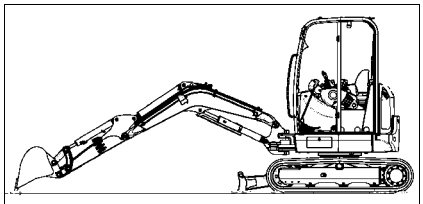


Fig. 126: Parking the excavator

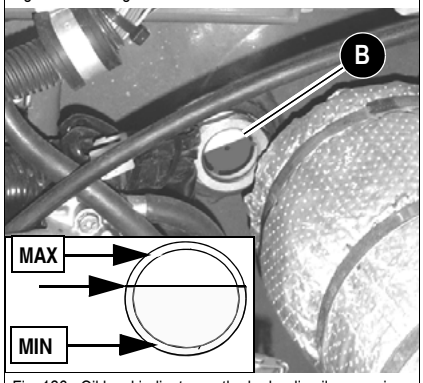


Fig. 126: Oil level indicator on the hydraulic oil reservoir

☞ *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.
- 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 (0.4'') over the center, between positions **MIN** and **MAX**, as shown by the arrows in fig. 126.

➥ 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 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 fill up the hydraulic oil unless the engine is stopped. Otherwise, hydraulic oil will overflow at the filler opening on the hydraulic reservoir.

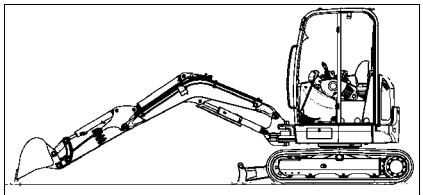


Fig. 127: Parking the excavator

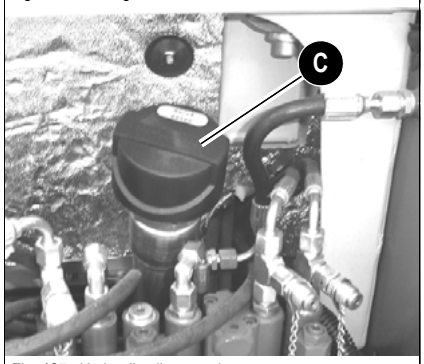


Fig. 127: Hydraulic oil reservoir

☞ *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
- Set the boom straight (offset ram)
- Stop the engine
- Fold the control lever base up
- Let the engine cool down
- Slowly open cap **C** of the hydraulic reservoir

With the filter insert in place:

- Add hydraulic oil
- Check the hydraulic oil level on sight glass **B**
- Add more oil if necessary and check again
- Close cap **C** of the hydraulic reservoir hand tight again

Important information for the use of biodegradable oil

- Use only the biodegradable hydraulic fluids which have been tested and approved by Wacker Neuson GmbH. Always contact Wacker Neuson 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 reservoir (next to the filler inlet) regarding the type of oil currently used!
  The combined use of two different biodegradable oils may 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 5.15 Maintenance plan (overview)* on page 5-35
- Always have the condensation water in the hydraulic oil reservoir drained by an authorized Wacker Neuson service center 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 an authorized Wacker Neuson service center.

5.8 Pilot valve

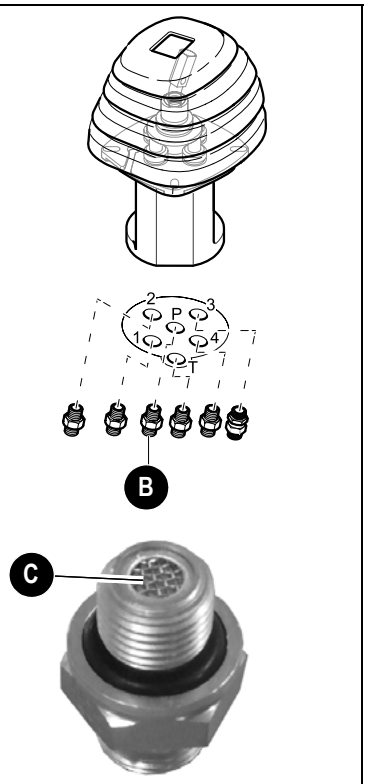


Fig. 128: Pilot valve

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 cleat it if necessary.
- In order to protect the piston valves in the pilot valves from damage due to dirt in the oil, 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.*

☞ *Set the boom straight.*

☞ *Stop the engine.*

☞ *Move the control levers in all directions repeatedly.*

☞ *Switch 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.*

☞ Engage the pump before routing the hoses.

☞ Remove the joystick.

☞ *Remove the pilot control hose from the joystick.*

☞ *Remove pilot control filter **B** from 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

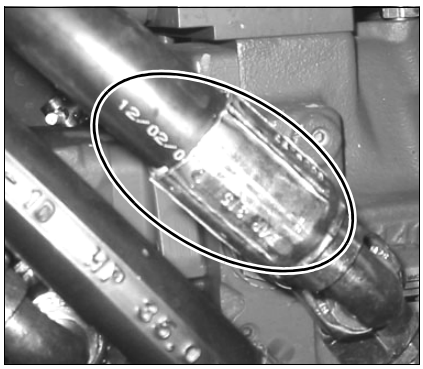
Warning!

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 Wacker Neuson service center.
  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.

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.

5.9 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. 129*

☞ *Place the excavator so that mark **B** of the rubber track is between the drive pinion **C** and the track tension roller **D***

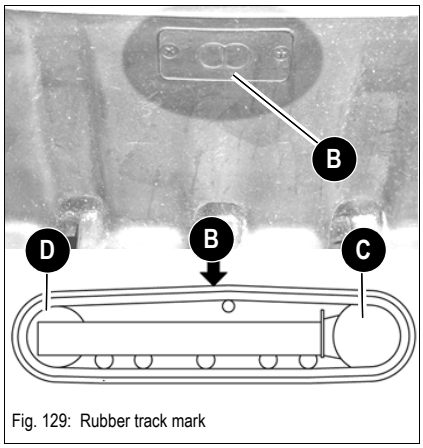


Fig. 129: Rubber track mark

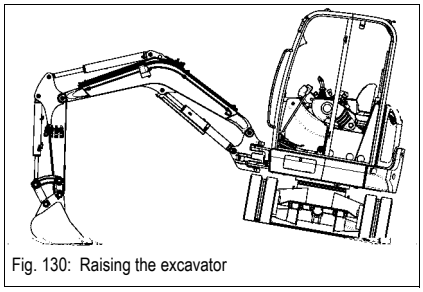


Fig. 130: Raising the excavator

☞ *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.*

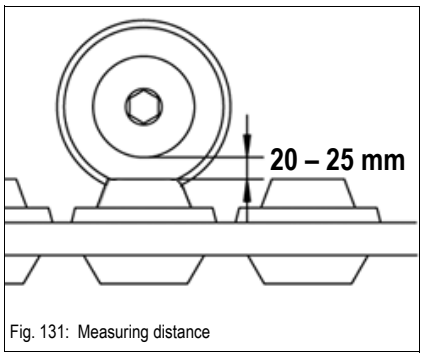


Fig. 131: Measuring distance

- 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 (0.79'' - 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.*

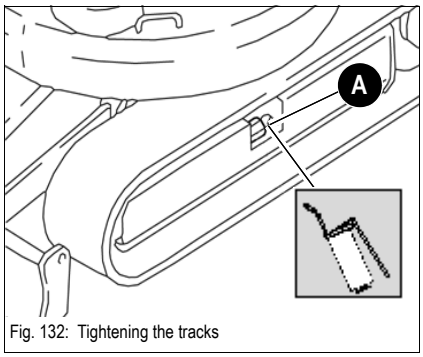


Fig. 132: Tightening the tracks

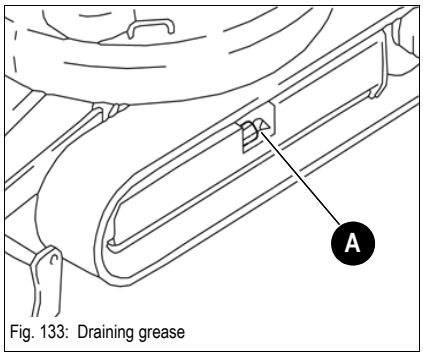


Fig. 133: Draining grease

Tightening the tracks

☞ *Inject grease with the pump through lubricating valve.*
☞ *Check the tension is correct by starting the engine, letting it run at idling speed and slowly moving the machine forward 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

- 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 forward 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.

5.10 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 switched off. 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

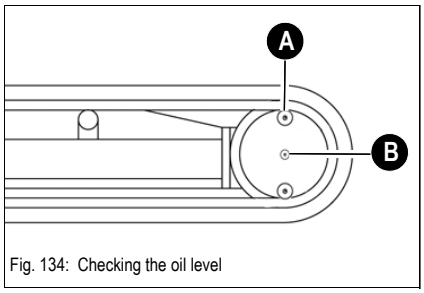


Fig. 134: Checking the oil level

☞ *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**, fill up 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

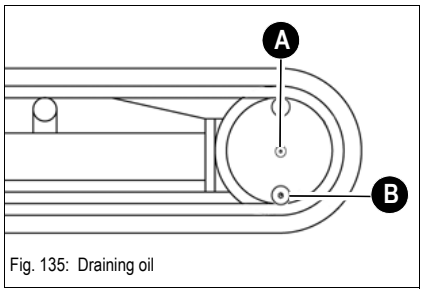


Fig. 135: Draining oil

☞ *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.*
☞ *Unscrew 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.

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. Observe the lubrication and maintenance instructions in the Operator's Manuals of the attachments.

Powertilt (option)

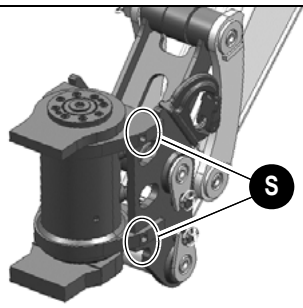


Fig. 136: Lubricate

Perform maintenance on the Powertilt unit once a day with the other maintenance work for the machine.

Perform visual checks for possible defects, damage or cracks.

Remove all dirt on and around moving parts.

Apply grease via grease nipples **S**.

– *see Powertilt (option)* on page 3-63

5.11 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 danger 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!

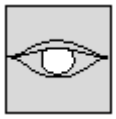
Dispose of used batteries properly.

Service and maintenance work at regular intervals

Before operating the machine

☞ *Check every time before driving 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 in engine compartment* on page 6-3
- Cable and earth connections
- Battery charge condition – *see Battery* on page 5-29
- Condition of battery terminals

Instructions concerning specific components

Cables, bulbs and fuses

Always observe the following instructions:

- Malfunctioning components of the electric system must always be replaced by a qualified technician.
- 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 in engine compartment* 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 a malfunctioning charge indicator light immediately – *see chapter 31 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.*

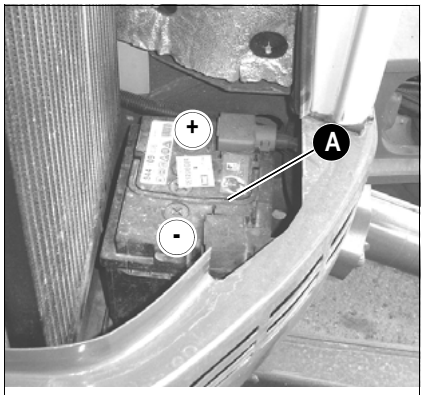


Fig. 137: Battery

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 authorized Wacker Neuson service center.

Always follow the specific battery safety instructions!

Important!

Do not disconnect the battery while the engine is running.

5.12 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 gasoline 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 reservoir and the filler caps for fuel, hydraulic oil etc.
- Protect the following components from moisture:
  - Engine
  - Electric components such as the alternator
  - Control devices and seals
  - Air intake filters

When using volatile and easily flammable anticorrosion agents and sprays:

- Ensure adequate room ventilation
- Do not use unprotected lights or open 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 may 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.

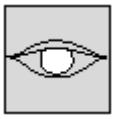
- Stop the engine before cleaning.

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 connectors and fasteners must be checked regularly for tightness, even if they are not listed in the maintenance schedules.

☞ *Engine fastening screws.*

☞ *Fastening screws on the hydraulic system.*

☞ *Line, bucket teeth and pin fastenings on the attachment.*

Retighten loose connections immediately. Contact an authorized Wacker Neuson service center 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.

5.13 Maintenance if the machine is out of service for a longer period of time

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, fill up the 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. Load 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.*

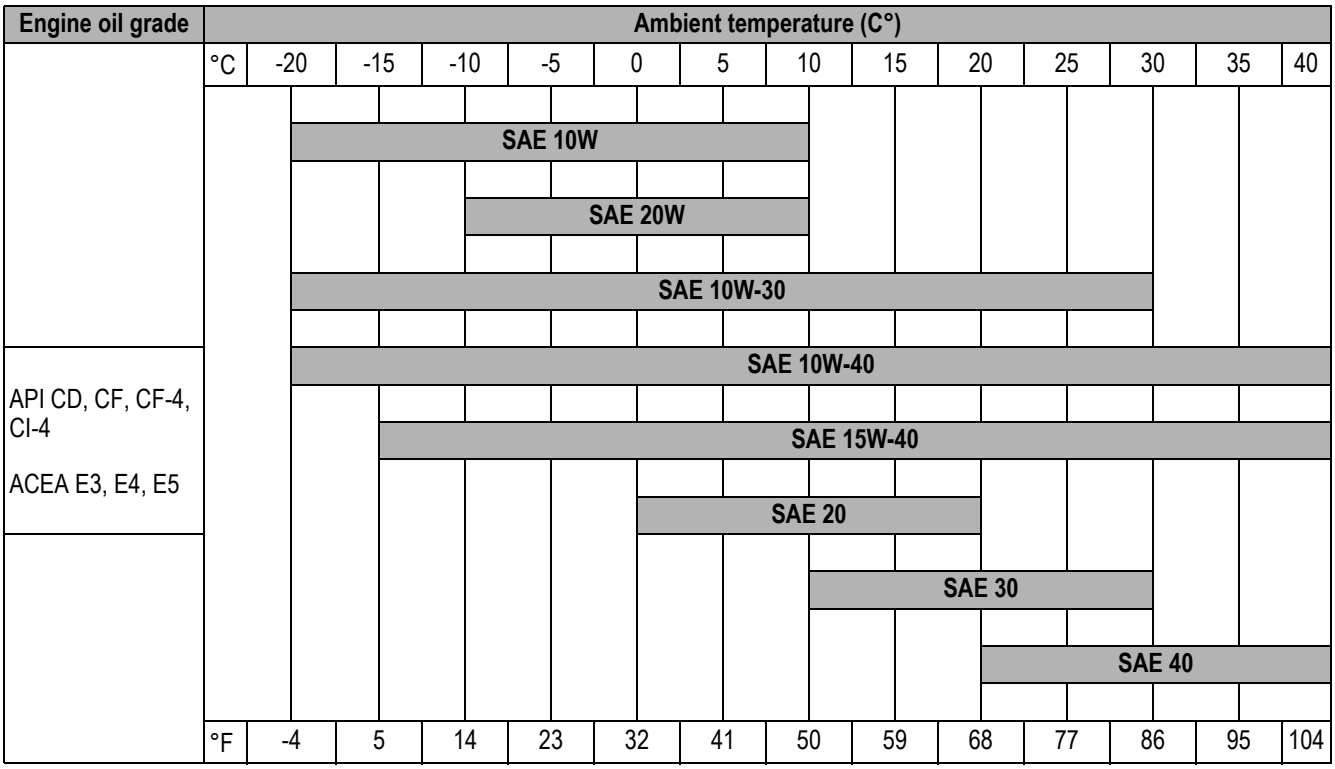
☞ *Start the engine and let it run without load.*

5.14 Fluids and lubricants

Component/ application	Engine/machine fluid	Specification	Season/temperature	Capacities[1]
Diesel engine	Engine oil[2]	SAE10W-40	-20 °C (-4°F) +40 °C (104°F)	About 3.4 l (0.9 gal)
Travelling drive	Gearbox oil[3]	SAE80W-90	Year-round	About 0.6 l (0.2 gal) each
		FINA PONTONIC GLS, SAE85W-90		
Hydraulic oil reservoir	Hydraulic oil[4]	HVLP46 200 Hydraulic	Year-round[5]	53 l (14 gal)
	Biodegradable oil[6]	PANOLIN HLP Synth 46		
		FINA BIOHYDRAN SE 46		
		BP BIOHYD SE-46 404 Biodegradeable Hydraulic 32/46		
Grease	Roller and friction bearings[7]	FINA Energrease L21M Mobilgrease CM-P	Year-round	As required
	Open gear[8] (live ring gears)	BP Energrease MP-MG2	Year-round	As required
Grease nipples	Multipurpose grease[9]	FINA Energrease L21M Mobilgrease CM-P	Year-round	As required
Battery terminals	Acid-proof grease[10]	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	About 36 l (9.5 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	About 4.5 l (1.2 gal)
		Distilled water + antifreeze ASTM D4985		
Washer system	Cleaning agent	Water + antifreeze	Year-round	1.2 l (0.3 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. According to DIN 51502; API CD, CF, CF-4, CI-4, ACEA E3, E4, E5
3. Hypoid gearbox oil based on basic mineral oil (SAE85W-90 according to DIN 51502), (API GL-4, GL5)
4. According to DIN 51524 section 3
5. Depending on local conditions - see Hydraulics oil grade on page 5-36
6. Biodegradable hydraulic oil based on saturated synthetic esters with an iodine value of < 10 g/mg, according to DIN 51524, section 3, HVLP, HEES
7. KF2K-25 according to DIN 51502 multipurpose lithium grease with MoS^2 additive
8. KP2N-20 according to DIN 51502 EP multipurpose calcium sulphonate complex grease
9. KF2K-25 according to DIN 51502 multipurpose lithium grease with MoS^2 additive
10. Standard acid-proof grease

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!

Refer to the maintenance plan on page *5-35* for additional maintenance work.

Oil grades for the hydraulic system, depending on temperature

Hydraulics oil grade	Ambient temperature														
HVLP[1]	°C	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	50
		ISO VG32													
					ISO VG46										
							ISO VG68								
	°F	-4	5	14	23	32	41	50	59	68	77	86	95	104	122

1. According to DIN 51524 section 3

5.15 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 250 s/h	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorized Wacker Neuson service center
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 – maintenance display on filter							●	
• Coolant					●			●
• Hydraulic oil filter insert [4]		●		●				●
• Hydraulic oil					●			●
• Hydraulic oil reservoir 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 cooler and hydraulic oil for contamination. Clean if necessary	●						●	
Check cooling systems, heating and hoses for leaks and pressure (visual check)	●						●	
Replacing the cab filter				●				●
Air filter (damage)	●						●	
Check the pilot control filter for dirt, clean it if necessary				●			●	
Prefilter with water separator: drain water	●						●	
• Clean				●				●
Check V-belt condition and tension	●						●	

5.15 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 250 s/h	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorized Wacker Neuson service center
Check exhaust system for damage and condition	●						●	
Check valve 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		●		●				●
Check tracks for cracks and cuts	●						●	
Check track tension. Retighten if necessary	●						●	
Check bearing play of tread rollers, track carrier rollers, front idlers				●				●
Check piston rods for damage	●						●	
Check screws for tightness		●		●				●
Check pin lock	●						●	
Check line fixtures	●						●	
Check indicator lights for correct function		●		●				●
Couplings, dirt pile-up on hydraulic system dust caps	●						●	
Check insulating mats in the engine compartment for damage/condition		●						●
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	●						●	

5.15 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 250 s/h	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorized Wacker Neuson service center
Check the Powertilt for damage	●						●	
Check Powertilt for axial play (must not be over 0.38 mm / 0,014 in)			●					●
Actuate Powertilt swivel device in final position for 1 minute[9]		●					●	
Lubrication service ( ):								
Lubricate the following assemblies/components: – *see Maintenance label* on page 5-40								
• Stabilizer blade	●						●	
• Swivelling console	●						●	
• Boom	●						●	
• Stick	●						●	
• Attachments	●						●	
• Hydraulic quickhitch (option)– *see Hydraulic quickhitch (option)* on page 3-60	●						●	
• Powertilt	●						●	
• Grease strip on chassis – *see Maintenance label* on page 5-40	●						●	
Air conditioning ( ):								
Perform the following maintenance and inspection work:								
• Function of air conditioning [10]		●						●
Replace cab filter				●				●
Check dehumidifier for corrosion, condensation and air bubbles		●						●
Replace dehumidifier and refrigerating agent [11]						●		●
Compressor oil [12]						●		●
Check refrigerating agent				●				●
Functional check ( ):								
Check the function of the following assemblies/components. Rectify if necessary:								
• Lights, signalling system, audible warning system		●		●				●
• Heating function [13]		●		●				●

5.15 Maintenance plan (overview)

Work description

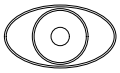
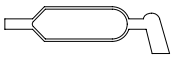
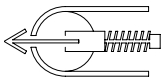
For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

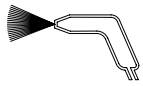
	Maintenance plan/service hours (s/h)							
	Maintenance work (once a day)	50 s/h service	Every 250 s/h	Every 500 s/h	Every 1000 s/h once a year	Every 1500 s/h	Customer	Authorized Wacker Neuson service center
• Hydraulic quickhitch system (lock)	●						●	
• Check the Powertilt	●						●	
Leakage check ( ):								
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	●						●	
☞ Hydraulic quickhitch system (hoses, valve)	●						●	

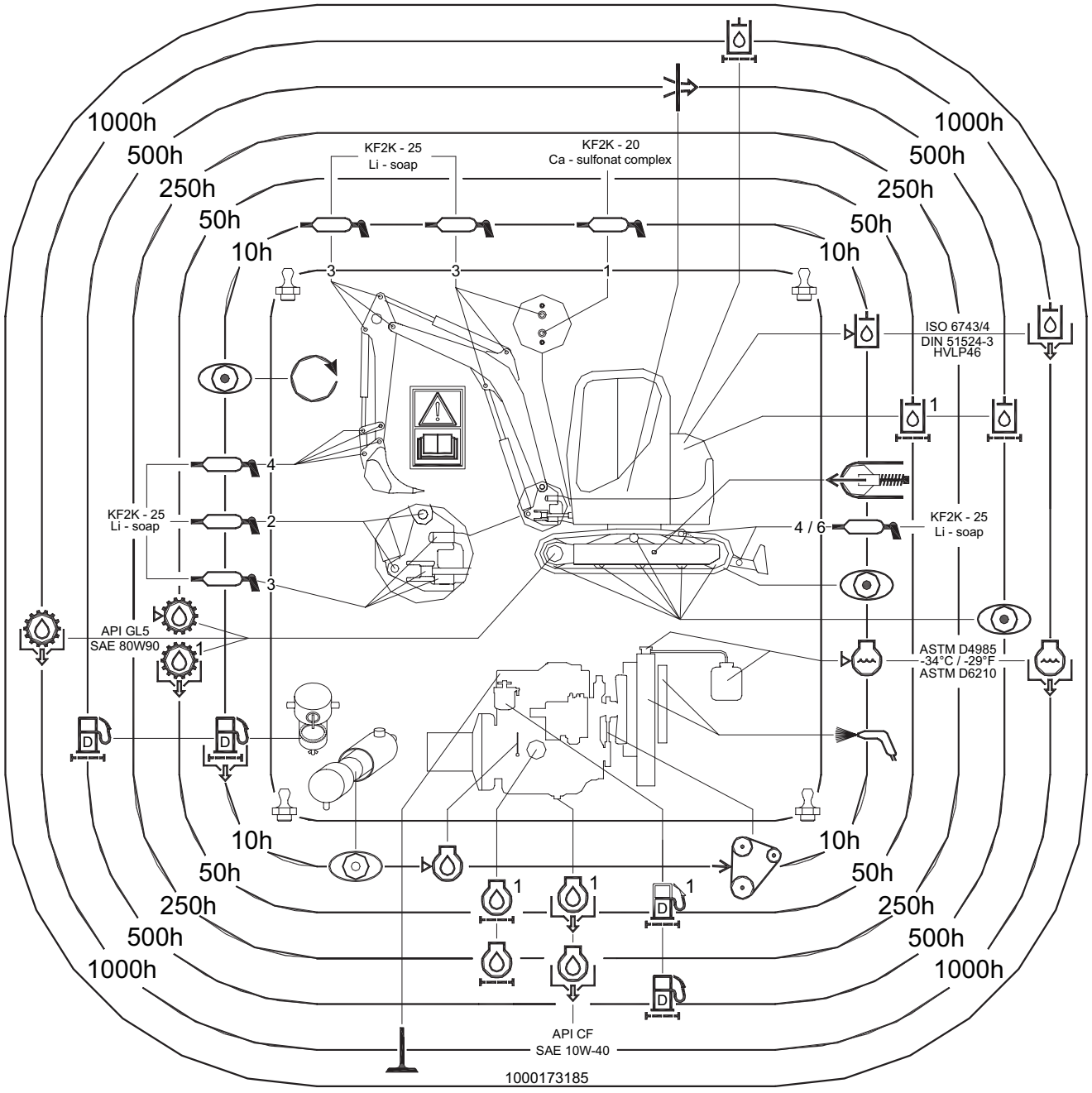
1. Drain engine oil the first time after 50 s/h, then every 250 s/h
2. Replace the engine oil filter the first time after 50 s/h, then every 250 s/h
3. Replace the fuel filter the first time after 50 s/h, then every 500 s/h
4. Replace the hydraulic oil filter insert the first time after 50 s/h, then 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. Rinse the system to remove dirt. Repeat the procedure in the opposite flow direction.
10. Switch on once every week
11. Replace the dehumidifier and the refrigerating agent every 1500 s/h or every 2 years
12. Replace the compressor oil every other 1500 s/h servicing or every 2 years
13. Check the first time after 50 s/h, then every 500 s/h

5.16 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 add 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 track 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	Replace the recirculated air filter



6 Specifications

6.1 Chassis

Sturdy steel sheet chassis, rubber-mounted engine

6.2 Engine

Engine	Model 28Z3
Product	Yanmar diesel engine
Type	3TNV76-NNS
Design	Water-cooled 4 stroke diesel engine
No. of cylinders	3
Displacement	1116 cm³ (68,1 in^3)
Nominal bore and stroke	76 x 82 mm (2.99 x 3.22")
Output	15.2 kW at 2500 rpm (20.4 hp)
Max. torque	66.1 Nm at 1800 rpm (48.7 ft.lbs.)
Max. engine speed without load	2675 +/- 25 rpm
Idling speed	1300 +/- 25 rpm
Fuel injection system	Indirect injection
Starting aid	Glow plug (preheating time 4 seconds)
Max. inclined position (engine no longer supplied with oil):	25° in all directions Observe the machine's climbing ability (30°/ 58 %)!
Exhaust values according to	97/68/EC EPA

6.3 Hydraulic system

Hydraulics	Model 28Z3
Pump	Double variable displacement + twin gear pump 11.5 + 11.5 + 8 + 2.7 cm³ (0.7+ 0.7+ 0.5 + 0.2 in^3)
Flow rate	28.75 + 28.75 + 20 + 6.75 l/min (8 + 8 + 5 + 2 gpm) at 2500 rpm
Service pressure for work and drive hydraulics	225 bar (3263 psi)
Swivel unit service pressure	200 bar (2901 psi)
Hydraulic oil cooler	Standard
Hydraulic tank capacity (system fill)	26.5 l (7 gal)

6.4 Undercarriage and swivel unit

Undercarriage/swivel unit	Model 28Z3
2 speed ranges	2.1/3.8 km/h (1.3/2.4 mph)
Climbing ability	30°/58 %
Track width	300 mm (11.8")
No. of track rollers on either side	3
Ground clearance	277mm (11")
Ground pressure	0.27 kg/cm² (3.8 psi)
Upper carriage swivel speed	10.25 rpm

6.5 Stabilizer blade

Stabilizer blade	Model 28Z3
Width/height	1570/290 mm (5'2" / 11.4")
Max. lift over/under subgrade	380/419 mm (1'3" / 1'4")

6.6 Work hydraulics

Work hydraulics	Model 28Z3
Max. service pressure	225 $^{\pm 3}$ bar (3263.3 (±43,5) psi)
Main pressure restriction for boom/bucket/stick	225 $^{\pm 3}$ bar (3263.3(±43,5) psi)
Main pressure restriction for stabilizer blade	206 $^{-4/+2}$ bar (2988 (+29 / -58) psi)
Main pressure restriction for pilot control pressure	30 $^{-0/+4}$ bar (435.1 (+58/ 0) psi)
Main pressure restriction for swivel drive (hydraulic motor pressure restriction)	200 $^{-4/+2}$ bar (2900.7 (+29 / -58) psi)
Filter	Return filter
Hydraulic reservoir capacity	26.5 l (7 gal)

6.7 Electric system

Electric system	
Alternator	12 V 40 A
Starter	12 V 1.1 kW
Battery	12 V 43 Ah
Socket	E.g. for 12V power outlet; 15 A max.

Fuse box in engine compartment

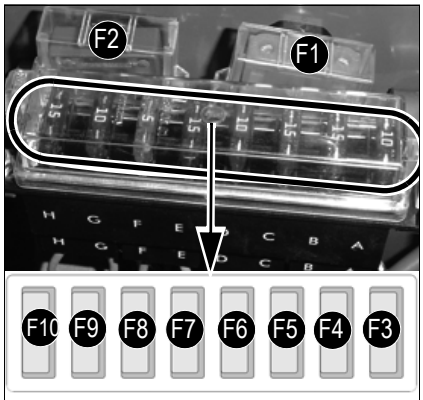


Fig. 138: Fuse box

Fuse no.	Rated current (A)	Protected circuit
F1	40 A	– Start, preheat, cutoff solenoid
F2	50 A	– Ignition lock

Fuse no.	Rated current (A)	Protected circuit
F3	10 A	– Indicator, cutoff solenoid, relays
F4	15 A	– Boom working light, heating
F5	15 A	– Valves, horn
F6	10 A	– Cab working light
F7	15 A	– Wiper, interior light
F8	5 A	– Proportional controls
F9	10 A	– Rotating beacon, radio
F10	15 A	– Socket, 12V power outlet

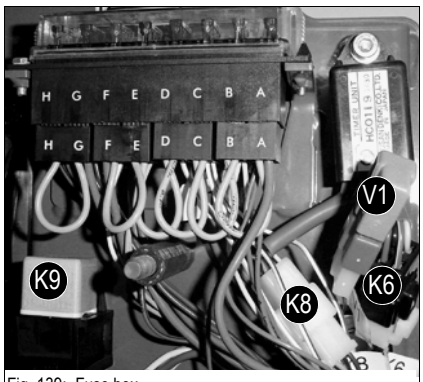


Fig. 139: Fuse box

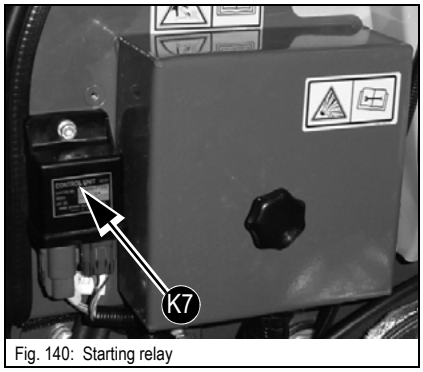


Fig. 140: Starting relay

Relay no.	Protected circuit
V1	– Blocking diode
K6	– Preheating time lag relay (blue)
K7	– Starting relay
K8	– Preheating time lag relay (brown)
K9	– Pick-up contact cutoff solenoid relay

6.8 Noise levels

Sound power level	Model 28Z3
Sound power level (L_{WA})	93 dB (A)
Sound pressure level (L_{PA}) at the driver's ear	≤ 78 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 performed 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 (in³ / 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 Powertilt

Powertilt	Model 28Z3
Model size	6
Piston stroke	525 cm³ (32 cu. in³.)
Required oil flow	3 – 6 L/min (0.8 – 1.6 gal/min)
Connections	1/4 in
Slewing range	180°
Weight	65 kg (143.3 lbs.)
Drive torque – at 210 bar (3045 psi)	2990 Nm (2205 ft.lbs.)
Holding torque – at 225 bar (3263 psi)	7270 Nm (5362 ft.lbs.)
Minimum hose/pipe size Connecting hose size	10 mm (0.4 in) 6 mm (0.23 in)

6.12 Dimensions model 28Z3

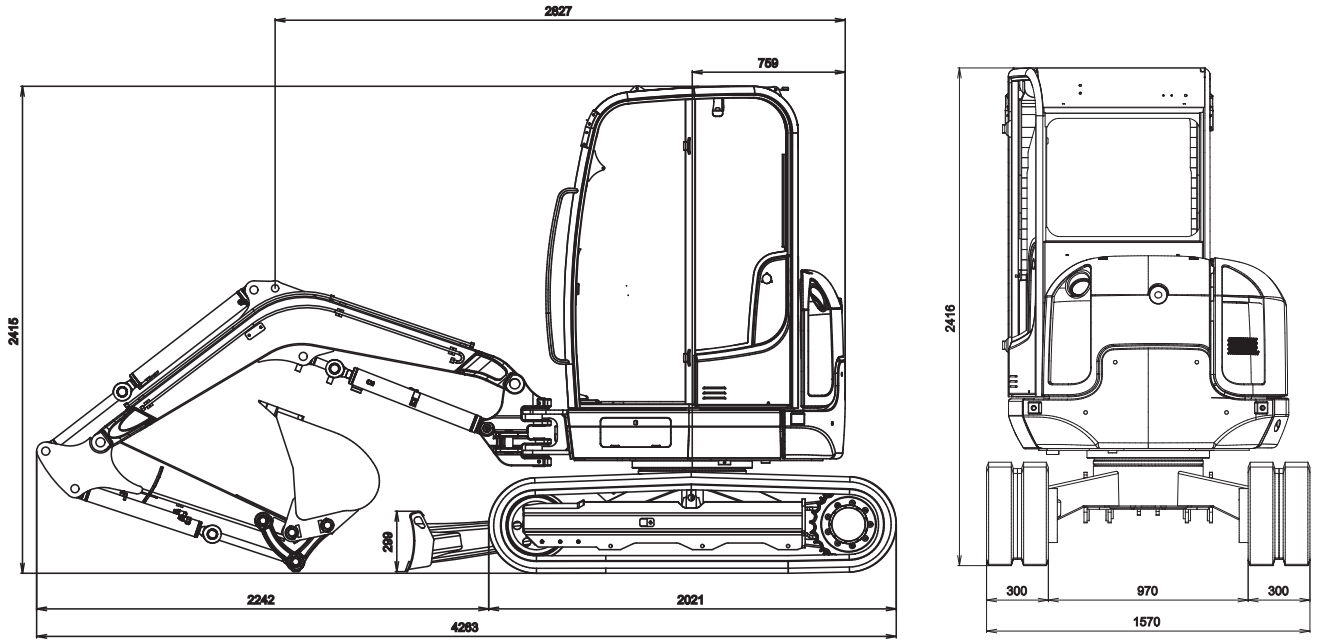
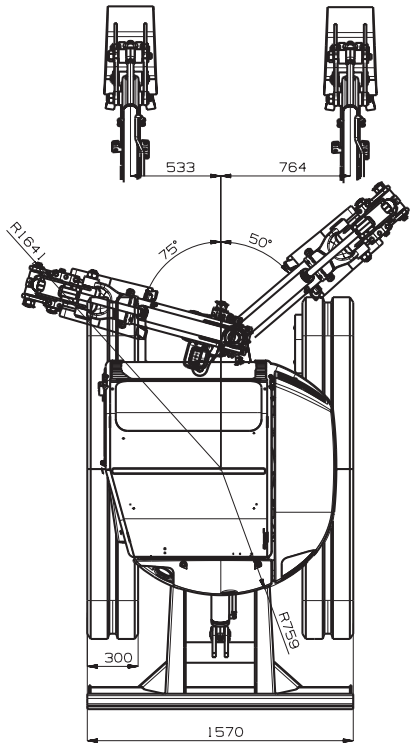


Fig. 141: Machine dimensions (model 28Z3)



Main data	Model 28Z3
Service weight with cab/canopy	2670/2577 kg (5886,3 / 5681.3 lbs)
Height	2415 mm (7’11’’)
Width	1570 mm (5’2’’)
Transport length	4263 mm (14’’)
Max. digging depth	2544 mm (8’4’’)
Stick length (standard)	1050 mm (3’5’’)
Stick length (long version)	1250 mm (4’1’’)
Max. digging depth for long stick (+ 300 mm)	2744 mm (9’)
Max. vertical digging depth	1962 mm (6’5’’)
Max. vertical digging depth (long stick)	2152 mm (7’1’’)
Max. digging height	4169 mm (13’8’’)
Max. digging height (long stick)	4299 mm (14’1’’)
Max. dump height	2840 mm (9’4’’)
Max. dump height (long stick)	2840 mm (9’4’’)
Max. digging radius	1614 mm (5’4’’)
Max. digging radius (long stick)	2070 mm (6’9’’)
Max. reach at ground level	4481 mm (14’8’’)
Max. reach at ground level (long stick)	4681 mm (15’4’’)
Max. breakout force at bucket tooth	22.5 kN (5058 lbf.)
Max. tearout force (standard stick)	15.4 kN (3462 lbf.)
Max. tearout force (long stick)	21.9 kN (4923 lbf.)
Min. tail end slewing radius	760 mm (2’6’’)
Max. tail end lateral projection (90° rotation of upper carriage)	0 mm (0)
Max. boom displacement to bucket center (right-hand side)	533 mm (1’9’’)
Max. boom displacement to bucket center (left-hand side)	764 mm (2’6’’)

6.13 Lift capacity table 28Z3

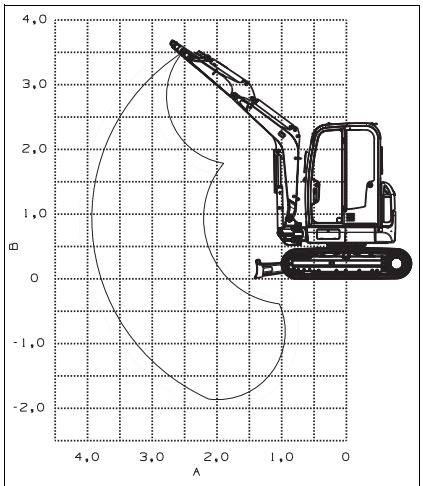
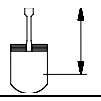
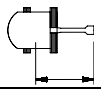


Fig. 142: Lift capacity table (model 28Z3)

A	max		3,5 m (11'6'')		3,0 m (9'10'')		2,5 m (8'2'')	
B								
3,0 m (9'10")	*510 (1124)	460 (1014)	-	-	*495 (1091)	490 (1080)	-	-
2,0 m (6'7")	*495 (1091)	340 (750)	*495 (1091)	380 (838)	*525 (1157)	480 (1058)	*580 (1279)	*580 (1279)
1,0 m (3'3")	*500 (1102)	310 (683)	*555 (1224)	365 (805)	*660 (1455)	455 (1003)	*860 (1896)	585 (1290)
0,0 m (0'0")	*510 (1124)	320 (705)	*585 (1290)	355 (783)	*730 (1609)	435 (959)	*965 (2127)	560 (1235)
-1,0 m (-3'3")	*510 (1124)	395 (871)	-	-	*615 (1356)	440 (970)	*815 (1797)	565 (1246)

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 28Z3, long stick option

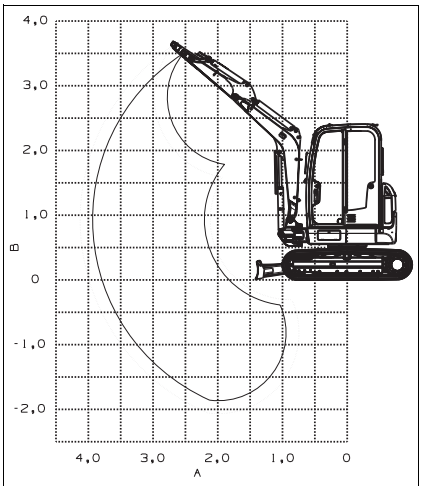
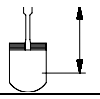
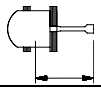


Fig. 143: Lift capacity table (model 28Z3)

A	max		3,5 m (11'6")		3,0 m (9'10")		2,5 m (8'2")	
B								
3,0 m (9'10")	*460 (1014=	405 (893)	-	-	*425 (937)	*425 (937)	-	-
2,0 m (6'7")	*450 (992)	310 (683)	*450 (992)	380 (838)	*470 (1036)	*470 (1036)	-	-
1,0 m (3'3")	*460 (1014)	285 (628)	*525 (1157)	365 (805)	*620 (1367)	455 (1003)	*800 (1764)	590 (1301)
0,0 m (0'0")	*470 (1036)	295 (650)	*580 (1279)	350 (772)	*720 (1587)	430 (948)	*955 (2105)	555 (1224)
-1,0 m (-3'3")	*480 (1058)	355 (783)	*475 (1047)	350 (772)	*650 (1433)	430 (948)	*855 (1885)	555 (1224)

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 28Z3, extra weight option

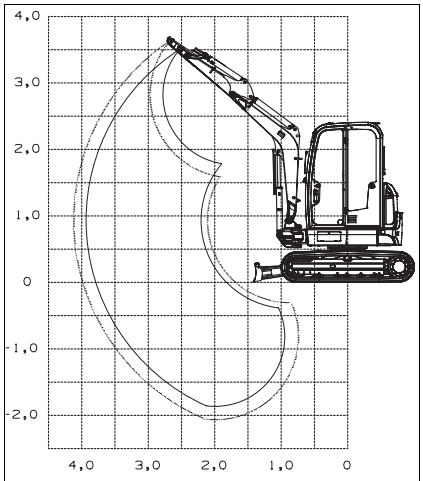
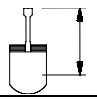
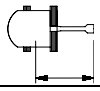


Fig. 144: Lift capacity table (model 28Z3)

A	max		3,5 m (11'6")		3,0 m (9'10")		2,5 m (8'2")	
B								
3,0 m (9'10")	*510 (1124)	*510 (1124)	-	-	*495 (1091)	*495 (1091)	-	-
2,0 m (6'7")	*495 (1091)	380 (838)	*495 (1091)	424 (935)	*525 (1157)	*525 (1157)	*580 (12799	*580 (12799
1,0 m (3'3")	*500 (1102)	348 (767))	*555 (1224)	409 (902)	*660 (1455)	508 (1120)	*860 (1896)	653 (1440)
0,0 m (0'0")	*510 (1124)	360 (794)	585 (1290)	399 (880)	*730 (1609)	488 (1076)	*965 (2127)	628 (1385)
-1,0 m (-3'3")	*510 (1124)	443 (977)	-	-	*615 (1356)	493 (1087)	*815 (1797)	633 (1396)

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.

6.16 Lift capacity table 28Z3, long stick and extra weight options

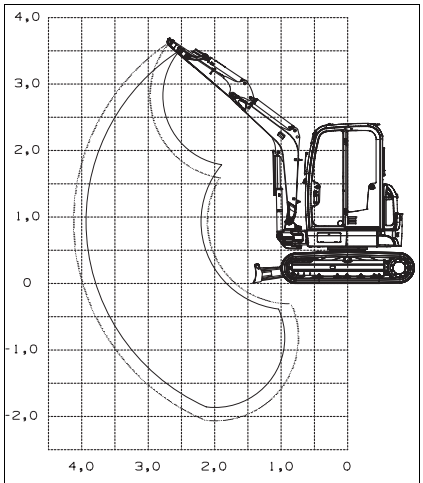
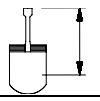
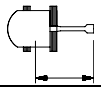


Fig. 145: Lift capacity table (model 28Z3)

A	max		3,5 m (11'6")		3,0 m (9'10")		2,5 m (8'2")	
B								
3,0 m (9'10")	*460 (1014)	451 (9949	-	-	*425 (937)	425	-	-
2,0 m (6'7")	*450 (992)	348 (767)	*450 (992)	424 (935)	*470 (1036)	*470 (1036)	-	-
1,0 m (3'3")	*460 (1014)	321 (708)	*525 (1157)	409 (902)	*620 (1367)	508 (1120)	*800 (1764)	658 (1451)
0,0 m (0'0")	*470 (1036)	332 (710)	*580 (1297)	394 (869)	*720 (1587)	483 (1065)	*955 (2105)	623 (1373)
-1,0 m (-3'3")	*480 (1058)	399 (880)	*475 (1047)	394 (869)	*650 (1433)	483 (1065)	*855 (1885)	623 (1373)

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 Linz GmbH keep abreast of the latest technical developments and constantly improve their products. For this reason, we may from time to time need to make changes to diagrams and descriptions in this documentation which do not reflect products which have already been delivered and which will not be implemented on these machines.

Technical data, dimensions and weights are given as an indication only. Responsibility for errors or omissions not accepted.

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