WACKER NEUSON

Operator's Manual

Track Excavator

803
803 dual power

This Operator's Manual includes the AEM Safety Manual CE-1009

AEM MEMBER

Machine type	**E08-01**
Edition	**3.7**
Order no	**1000287384**
Language	**us**

Documentations	Order no
Operator's Manual	1000287384
Service Manual	1000164843
Spare parts list	1000161641

Legend	
Original Operator‘s Manual	**x**
Translation of original Operator‘s Manual	–
Edition	3.7
Date	05/2016
Document	OM 803 us

Printed in Michigan, USA

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. Non-metric weights and measurements are approximate.

The cover features machines with possible optional equipment.

Pictures and graphics are symbolic representations and can differ from the actual product.

Wacker Neuson Linz GmbH

Flughafenstraße 7

A-4063 Hörsching

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1 Introduction

1.1 Information on this Operator's Manual

The Operator's Manual is stored in the storage bin at the rear of the seat.

This Operator's Manual contains important information on how to work safely, correctly and economically with the machine. Therefore, it aims not only at new personnel, but it also serves as a reference for experienced personnel. It helps to avoid hazardous 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. Carefully read the Operator's Manual before putting the machine into operation. This Operator's Manual will help to familiarize yourself more easily with the machine, thereby enabling you to use it more safely and efficiently.

Follow chapter "Safety Instructions" in particular. As a rule, keep the following in mind:

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

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 a Wacker Neuson service center. Use only original spare parts for repairs. 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 without adapting the Operator's Manual.
- Modifying Wacker Neuson products and fitting them with additional equipment and attachments 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.
- Subject to modifications and printing errors.

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

Abbreviations/symbols

- Identifies a list
  - Subdivision within lists or an activity. Follow the steps in the recommended order

☞ *Identifies an activity*

➥ Description of the effects or results of an activity


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

1.2 Machine overview (up to serial no. AI00966)

1 Boom light
2 Boom
3 Stick
4 Track
5 Travel gear
6 Stabilizer blade
7 Handhold
8 Lifting eye for loading/tying down the machine
9 Engine cover
10 Storage bin for Operator's Manual
11 Lock lever

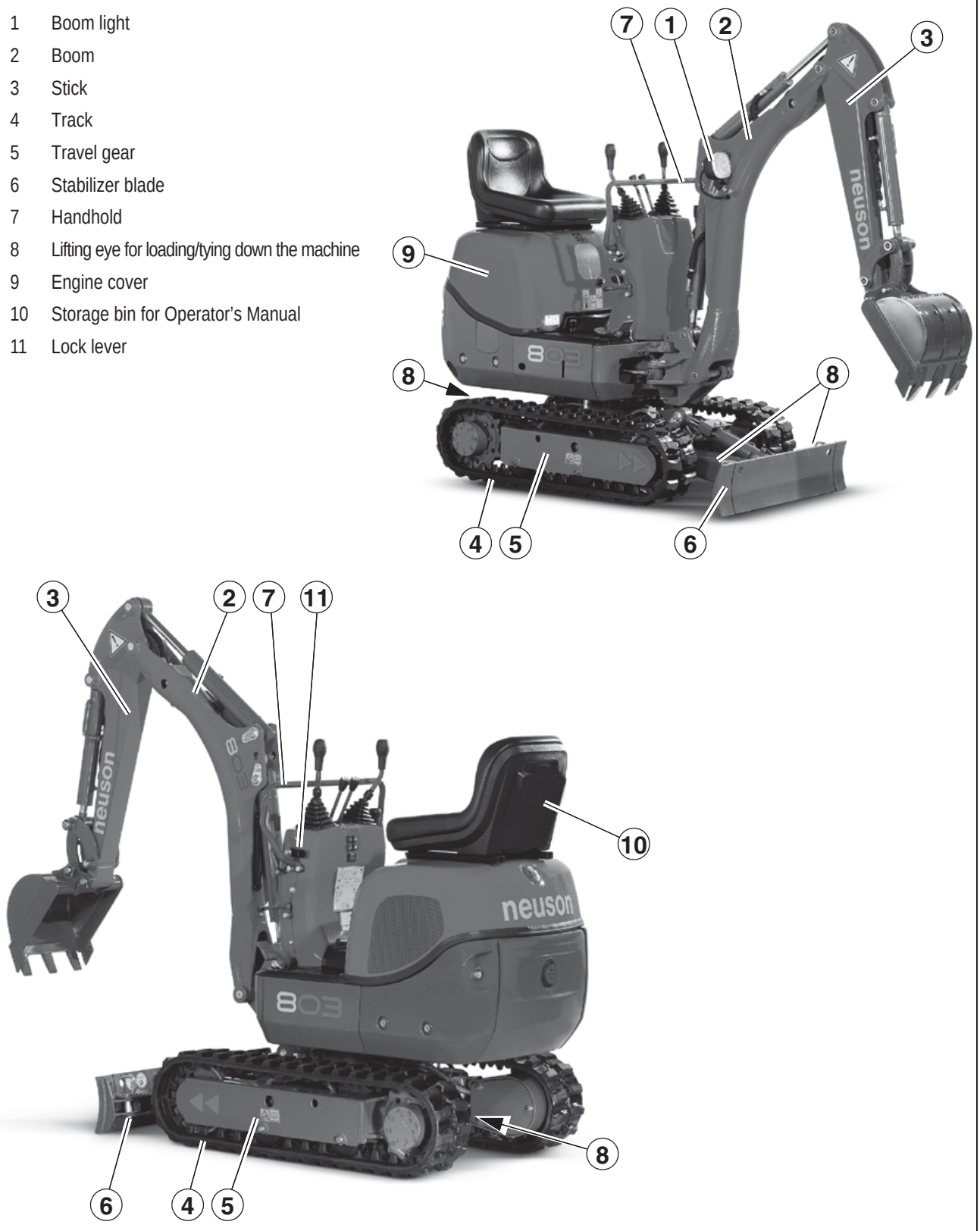


Fig. 1: Machine outside views

1.3 Machine overview (from serial no. AI00967)

1 Boom light
2 Boom
3 Stick
4 Track
5 Travel gear
6 Stabilizer blade
7 Handhold
8 Lifting eye for loading/tying down the machine
9 Engine cover
10 Storage bin for Operator's Manual
11 Lock lever
12 ROPS rollbar (option)
13 Shatter protection (option)

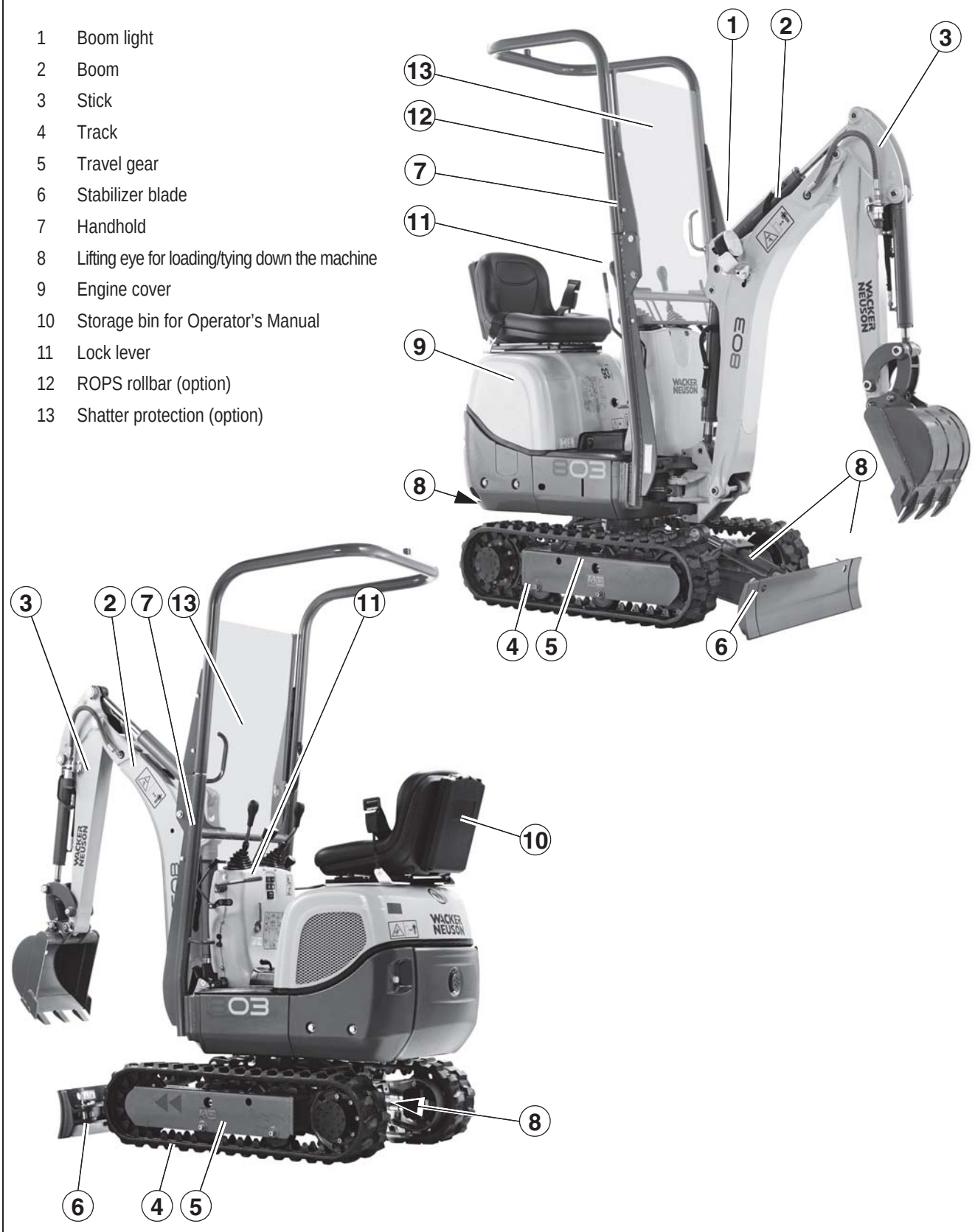


Fig. 2: Machine outside views

1.4 Brief description

The model 803 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 helper for moving earth, gravel and debris on construction sites and elsewhere. A wide range of attachments accounts for the numerous applications of the machine, including hammer operation.

See chapter Fields of application, attachments for further applications.

The main components of the machine are:

- Undercarriage
  - Tracked travel gear
  - Stabilizer blade
  - Live ring
- Upper carriage
  - Water-cooled diesel engine
  - Hydraulic and electrical components
- Boom

Information!

The machine can be equipped with the **"Telematic"** option (for transmitting operating data, location, etc. via satellite)!

Traveling drive

The diesel engine permanently drives two gear pumps the oil flow of which is sent to the hydraulic motor currently actuated.

Operating hydraulics

The diesel engine permanently drives two gear pumps the oil flow of which is sent to the operating hydraulics as required. The oil flow of these pumps depends on the diesel engine speed.

Cooling system

An indicator light on the instrument panel of the machine ensures constant monitoring of the engine oil and coolant temperature.

Definition of the term “Protective Structure”

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

Explanation of abbreviations

ROPS:
Roll Over Protective Structure
TOPS:
Tip Over Protective Structure

1.5 Rollbar

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 fragments flying around from the front.

1.6 Mechanical integrity

DANGER

Accident hazard due to modified cabin and protective structures!

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

- No drilling, cutting or grinding on protective structures.
- Welding, straightening or bending work on protective structures is prohibited.
- Have damaged protective structures immediately replaced.

Information!

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

Information!

Protective structures may only be installed or removed by a Wacker Neuson service center.

Responsibility for machine equipped with protective structures

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

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

1.7 Fields of application, attachments

The attachments will decide in the first place how the excavator is used.

NOTICE

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

- Please contact your Wacker Neuson dealer if you wish to use other attachments.

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

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

Information!

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

Use: attachment

Description of attachment	Weight	Capacity	Remarks
Backhoe bucket B = 250 mm (10 in) (standard bucket)	15 kg (33 lbs)	0.014 m^3 (0.50 ft^3)	
Backhoe bucket B = 370 mm (14.5 in)	17 kg (38 lbs)	0.018 m^3 (0.63 ft^3)	
Backhoe bucket B = 370 mm (14.5 in)	19 kg (42 lbs)	0.024 m^3 (0.85 ft^3)	
Bucket B = 700 mm (27.5 in)	24.5 kg (54 lbs)	0.027 m^3 (0.95 ft^3)	
Hydraulic hammer NE06	63 kg (139 lbs)	--	

1.8 Regulations

Requirements to be met by the operator

Earth moving machines may be traveled 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 traveling and servicing the earth moving machine and have proven their qualifications to the contractor
- Persons are expected to perform work reliably.

They have been appointed by the contractor for traveling and servicing the earth moving machine.

Get informed on and follow the legal regulations of your country.

1.9 TOPS rollbar (up to serial no. AI00966)/ROPS

NOTICE

Always fasten the seat belt if the rollbar is raised.

NOTICE

Do not use the seat belt if the rollbar is lowered, or if the machine is not equipped with a rollbar.

- Machine operation with the rollbar lowered is prohibited – *see chapter Operation with lowered ROPS rollbar* on page 2-9.

1.10 EC Declaration of Conformity

EC Declaration of Conformity

Manufacturer

Wacker Neuson Linz GmbH, Flughafenstr. 7, 4063 Hörsching, Austria

CE

Product

Machine designation	**Hydraulic excavator**
Model/version	**E08-01**
Trade name	**803**
Serial number	**--**
Output in kW	**9.6**
Measured sound power level dB(A)	**92.6**
Guaranteed sound power level dB(A)	**93**

Declaration of conformity

Notified body according to Directive 2006/42/EC, appendix XI:
DGUV Test-, Prüf- und Zertifizierungsstelle
Fachausschuss Bauwesen, Landsberger Str. 309, 80687 Munich, Germany
Distinguishing EU number 0515

Notified body involved in procedure

TÜV SÜD Industrie Service GmbH
Westendstr. 199
D-80686 Munich

Directives and standards

We hereby declare that this product corresponds to the relevant regulations of the following Directives and standards:
2006/42/EC, 2005/88/EC, 2000/14/EC;
DIN EN ISO 12100-1, DIN EN ISO 12100-2, DIN EN 474-1 and DIN EN 474-5 (except item C.3.3),
DIN EN ISO 3471, EN ISO 3744, DIN EN ISO 3449

Authorized representative for the compilation of technical documentation

Thomas Köck, team leader technical documentation
Flughafenstr. 7
4063 Hörsching/Austria
Austria

Johannes Mahringer,
Managing director

The indications specified above correspond to the existing information at time of going to press. They have possibly changed in the meantime (refer to the original declaration of conformity supplied with the machine). Applies to EU countries, and countries with legislation similar to that of the EU. Applies to all machines with CE marks that have not been modified without authorization since the product was placed on the market.

1.11 Type labels and component numbers

Information!

Type, quantity and position of the labels depend on options, country and machine.

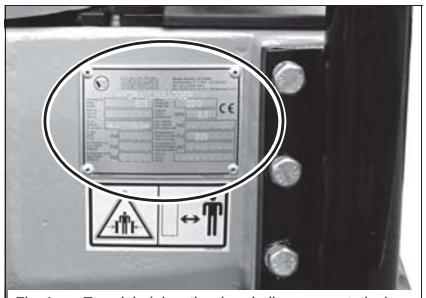


Fig. 1: Type label: location (symbolic representation)

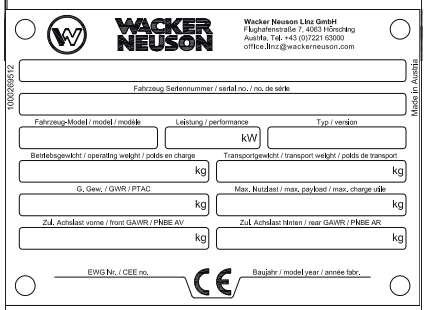


Fig. 1: Type label (symbolic representation)

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 control stand level).

Type label information (example):

Machine designation:	HYDRAULIC EXCAVATOR
Model:	----------
Model year:	----------
CEE no.:	----------
Output:	----------
Serial no.:	----------
Max. payload:	----------
GWR:	----------
Operating weight:	----------
Front GAWR:	----------
Transport weight:	----------
Rear GAWR:	----------
Version:	----------

Other information – *see chapter 6 Technical data* on page 6-1

Fig. 2: ROPS bar type label (symbolic representation)

ROPS bar type label

The type label is located at the front right, on one side of the rollbar.

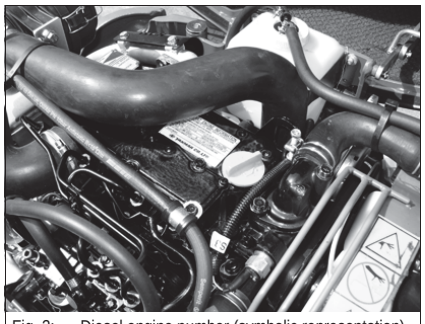
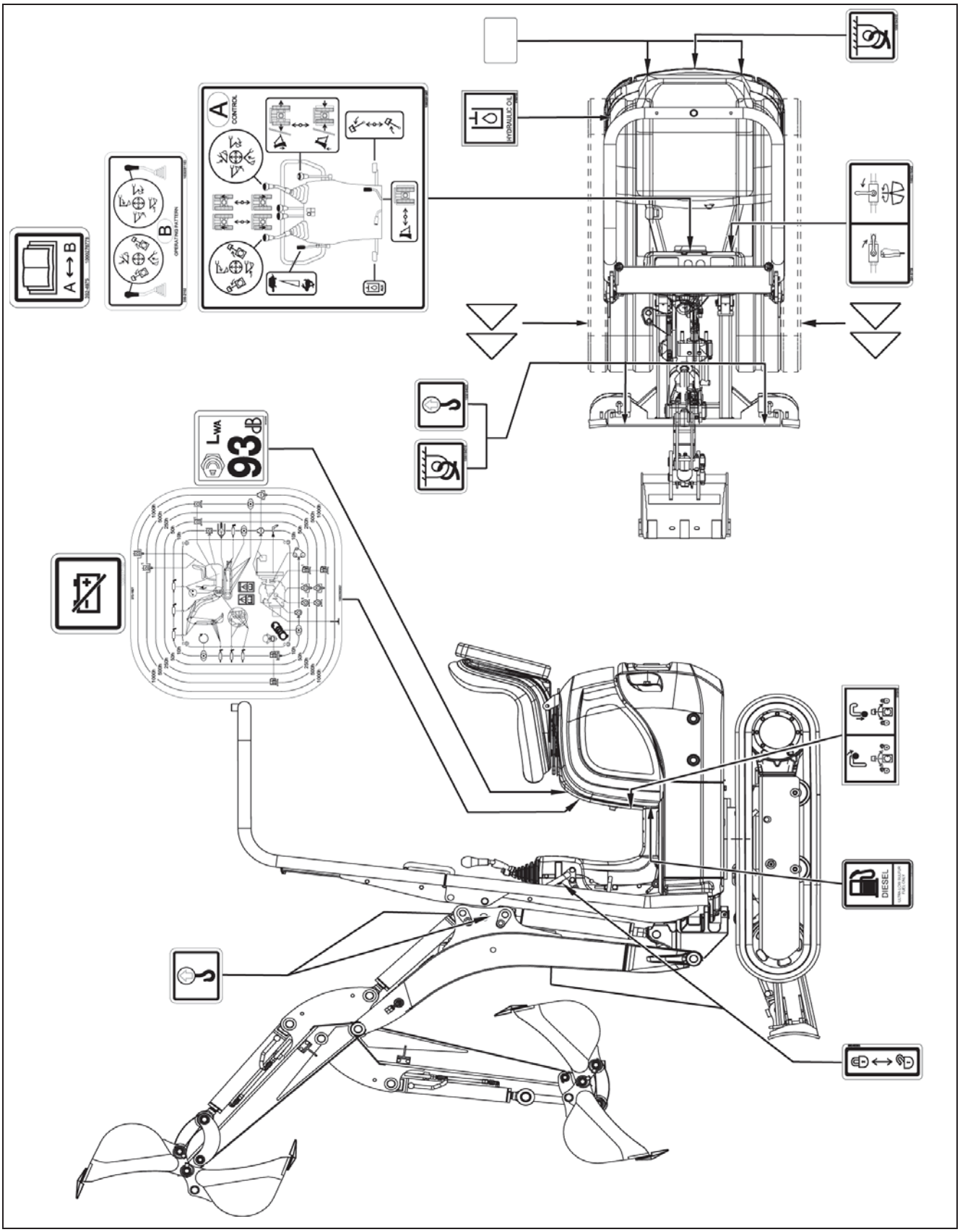


Fig. 3: Diesel engine number (symbolic representation)

Engine number

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

1.12 Overview of adhesive labels[1]



1. Number and position of adhesive labels can differ depending on country.

The following states signs and symbols that do not contain explanatory text and that are not explained in the following chapters.

Fig. 4: Eye hooks

Meaning

Machine is raised by the eye hooks

– *see chapter Lifting the machine* on page 3-44

Position

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

Fig. 5: Points for tying down the machine

Meaning

Points for tying down the machine.

The mounting points are used for tying down the machine during loading and transportation

– *see chapter Tying down the machine* on page 3-47.

Position

On either side of the stabilizer blade, at the center of the undercarriage

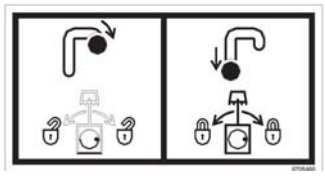


Fig. 6: Swivel unit lock

Meaning

This label shows how to lock the upper carriage.

Position

On the front side of the engine cover

Fig. 7: Noise level indication

Meaning

Noise levels produced by the machine.

L_{WA} = sound power level

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

Position

On the front side of the engine cover

Fig. 8: Hydraulic oil

Meaning

The reservoir contains hydraulic oil.

Position

On the hydraulic oil reservoir

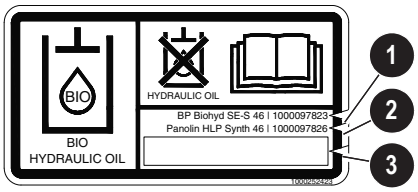


Fig. 9: Biodegradable hydraulic oil

Meaning (option)

The reservoir contains biodegradable hydraulic oil.

This label is notched on the side depending on the biodegradable hydraulic oil used.

1 BP Biohyd SE-S 46

2 Panolin HLP Synth 46

3 Other producer of biodegradable hydraulic oil

During operation with a zero-emission power unit, there must be no biodegradable hydraulic oil in the excavator or power unit.

Position

Under the engine cover on the hydraulic oil reservoir

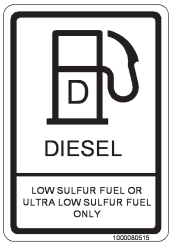


Fig. 10: Diesel

Meaning

Only refuel diesel fuel with a low sulfur content!

– *see chapter Important information on the use of biodegradable oil* on page 5-18

Position

On the fuel tank

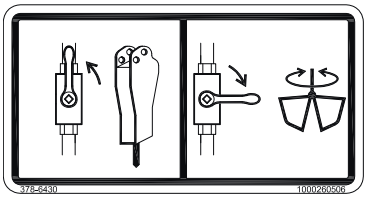


Fig. 11: Hammer/grab operation (up to WNCE0801EPAL0209)

Meaning (option)

(up to serial number WNCE0801EPAL00209)

Changeover from hammer to grab operation.

Position

On the control stand

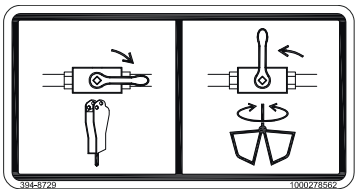


Fig. 12: Hammer/grab operation (from WNCE0801EPAL0210)

Meaning (option)

(from serial number WNCE0801EPAL00210)

Changeover from hammer to grab operation.

Position

On the control stand

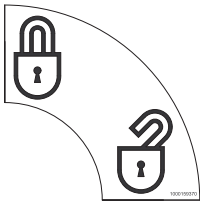


Fig. 13: Lock lever

Meaning (up to serial no. AI00814)

This label shows how to lock the control levers.

Position

On the left-hand side of the control element console

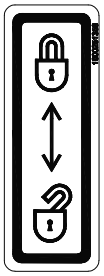


Fig. 14: Lock lever

Meaning (from serial no. AI00815)

This label shows how to lock the control levers.

Position

On either side of the control stand

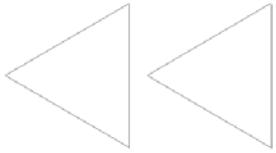


Fig. 15: Direction indicator

Meaning

This label shows the forward traveling direction.

Position

On either side of the undercarriage

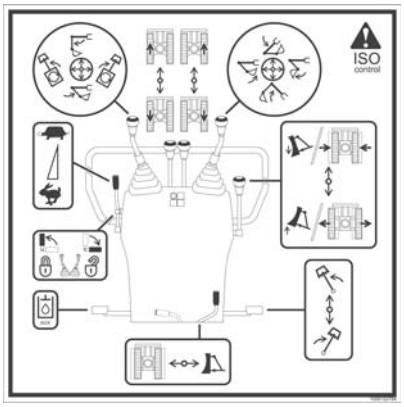


Fig. 16: Controls

Meaning (up to serial no. AI00814)

This label describes the pedal and control lever functions.

– *see chapter 3.14 Control lever overview* on page 3-52

Position

On the control stand

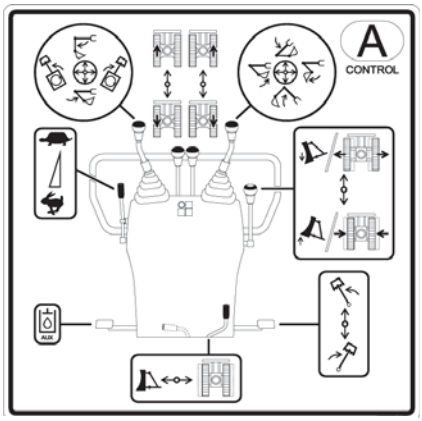


Fig. 17: Controls

Meaning (from serial no. AI00815)

This label describes the pedal and control lever functions.

– *see chapter 3.14 Control lever overview* on page 3-52

Position

On the control stand

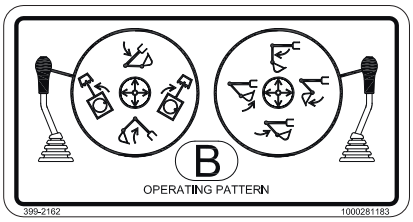


Fig. 18: SAE controls

Meaning

Indicates the control operations that do not comply with the ISO standard if the SAE controls are selected.

Position

On the control stand

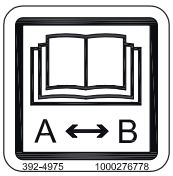


Fig. 19: ISO/SAE changeover

Meaning

Check before starting the machine the operating pattern that has been chosen.

Wiring diagram	Controls	
A	ISO controls (Europe)	Operating Pattern A
B	SAE controls (US)	Operating Pattern B

Position

On the control stand

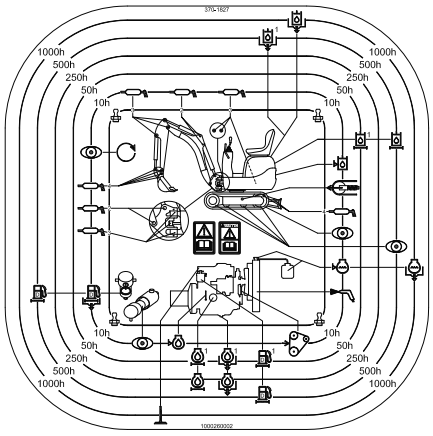


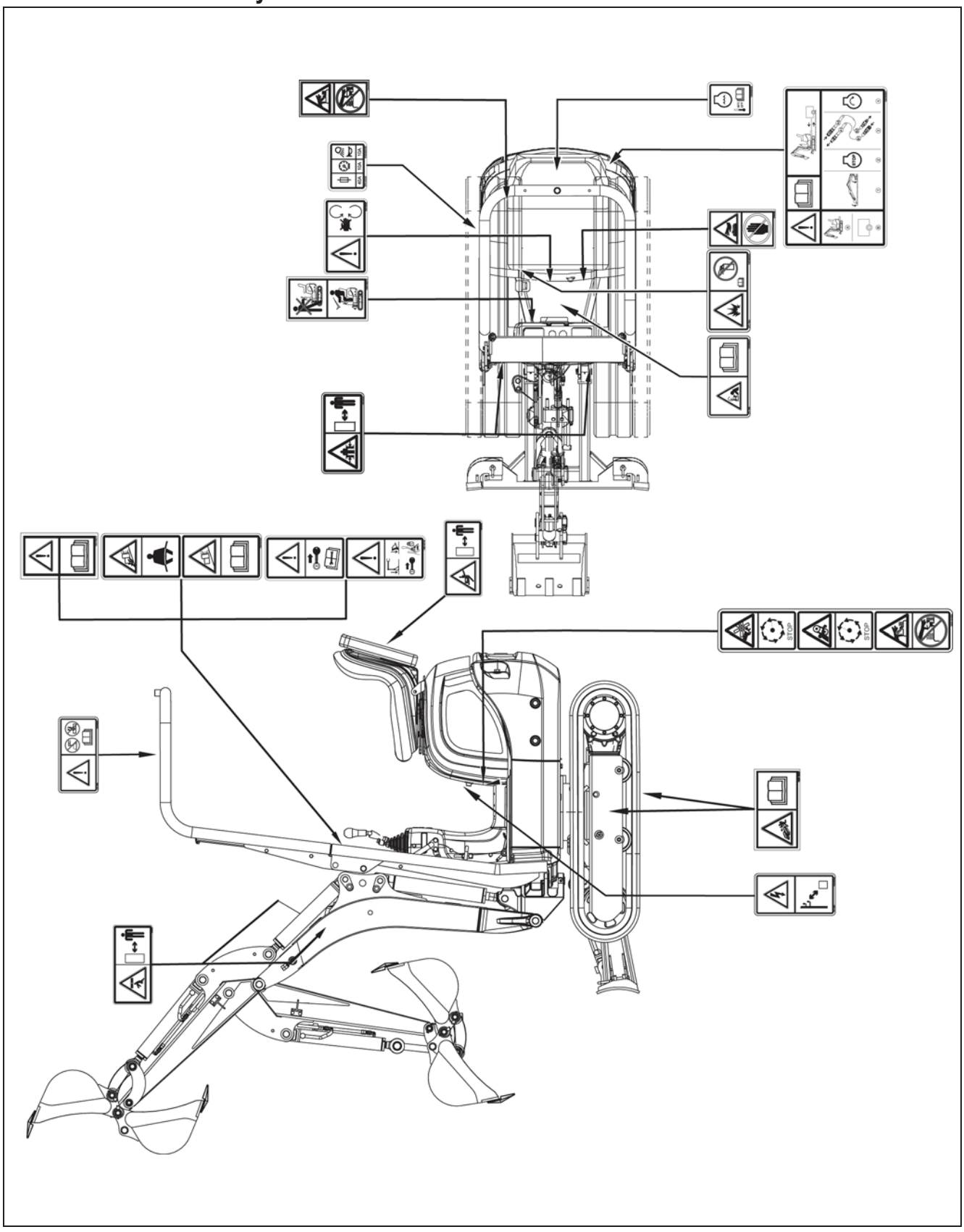
Fig. 20: Maintenance plan

Meaning
Maintenance plan
Position
On the front side of the engine cover

Fig. 21: Battery master switch

Meaning
Battery master switch
Position
On the front side of the engine cover

1.13 Overview of safety labels[1]



1. Number and position of adhesive labels can differ depending on country.

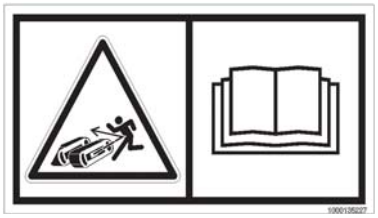


Fig. 22: Tightening the tracks

Meaning

Potential high pressure grease discharge from the track tension adjustment fitting.

Always read the Operator's Manual before working with the track tensioner.

Position

On either side of the travel gear.

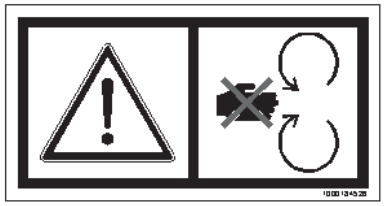


Fig. 23: Stopping the engine

Meaning

Entanglement hazard.

Stop the engine before opening or removing the safety devices (for example engine cover, fan guard)

Position

On the front side of the engine cover

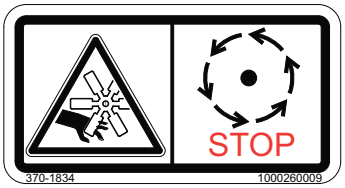


Fig. 24: Fan in engine compartment

Meaning

Cutting hazard. Cooling fan can cut when rotating.

Stop the engine before opening the engine cover!

Stay clear of the engine compartment if the fan is still running!

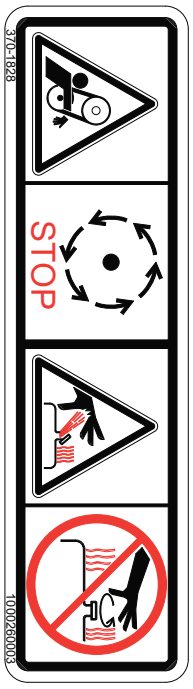


Fig. 25: Hydraulic oil reservoir under pressure

Meaning

Entanglement hazard. You can be pinched or entangled in the engine V-belt when the engine is running.

Stay clear of the engine compartment with the engine running!

Perform work in the engine compartment at engine standstill only.

Burn hazard. Hot surface. Do not touch. Contents are under pressure.

Allow the reservoir to cool down!

Carefully and slowly open the cover only after the reservoir has cooled down, to release the pressure.

Wear suitable protective clothing to open the cover.

Position

In the engine compartment

Fig. 26: Reservoir under pressure

Meaning

The reservoir is hot and under pressure.

- Allow the fluids to cool down!

  Carefully and slowly open the cover only after the reservoir has cooled down, to release the pressure.

  Wear suitable protective clothing and goggles to open the cover.

Position

On the hydraulic oil reservoir

Fig. 27: Hot surfaces

Meaning

Burn hazard. Hot surface. Do not touch.

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

Position

In the engine compartment

Fig. 28: Read and understand the Operator's Manual

Meaning

Attention! Read and understand the Operator's Manual before starting the machine!

The machine may be put into operation only if you read, understand and observe the Operator's Manual.

Position

At the front on the engine cover (standard).

On the left on the rollbar (option).

Fig. 29: Warnings

Meaning (up to serial no. AI00824)

Crushing hazard.

- Only operate the machine from the operator's seat.
- Machine operation is only allowed if the rollbar is raised and locked, and if the seat belt is fastened.
- Machine operation with the rollbar lowered is prohibited.

Operate within stability limits of machine to avoid tipping over.

- Always work ensuring machine stability, do not overload the machine and use only attachments that have been released by the manufacturer. Always work on firm ground. Follow the instructions given in the Operator's Manual.

Position

At the front on the engine cover (standard).

On the left on the rollbar (option).

Fig. 30: Warnings

Meaning (from serial no. AI00825)

Crushing hazard.

- Only operate the machine from the operator's seat.
- Machine operation is only allowed if the rollbar is raised and locked, and if the seat belt is fastened.
- Machine operation with the rollbar lowered is prohibited.

Operate within stability limits of machine to avoid tipping over.

- Always work ensuring machine stability, do not overload the machine and use only attachments that have been released by the manufacturer. Always work on firm ground. Follow the instructions given in the Operator's Manual.

Position

At the front on the engine cover (standard).

On the left on the rollbar (option).

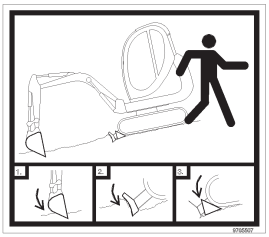


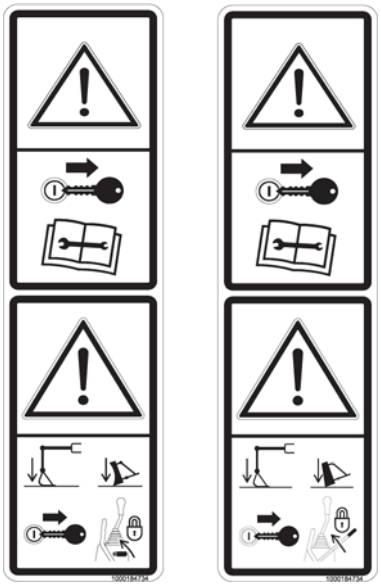
Fig. 31: Parking the machine correctly

Meaning (up to serial no. AI00681)

Lower the boom and the stabilizer blade to the ground as you leave the machine, remove the starting key and place chocks on the left and right under the tracks.

Position

At the front on the engine cover



(up to serial no. AI00824) (from serial no. AI00825)

Fig. 32: Warnings

Meaning

Crushing hazard due to unintentional machine operation.

- Before performing maintenance and repair work, stop the engine, raise the lock lever and remove the starting key.
  The key must be kept by the operator.

Position

At the front on the engine cover (standard).

On the left on the rollbar (option).

Attention. Before leaving the machine, lower the boom and the stabilizer blade to the-ground, stop the engine, raise the lock lever and remove the starting key.

Position

At the front on the engine cover (standard).

On the left on the rollbar (option).

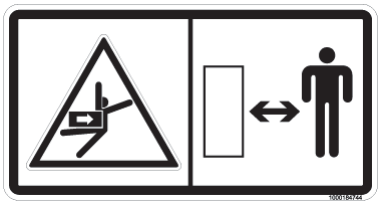


Fig. 33: Swiveling range

Meaning

Collision hazard.

Stay clear of the machine's slewing range during operation.

Position

At the rear left

Fig. 34: Swiveling range

Meaning

Crushing hazard.

Stay clear of the machine's slewing range during operation.

Position

At the front left and right of the chassis

Fig. 35: Burn hazardl

Meaning (up to serial no. AI00681)

Burn hazard due to hot parts on the boom (lines, plug-and-socket connections, threaded fittings, hydraulic cylinders, couplings, etc.).

Position

On either side of the boom

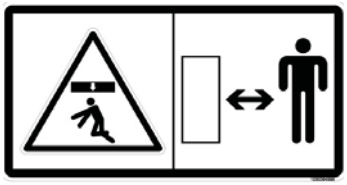


Fig. 36: Boom operation

Meaning

Crushing hazard.

Stay clear of the machine's work range during operation.

Position

On either side of the boom

Fig. 37: Use the lock lever

Meaning (from serial number AF01941)

Attention! Severe injury hazard.

Operate the machine only when seated on the seat.

Before leaving the seat, raise the lock lever to prevent unintentional movements!

Stay clear of the machine's slewing range during operation.

Position

At the right on the control stand

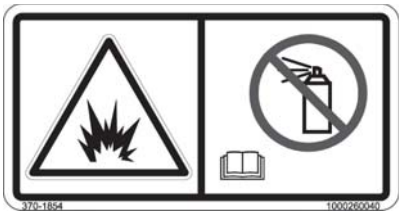


Fig. 38: Do not use ether

Meaning

Attention! Severe injury hazard.

Explosion hazard.

Do not use ether!

This machine is equipped with an intake-air preheating system. Using ether can cause explosions or fire, which in turn can cause death or serious injury.

Position

In the engine compartment on the air intake hose

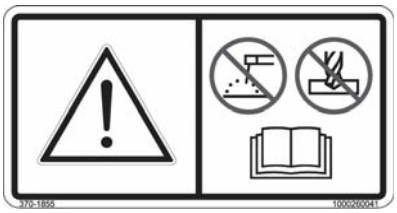


Fig. 39: Do not drill holes or weld the ROPS structure

Meaning (option, only for machines equipped with ROPS bar)

Attention! Severe injury hazard.

Structural damage, roll-over accidents, retrofitting work, structural modifications or improper repair work affect the protective effect.

Do not drill holes or perform welding on this structure. Have the machine serviced and repaired only by a Wacker Neuson service center.

Position

On the ROPS bar

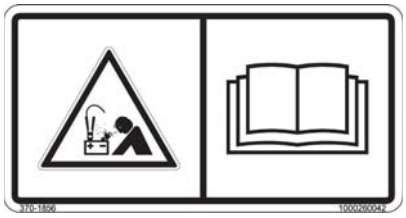


Fig. 40: Explosion hazard

Meaning

Explosion hazard.

Connecting jump leads incorrectly can cause explosions and personal injury with possible death.

Always wear safety glasses and protective clothing.

Follow the specific battery safety instructions!

Position

Near the battery

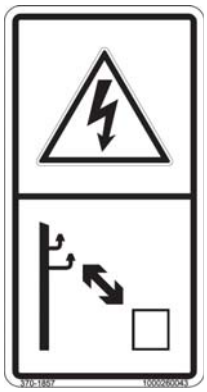


Fig. 41: Electric shock hazard

Meaning

Electric shock hazard.

Keep a safe distance from high-voltage lines. Always keep a safe distance from electrically conductive parts with the machine and the equipment.

Position

On the control stand

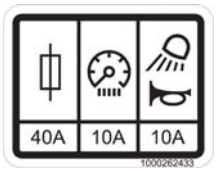


Fig. 42: Fuses

Meaning

Fuse assignment.

Use only original fuses with the specified current rating!

Position

Behind the right-hand trim

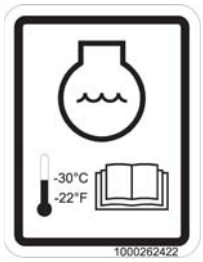


Fig. 43: Coolant

Meaning

The coolant must have a thermal stability of –30 °C (–22 °F).

– see chapter 6.10 Coolant compound table on page 6-9

Position

On the inside of the engine cover

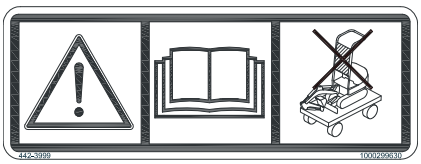


Fig. 44: Removing the shatter protection

Meaning (option)

Remove the shatter protection if the machine is transported on an open platform.

Position

On the shatter protection at the upper left in traveling direction.

Information!

If an additional cross brace is installed (from the 3rd quarter of 2014), the shatter protection does not have to be removed before transporting the machine on an open platform.

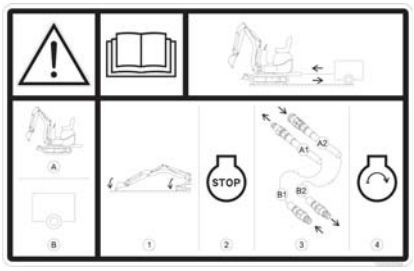


Fig. 45: Dual Power connection

Meaning (option)

Read the Operator's Manual before connecting lines.

Position

At the rear left.

2 Safety instructions

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.

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.

Environment

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

2.2 Warranty

Warranty claims can be brought forward to your Wacker Neuson dealer only. Furthermore, the instructions in this Operator's Manual must be observed.

2.3 Disposal

All fluids, lubricants, material, etc., used on the machine are subject to specific regulations regarding collection and disposal. Dispose of different materials and consumables separately and responsibly in accordance with environmental protection legislation.

Environment

Avoid damage to the environment. Do not allow the oil and oily wastes to get into the ground or stretches of water.

If the machine is no longer used according to its designated use, ensure that it is decommissioned or put out of operation and disposed of according to applicable regulations.

- Observe all applicable safety regulations during machine disposal.
- Machine disposal must be performed in accordance with state-of-the-art standards that apply at the time of disposal.

2.4 Designated Use

1. In accordance with this 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 *Chapter 1.7 "Fields of application, attachments"* 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 operator alone will bear the risk.
3. "Designated use" also includes observing the instructions set forth in the Operator's Manual and observing the maintenance schedule.
4. Machine safety can be negatively affected by performing out 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
   - 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 the Operator's Manual before starting, moving, operating, servicing or repairing the machine. Observe the safety instructions.
7. The machine shall not be used for transport jobs on public roads without a specific certification.
8. In applications with lifting gear, the machine is used according to its designated use only if the prescribed devices are installed and functional.
9. Hammer operation is only allowed in specified areas.

2.5 Preparing To Use The Machine

Conditions for use

- The machine has been designed and built in accordance with state-of-the-art standards and the recognized safety regulations. Nevertheless, its use can constitute a risk to life and limb of the operator or of 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 the Operator's manual.
- The machine must only be used by qualified operators who are fully aware of the risks involved in operating the machine.
- Before putting the machine into operation, inspect the machine for safety in work and road operation.
- 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 operator/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.

Operator 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 Operator's 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 operator/owner must regularly ensure that all persons entrusted with operation or maintenance of the machine are working in compliance with the Operator's Manual and are aware of risks and safety factors of the machine.

Preparing for use

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

Information on visibility

- Before putting the machine into operation, perform a visual check to ensure that there are neither persons nor objects or other sources of risk around the machine.
- When using the machine, check the surroundings constantly in order to identify potential hazards in time.
- Before using the machine, before starting work or when changing operators, ensure that all visual aids (mirrors) work correctly, that they are clean and adjusted in accordance with the instructions in this Operator's Manual. The operator must observe the local regulations.
- Do not make any changes or modifications that impair visibility. Otherwise the machine does not meet the requirements for conformity and licensing.

Modifications and spare parts

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

2.6 Operator and Technician Qualifications and Basic Responsibilities

Operator/Owner responsibility

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

Repair person qualifications

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

2.7 Safety Instructions Regarding Operation

Preparing for use

- Keep the machine clean. This reduces the risk of fire hazards (such as from combustible materials like rags), and reduces injury or operational accident hazard that can be caused by dirt build-up on the travel pedals, mirrors or foot rests and steps.
- Observe all safety, warning, and information 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 and check if all mirrors are adjusted correctly before putting the machine into operation.
- Always adjust the seat position before starting work. Never change the seat position when operating the machine.
- Make sure that all safety devices are properly installed and functional before starting work.
- Before putting the machine/attachment into operation (starting/moving), ensure 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 – explosion hazard.
- Make sure the brakes, the steering, the travel pedals, the control levers and the signalling and light systems are functional before operating the machine, and also before restarting after an interruption of work.
- Fold up the lock lever base before releasing the seat belt in order to avoid unintentional operation.
  - Lower the attachments to the ground.

Job site 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 – carbon monoxide poisoning hazard.

- Observe the danger zone. See “danger zone awareness“.
- Use the rearview mirror to stay aware of job site obstacles and personnel.
- Always use 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 job site if the lights of the machine are not sufficient for performing work safely.

Danger zone awareness

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

Operating the machine

- 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, move 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, ALWAYS adapt your travel speed to the prevailing ground conditions.
- Never get on or off during machine operation or travel.
- The travel pedals require practice before an operator becomes familiar with the pedal response. Therefore, adjust the travel speed to your abilities and the surroundings.

Carrying passengers

- Do not lift, lower or 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 or in event of malfunctions, stop the machine immediately, lock it, and report the malfunction to a qualified technician or supervisor. Safety-relevant damage or malfunctions of the machine must be rectified immediately.

Traveling

- Before moving the machine always check whether the supplementary equipment and the attachments have been safely stowed away or attached.
- Careful when reversing the machine – accident hazard.
- Persons in the blind spot of the machine cannot be seen by the operator.
- Ensure that nobody is within the danger zone of the machine when changing the traveling direction.
- Use the rearview mirrors to reverse with the machine.
- 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 and tilt it in until the bucket opening is in the upward horizontal position as a minimum before traveling on public roads.
- Apart from the operator, no other persons are allowed to ride on the machine.operator

2.8 Operator Protection System

TOPS rollbar (up to serial no. AF01416)
ROPS rollbar

The machine can be equipped with an optional lowerable TOPS or ROPS rollbar.

DANGER

Personal injury hazard! In order to ensure the best possible protection for the operator, operate the machine only with a raised rollbar.

Causes severe personal injury or death.

- Always fasten the seat belt if the rollbar is raised.

WARNING

Personal injury hazard! Do not modify the rollbar.

Failure to follow this precautionary measure can lead to severe injury or death.

- No drilling, cutting or grinding.
- No welding, straightening or bending.
- Do not mount any brackets.
- Repair work may be performed by a Wacker Neuson dealer only.
- Always replace the complete rollbar if it is deformed, cracked or otherwise damaged.
- If you are not sure, always contact a Wacker Neuson dealer.

Traveling without TOPS rollbar (up to serial no. AF01416)
Traveling without ROPS rollbar

DANGER

Accident hazard! Do not operate the machine with a lowered rollbar.

Failure to follow this precautionary measure will cause severe injury or death.

- Traveling with a lowered rollbar is temporarily allowed depending on the situation (e.g. to reduce the transport height in case of low clearance heights) – but only if the following conditions are fulfilled:
  - Obtain the approval of the competent national authority.
  - Machine travel is only allowed on absolutely level ground.
  - Avoid tipping movements of the machine under all circumstances.
  - Fastening the seat belt is prohibited.
  - Wear protective equipment (e.g. protective clothing, safety glasses).

Shatter protection (Option)

The optional shatter protection protects the operator against material falling from the front.

DANGER

Piercing/penetration hazard by fragments from the front!

Causes serious or deadly injuries.

- A shatter protection must be installed on a canopy version if an attachment (for example a hammer) causes fragments to fly around.
- This shatter protection takes over the function of a front window.
- Machine operation is prohibited under these conditions without the operator safety shield installed.

WARNING

Personal injury hazard! Do not modify the shatter protection.

Failure to follow this precautionary measure can lead to severe injury or death.

- No drilling, cutting or grinding.
- Do not mount any brackets.
- Do not perform any welding/bonding work.
- Replace the complete protective structure if it is damaged, deformed and/or cracked.
- If you are not sure, always contact a Wacker Neuson dealer.
- Repair work may be performed by a Wacker Neuson dealer only.

Important

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

Work range and restricted visibility

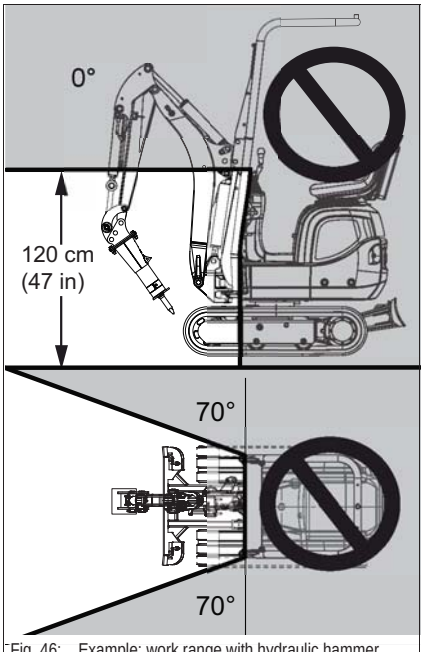


Fig. 46: Example: work range with hydraulic hammer

WARNING

Accident hazard! The size of the work range depends on the attachment used.

Can cause serious injury or death.

- – see Operator's Manual of attachment
  – see example: work range with hydraulic hammer *Fig. 46*
- Do not use the attachment outside the defined work range.

NOTICE

Stop machine operation when visibility is restricted due to rain, snowfall, dust etc.

☞ *Resume work only if visibility is no longer restricted.*

2.9 Applications with Lifting Gear

General information

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

Important

Applications with lifting gear with this machine is prohibited.

Operation with lowered TOPS rollbar (up to serial no. AI00966)
Operation with lowered ROPS rollbar

WARNING

Crushing hazard during machine travel with lowered rollbar!

Can cause serious injury or death.

- Depending on the situation, traveling over very short distances with a lowered rollbar is allowed (in case of low clearance heights, for example), however only if the following conditions are fulfilled:
  - Obtain the approval of the competent national authority.
  - Machine operation with a lowered rollbar is prohibited under any circumstances.
  - Machine travel is only allowed on absolutely level ground.
  - Avoid tipping movements of the machine under all circumstances.
  - Machine operation in areas involving a risk of falling objects is prohibited.
  - Do not fasten the seat belt in order to be able to leave the machine immediately in an emergency.
  - Wear protective equipment (protective clothing, safety glasses, for example).

2.10 Attachments

General information regarding attachments

- Prior to traveling on public roads remove all attachments which cannot be secured in compliance with the legal regulations of your country.
- Attachments and counterweights affect handling and the machine's steering capability.
- Fit the attachments with the specially required devices only.
- Coupling and remove attachments requires special care.
- 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 couple the attachment with the engine running and the machine moving.
- Before putting the machine/attachment into operation (starting/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.

- Secure the attachments against unintentional movement.

Installation notes

- Before uncoupling or coupling hydraulic lines (hydraulic quick couplers):
  - Stop the engine
  - Release the pressure in the hydraulic system. In order to do so, move the control levers of the hydraulic control units back and forth a couple of times – *see chapter 3.19 Pressure release on the auxiliary hydraulics* on page 3-75
- 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 optional equipment is installed, all light installations, indicator lights etc. that are required in addition must be installed and functional.
- Prior to fitting attachments to the stick, secure the control lever of the hydraulic control unit against unintentional movement.

2.11 Trailers

Important

Towing a trailer with this machine is prohibited.

2.12 Hammer operation

- Contact your Wacker Neuson dealer for information on the correct equipment.

Safety instructions

- If there is a risk of falling or projected objects, an operator safety shield must be installed.
- During operation, all persons must stay clear of the work range of the machine.
- Do not place the machine directly underneath the workplace during demolition, otherwise debris can fall onto the machine or the building can collapse.
- Do not perform demolition work below the machine, this could cause the machine to tip over.
- The machine can lose its balance and tip over if a hammer or other heavy attachment is used. Proceed as follows to perform work both on level ground and on slopes:
  - Never turn, lower or set down the attachment abruptly.
  - Do not extend or retract the boom abruptly, otherwise the machine can tip over.
- Stop work immediately if a hydraulic hose moves back and forth in an unusual manner. This could be a cause for a pressure accumulator defect. Contact your Wacker Neuson dealer and have the error repaired immediately.

Working with a hammer

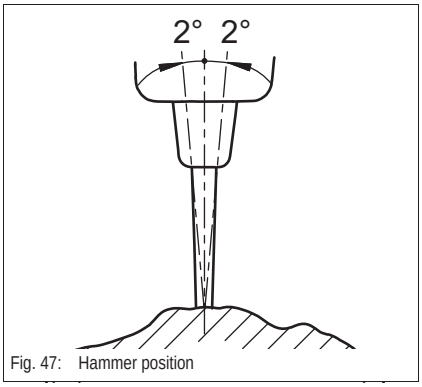


Fig. 47: Hammer position

NOTICE

Always observe the following instructions:

- Do not use the impact force of the attachment to perform demolition work.
- Keep the hammer perpendicular to the surface (max. deviation to all sides is 2°).
- Never move the hammer as you drive it into the material.
- After you have driven the hammer into the material, do not try to fragment the material with movements to the sides.
- Do not operate the hammer in the same spot uninterruptedly for more than 15 seconds.
- If the applied impact force does not break the material, move the hammer to the edge or start again in another place in order to break the material.
- Do not put the hammer into operation if a hydraulic cylinder is fully extended or retracted.
- Never use the hammer horizontally or upward.
- Do not use the hammer for catching or collecting material.
- Press the hammer firmly against the material to avoid hammer operation without any resistance.
- Do not use the hammer to raise loads.
- Do not hit the hammer-body against rocks, concrete, etc.
- Do not raise the machine with the boom.
- Do not perform any movements with the machine during hammer operation.
- Working with the hydraulic cylinders and/or the boom fully extended is prohibited.

2.13 Transport and Towing

Towing

- The machine must be towed according to the procedures described within this Operator's Manual.
- Observe the prescribed transport position, admissible speed and itinerary.

Transporting

- The machine must be loaded and transported according to the procedures described within this Operator's Manual.
- The transporting vehicle must have sufficient load capacity and platform size to safety transport the machine. Refer to Chapter *6 Technical data* of this manual to determine the physical characteristic 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.
- The recommissioning procedure must be strictly in accordance with the Operator's Manual.

2.14 Safety Guidelines for Maintenance

General maintenance notes

- 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.
- The manufacturer requires the owner to perform maintenance under all circumstances. Otherwise warranty shall not be given in full.
- Adhere to prescribed intervals or those specified in this Operator's Manual for routine checks/inspections and maintenance.
- For inspection and maintenance, ensure that all tools and service center 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 retighten any screws, electrical connections, or hydraulic hose connections that may 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.

Personal safety measures

- Brief the technician and the operator before beginning special operations, repair work and maintenance. Appoint a person to supervise the activities.
- Observe the specific safety instructions in the Maintenance section of this Operator's Manual.
- Before taking up work on machine parts risky for life and limb (bruising, cutting), always ensure safe blocking/support of these areas.

- Apply special care when working on the fuel system – increased fire hazard.
- Engine block 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 – personal injury hazard.

- 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 – explosion hazard.

Preparing for maintenance and repair work

- In any work concerning the operation, conversion or adjustment of the machine and its safety-oriented devices, or any work related to maintenance, inspection and repair, observe the starting and stopping procedures set forth in the Operator's Manual, and the information on maintenance.
- Prior to performing assembly work on the machine, ensure that no movable parts will roll away or start moving.
- If required, secure the maintenance area appropriately.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.
- Perform service, maintenance and repair work ONLY if:
  - machine is positioned on firm and level ground
  - all hydraulically movable attachments and working equipment have been lowered to the ground
  - engine is stopped
  - the starting key has been removed
  - pressure accumulator is empty
  - lock lever is folded up
  - machine has been secured against unintentional movement
- Should maintenance or repair be inevitable with the engine running:
  - Lower the stabilizer blade and lock the controls
  - Only work in groups of two
  - Both persons must be authorized for the operation of 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 work manual
  - Always keep a safe distance from all rotating and moving parts, for example, fan blades, V-belt drives, PTO shaft drives, etc.
- Prior to performing service, maintenance and repair work, always attach a warning label, such as “Repair work – do not start machine” to the starter lock or to the control elements as a precautionary measure.

- 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 and repair work beneath a raised machine, attachments or additional equipment ONLY if a safe and secure support has been provided. The use of hydraulic cylinders or jacks as the sole method of support does NOT sufficiently secure raised machines or equipment/attachments.
- 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.
- Clean the machine, especially connections and threaded unions, of any traces of oil, fuel or preservatives before performing maintenance/repair work. Do not use aggressive detergents. Use lint-free cleaning rags.
- To avoid an accident hazard, 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.
- Have loads fastened and crane operators instructed by experienced persons only. The person giving the instructions to the operator must be within sight or sound of him.

Performing maintenance and repairs

- 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.
- Observe the adjustment, maintenance and inspection activities and intervals set forth in the Operator's Manual, including information on the replacement of parts/partial equipment.
  These activities may be performed only by a Wacker Neuson service center.
- Disconnect the negative terminal of the battery if work needs to be performed on the electrical system.
- Do not allow the machine not be serviced, repaired or test-driven by unauthorized personnel.
- 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.
- Wear a safety harness when performing elevated maintenance. Keep all handles, steps, handrails, platforms, landings and ladders free from dirt, snow and ice.
- Do not use the work equipment as lifting platforms for persons.

2.15 Special Hazards

Electrical energy

- Use only original fuses with the specified current rating.
- In case of electrical system malfunctions, stop the machine immediately, disconnect the battery (for example, by using the battery master switch), and perform troubleshooting procedures.
- Work on the electrical system may only be performed by a technician with appropriate training, in accordance with the applicable electrical engineering codes.
- Inspect and check the electric 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 electrical system or when performing welding work.
- Starting the machine with a battery jumper cable can be risky if performed improperly. Observe the safety instructions regarding the battery.

Underground electric lines

- Before starting any work, the machine operator must ensure that there are no lines in the work range.
- If you are not sure, contact the person in charge at the network operator.
- If there are lines, take the following safety measures:
  - Mark the position and path of the lines unambiguously.
  - Fasten, support or secure exposed lines.
  - Safely fasten lines if vibration or shocks to these lines must be avoided.

Overhead electric lines

DANGER

Personal injury hazard due to electrical shocks!

Will cause severe injuries or death.

- During machine operation, maintain a safe distance from overhead electric lines.
- If work must be performed close to overhead lines, the equipment/attachments must be kept well away from them.

Rated voltage (volt)	Safety distance	
	Meter	Foot
Up to 1000 V	1 m	3.3 '
Over 1 kV to 110 kV	3 m	9.8 '
Over 110 kV to 220 kV	4 m	13.1'
Over 220 kV to 380 kV	5 m	16.4 '
Unknown rated voltage	5 m	16.4 '

- If no sufficient distance can be kept to overhead electric lines, the machine operator must take other safety measures, for instance switching off the current, in agreement with the owner or operator of the lines.
- If an energized line is touched nevertheless:
  - Do not leave the machine.
  - Travel the machine out of the area.
  - Warn others against approaching and touching the machine.
  - Have the live wire de-energized.
  - Do not leave the machine until the line that has been touched or damaged has been safely de-energized.

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, ensure that there is sufficient ventilation. Observe the regulations in force at the respective site.
- Welding, burning and grinding work on the machine may only be performed by a Wacker Neuson dealer.

- Before performing welding, flame-cutting and grinding work, clean the machine and its surroundings from dust and other inflammable substances, and ensure that the premises are adequately ventilated – explosion hazard.
- In areas with special hazards (for example, toxic gases, caustic vapors, toxic environments), carry appropriate protective equipment (breathing filters, protective clothing).
- Do not use the vehicle in radioactively, biologically or chemically contaminated areas.

Hydraulics

- Work on the hydraulic equipment of the machine must be performed only by persons having specific technical knowledge and experience in hydraulic systems.
- Check all lines, hydraulic hoses, fittings, and threaded couplers 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 for the respective assembly, release the pressure in all system sections and pressure lines (hydraulic system) to be opened before performing any implementing/repair work.
- Hydraulic and compressed-air lines must be laid and fitted properly. Ensure that no connections are interchanged. The fittings, lengths and quality of the hydraulic hoses must comply with the technical requirements.

Noise

- Close all doors and windows if practical.
- Removing sound baffles on the machine during operation is prohibited.
- Wear ear protectors. 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)).

- Be careful when handling hot consumables – burn hazard.
- When using the machine in contaminated areas, take appropriate measures for the protection of the operator and the machine.

Tracks

- Check track tension at regular intervals.
- Repair work on the tracks must be performed by technical personnel or by Wacker Neuson dealers only.
- Damaged or malfunctioning tracks reduce the machine’s operational safety. Check the tracks regularly for:
  - Cracks, cuts or other damage.

- Check track tension at regular intervals.

Battery

CALIFORNIA

Proposition 65 Warning

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling

- When handling the battery observe the specific safety instructions and regulations relevant to accident prevention. Batteries contain caustic sulphuric acid.
- 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.
  - Dispose of the battery immediately.
- A potentially combustible oxygen-hydrogen mixture forms in batteries during normal operation and especially when charging. Always wear gloves and eye protection when working with batteries.

2.16 Safety Guidelines while using Internal Combustion Engines

WARNING

Special hazard during operation and fueling.

Can cause severe injury or death.

- Read and follow the warning instructions and the safety guidelines below.

CALIFORNIA

Proposition 65 Warning

Engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Running the engine

When running the engine:

- Keep the area around the muffer and exhaust pipe free of flammable materials.
- Check the fuel lines and the fuel tank for leaks and cracks before starting the engine. Do not run the machine if fuel leaks are present or the fuel lines are loose.
- Engine exhaust CAN KILL YOU IN MINUTES. Engine exhaust contains carbon monoxide. This is a poison you cannot see or smell. Never run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided.
- Do not smoke while operating the machine.
- Do not run the engine near open flames.
- Do not touch the engine or exhaust 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 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.
- Do not smoke.
- Do not refuel a hot or running engine.

Do not refuel the engine near an open flame

- Use suitable mounting points and load-securing devices.
- The recommissioning procedure must be strictly in accordance with the Operator's Manual.

Dual Power option

Operating radius

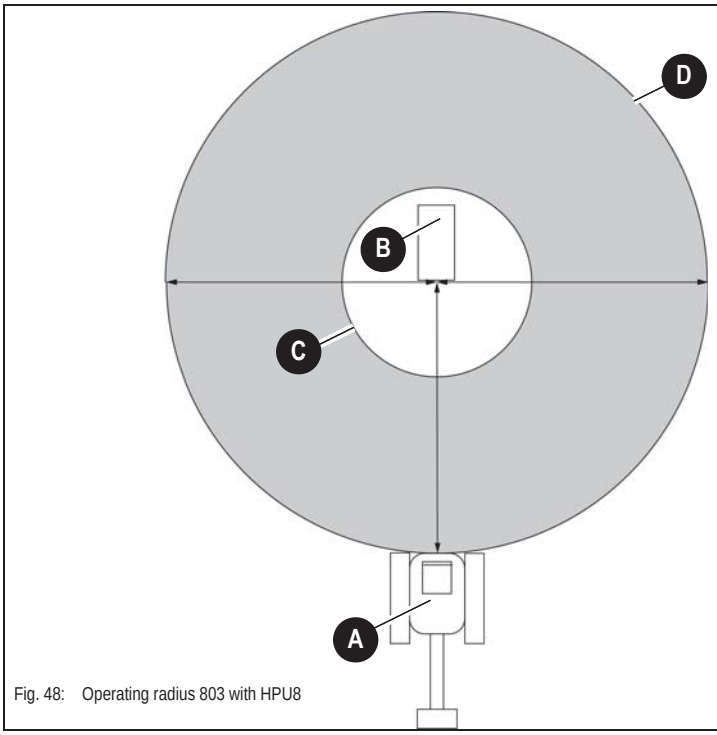


Fig. 48: Operating radius 803 with HPU8

Position	Function
A	Hydraulic excavator 803
B	Electrohydraulic power unit HPU8
C	Minimum operating radius with connected power unit: 1.5 m/59 in
D	Maximum operating radius with connected power unit: 10 m/33 ft
--	Minimum bending radius of Dual Power hydraulic hoses: 30 cm (12 in)

- The power unit must be at the same level as the excavator.
- Do not pull the power unit with the hydraulic hoses.
- The operator must have permanent visual contact with the power unit.

- Do not travel across hydraulic hoses.
- The protective hoses must be located on the exavator side of the hydraulic hose and must not be removed.
- Do not squeeze hydraulic hoses.
- Do not put hydraulic hoses over edges.
- Do not put anything down on the hydraulic hoses.
- Do not put the connecting cable over edges.

3 Operation

This chapter describes the controls, and contains information on the function and handling of the indicator lights and controls on the control stand.

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

A combination of digits, or a combination of digits and letters (for example 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.

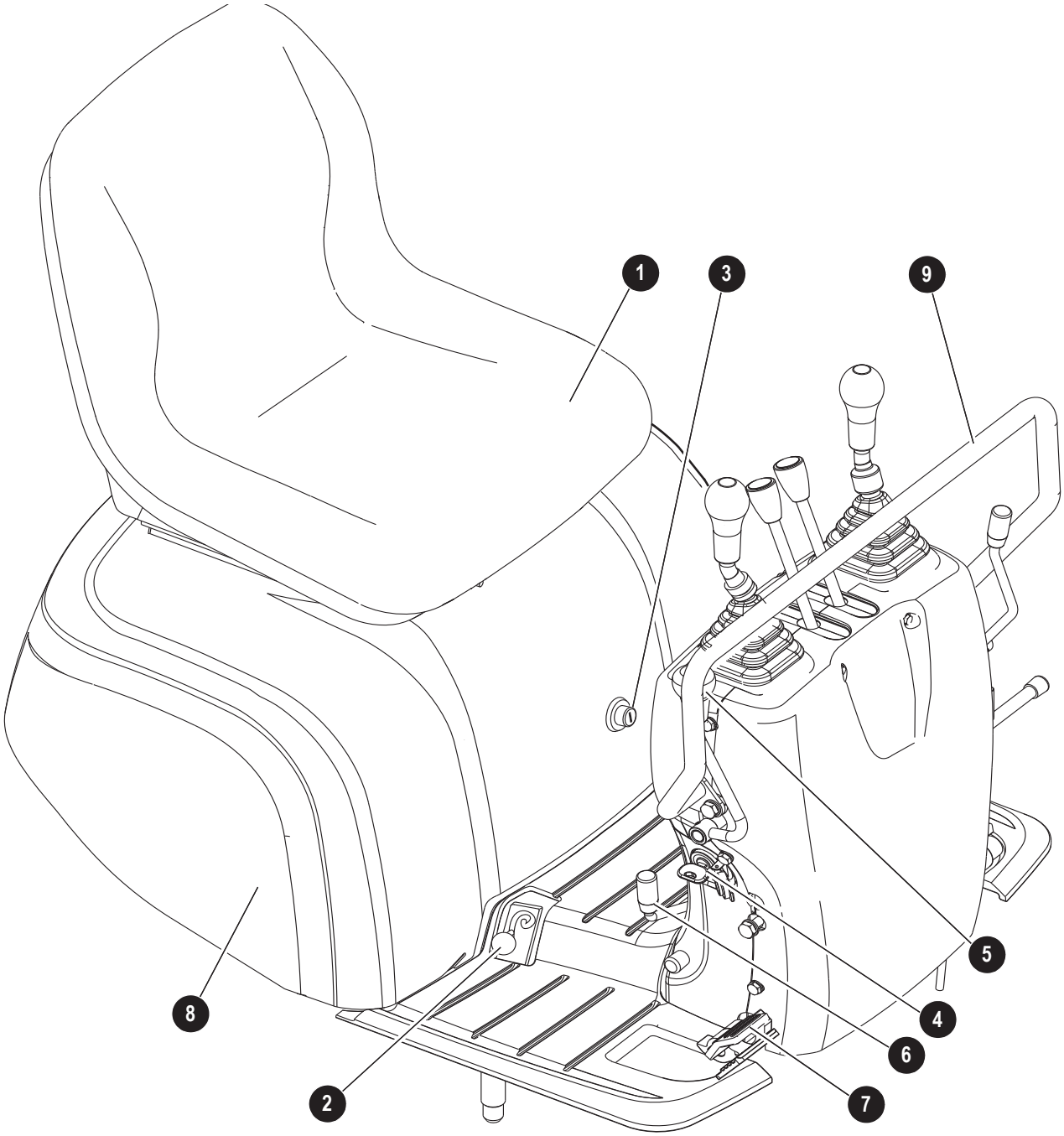
The symbols used in the description have the following meanings:

- Identifies a list
  - Subdivision within lists or an activity. Follow the steps in the recommended order.

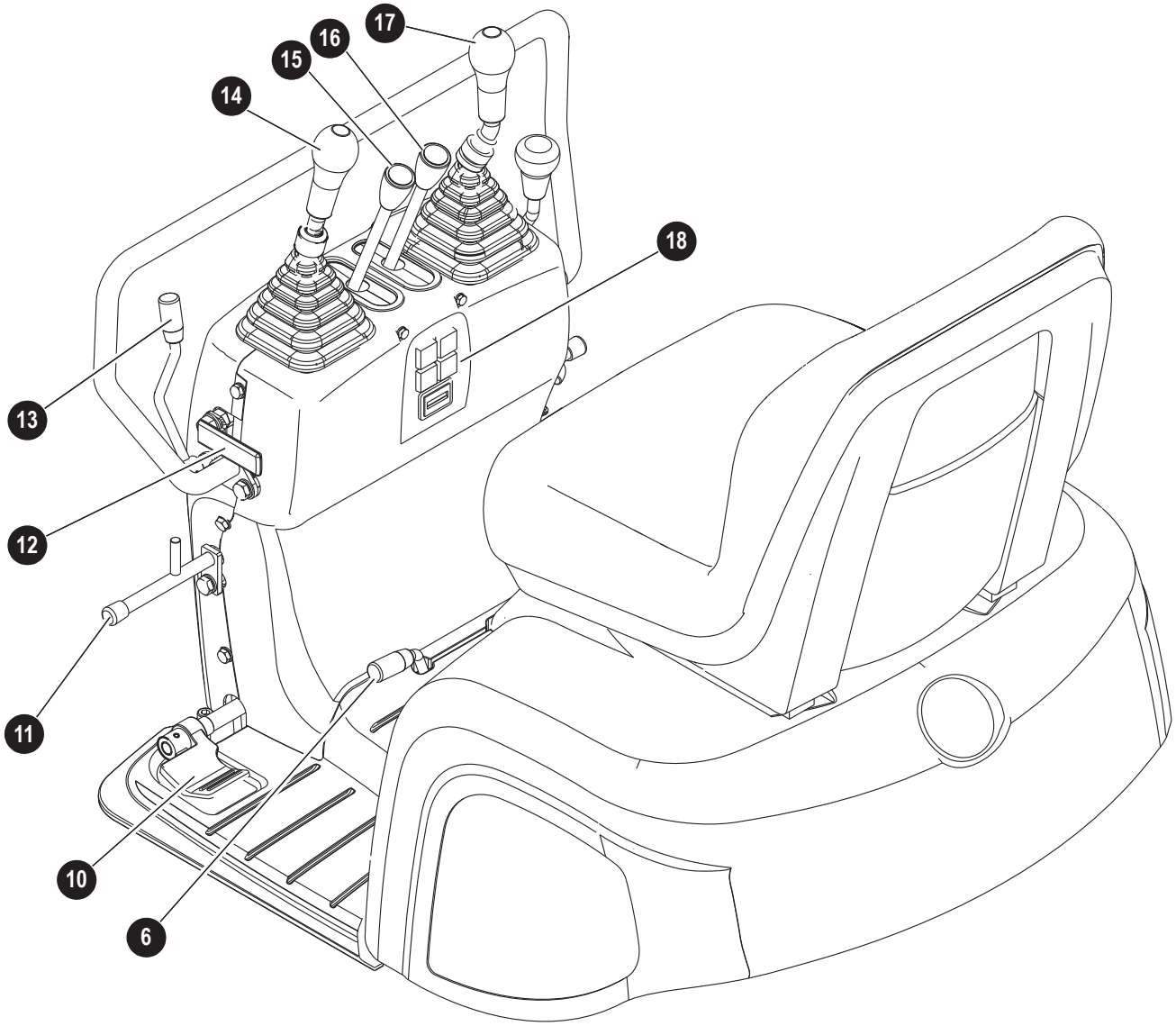
☞ *Identifies an activity*

➥ Description of the effects or results of an activity

3.1 Control stand overview (up to serial no. AI00814)

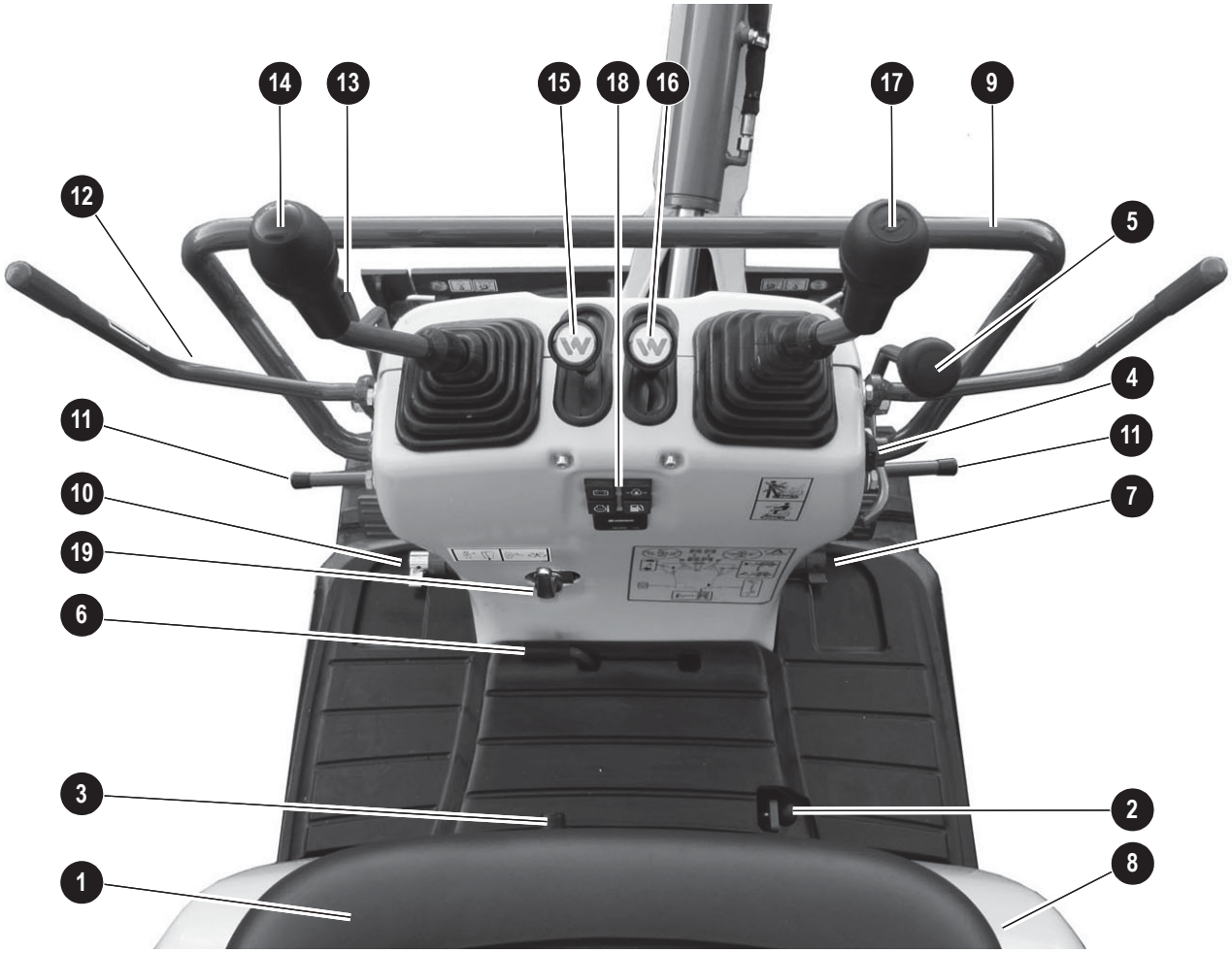


Pos.	Description	For more information see page
1	Operator seat	3-28
2	Upper carriage lock	3-25
3	Engine cover lock	3-41
4	Starter	3-10
5	Stabilizer blade/telescopic travel gear lever	3-22,3-24
6	Stabilizer blade/telescopic travel gear changeover lever	3-24
7	Boom swivel pedal	3-53
8	Engine cover	
9	Handhold	



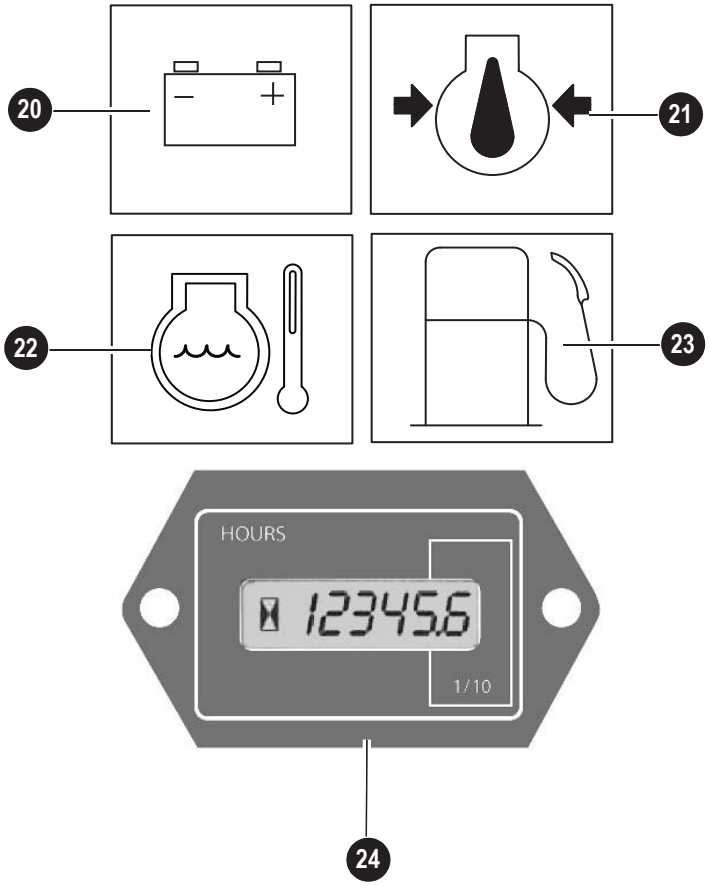
Pos.	Description	For more information see page
10	Auxiliary hydraulics pedal	3-55
11	Footrest	
12	Lock lever	3-62
13	Throttle	3-10
14	Control lever (left)	3-52
15	Travel lever (left)	3-16
16	Travel lever (right)	3-16
17	Control lever (right)	3-52
18	Display element	3-6

3.2 Control stand overview (from serial no. AI00815)



Pos.	Description	For more information see page
1	Operator seat	3-28
2	Upper carriage lock	3-25
3	Engine cover lock	3-41
4	Starter	3-10
5	Stabilizer blade/telescopic travel gear lever	3-22,3-24
6	Stabilizer blade/telescopic travel gear changeover lever	3-24
7	Boom swivel pedal	3-53
8	Engine cover	3-42
9	Handhold	
10	Auxiliary hydraulics pedal	3-55
11	Footrest	
12	Lock lever	3-62
13	Throttle	3-10
14	Control lever (left)	3-52
15	Travel lever (left)	3-16
16	Travel lever (right)	3-16
17	Control lever (right)	3-52
18	Display element	3-6
19	Lever for switching over hammer/grab operation (option)	3-75

3.3 Display elements (overview)



Pos.	Description	For more information see page
20	Indicator light (red) – alternator charge function	3-11
21	Indicator light (red) – engine oil pressure	3-11
22	Indicator light (red) – coolant temperature	3-12
23	Indicator light (yellow) – fuel gage	3-12
24	Hour meter	3-12

3.4 Putting into operation

Information!

Machine operation is only allowed when seated on the seat.

Safety instructions

- Always use the climbing aids when climbing aboard the machine – *see chapter 3.8 Access to the control stand* on page 3-28.
- Never use the controls, lines or cables as handles.
- Never get on a moving machine. Never jump off the machine.
- Observe the lift capacity table (see chapter “Technical data – lift capacity table”).

Putting into operation for the first time

Important information

- The machine may only be put into operation by authorized personnel
  – *see chapter 1.8 Regulations* on page 1-7
  – *see chapter Selection and qualification of personnel, basic responsibilities* on page 2-5!
- The personnel must have read and understood this Operator’s Manual before putting the machine into operation.
- The machine may 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.
- Go through the “Start-up” checklist in the following chapter

Running-in period

Handle the machine carefully during its first 50 operating hours.

Observe the following recommendations during the running-in period to ensure full output and a long service life of the machine.

- Do not change engine speed abruptly!
- Avoid using the machine under heavy loads and/or at high speeds.
- Avoid abrupt acceleration, braking and changing traveling direction.
- Do not run the engine at high speed for extended periods.
- Strictly observe the maintenance schedules in the appendix – *see chapter 5.16 Maintenance plan (overview)* on page 5-38.

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 work listed below is 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 the machine can be put into operation.

Start-up checklist

Check the following points before putting the machine into operation:

No.	Question	✔
1	Enough fuel in the tank? (➠ *5-2*)	
2	Coolant level OK? (➠ *5-10*)	
3	Water drained from the water separator? (➠ *5-5*)	
4	Engine oil level OK? (➠ *5-7*)	
5	Oil level in hydraulic oil reservoir OK? (➠ *5-17*)	
7	V-belt condition and tension checked? (➠ *5-15*)	
8	Lubrication points greased? (➠ *5-27*)	
9	Tracks checked for cracks, cuts etc.? (➠ *5-25*)	
10	Light system, acoustic warning system, indicator and warning lights OK? (➠ *3-27*,*3-11*)	
11	Are the lights and the footholds clean?	
12	Raise the lock lever (➠ *3-62*)	
13	Attachment safely locked? (➠ *3-75*)	
14	Engine cover safely closed and locked? (➠ *3-41*)	
15	Especially after cleaning, maintenance or repair work: ➥ Rags, tools and other loose objects removed?	
16	Seating position adjusted correctly? (➠ *3-28*)	
17	Seat belt fastened (only if the machine is equipped with the rollbar option, and if this rollbar is raised)? (➠ *3-37*)	
18	Anyone in the danger zone of the machine?	
19	Indicator lights for engine oil pressure and alternator charge function illuminate.	
20	In case of dual-power operation: hydraulic oil levels of excavator and electro-hydraulic power unit OK?(➠ *3-67*)	

Operation checklist

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

No.	Question	✔
1	Indicator light for engine and coolant temperature gone out? (➠ *3-6*)	
2	Indicator lights for engine oil pressure and alternator charge function gone out? (➠ *3-11*)	
3	Do the travel levers and pedals work correctly? (➠ *3-16*)	
4	Telescopic travel gear extended? (➠ *3-24*)	

“Parking” checklist

Check and observe the following points when parking the machine:

No.	Question	✔
1	Attachments lowered to the ground? (➠ *3-26*)	
2	Stabilizer blade lowered to the ground?	
3	Lock lever raised, especially if the machine cannot be supervised? (➠ *3-62*)	
4	Machine keys removed, especially if the machine cannot be supervised? (➠ *3-26*)	
When parking on public roads:		
5	Machine adequately secured?	
When parking on slopes:		
6	Machine also secured with chocks under the tracks to prevent it from rolling away? (➠ *3-26*)	

3.5 Machine travel

Starter

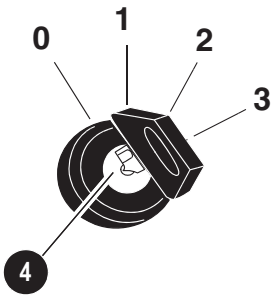


Fig. 49: Preheating start switch

Position	Function	Power consumer
0	Insert or remove the starting key	None
1	ON/travel position	Feed pump switched on ➥ Indicator lights illuminate
2	Preheats the engine (10 – 15 seconds)	Glow plugs
3	Starts the engine	Starter

Throttle

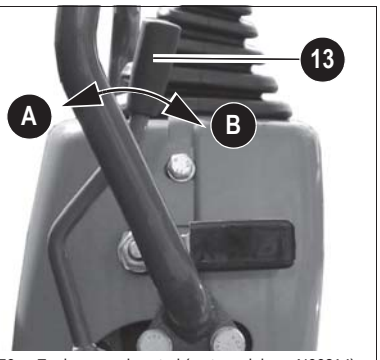


Fig. 50: Engine speed control (up to serial no. AI00814)

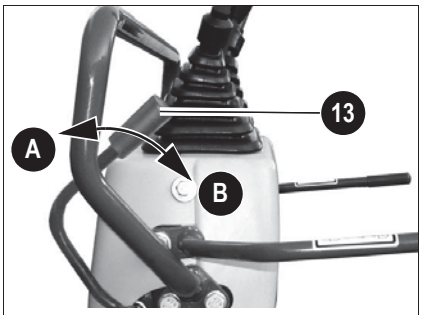


Fig. 51: Engine speed control (from serial no. AI00815)

Speed is set continuously with throttle **13**.

➥ Position **A**: idling speed

➥ Position **B**: max. engine speed

Traveling signal (option)

A traveling signal sounds as soon as at least one of the tracks moves.

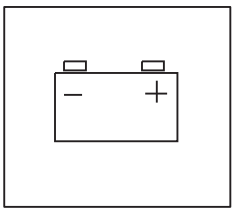
WARNING

Accident hazard during forward/backward machine travel.

Serious crushing hazard causing death or serious injury.

- Do not allow anyone to stay in the danger zone.
- Do not rely on the traveling signal under any circumstances.
- If the traveling signal does not sound, stop machine operation immediately and get in touch with a Wacker Neuson service center (observe the relevant national regulations).

Indicator lights and warning lights (overview)



Indicator light (red) – alternator charge function

NOTICE

The coolant pump no longer runs if the V-belt is faulty. Engine overheating or breakdown hazard.
If the indicator light illuminates with the engine running:

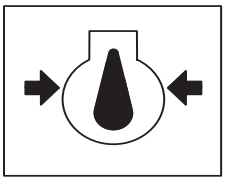
- Stop the engine immediately and have the cause repaired by a Wacker Neuson service center

The V-belt is malfunctioning or there is an error in the charging circuit of the alternator if the indicator light illuminates with the engine running. The battery is no longer charged.

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

Information!

During operation with an electrohydraulic power unit, the indicator light illuminates if the battery has to be charged
– see chapter Charging the excavator battery on page 3-71.



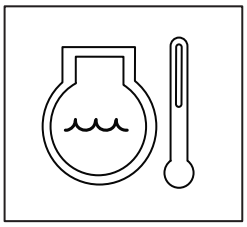
Indicator light (red) – engine oil pressure

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

☞ *Stop the engine immediately and*

☞ *Check the oil level*

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



Indicator light (red) – coolant temperature

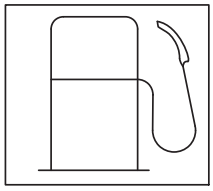
DANGER

Never open the radiator and never drain coolant if the engine is warm since the cooling system is under high pressure –

Burn hazard!

Can cause serious injury or death.

- Wait at least 10 minutes after stopping the engine!
- Wear protective gloves and clothing
- Open the cap to the first notch and release the pressure



Fuel level indicator

Fill up immediately if this indicator light illuminates. Bleed the fuel system if the tank has been run empty.

Hour meter

Counts the operating hours when the engine or the electrohydraulic power unit is running if the machine is equipped with the **Dual Power** option.

Information!

The operating hours are only displayed if the starter is enabled.

Before starting the engine:

☞ *Adjust your seating position – see* ***Seat adjustment*** *on page 3-28*

Information!

All controls must be within easy reach and you must be able to move them to the limit!

Information!

Operate the machine only on adequately ventilated premises! Ensure sufficient ventilation on enclosed premises!

Information!

Machine operation with the rollbar lowered is prohibited – *see chapter* ***Operation with lowered ROPS rollbar*** on page 2-9.

☞ *Fasten your seat belt (rollbar option only)*
– see ***Seat belt (option)*** *on page 3-37*

☞ *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 run the starter for more than 10 seconds.
- Wait about 1 minute so the battery can recover before trying again.

Procedure

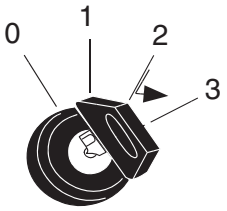


Fig. 52: Preheating start switch

NOTICE

Actuating the preheating system too long can damage the glow elements.

- Never preheat the engine more than 10 seconds

After you have completed the starting preparations:

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

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

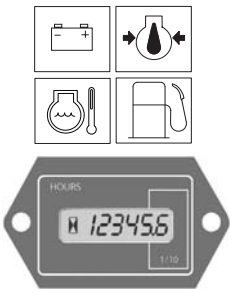


Fig. 53: Display elements

☞ *Check whether all indicator lights are on*

☞ *Have malfunctioning indicator lights immediately replaced*

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

➥ Engine is preheated

☞ *Turn and hold the starting key in position **3** 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 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*

3.6 Starting at low temperatures

Information!

In general, a battery delivers less energy in cold conditions. Therefore ensure that 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*

☞ *Apply full load to the engine only after the warm-up phase*

Engine and machine warm-up

- Once it has started, let the engine warm up about 5 Minutes at slightly increased idling rpm. Actuate the operating hydraulics to warm up the hydraulic oil and the components more quickly.
- Set the engine speed lever to the center position, actuate the operating hydraulics about 5 minutes and repeatedly move the bucket cylinder to the limit for less than 10 seconds.
- Move the engine speed lever to maximum position, move all control levers through all positions so the warm oil can circulate through all hydraulic components.

At temperatures below -18 °C or if the functions still respond slowly, extend the warm-up phase accordingly.

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

- Never jump-start the engine if the battery of the machine is frozen – explosion hazard!
  ☞ Dispose of a frozen battery!
- The excavator must not touch the jump-starting vehicle when connected with jump leads – sparking hazard!
- The external power source must deliver 12 V; higher supply voltages will damage the electrical system of the vehicles!
- Use only authorized battery jumper cables which conform to the safety requirements and which are in perfect condition!
- The jump lead connected to the positive **+** terminal of the starting battery must never be brought into connection with electrically conductive vehicle parts ***– short circuit hazard.***
- Route the jump leads so that no one can catch on rotating components in the engine compartment!

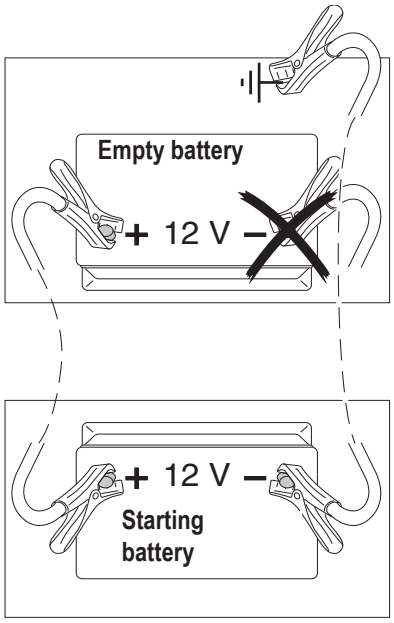


Fig. 54: Starting aid with battery jumper cables

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 empty 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 cable (–) to a solid metal component fimly screwed on the engine block or onto the engine block itself. Do not connect it to the negative terminal of the empty battery, as otherwise explosive gas emerging from the battery can ignite if sparks are formed!*

☞ *Start the engine of the machine with the empty 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 traveling on public roads

Traveling on public roads is prohibited.

Travel position

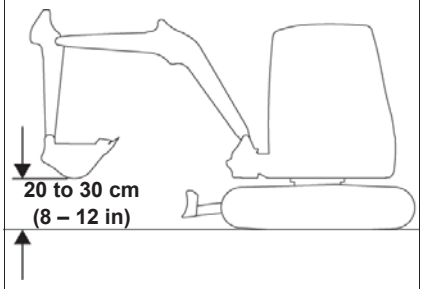


Fig. 55: Travel position

- Position the machine as shown.
- Position the boom at the center and raise it about 20 to 30 cm (8 – 12 in) off the ground.

Information!

During machine travel, raise the stabilizer blade sufficiently high off the ground to avoid ground contact on rough terrain.

Starting machine travel

After starting the engine:

☞ *The alternator charge indicator light goes out*

☞ *Slowly actuate the travel lever*

➥ Machine moves off

Operating temperature range

The following operating conditions must be fulfilled in order to ensure optimal output and a long service life of the machine.

Do not operate the machine at ambient temperatures above +38 °C (+100 °F) or below −15 °C (−5 °F).

Travel levers

WARNING

Accident hazard! The machine moves in the opposite direction if the upper carriage is rotated by 180°!

Can cause serious injury or death.

- Slowly and carefully actuate the travel levers/pedals

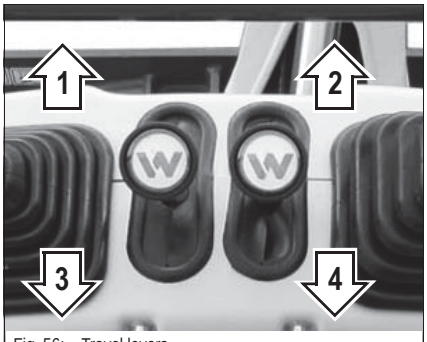


Fig. 56: Travel levers

The stabilizer blade side is the front side.

Raise the attachment and the stabilizer blade.

The travel movements of the machine are controlled with the travel levers.
Lock the upper carriage when traveling over longer distances.

Position	Lever	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 travel speed depends on the position of the travel levers and on the engine speed.

Information!

Ensure that both tracks move as you change direction, otherwise the rubber tracks are subject to increased abrasion.

ISO/SAE changeover (option)

WARNING

Accident hazard due to modified control lever operation!

Can cause serious injury or death.

- Change over the controls only on level and firm ground, and only if the starting key is removed.
- Ensure that you know which control mode has been selected before starting work.

The changeover is located under both covers **1** on the control stand.
Switching is possible between Operating Pattern A (ISO controls) and Operating Pattern B (SAE controls).

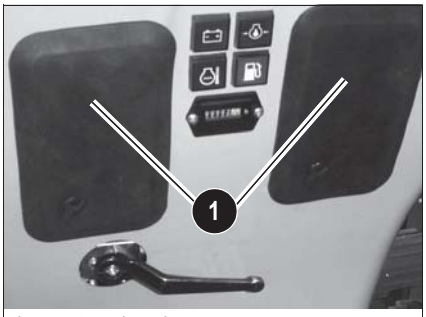


Fig. 57: Control stand covers

1 Park the machine on level and firm ground, lower the boom to the ground, stop the engine and remove the starting key.
2 Raise covers **1**.
3 Slide the knurled sleeve **2** upward, and hold, unhitch and grease it.
4 Slide the knurled sleeve **2** upward and hitch it into ball pin **A** or **B** as required. The sleeve is safely locked if it is firmly connected with the ball pin and if it is engaged in the lower position.
5 Lower covers **1**.

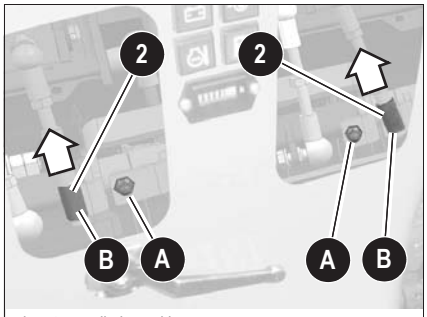


Fig. 58: Ball pin position

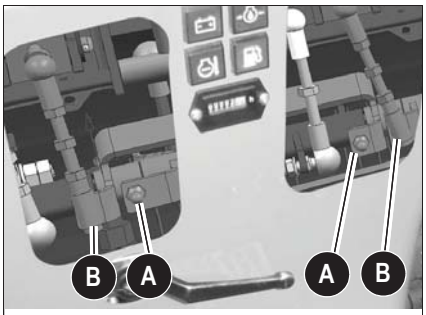


Fig. 59: ISO/SAE changeover

Wiring diagram	Controls	
A	ISO controls (Europe)	Operating Pattern A ball pin position A (inside)
B	SAE controls (US)	Operating Pattern B ball pin position B (outside)

Hydraulic brake

The travel levers automatically return to their initial positions as soon as they are released. This creates sufficient hydraulic braking effect.

When traveling downhill, the automatic hydraulic brake valves prevent the machine from traveling faster than the permissible travel speed.

Information!

Reduce travel speed with the travel levers, and *not* with the engine speed control of the diesel engine.

Stabilizer blade as a parking brake

The stabilizer blade is used as a parking brake. Press the stabilizer blade against the ground.

3.7 Machine travel on slopes

WARNING

Accident hazard due to tipping over or slipping of machine!

Can cause serious injury or death.

- Travel on slopes only on firm and level ground.
- Travel on slopes only with the telescopic travel gear extended (normal operation).
- Never exceed the stability limits of the machine (maximum gradient angle 15°, maximum lateral angle of inclination 10°).
- Raise the boom about 20 – 30 cm (8 – 12 in) off the ground and position it straight ahead at the center of the machine. In an emergency, lower the boom immediately to increase stability.
- Do not reverse down slopes.
- Do not turn or swivel the upper carriage and the boom when traveling downhill or uphill with a full attachment.
- Traveling diagonally on slopes is prohibited.
- Traveling on slopes is prohibited if a zero-emission power unit (HPU8, for example) is raised with the stabilizer blade.

Stones and the humidity in the upper layer of the ground can drastically affect machine traction and stability.

The machine can slip sideways on gravel or loose, rocky soil. The stability of the machine can be reduced on rough terrain.

Newly filled or muddy ground can give away under the weight of the machine, or the tracks can dig into the ground and increase the angle of the machine (maximum gradient angle and maximum lateral angle of inclination).

If the engine dies as you travel on a slope, immediately put the control levers to neutral position and start the engine again.

Bear in mind the following under all circumstances when traveling uphill or downhill:

- Keep the travel levers near the neutral position.
- Perform slow and smooth travel movements.
- Avoid sudden travel movements.
- Reduce the engine speed.

The machine can slip even on gentle slopes if it travels across grass, leaves, humid metal surfaces, frozen ground or ice.

Preparations for traveling on slopes

Always travel straight ahead when traveling uphill or downhill.

When changing position, do not exceed a maximum gradient angle of 15° and a maximum lateral angle of inclination of 10°.

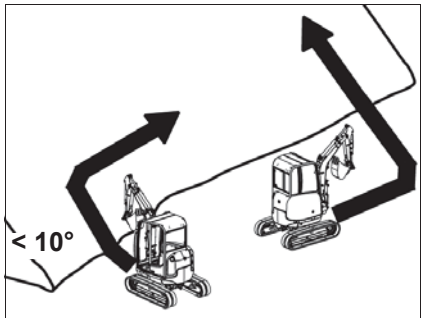


Fig. 60: Traveling on slopes

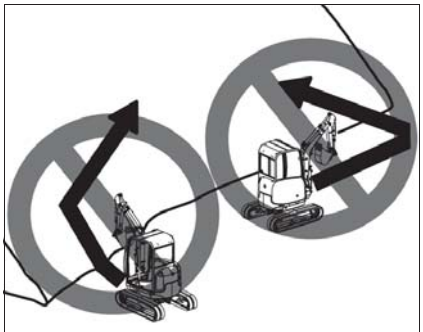


Fig. 61: Traveling diagonally on slopes

Information!

Traveling diagonally on slopes is prohibited.

Change position on level ground and then travel straight-ahead onto the slope.

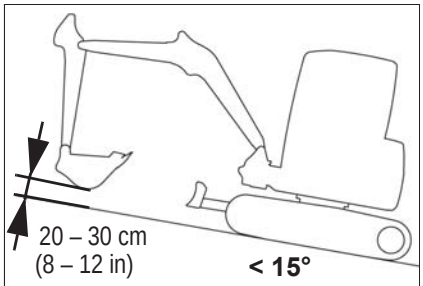


Fig. 62: Traveling uphill

Traveling uphill

During uphill travel, the control stand must face uphill.

Set the stabilizer blade uphill.

Raise the boom about 20 – 30 cm (8 – 12 in) off the ground and position it straight ahead at the center of the machine.

Do not exceed a maximum gradient angle of 15°.

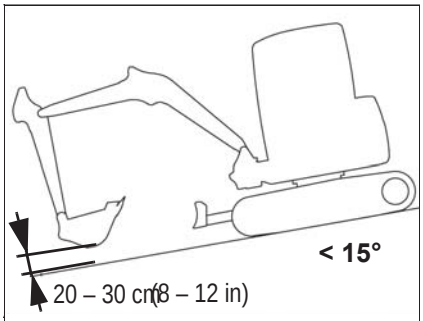


Fig. 63: Traveling downhill

Traveling downhill

During downhill travel, the control stand must face downhill.

Set the stabilizer blade downhill.

Raise the boom about 20 – 30 cm (8 – 12 in) off the ground and position it straight ahead at the center of the machine.

Do not exceed a maximum sloping angle of 15°.

Fig. 64: Lateral angle of inclination

Lateral angle of inclination

Do not exceed a maximum lateral angle of inclination of 10°.

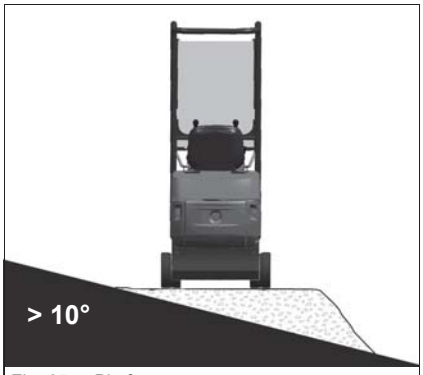


Fig. 65: Platform

On lateral inclinations over 10°, pile up material to create a level surface that can be used as a platform for the machine.

Stabilizer blade operation

WARNING

Injury hazard due to operation of stabilizer blade lever!

Can cause serious injury or death.

- Raising the lock lever does not prevent the stabilizer blade from being lowered.
- Keep out of the danger zone of the stabilizer blade.

NOTICE

Lowering the stabilizer blade too deeply into the ground can create too much resistance – *see* ***Grading*** on page 3-83.

- Slightly raise the stabilizer blade

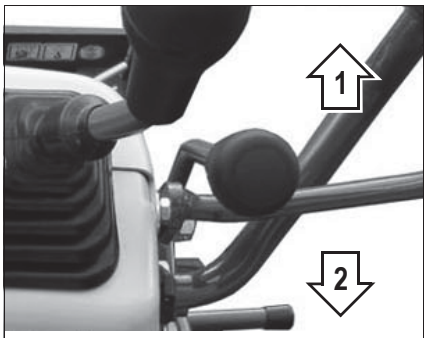


Fig. 66: Stabilizer blade operation

Position	Lever	Function
1	Push forward	Lowers the stabilizer blade
2	Pull backward	Raises the stabilizer blade

Information!

Check the position of the stabilizer blade before machine travel.

Changing the width of the stabilizer blade

NOTICE

The machine can be damaged if the telescopic travel gear and the stabilizer blade are set to different widths (for example when traveling through a door frame).

- Adjust the stabilizer blade and the telescopic travel gear to the same widths when operating the machine.

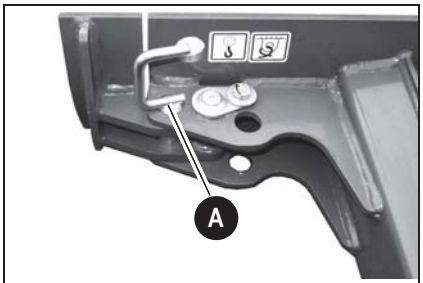


Fig. 67: Changing the width of the stabilizer blade

Reducing the width of the stabilizer blade

☞ *Raise the stabilizer blade to about 1 – 2 cm (about 0.4 – 0.8 in).*

☞ *Pull out pins* **A** *on either side.*

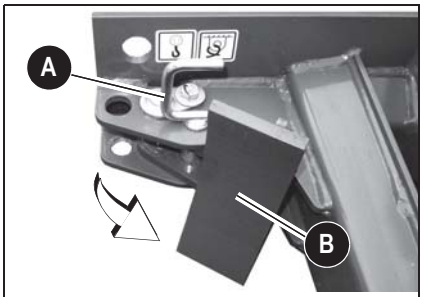


Fig. 68: Changing the width of the stabilizer blade

☞ *Turn in the stabilizer blade extensions* **B** *on either side.*

☞ *Insert pins* **A** *on either side.*

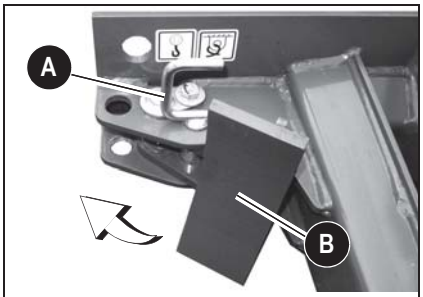


Fig. 69: Changing the width of the stabilizer blade

Increasing the width of the stabilizer blade

☞ *Raise the stabilizer blade to about 1 – 2 cm (about 0.4 – 0.8 in).*

☞ *Pull out pins* **A** *on either side.*

☞ *Turn out the stabilizer blade extensions* **B** *on either side.*

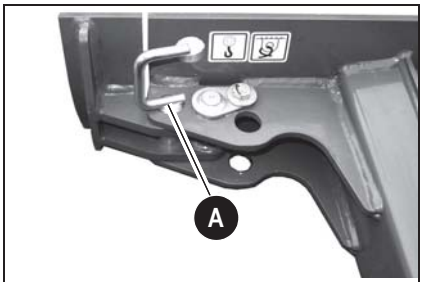


Fig. 70: Changing the width of the stabilizer blade

Insert pins **A** *on either side.*

Telescopic travel gear

WARNING

Injury hazard due to tipping over of machine!

Can cause serious injury or death.

- Only perform work with an extended telescopic travel gear.
- Traveling with a retracted telescopic travel gear is only allowed for traveling very short distances through passages.
  Pay attention to the reduced stability.
- Retract or extend the telescopic travel gear completely.
- Position the boom upward during uphill travel.
- Position the boom downward during downhill travel.
- Raise the boom about 20 – 30 cm (8 – 12 in) off the ground and position it straight ahead at the center of the machine. In an emergency, lower the boom immediately to increase stability.
  This prevents the machine from tipping over in case of a hydraulic hose rupture on the telescopic cylinder. A hydraulic hose rupture might cause the travel gear to retract and reduce stability.

WARNING

Crushing hazard when retracting the telescopic travel gear!

Can cause serious injury or death.

- Do not allow anyone to stay in the danger zone.

NOTICE

In order to avoid damage to the machine when traveling through doors frames etc.:

- Pay attention to the width of the stabilizer blade and of the telescopic travel gear when traveling through passages.
- Adjust the stabilizer blade and the telescopic travel gear to the same widths when operating the machine.

Information!

In order to achieve the best possible stability, lower the stabilizer blade, turn out the extensions (option) and extend the telescopic travel gear.

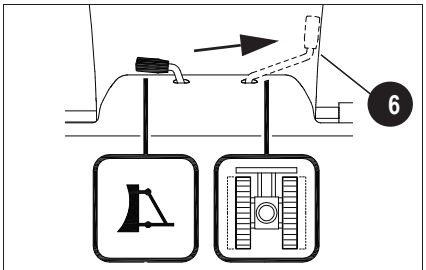


Fig. 71: Telescopic travel gear

☞ *Move lever* **6** *to the final right-hand position*

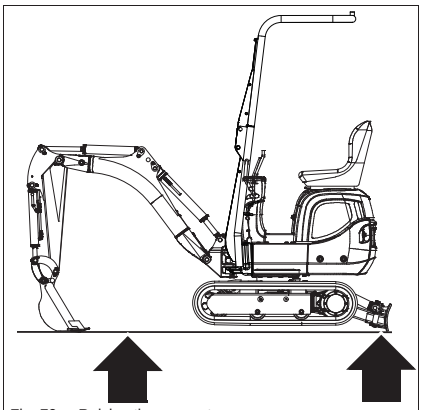


Fig. 72: Raising the excavator

☞ *Raise the machine evenly and horizontally by means of the boom and the stabilizer blade*

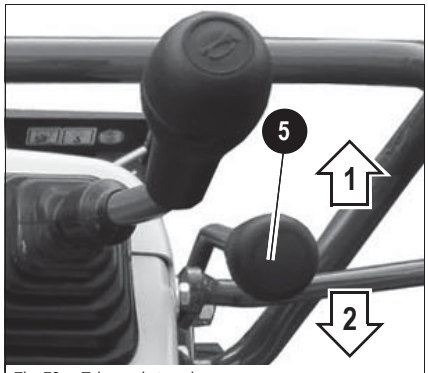


Fig. 73: Telescopic travel gear

☞ *The telescopic travel gear is controlled via control lever* **5***:*

Position	Lever	Function
1	Push forward	The travel gear is extended (wide track)
2	Pull backward	The travel gear is retracted (narrow track)

Information!

Push or pull lever **5** until the travel gear has reached its final position.

Upper carriage lock

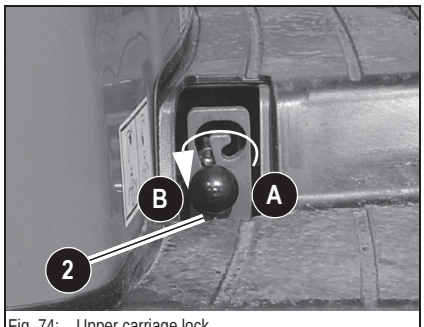


Fig. 74: Upper carriage lock

WARNING

Accident hazard due to incorrect transportation!

Can cause serious injury or death.

- Lock the upper carriage.
- Secure the machine and the attachments correctly.

The upper carriage lock prevents the upper carriage from rotating during machine travel over longer distances, or locks the upper carriage during transport.

Locking the upper carriage

☞ *Pull lever* **2** *from position* ***A*** *to position* ***B***

Unlocking the upper carriage

☞ *Push lever* **2** *from position* ***B*** *to position* ***A***

Parking the machine

WARNING

Accident hazard due to incorrect parking!

Can cause serious injury or death.

- Park the machine on level ground
- Press the boom and the stabilizer blade against the ground
- Secure the tracks accordingly (chocks, for example)

☞ *Stop the machine.*

☞ *Press the boom and the stabilizer blade against the ground.*

☞ *Reduce engine speed completely.*

NOTICE

Never stop the engine under full load, otherwise it can be damaged due to overheating. Except in case of an emergency, always ensure that 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 switch it off.

☞ *Secure the machine against unauthorized operation.*

☞ *Raise the lock lever.*

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

Parking the machine on slopes

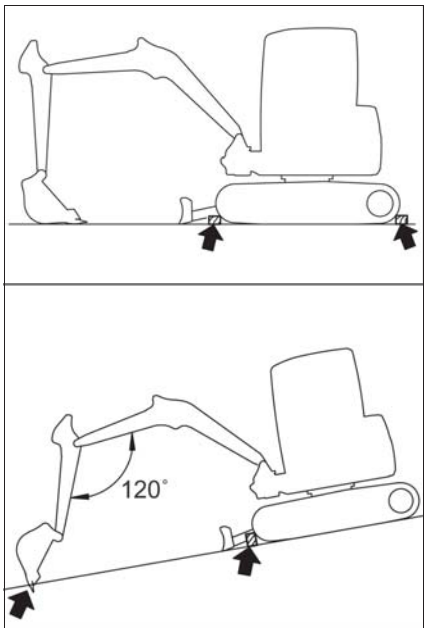


Fig. 75: Parking the machine on slopes

☞ *Avoid stopping the machine abruptly. Always ensure that there is enough space for stopping the machine.*

- Park the machine on firm, level and horizontal ground. Never park on slopes. If you cannot avoid parking the machine on a slope:
  - ☞ Press the bucket *onto* the ground on the downhill side of the machine.
  - ☞ Place the stabilizer blade downhill and press it against the ground.
  - ☞ Place chocks under the tracks to prevent the machine from moving.

WARNING

Accident hazard due to control lever operation!

Can cause serious injury or death.

- Raise the lock lever before leaving the seat.

Light system

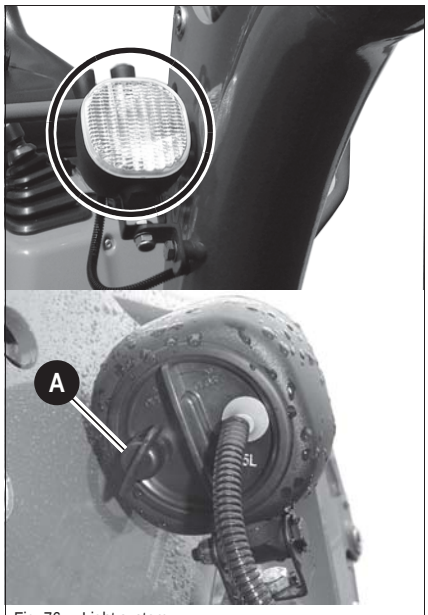


Fig. 76: Light system

The working light is located on the right on the boom.

The working light can be switched on with switch **A** as soon as the starting key is in position “1”.

The switch has several positions and can be turned.

Therefore continue turning switch **A** by one notch to switch the working light on or off.

Information!

The Dual Power option includes a power-saving LED light – *see chapter* ***LED working light*** on page 3-73

Power outlet

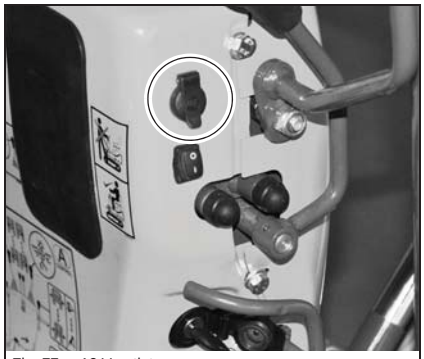


Fig. 77: 12 V outlet

The control stand is equipped with a 12 V outlet on the right. This makes it possible to operate a 12 V rotating beacon, for example.

NOTICE

There must be no consumer connected to the 12 V outlet during Dual-Power operation.

- The 12 V outlet may only be used during diesel operation, since the battery is not charged during Dual-Power operation – *see chapter* ***Charging the excavator battery*** on page 3-71.

Seat adjustment

WARNING

Accident hazard when adjusting the operator seat during machine operation!

Can cause serious injury or death.

- Adjust the correct seating position.
- Do not adjust the operator seat during operation.

Fig. 78: Seat adjustment

Horizontal adjustment:

☞ *Sit down on the operator seat.*

☞ *The operator must touch the backrest with his back.*

☞ *Pull lever **H** upward and at the same time*

☞ *Move the seat forward or backward*

3.8 Access to the control stand

WARNING

Injury hazard when entering or exiting!

Can cause serious injury or death.

- Bear in mind the following before accessing the control stand:
  - The footholds and handles must be free of snow, ice, oil, grease, mud or other dirt.
  - Stop the machine on firm, level and horizontal ground – *see chapter **Parking the machine*** on page 3-26
  - Lower the boom
  - Stop the engine
  - Raise the lock lever
  - Remove the starting key

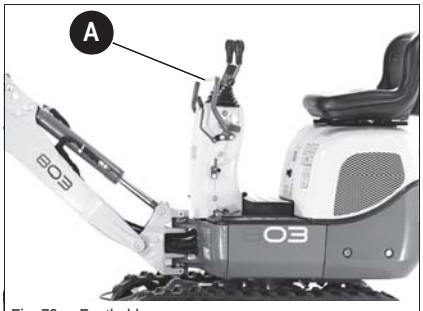


Fig. 79: Footholds

☞ *Use handhold **A**.*

Fig. 80: ROPS handles

☞ *Use handhold **A**.*

Telescopically extended travel gear

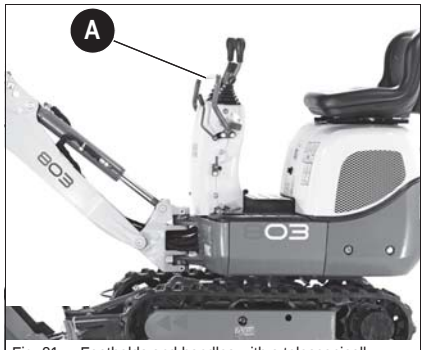


Fig. 81: Footholds and handles with a telescopically extended travel gear

☞ *Use handhold **A**.*

3.9 Lowerable TOPS rollbar (up to serial no. AI00966) (option)

WARNING

Accident hazard when operating the machine with a lowered rollbar!

Can cause serious injury or death.

- Machine operation is only allowed if the rollbar is raised and locked, and if the seat belt is fastened.
- Depending on the situation, traveling over very short distances with a lowered rollbar is allowed (in case of low clearance heights, for example) – *see chapter* ***Operation with lowered ROPS rollbar*** on page 2-9.

WARNING

Injury hazard due to unfastened seat belt!

Can cause serious injury or death.

- Use the seat belt only if the rollbar is raised!

WARNING

Injury hazard due to damaged rollbar!

Can cause serious injury or death.

- Machine operation with a damaged rollbar is prohibited. Contact a Wacker Neuson service center.

NOTICE

The boom must not be moved if the rollbar is lowered!

Lowering the rollbar

☞ *Stop the machine on firm, level and horizontal ground*
☞ *Fully raise the boom*
☞ *Pull the stick toward the machine*
☞ *Curl the bucket*
☞ *Stop the engine*
☞ *Raise the lock lever*
☞ *Remove the starting key*

Information!

In order to lower it, the rollbar must be held by one person on either side.

Fig. 82: Lowering the rollbar

☞ *Remove the lock nuts and screws **A** on either side*


Fig. 83: Lowering the rollbar

☞ *Slowly and carefully lower the rollbar*

Raising the rollbar

Fig. 84: Raising the rollbar

☞ *Stop the machine on firm, level and horizontal ground*
☞ *Stop the engine*
☞ *Raise the lock lever*
☞ *Remove the starting key*

Information!

In order to raise it, the rollbar must be held by one person on either side.

☞ *Slowly and carefully raise the rollbar*
☞ *Re-insert the screws on either side* **A** *and secure them with new lock nuts* **A**

NOTICE
Replace the lock nuts every time they are loosened.

3.10 Lowerable ROPS rollbar (up to serial no. AI00966) (option)

WARNING

Accident hazard when operating the machine with a lowered rollbar!

Can cause serious injury or death.

- Machine operation is only allowed if the rollbar is raised and locked, and if the seat belt is fastened.
- Depending on the situation, traveling over very short distances with a lowered rollbar is allowed (in case of low clearance heights, for example) – *see chapter* ***Operation with lowered ROPS rollbar*** on page 2-9.

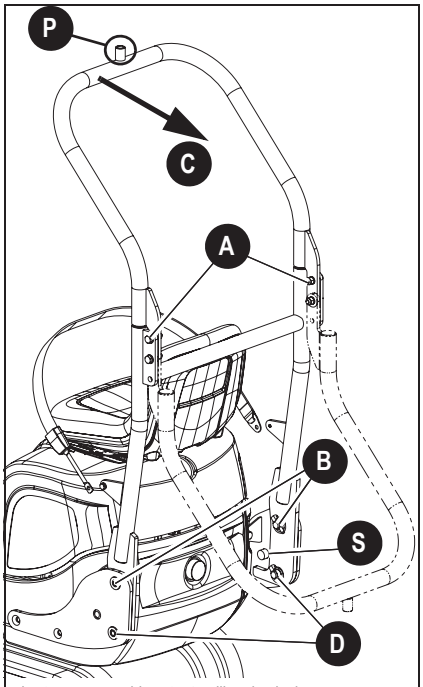


Fig. 85: Lowerable ROPS rollbar (option)

WARNING

Injury hazard due to unfastened seat belt!

Can cause serious injury or death.

- Use the seat belt only if the rollbar is raised!

WARNING

Injury hazard due to damaged rollbar!

Can cause serious injury or death.

- Machine operation with a damaged rollbar is prohibited. Contact a Wacker Neuson service center.

NOTICE

The boom must not be moved if the rollbar is lowered!

Bracket **P** for installing a rotating beacon is located on top of the rollbar.

Lowering the rollbar

☞ *Stop the machine on firm, level and horizontal ground*
☞ *Stop the engine*
☞ *Raise the lock lever*
☞ *Remove the starting key*

Information!

In order to lower it, the rollbar must be held by one person on either side.

☞ *Remove the lock nuts and screws **A** on either side*
☞ *Slowly and carefully lower the rollbar*
☞ *Insert the screws again on either side and secure them with the lock nuts*

NOTICE
Replace the lock nuts every time they are loosened.

Raising the rollbar

☞ *Stop the machine on firm, level and horizontal ground*
☞ *Stop the engine*
☞ *Raise the lock lever*
☞ *Remove the starting key*

Information!

In order to raise it, the rollbar must be held by one person on either side.

☞ *Remove the lock nuts and screws **A** on either side*
☞ *Slowly and carefully raise the rollbar*
☞ *Insert the screws again on either side and secure them with the lock nuts*

NOTICE
Replace the lock nuts every time they are loosened.

Lowering the rollbar

☞ *Stop the machine on firm, level and horizontal ground*
☞ *Stop the engine*
☞ *Raise the lock lever*
☞ *Remove the starting key*

Information!

In order to lower it, the rollbar must be held by one person on either side.

☞ *Remove the split pins and pins **B** on either side*
☞ *Slowly and carefully lower the rollbar toward **C** to the limit **S**.*

Raising the rollbar

☞ *Stop the machine on firm, level and horizontal ground*
☞ *Stop the engine*
☞ *Raise the lock lever*
☞ *Remove the starting key*

Information!

In order to raise it, the rollbar must be held by one person on either side.

☞ *Slowly and carefully raise the rollbar*
☞ *Fit pins **B** again on either side and secure them with the split pins*

3.11 Lowerable ROPS rollbar (from serial no. AI00967) (option)

WARNING

Accident hazard when operating the machine with a lowered rollbar!

Can cause serious injury or death.

- Machine operation is only allowed if the rollbar is raised and locked, and if the seat belt is fastened.
- Depending on the situation, traveling over very short distances with a lowered rollbar is allowed (in case of low clearance heights, for example) – *see chapter* ***Operation with lowered ROPS rollbar*** on page 2-9.

WARNING

Injury hazard due to unfastened seat belt!

Can cause serious injury or death.

- Use the seat belt only if the rollbar is raised!

WARNING

Injury hazard due to damaged rollbar!

Can cause serious injury or death.

- Machine operation with a damaged rollbar is prohibited. Contact a Wacker Neuson service center.

NOTICE

The boom must not be moved if the rollbar is lowered!

Lowering the rollbar

Information!

Remove the window if the machine is equipped with the shatter protection option – *see chapter 3.12* ***Shatter protection (option) (from serial no. AI00967)*** on page 3-48.

☞ *Stop the machine on firm, level and horizontal ground*
☞ *Fully raise the boom*
☞ *Pull the stick toward the machine*
☞ *Curl the bucket*
☞ *Position the boom straight ahead*
☞ *Stop the engine*
☞ *Raise the lock lever*

Fig. 86: Lowering the rollbar

☞ *Remove the starting key*

Information!

In order to lower it, the rollbar must be held by one person on either side.

☞ *Remove the linch pins and bolts* **B** *on either side*


Fig. 87: Rollbar lowered

☞ *Slowly and carefully lower the rollbar as far as it will go*

Raising the rollbar


Fig. 88: Lowering the rollbar

☞ *Stop the machine on firm, level and horizontal ground*
☞ *Stop the engine*
☞ *Raise the lock lever*
☞ *Remove the starting key*

Information!

In order to raise it, the rollbar must be held by one person on either side.

☞ *Slowly and carefully lower the rollbar*

Fig. 89: Lowering the rollbar

☞ *Install the linch pins and bolts* **B** *on either side*

Fig. 90: Rotating beacon bracket

Rotating beacon bracket

Bracket **P** for installing a rotating beacon is located on top of the rollbar.

Seat belt (option)

Seat belt (up to serial no. AI01200)

WARNING

Injury hazard when operating the machine without fastening the seat belt!

Can cause serious injury or death.

- Operating the machine without fastening the seat belt is prohibited under any circumstances.
- Seat belt must not be twisted.
- The seat belt must run over the hips – and not over the stomach.
- Do not place the seat belt over hard, edged or fragile items (tools, rulers, glasses, pen) carried inside your clothes.
- Never buckle up 2 persons with one seat belt.
- Check the seat belt condition regularly. Have damaged parts immediately replaced by a Wacker Neuson service center.
- Always keep the seat belt clean, as coarse dirt can impair proper functioning.
- Seat belt buckle must not be obstructed by foreign bodies, otherwise the buckle latch cannot lock into place.
- Depending on the situation, traveling over very short distances with a lowered rollbar is allowed (in case of low clearance heights, for example)
  – *see chapter* ***Operation with lowered ROPS rollbar*** on page 2-9
  – *see chapter* ***Operation with lowered TOPS rollbar (up to serial no. AI00966)*** on page 2-9.

After an accident the belt strap is stretched and no longer serviceable. In an accident, the seat belt does not provide enough safety!

- Replace the seat belt after an accident.
- Have fastening points and seat fixture checked for bearing capacity.

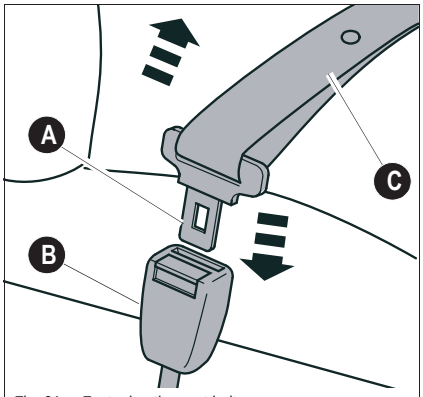


Fig. 91: Fastening the seat belt

Seat belt **C** is for the operator's safety.

Fastening the seat belt:

☞ *Fasten the seat belt as follows before starting 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** until it engages audibly **(pull test)**
- Tighten the seat belt by pulling at its end

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

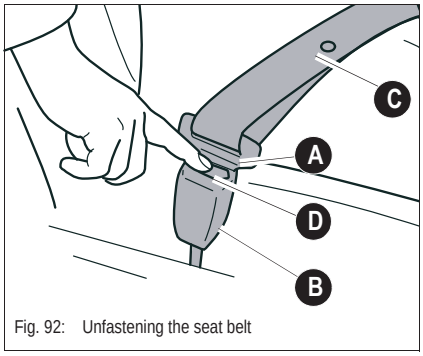


Fig. 92: Unfastening the seat belt

Unfastening the seat belt:

☞ *Unfasten seat belt **C** as follows:*

- Hold the seat belt
- Press button **D** on buckle **B**

  ➥Latch **A** is released by spring pressure
- Unfastening the seat belt

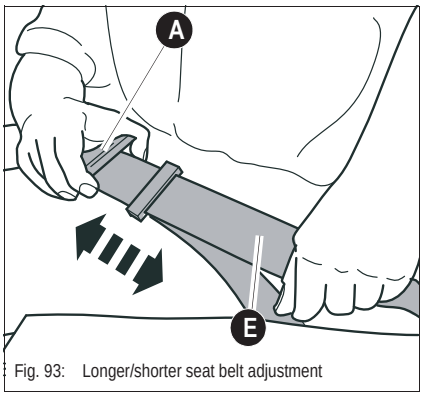


Fig. 93: Longer/shorter seat belt adjustment

Longer/shorter seat belt adjustment:

☞ *Lengthen the seat 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 seat belt, just pull the free end **E** of the belt

Retracting seat belt (from serial no. AI01201))

WARNING

Injury hazard when operating the machine without fastening the seat belt!

Can cause serious injury or death.

- Operating the machine without fastening the seat belt is prohibited under any circumstances.
- Seat belt must not be twisted.
- The seat belt must run over the hips – and not over the stomach.
- Do not place the seat belt over hard, edged or fragile items (tools, rulers, glasses, pen) carried inside your clothes.
- Never buckle up 2 persons with one seat belt.
- Check the seat belt condition regularly. Have damaged parts immediately replaced by a Wacker Neuson service center.
- Always keep the seat belt clean, as coarse dirt can impair proper functioning.
- Seat belt buckle must not be obstructed by foreign bodies, otherwise the buckle latch cannot lock into place.
- Depending on the situation, traveling over very short distances with a lowered rollbar is allowed (in case of low clearance heights, for example) *– see chapter* ***Operation with lowered ROPS rollbar*** on page 2-9.

After an accident the belt strap is stretched and no longer serviceable. In an accident, the seat belt does not provide enough safety!

- Replace the seat belt after an accident.
- Have fastening points and seat fixture checked for bearing capacity.

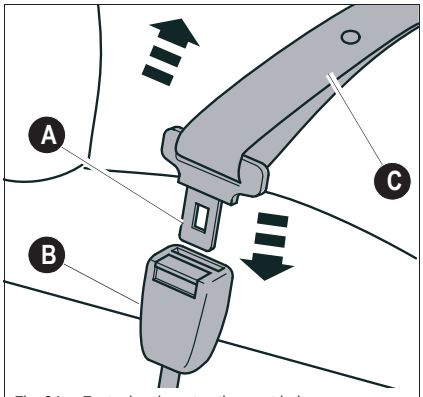


Fig. 94: Fastening the retracting seat belt

The retracting seat belt **C** is for the operator's safety.

Fastening the retracting seat belt:

☞ *Fasten the retracting seat belt as follows before starting 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** until it engages audibly **(pull test)**

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

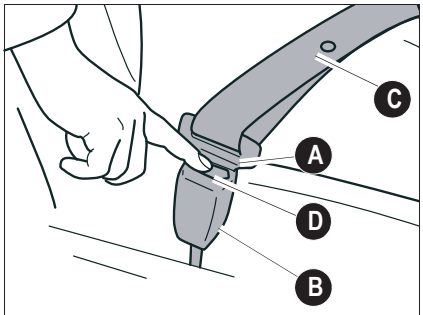


Fig. 95: Unfastening the retracting seat belt

Unfastening the retracting seat belt:

☞ *Unfasten retracting seat belt **C** as follows:*

- Hold the retracting seat belt
- Press button **D** on buckle **B**

  ➥Latch **A** is released by spring pressure
- Unfastening the retracting seat belt

Engine cover

WARNING

Injury hazard due to rotating parts!

Can cause serious injury or death.

- Open the engine cover only at engine standstill!
- Ensure that no one is injured by the open engine cover.
- Raise the lock lever
- Remove the starting key

WARNING

Burn hazard due to hot engine parts!

Can cause serious injury or death.

- Stop the engine before performing work in the engine compartment!
- Raise the lock lever
- Remove the starting key
- Let the engine cool down.

Information!

Close and lock the engine cover after finishing work in the engine compartment.

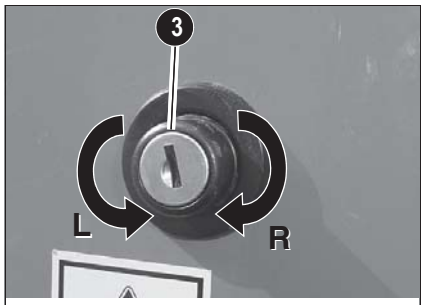


Fig. 96: Engine cover lock

Opening:

☞ *Press lock* **3**

☞ *Pull the engine cover upward*

Closing:

☞ *Firmly press down the engine cover until lock* **3** *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* **3** *to the* ***left*** *(**L**)*

➥ Engine cover locked

☞ *Turn the starting key in lock* **3** *to the* ***right*** *(**R**)*

➥ Engine cover unlocked

Opening the engine cover

☞ *Unlock and open the engine cover.*

Fig. 97: Open engine cover

☞ *Let the engine cover engage in position* **A**.

- It is locked by letting curved rail **B** engage in position **A**.

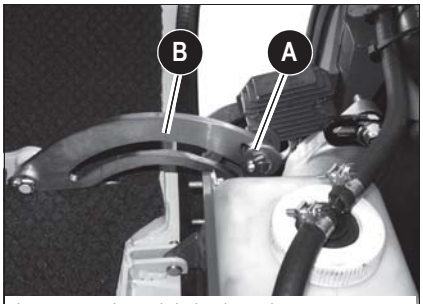


Fig. 99: Opening and closing the engine cover

Close the engine cover

☞ *Unlock the engine cover.*

- It is unlocked by raising curved rail **B**.

☞ *Lower the engine cover slowly.*

☞ *Ensure that the engine cover closes correctly.*

☞ *Close the engine cover.*

☞ *Lock the engine cover.*

Battery master switch

WARNING

Danger of accident from interrupted electric power supply in the HPU operation!

Can cause serious injury or death.

- HPU operation with interrupted electric power supply is forbidden, as safety-related functions (e.g. light, horn) do not work.

From serial number WNCE0801VPAL01769, the vehicle has a battery isolator switch.

The battery isolator switch is located under the engine cover.

Interrupt the electric power supply:

Flip up the battery isolator switch **A** and remove from the **B** positive terminal.

Establish the electric power supply:

Set the battery isolator switch **A** to the positive terminal **B** and fold down.

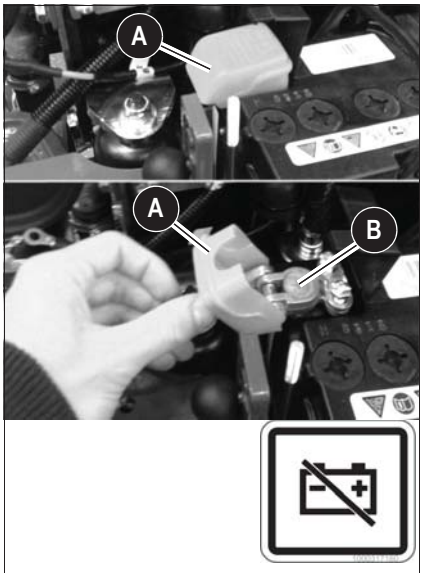


Fig. 100: Battery master switch

Towing the machine

WARNING

Accident hazard due to towing!

Can cause serious injury or death.

- The machine may only be towed using suitable towing equipment (towing bar or cable) in connection with suitable towing facilities, such as a towing coupling, hooks and eyes.
- Start machine travel and tow away slowly.
- Ensure that no one is between the vehicles during towing.
- Have a recovery service or a Wacker Neuson service center tow the machine away if necessary – *see chapter* ***Transportation*** on page 2-10.
- Ensure that no one is near the towing bar or cable. The lateral safety distance is equal to 1.5 times the length of the towing equipment.

NOTICE

Only tow the machine if absolutely necessary.

- Tow away the machine only if the engine is running and if the drive is functional. A malfunctioning machine must be loaded with a crane.
- If necessary, contact a Wacker Neuson service center for towing the machine away.
- Fasten the towing equipment only on the towing eye hook provided for this.
- The maximum permissible load of the towing eye hook is equal to 1.5 times the dead weight of the machine.
- A tractor vehicle of the same weight category must be used as a minimum. In addition, the tractor vehicle must be equipped with a safe brake system and sufficient tractive power.

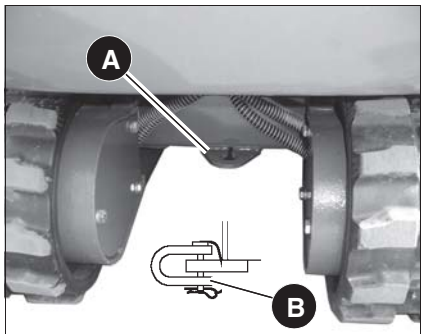


Fig. 101: Towing bore

1 Ensure that the machine can be towed safely.
2 Use towing eye hook **A** of the machine for towing.
3 Use towing eye hook **A** only for towing.
4 Secure shackle **B** with the shackle pin and a lock pin.
5 Install towing equipment of adequate size on the shackle.
6 Start machine travel and tow away slowly.
7 Tow away the machine only until it can travel on its own.

Information!

The manufacturer's warranty shall not apply to accidents or damage caused by towing the machine. Using towing eye hook A to pull other machines or to tow equipment is prohibited.

Lifting the machine

WARNING

Accident hazard due to incorrect loading!

Can cause serious injury or death.

- Ensure that no one is near the machine!
- Have loads fastened and crane operators guided by experienced persons only! The person guiding the crane operator must be within sight or sound of him.
- Ensure that the crane and the lifting gear (cables, chains) have sufficient lifting capacity!
- Raise the machine only if the standard bucket is empty.
- Stay clear of suspended loads!
- Secure the machine against unintentional movement!
- 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!
- Lock the upper carriage – *see chapter* ***Upper carriage lock*** on page 3-25!
- Ensure that the lifting gear has the required lengths **L1** and **L2**.

NOTICE

In order to avoid damage to the machine and the lifting gear:

- Lower the rollbar during crane lifting
  – *see* ***Lowering the rollbar*** on page 3-34.
- Remove the window if the machine is equipped with the shatter protection option
  – *see* ***Shatter protection (option) (from serial no. AI00967)*** on page 3-48.

Information!

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 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.

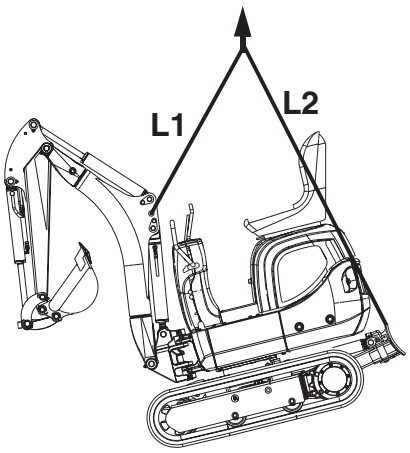


Fig. 102: Crane lifting (without rollbar)

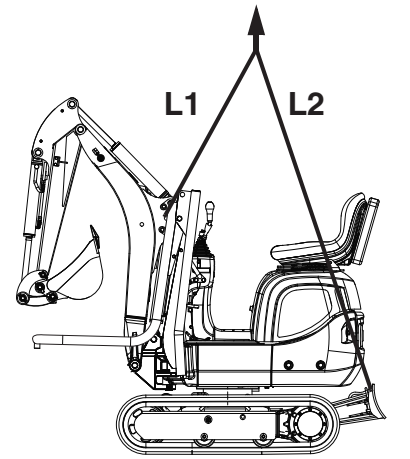


Fig. 103: Crane lifting (with rollbar)

1 Fit an empty standard bucket and lock it safely.
2 Empty the standard bucket or remove the attachment.
3 Remove all dirt from the machine.
4 Park the machine on firm, level and horizontal ground.
5 Curl the standard bucket and lower it to transport position.
6 Fully raise the boom.
7 Pull the stick toward the machine.
8 Raise the stabilizer blade (it must be at the rear).
9 Position the boom straight ahead at the center of the machine.
10 Stop the engine.
11 Operate the control lever repeatedly to release the pressure in the hydraulic system.
12 Raise the lock lever.
13 Remove the starting key and carry it with you.
14 Remove all loose objects from the machine.
15 Get off the machine, close and lock all covers.
16 Remove the window if the machine is equipped with the shatter protection option. Lower the rollbar if the machine is equipped with this option.
17 Install suitable slings at the points provided for lifting the machine.
18 Install the lifting gear at the point on the boom provided for lifting the machine.
19 Install the lifting gear at the points on the stabilizer blade provided for lifting the machine.

☞ Ensure that the lifting gear has the required lengths **L1** and **L2**.

20 Slowly raise the machine until there is no more contact with the ground.
21 Wait until the machine does not swing any more and is completely steady.
22 If the balance, and the condition and position of the slings is correct, slowly raise the machine to the required height and load it.
23 Raise the rollbar after loading the machine.

Required lengths **L1** and **L2** of the lifting gear:

Length	Dimension
L1	1054 mm (42 in)
L2	1718 mm (68 in)

Loading and transporting the machine

Safety instructions

- The transport vehicle must be of adequate size – refer to *Chapter* ***6 "Technical data"*** for the machine's dimensions and weights!
- Remove dirt (mud, snow, ice, for example) from the tracks so that the machine can be safely traveled onto the ramps.

WARNING

Accident hazard due to incorrect loading or transportation!

Can cause serious injury or death.

- 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!

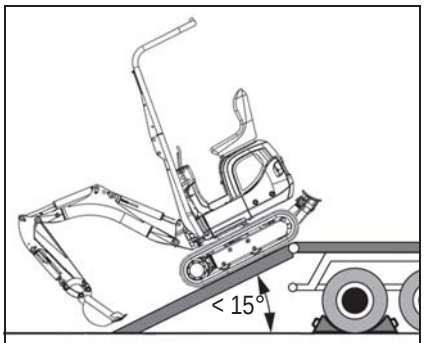


Fig. 104: Access ramps

- Secure the transport vehicle with chocks to prevent it from rolling.
- Up to the 2nd quarter of 2014 (shatter protection without upper cross brace): Remove the shatter protection if the machine is transported on an open platform.
- From the 3rd quarter of 2014:
  Check the safe position of the split pins on the left and right.
  – see chapter ***Installing (from the 3rd quarter of 2014)*** on page 3-49
  If an additional cross brace is installed (from the 2nd quarter of 2014), the shatter protection does not have to be removed before transporting the machine on an open platform.
- Place the access ramps at the smallest possible angle. Ensure that the grade does not exceed 15° (17 %). Use access ramps with an antiskid surface only.
- Ensure that the loading area is clear and access to it is not obstructed – by superstructures, for example
- Ensure that the access ramps and the tracks of the excavator are free of dirt (oil, grease, ice, for example)
- Start the engine of the excavator
- Raise the boom enough so that it will not touch the access ramps
- Rotate the upper carriage to the rear (see figure **104**)
- Carefully travel the excavator onto the middle of the transport vehicle
- Move the excavator to transport position
- Stop the engine
- Raise the lock lever
- Remove the starting key
- Close and lock the engine cover

Information!

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

- Secure the machine against unintentional movement
  – see chapter ***Parking the machine*** on page 3-26!

Tying down the machine

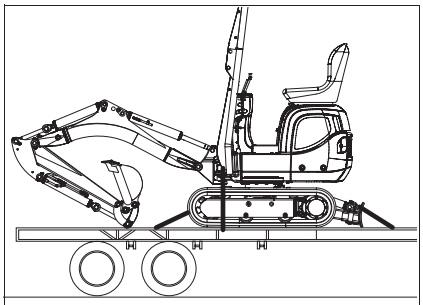
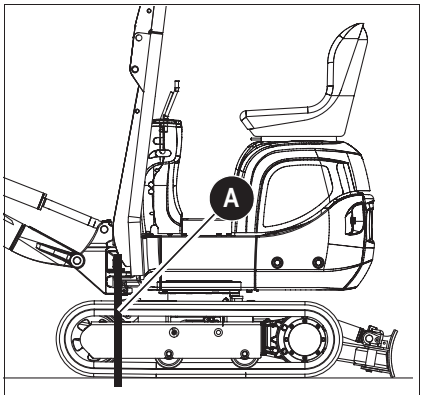


Fig. 105: Tying down the excavator



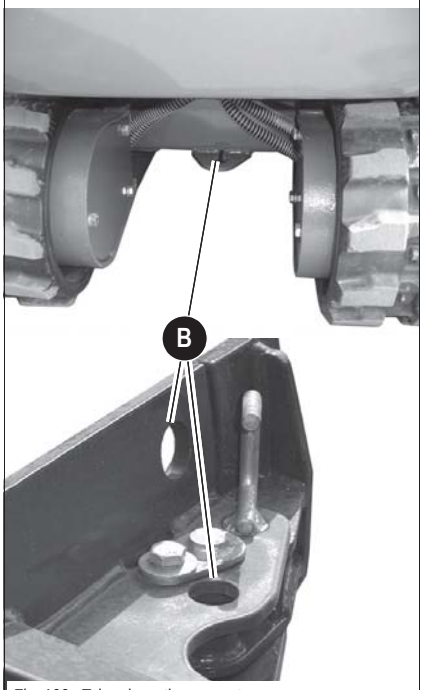


Fig. 106: Tying down the excavator

WARNING

Accident hazard due to incorrect loading or transportation!

Can cause serious injury or death.

- 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!

- Ensure that the authorized maximum height is not exceeded
- Lock the upper carriage – *see chapter* ***Upper carriage lock*** on page 3-25
- Lower the stabilizer blade and the boom
- Firmly tie down the excavator at the swiveling console onto the platform, with belts or chains **A** of adequate size
- Firmly tie down the excavator at the eye hooks **B** onto the platform, with belts or chains of adequate size
- Ensure that the operator of the transport vehicle knows the overall height, width and weight of his vehicle (incl. excavator) before departure, as well as the legal transport regulations of the country or countries where transport is to take place!

Information!

Only use OSHA-approved lifting devices.
Use edge protectors to avoid damage both to the machine and to the belts, ropes or chains.

3.12 Shatter protection (option) (from serial no. AI00967)

DANGER

Piercing/penetration hazard by objects from the front!

Causes serious injury or death.

- A shatter protection must be installed on a canopy version if an attachment (a hammer, for example) causes fragments to fly around. This shatter protection takes over the function of a front window.
- Pay attention to the restricted work range (see fig. 109).
- Machine operation is prohibited without a shatter protection.
- For 803 machines up to serial number AI00966, operation with an attachment causing fragments to fly around is absolutely prohibited, because a shatter protection cannot be mounted.

DANGER

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

Causes serious injury or death.

- Stop machine operation immediately.

Information!

The shatter protection protects the operator against fragments from the front.

- The machine owner must ensure that the hazard situation is evaluated and that the national regulations are observed.
- The machine owner 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.

Information!

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

Information!

Protective structures may only be installed or removed by a Wacker Neuson service center.

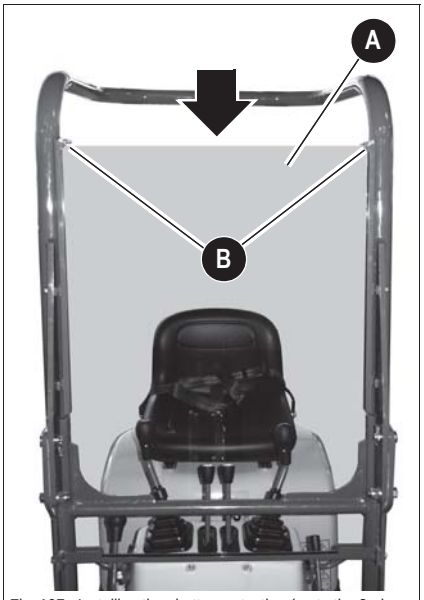


Fig. 107: Installing the shatter protection (up to the 2nd quarter of 2014)

Installing (up to the 2nd quarter of 2014)

1 Follow the safety instructions for assembly
– *see chapter* ***Parking the machine*** on page 3-26.

2 Lower the boom to the ground.

3 Stop the engine

4 Raise the lock lever
– *see chapter* ***Lock lever (up to serial no. AI00814)*** on page 3-62
– *see chapter* ***Lock lever (from serial no. AI00815)*** on page 3-62

5 Remove the starting key

6 With the help of two persons, carefully slide shatter protection **A** from above into the guide rails.

7 Secure the shatter protection on either side with two linch pins **B**.

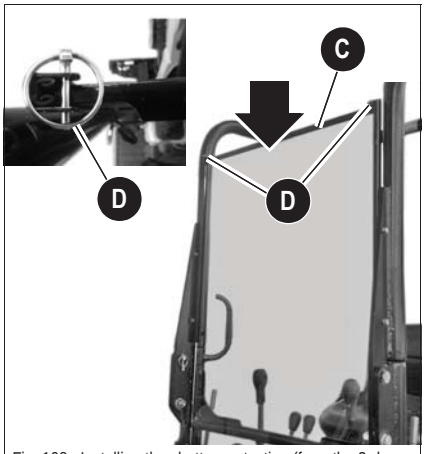


Fig. 108: Installing the shatter protection (from the 3rd quarter of 2014)

Installing (from the 3rd quarter of 2014)

Perform steps 1 – 6 as described above.

☞ *Secure the shatter protection with cross brace* **C** *and one split pin* **D** *on the left and right.*

Removing

Remove in the reverse order.

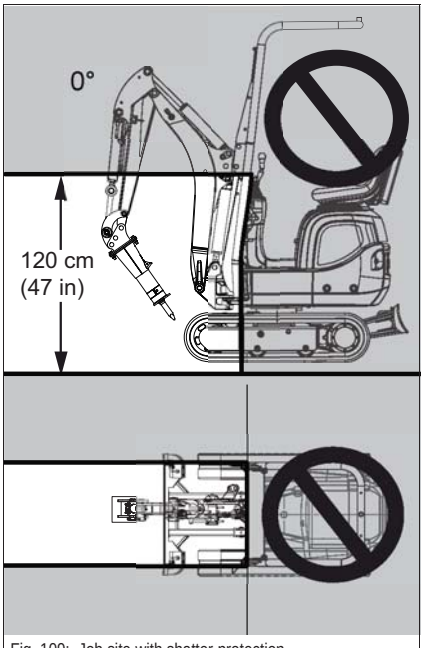


Fig. 109: Job site with shatter protection

Job site

Height of working area: 120 cm (47 in).

The figures refer to work with a Wacker Neuson hydraulic hammer.

Information!

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

3.13 Machine operation

General safety instructions

- Machine operation is only allowed when seated on the seat
  – see chapter 2.6 ***Safety instructions regarding operation*** on page 2-6.
- Do not use the machine in areas with falling object hazard!
- Never travel up to the edge of a pit from outside – cave-in hazard!
- Never undermine the foundations of walls – collapsing hazard!
- Do not dig under projecting ground. Stones or the projecting earth can fall onto the machine.
- Do not excavate deeply under the front side of the machine. The ground under the machine could collapse and cause it to tip over.
- In order to leave the control stand more easily under especially difficult circumstances, position the tracks parallel to the roadside or to the uphill slope with the drive pinion behind the operator.
- Do not perform demolition work below the machine, this could cause the machine to tip over.
- When working on roofs or similar structures, check the resistance and the structure before starting work. The building can collapse, causing serious/fatal injury and serious damage.
- Do not place the machine directly underneath the workplace during demolition, otherwise demolished parts can fall onto the machine or the building can collapse, causing serious/fatal injury and serious damage.
- Do not use the impact force of the attachment to perform demolition work. Falling demolished parts (parts of buildings, for example) can cause injury and/or damage to property and/or the machine.
- In general the machine is more liable to tip over if the boom is positioned laterally than if it is positioned parallel to the longitudinal axis of the machine.
- The machine can lose its balance and tip over if a demolition hammer or other heavy attachment is used. Proceed as follows to perform work both on level ground and on slopes:
  ☞ Never lower, turn or set down the attachment abruptly.
  ☞ Do not extend or retract the boom abruptly, otherwise the machine can tip over.
- Do not raise the bucket over the heads of persons, the seat or the cabs of trucks or other means of transport. Material can fall out, or the bucket can knock against the truck and cause serious/fatal injury and serious damage.

- Operation of the machine by unauthorized personnel is prohibited!
- Look out for high-voltage cables, underground cables, gas and water pipes during excavation work!
- 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 that are to be opened before starting setup or repair work, for example fitting/removing an attachment with hydraulic functions – *see* ***Emergency lowering*** on page 3-60.
- Machine operation is only allowed if the rollbar is raised and locked, and if the seat belt is fastened.
  - Machine operation with the rollbar lowered is prohibited.
- Use an external light source in case of poor illumination of the job site. If this is not enough to illuminate the job site sufficiently, stop machine operation and only take it up again if sufficient illumination can be ensured.

3.14 Control lever overview

Information!

Moving a control lever quickly causes the corresponding function to be performed quickly. Moving a control lever slowly causes the corresponding function to be performed slowly.

Left-hand control lever

WARNING

Accident hazard due to boom operation!

Can cause serious injury or death.

- Raise the lock lever.

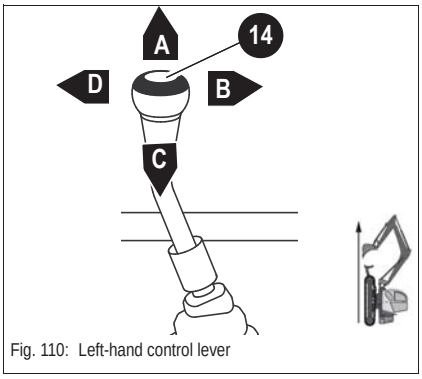


Fig. 110: Left-hand control lever

Position	Lever	Function
A	☞ *Forward*	➥ Extends the stick
B	☞ *To the right*	➥ Rotates the upper carriage to the right
C	☞ *Backward*	➥ Retracts the stick
D	☞ *To the left*	➥ Rotates the upper carriage to the left

Information!

Always perform smooth control movements.

Right-hand control lever

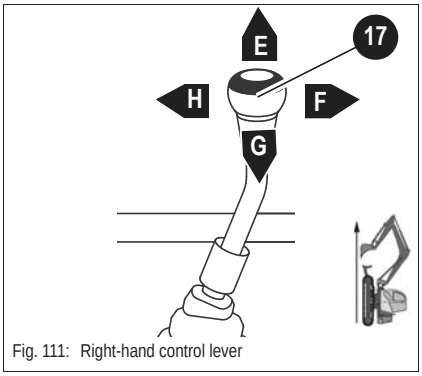


Fig. 111: Right-hand control lever

Position	Lever	Function
E	☞ *Forward*	➥ Lowers the boom
F	☞ *To the right*	➥ Tilts out the bucket
G	☞ *Backward*	➥ Raises the boom
H	☞ *To the left*	➥ Tilts in the bucket

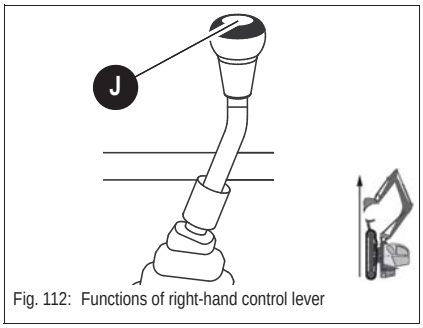


Fig. 112: Functions of right-hand control lever

Button	Function
J	➥ Horn

3.15 Boom swivel controls

WARNING

Injury hazard when operating the boom swivel mechanism!

Can cause serious injury or death.

- The boom swivel function cannot be locked.
- Press the pedal carefully, otherwise the boom is actuated earlier than required.
- In order to minimize the risk of unintentional operation, flip the pedal forward after swiveling the boom.

Boom swivel controls (up to serial no. AI00975)

WARNING

Injury hazard when operating the boom swivel mechanism!

Can cause serious injury or death.

- In order to minimize the risk of unintentional operation, flip the pedal forward after swiveling the boom.

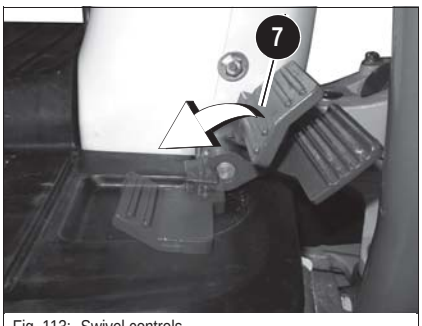


Fig. 113: Swivel controls

☞ *Unfold the right-hand pedal* **7**

➥ The boom can be swiveled

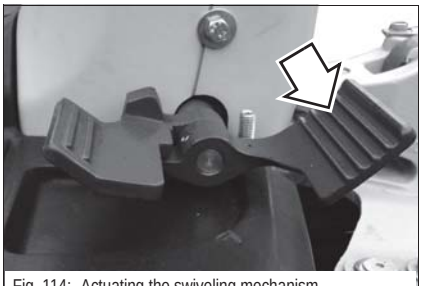


Fig. 114: Actuating the swiveling mechanism

Swiveling the boom to the left:

☞ *Press the front half of the right-hand pedal*

➥ Boom swivels to the left

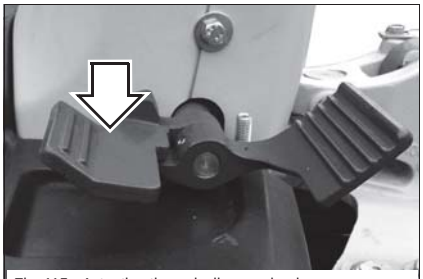


Fig. 115: Actuating the swiveling mechanism

Swiveling the boom to the right:

☞ *Press the rear half of the right-hand pedal*

➥ Boom swivels to the right

Boom swivel controls (from serial no. AI00976)

WARNING

Injury hazard when operating the boom swivel mechanism!

Can cause serious injury or death.

- The pedal is secured with a torsion spring. The pedal flips forward when it is released, but is not locked.

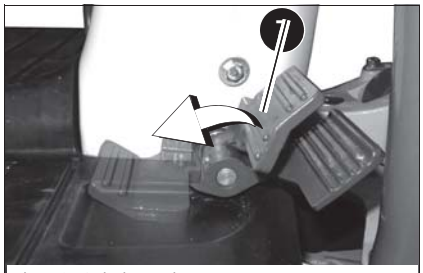


Fig. 116: Swivel controls

☞ *Unfold the right-hand pedal* **7**

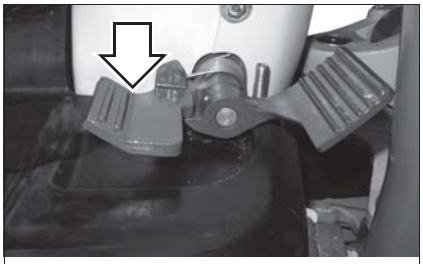


Fig. 117: Keeping the swiveling mechanism in position

☞ *Keep the right-hand pedal in position but do not press it*

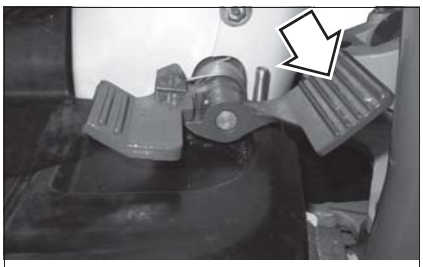


Fig. 118: Actuating the swiveling mechanism

Swiveling the boom to the left:

☞ *Press the front half of the right-hand pedal*

➥ Boom swivels to the left

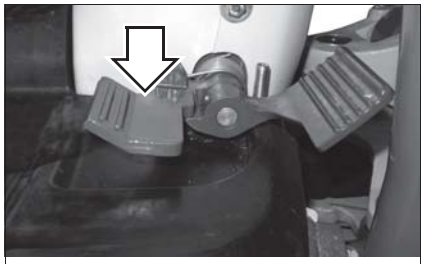


Fig. 119: Actuating the swiveling mechanism

Swiveling the boom to the right:

☞ *Press the rear half of the right-hand pedal*

➥ Boom swivels to the right

3.16 Auxiliary hydraulics

WARNING

Injury hazard due to auxiliary hydraulics operation!

Can cause serious injury or death.

- The auxiliary hydraulics function cannot be locked.
- Press the pedal carefully, otherwise the auxiliary hydraulics is actuated earlier than required.

Auxiliary hydraulics (up to serial no. AI00975)

WARNING

Injury hazard due to auxiliary hydraulics operation!

Can cause serious injury or death.

- In order to minimize the risk of unintentional operation, flip the pedal forward after actuating the auxiliary hydraulics.

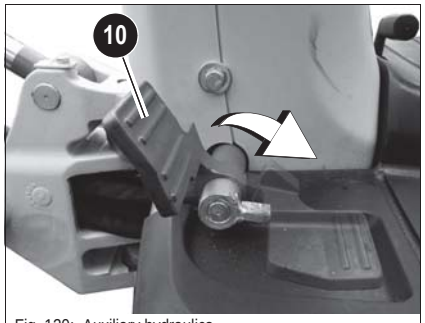


Fig. 120: Auxiliary hydraulics

☞ *Unfold the left-hand pedal **10***

➥ Auxiliary hydraulics can be actuated

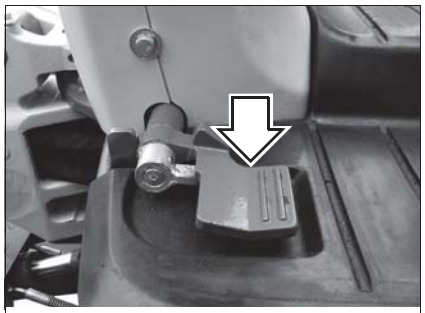


Fig. 121: Actuating the auxiliary hydraulics

Actuating the auxiliary hydraulics:

☞ *Press the left-hand pedal*

➥ Oil flows through the auxiliary hydraulics line

Auxiliary hydraulics (from serial no. AI00976)

WARNING

Injury hazard due to auxiliary hydraulics operation!

Can cause serious injury or death.

- The pedal is secured with a torsion spring. The pedal flips forward when it is released, but is not locked.

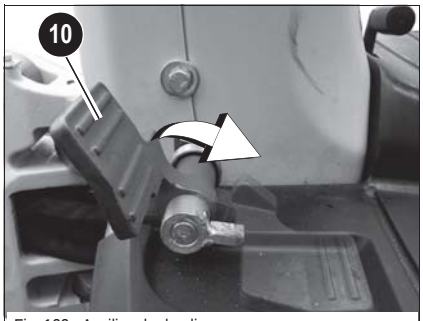


Fig. 122: Auxiliary hydraulics

☞ *Unfold the left-hand pedal **10***

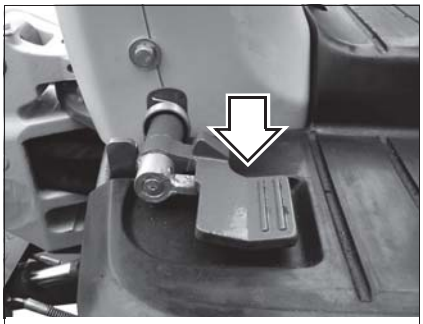


Fig. 123: Actuating the auxiliary hydraulics

☞ *Keep the left-hand pedal in position but do not press it*

Actuating the auxiliary hydraulics:

☞ *Press the left-hand pedal*

➥ Oil flows through the auxiliary hydraulics line

Auxiliary hydraulics (double-action option) (up to serial no. AI00975)

WARNING

Injury hazard due to auxiliary hydraulics operation!

Can cause serious injury or death.

- In order to minimize the risk of unintentional operation, flip the pedal forward after actuating the auxiliary hydraulics.

Information!

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

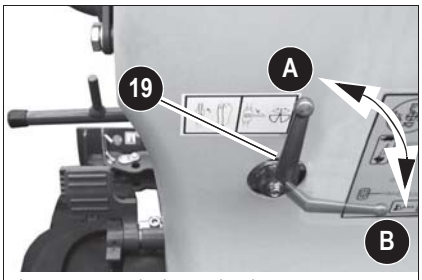


Fig. 124: Hammer/grab operation changeover

Hammer/grab operation changeover

Hammer/grab operation changeover is performed with lever **19**.

Position	Lever	Function
A	☞ *Turn lever* **19** *upward*	➥ Hammer operation
B	☞ *Turn lever* **19** *to the right*	➥ Grab operation

Hammer operation enabled

➥ Oil flows to the hammer through the pressure line and to the reservoir through the return line.

Grab operation enabled

- Press the pedal backward – the grab rotates to the left.
- Press the pedal forward – the grab rotates to the right.

➥ Oil flows forward through the left or right-hand pressure line.

Information!

Check the auxiliary hydraulics pedal for correct function.

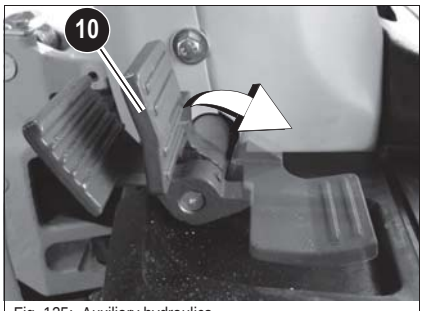


Fig. 125: Auxiliary hydraulics

☞ *Unfold the left-hand pedal* ***10***

➥ Auxiliary hydraulics can be actuated

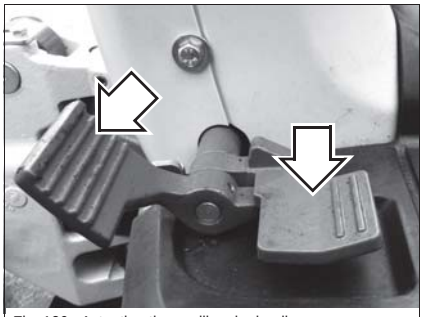


Fig. 126: Actuating the auxiliary hydraulics

Actuating the auxiliary hydraulics:

☞ *The left-hand pedal can be pressed forward or backward*

➥ Oil flows through the auxiliary hydraulics line

Auxiliary hydraulics (double-action option) (from serial no. AI00976)

WARNING

Injury hazard due to auxiliary hydraulics operation!

Can cause serious injury or death.

- The pedal is secured with a torsion spring. The pedal flips forward when it is released, but is not locked.

Information!

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

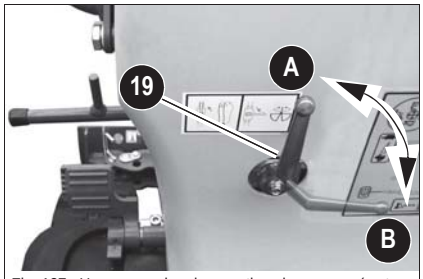


Fig. 127: Hammer and grab operation changeover (up to WNCE0801EPAL00209)

Hammer/grab operation changeover
(up to serial number WNCE0801EPAL00209)

Hammer/grab operation changeover is performed with lever **19**.

Position	Lever	Function
A	☞ *Turn lever* **19** *upward*	➥ Hammer operation
B	☞ *Turn lever* **19** *to the right*	➥ Grab operation

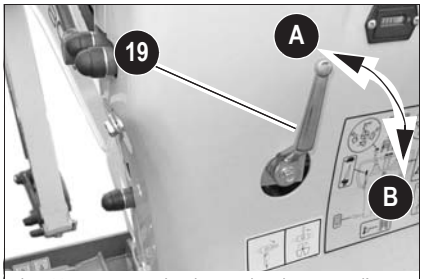


Fig. 128: Hammer and grab operation changeover (from WNCE0801EPAL00210)

Hammer/grab operation changeover
(from serial number WNCE0801EPAL00210)

Hammer/grab operation changeover is performed with lever **19**.

Position	Lever	Function
A	☞ *Turn lever* **19** *upward*	➥ Grab operation
B	☞ *Turn lever* **19** *to the right*	➥ Hammer operation

Hammer operation enabled

➥ Oil flows to the hammer through the pressure line and to the reservoir through the return line.

Grab operation enabled

- Standard: press the pedal backward – the grab rotates to the left.
- Standard: press the pedal forward – the grab rotates to the right.

➥ Oil flows forward through the left or right-hand pressure line.

Information!

Check the auxiliary hydraulics pedal for correct function.

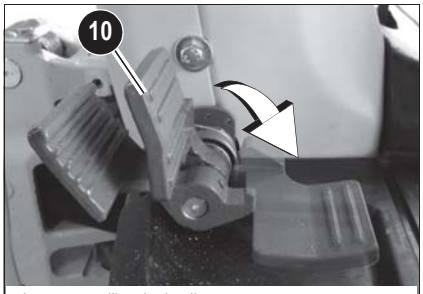


Fig. 130: Auxiliary hydraulics

☞ *Unfold the left-hand pedal **10***

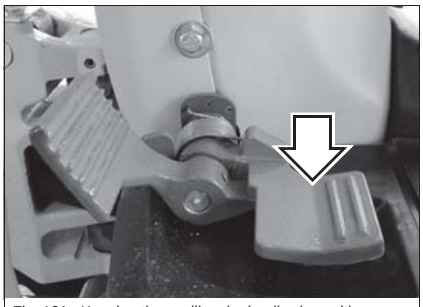


Fig. 131: Keeping the auxiliary hydraulics in position

☞ *Keep the left-hand pedal in position but do not press it*

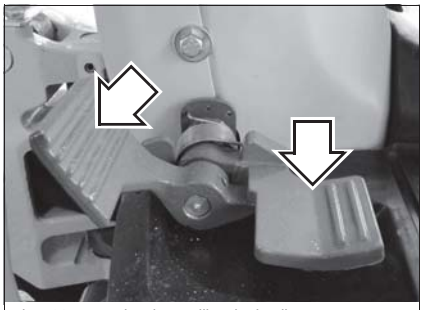


Fig. 132: Actuating the auxiliary hydraulics

Actuating the auxiliary hydraulics:

☞ *The left-hand pedal can be pressed forward or backward*

➥ Oil flows through the auxiliary hydraulics line

Emergency lowering

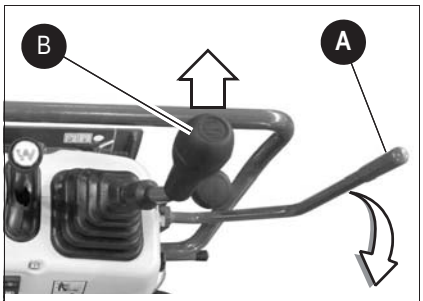


Fig. 133: Emergency lowering

WARNING

Crushing hazard during boom lowering!

Can cause serious injury or death.

- Ensure that no one is in the danger zone.

Information!

Lower the boom immediately after stopping the engine.

Observe the following during emergency lowering:

1 Lower lock lever **A**.

2 Push the right-hand control lever **B** forward until the boom is fully lowered to the ground.

3 Return control lever **B** to neutral.

Rotating the upper carriage

Specific safety instructions

WARNING

Accident hazard due to possible farther rotation of the upper carriage in cold operating state!

Can cause serious injury or death.

- Until the hydraulic fluid reaches operating temperature, the upper carriage can rotate farther than expected after the control is placed in the neutral position. Carefully operate the control lever in cold operating state.

WARNING

Crushing hazard due to upper carriage rotation on a slope!

Can cause serious injury or death.

- Operate the control levers especially carefully on a slope.

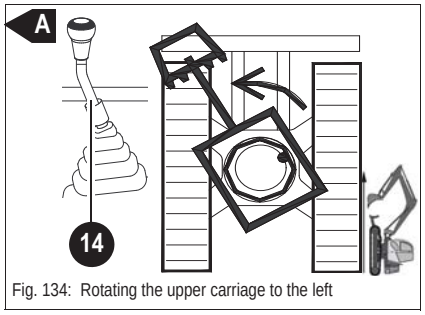


Fig. 134: Rotating the upper carriage to the left

Fast actuation of the control lever rotates the upper carriage fast, slow actuation of the control lever rotates the upper carriage slowly.

Rotate the upper carriage to the left as follows:

☞ *Push the left-hand control lever* **14** *to the left* ***A***

➥ The upper carriage rotates to the left

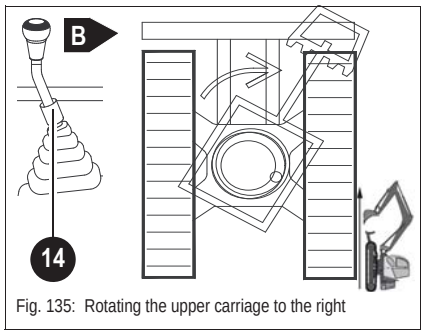


Fig. 135: Rotating the upper carriage to the right

Rotate the upper carriage to the right as follows:

☞ *Push the left-hand control lever* **14** *to the right* ***B***

➥ The upper carriage rotates to the right

Upper carriage deceleration

Hydraulic swivel unit brake:

The upper carriage's rotation is sufficiently braked by moving control lever **14** on the left back to initial position. Moving the control lever in the opposite direction (counteraction) brakes the upper carriage with maximum hydraulic output.

3.17 Lock lever

WARNING

Crushing hazard due to unexpected movements of the machine or attachments!

Can cause serious injury or death.

- Raise the lock lever before leaving the machine.
- Locking the lock lever makes it impossible to perform any functions with the control and travel levers.
- The boom can still be swiveled if the lock lever is raised.
- The auxiliary hydraulics can still be operated if the lock lever is raised.

Lock lever (up to serial no. AI00814)

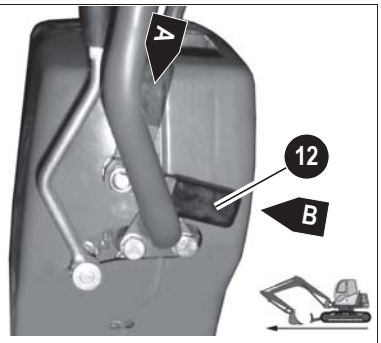


Fig. 136: Lock lever

Locking the lock lever

☞ *Set lever* **12** *to position* ***A***.

➥ The control levers are locked.

Unlocking the lock lever

☞ *Set lever* **12** *to position* ***B***.

➥ The control levers are unlocked.

Lock lever (from serial no. AI00815)

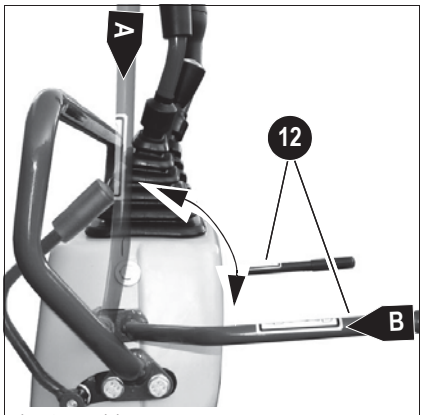


Fig. 137: Lock lever

Locking the lock lever

☞ *Set lever* **12** *to position* ***A***.

➥ The control levers are locked.

Unlocking the lock lever

☞ *Set lever* **12** *to position* ***B***.

➥ The control levers are unlocked.

3.18 Dual Power (option)

Dual Power enables zero-emission working by means of an electrohydraulic power unit (Wacker Neuson HPU8) or conventional working with the diesel engine.

If the machine is equipped with the Dual Power option, hydraulic hoses are connected to the undercarriage of the machine.

WARNING

Accident hazard due to incorrect operation of the hydraulic power unit!

Can cause serious injury or death.

- Do not allow anyone to stay in the danger zone of the excavator.
- The power unit must be at the same level as the excavator.
- The operator must have permanent visual contact with the power unit.
- Do not pull the power unit with the hydraulic hoses.
- *– see chapter* ***Dual Power (option)*** on page 2-17

NOTICE

In order to avoid damage to the machine, Wacker Neuson recommends operating the 803 compact excavator in dual-power operation only with the HPU8 power unit.
During operation with a zero-emission power unit, there must be no biodegradable hydraulic oil in the excavator or power unit.

Information!

The optimal performance of the 803 compact excavator in dual-power operation can only be ensured with the HPU8 power unit. However, if the maximum excavator connection values *– see chapter 6.6* ***Connection values of Dual Power option*** on page 6-3 are complied with, and if the hydraulic oil of the power unit and excavator is identical, other brands can be connected, too.

Information!

Do not travel across flexible hydraulic lines or connecting cables.

Overview of connections

NOTICE

Possible damage to the hydraulic system.

- Always couple and uncouple in the correct boom and stabilizer-blade position – *See* ***Coupling*** on page 3-65.
- Before coupling or uncoupling hydraulic hoses, stop the power unit and the diesel engine of the excavator.

Environment!

Possible serious damage to the environment due to unconnected hydraulic lines.

- The hydraulic hoses of the power unit must be connected to the excavator before starting the power unit.

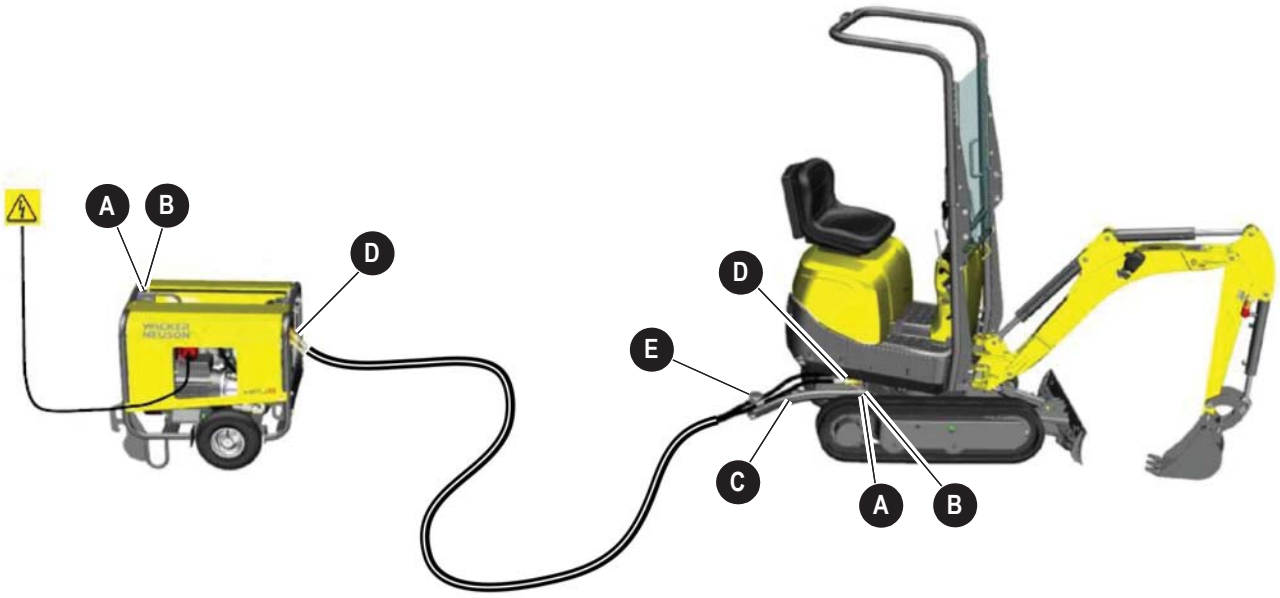


Fig. 138: Overview of connections (symbolic representation)

	Designation
A	Split pin
B	Pins
C	Lance
D	Hydraulic connections
E	Clamping screw

Coupling

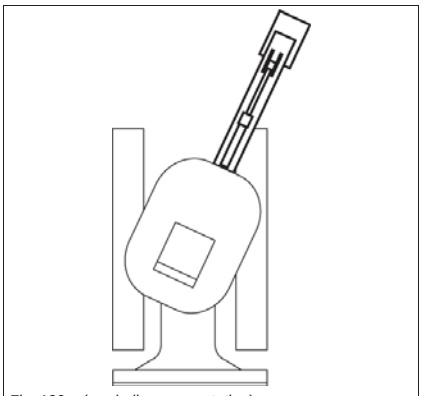


Fig. 139: (symbolic representation)

1 Put the excavator and the power unit on firm, level and horizontal ground.

2 Position the upper carriage as shown. The stabilizer blade must be at the rear.

3 Lower the stabilizer blade to the ground – see *Fig. 45*.

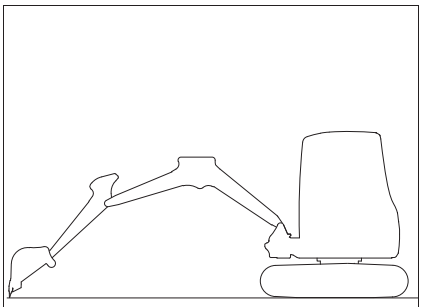


Fig. 140: (symbolic representation)

4 Position the bucket and the stick as shown.

5 Lower the boom to the ground.

6 Stop the diesel engine.

7 Remove the starting key and carry it with you.

8 Operate the control lever repeatedly to release the pressure in the hydraulic system.

9 Stop the power unit.

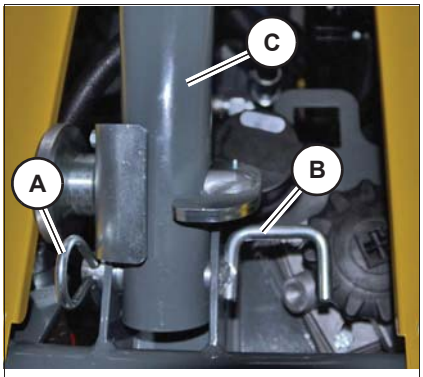


Fig. 141:

10 Pull out split pin **A** and pin **B** (at the front and rear) on the power unit and remove lance **C** from the power unit.

11 Fasten a pin and the split pin on the power unit again.

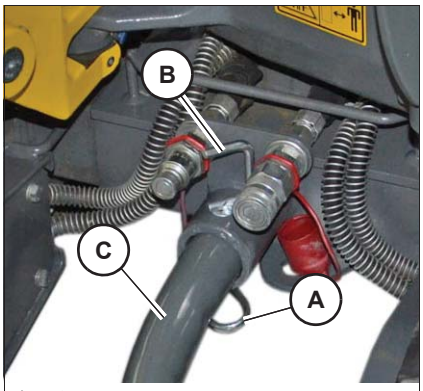


Fig. 142:

12 Insert lance **C** in the holder on the excavator and secure it with pin **B** and split pin **A**.

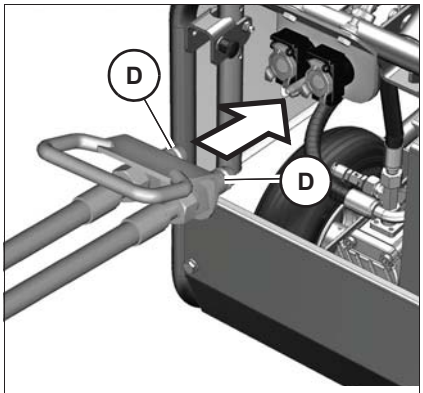


Fig. 143:

13 Connect the hydraulic hose connections **D** to the power unit.

CAUTION

Injury hazard due to sharp-edged objects!

Can cause injury.

- Wear protective gloves when coupling and uncoupling the hydraulic connections of the power unit.

Information!

Possible damage due to use of different hydraulic oil.

- The power unit and excavator must be filled with HVLP 46 hydraulic oil. Operation is prohibited if other oil types/grades or biodegradable hydraulic oil is used.

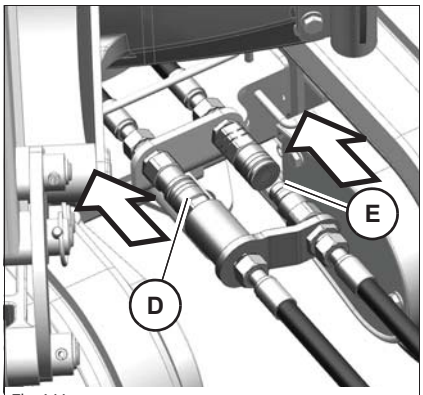


Fig. 144:

14 Connect the hydraulic hose connection **D** to the excavator.

15 Connect the hydraulic hose connection **E** to the excavator.

Environment!

Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.

Fig. 145:

16 Screw clamping screw **F** and fasten the hydraulic hose on the lance as shown.

Checking the hydraulic oil levels of the power unit and excavator

Check the hydraulic oil levels before starting the power unit.

NOTICE

Possible damage to power unit or excavator.

- Check the hydraulic oil levels before starting and observe the following measures.
- Do not start the diesel engine of the excavator during power unit operation, otherwise the hydraulic oil levels of the power unit and excavator are changed.

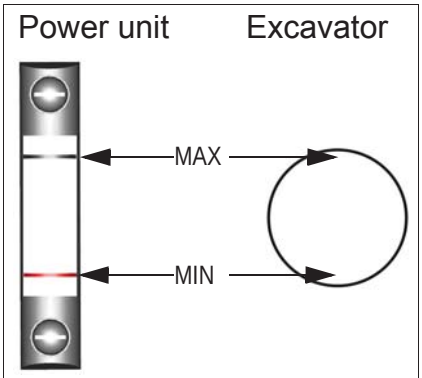


Fig. 146:

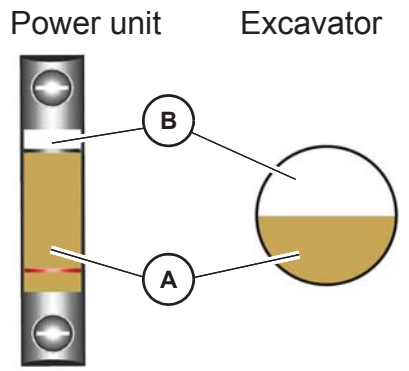


Fig. 147:

The power unit and excavator may only be put into operation if the hydraulic oil levels are between the MIN and MAX marks. Both hydraulic oil **(A)** and air **(B)** must be visible in the sight glass.

- Add hydraulic oil if no hydraulic oil can be seen in one of both sight glasses.
- Do not start operation if no air can be seen in one of the sight glasses. Contact a Wacker Neuson service center.

Changeover from HPU to diesel operation

Fig. 148:

NOTICE

Possible damage to the excavator if the diesel engine is started in the **HPU** position.

- Stop the diesel engine and change over from HPU to diesel operation.

Key **A** for changing over between HPU and diesel operation is located in the document box behind the operator seat.

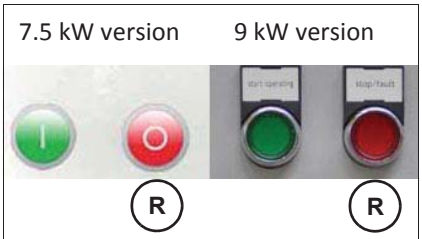


Fig. 149:

1 Stop the HPU: press the red push button **(R)**

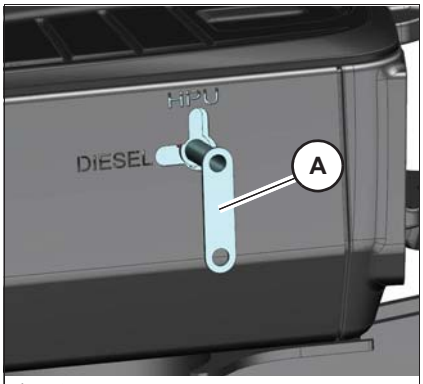


Fig. 150:

2 Insert key **A** and turn it anticlockwise to position **1**.

3 Remove key **A** and store it in the document box.

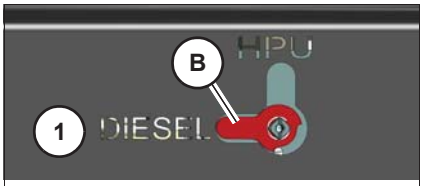


Fig. 151:

➥ Indication **B** must be in position **1**.

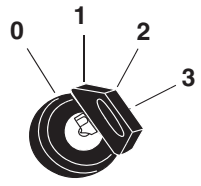


Fig. 152:

4 Start the diesel engine: turn the starting key to position **3**.

Changeover from diesel to HPU operation

Fig. 153:

Key **A** for changing over between HPU and diesel operation is located in the document box behind the operator seat.

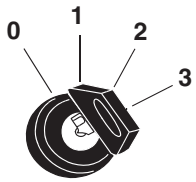


Fig. 154:

1 Stop the diesel engine: turn the starting key to position **0**.

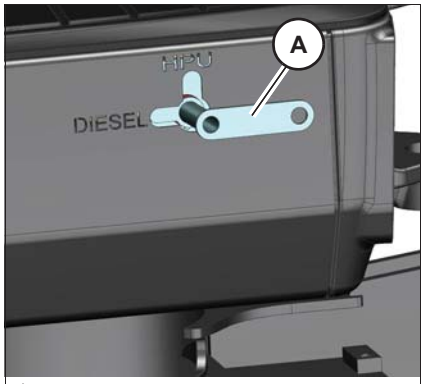


Fig. 155:

2 Insert key **A** and turn it clockwise to position **2**.

3 Remove key **A** and store it in the document box.

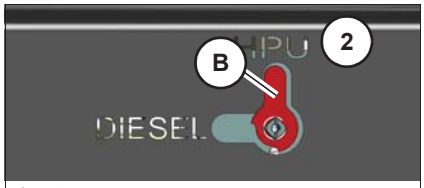


Fig. 156:

➥ Indication **B** must be in position **2**.

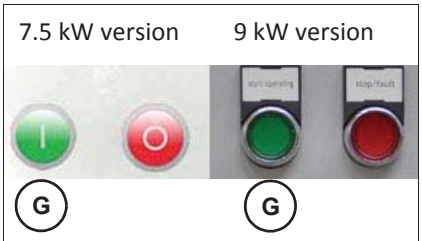


Fig. 157:

Switch on the HPU: press the green push button **(G)**

Uncoupling

CAUTION

Possible injury hazard due to sharp-edged objects!

Can cause injury.

- Wear protective gloves when uncoupling the hydraulic connections of the power unit.

NOTICE

Possible damage to power unit or excavator.

- Always couple and uncouple in the correct boom and stabilizer-blade position – *See* ***Coupling*** on page 3-65.
- The power unit and the excavator must be stopped before uncoupling.

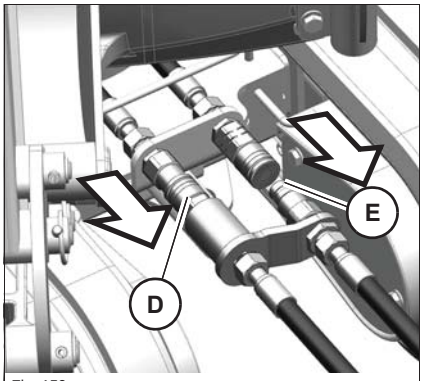


Fig. 158:

1 Uncouple the hydraulic hose connection **E** from the excavator.

2 Uncouple the hydraulic hose connection **D** from the excavator.

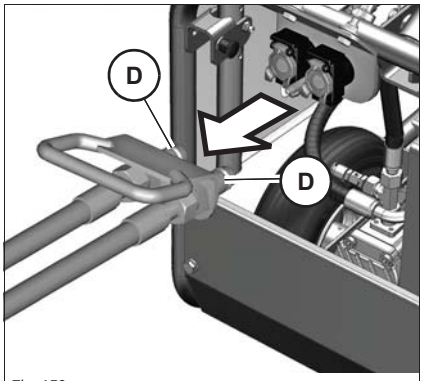


Fig. 159:

3 Uncouple the hydraulic hose connections **D** from the power unit.

Environment!

Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.

Charging the excavator battery

The excavator battery is not charged because the diesel engine does not during excavator operation with the zero-emission power unit. Charging the battery regularly is therefore necessary.

DANGER

Explosion hazard in case of incorrect handling of battery!

Incorrect battery handling can cause serious injury or death.

- The engine cover of the excavator must be open during recharging.
- Fire, open flames and smoking is prohibited.
- Perform charging only on well-ventilated premises.
- Do not charge malfunctioning or frozen batteries.

DANGER

Burn hazard due to hot engine parts!

Can cause serious burns.

- Stop the excavator engine and let it cool down.
- Wear protective equipment.

DANGER

Injury hazard due to rotating parts!

Rotating parts can cause serious injury or death.

- Open the excavator engine cover only at engine standstill.

NOTICE

Possible damage to the power unit and excavator.

- The power unit must be stopped during charging.

NOTICE

Possible damage to battery charger due to installation/routing near rotating parts.

- Do not place the battery charger cables near rotating parts.

Information!

Only operate battery chargers with the same specifications as the one supplied with the power unit. Observe the Operator's Manual of the battery charger. Contact a Wacker Neuson service center in case of doubt.

Fig. 160:

The battery charger is located in the storage compartment above the hydraulic-oil radiator of the power unit.

For more information, refer to the Operator's Manual of the battery charger. The Operator's Manual is located in the document box of the power unit.

The excavator battery can be charged in two different ways.

- With the power unit
- Directly with the 230 V mains

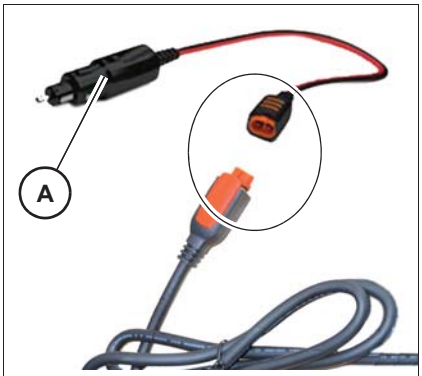


Fig. 161:

Connect the adapter connector and bushing of the battery charger.

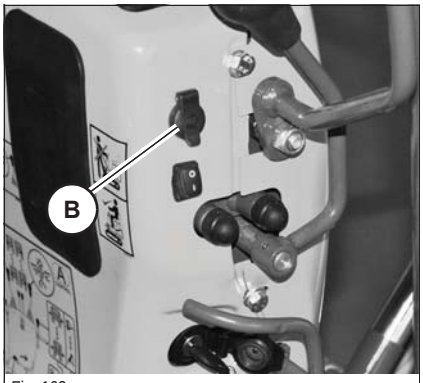


Fig. 162:

Connect the 12 V connector **A** to the 12 V outlet **B**.

Charging the battery with the power unit

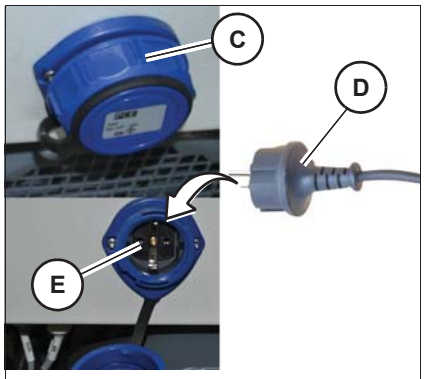


Fig. 163:

Turn protective cap **C** counterclockwise and remove it.

Connect safety connector **D** of the battery charger with the accessories outlet **E** of the power unit.

Charging the battery with the mains

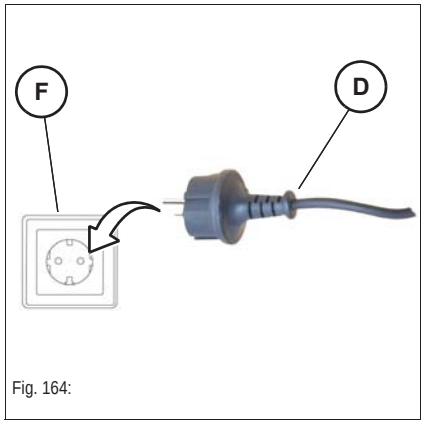


Fig. 164:

Connect safety connector **D** of the battery charger with a 230 V outlet **F**.

Environment!

Dispose of old batteries in an environmentally friendly manner.

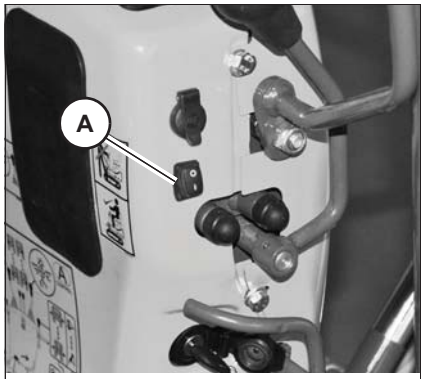


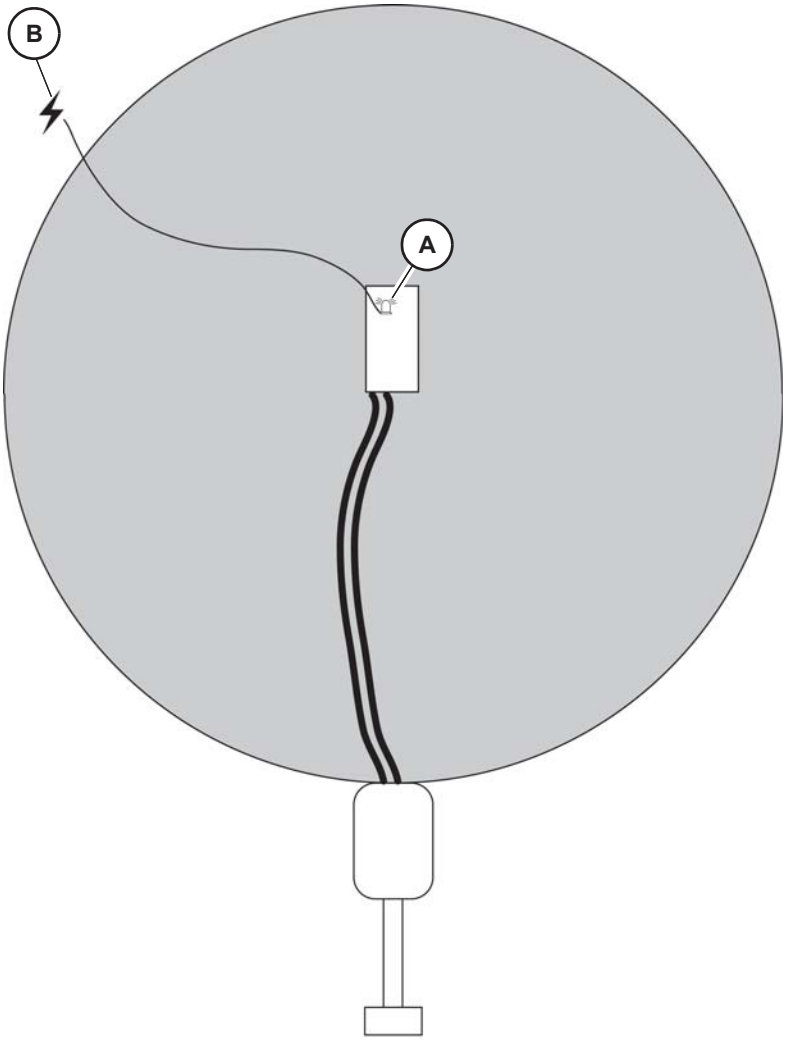
Fig. 165:

LED working light

The Dual Power option includes an energy-saving LED working light that is switched on and off with switch **A**.

Dual-Power operation with rotating beacon

The rotating beacon must be supplied with external power in countries or regions where a rotating beacon is mandatory during excavator operation.



Connect rotating beacon **A** to the external power supply **B**. Connecting the rotating beacon to the accessories outlet of the power unit is prohibited.

Information!

Using a rotating beacon screwed onto the power unit is prohibited. Wacker Neuson recommends a commercially available magnetic or clampable rotating beacon.

3.19 Pressure release on the auxiliary hydraulics

NOTICE

Before connecting or removing hydraulic lines from an attachment with hydraulic functions, ensure that the hydraulics are not under pressure! Ensure that no one is in the danger zone of the machine

Information!

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.
- Release the pressure in the sections of the system and hydraulic lines that are to be opened before starting setup or repair work, for example fitting/removing an attachment!

Releasing pressure

Release the pressure as follows:

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

☞ *Lower the boom and the attachment completely to the ground.*

☞ *Stop the engine.*

☞ *Lower (unlock) the lock lever.*

☞ *Move the control levers 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 hydraulic hoses make as the pressure is actually released.

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

3.20 Re-equipping attachments

Re-equipping the attachments is described below for a bucket. If you are fitting or removing attachments with their own hydraulic functions – grab or offset bucket, for example – you must follow the special information given in the Operator's Manual of the attachment.

Specific safety instructions

- Driving in pins with a plastic hammer can cause them to splinter, which can cause serious injury.

  ☞ Always wear goggles, a hard hat, protective gloves, safety shoes and other suitable protective clothing.
- Do not stand behind the bucket when removing pins.

  ☞ Do not place your foot underneath the bucket.
- Pay special attention to your fingers when removing and reinserting pins.
- Never insert fingers in the bores of the pins as you align them.

WARNING

Injury hazard during modification work!

Can cause serious injury or death.

- Avoid accidents and injury by following the information below:
  - Stop the engine
  - Raise the lock lever
  - Remove the starting key
  - Re-equip attachments only with suitable tools
  - Do not align components with your fingers or your hands but use suitable tools – crushing hazard!
- After you have re-equipped an attachment, or before starting work, ensure that the attachment is safely locked in the stick and the joint rod.

Removing a bucket

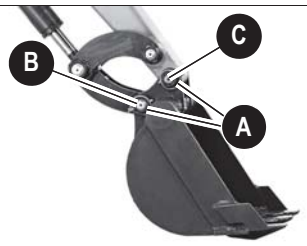


Fig. 166: Removing a bucket

- Lower the bucket to level ground with the flat side facing downward
- Stop the engine
- Raise the lock lever
- Remove the starting key
- Remove linch pins **A**
- First remove pin **B**, and then pin **C**. Carefully expel pins that are stuck with a hammer and a brass punch

If pin **C** is stuck:

- Start the engine
- Slighty raise and lower the boom to take the load off the pin
- Stop the engine
- Raise the lock lever
- Remove the starting key

Information!

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.

Installing a bucket

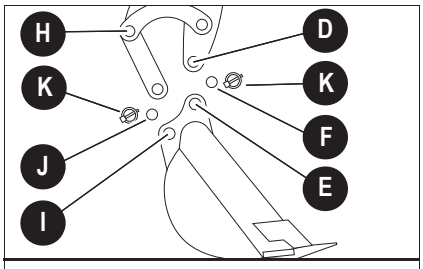


Fig. 167: Installing a bucket

- Install a bucket only if it is positioned on level ground with the flat side facing downward
- Apply grease to the pins and joints before inserting the pins
- Start the engine
- Straighten the stick so that bores **D** and **E** are flush
- Insert greased pin **F**
- Actuate the stick cylinder until bores **H** and **I** are flush
- Insert the greased pin **J**
- Install linch pins **K**

Connections for auxiliary hydraulics

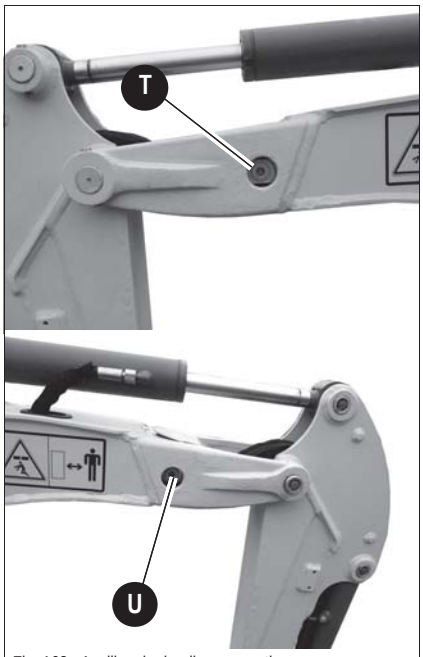


Fig. 168: Auxiliary hydraulics connections

Information!

For hammer operation we recommend installing the hydraulic lines up to the stick in order to avoid damage – *see chapter* ***Connections for auxiliary hydraulics (stick hose routing option)*** on page 3-78.

Auxiliary hydraulics can be connected as required.

If the machine is equipped with the double-action auxiliary hydraulics option, only the flow direction of the hydraulic oil changes.

Connection	Left side of boom	Right side of boom
T	☞ *Return line*	
U		☞ *Pressure line*

Information!

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

Connect and disconnect as follows:

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

☞ *Extend the stick cylinder halfway through.*

☞ *Stop the engine.*

☞ *Release the pressure on the operating hydraulics*
– see chapter 3.19 ***Pressure release on the auxiliary hydraulics*** *on page 3-75.*

➥ The attachment couplings can be connected.

☞ *Raise the lock lever.*

☞ *Remove the starting key.*

Connections for auxiliary hydraulics (stick hose routing option)

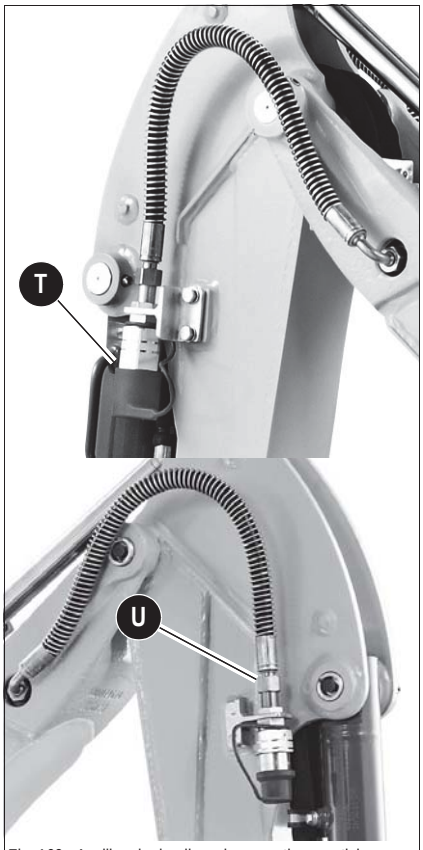


Fig. 169: Auxiliary hydraulics – hose routing on stick

Auxiliary hydraulics can be connected as required.

If the machine is equipped with the double-action auxiliary hydraulics option, only the flow direction of the hydraulic oil changes.

Connection	Stick (left)	Stick (right)
T	☞ *Return line*	
U		☞ *Pressure line*

Information!

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

Connect and disconnect as follows:

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

☞ *Extend the stick cylinder halfway through.*

☞ *Stop the engine.*

☞ *Release the pressure on the operating hydraulics*
– see chapter 3.19 ***Pressure release on the auxiliary hydraulics*** *on page 3-75.*

➥ The attachment couplings can be connected.

☞ *Raise the lock lever.*

☞ *Remove the starting key.*

Attachments

Information!

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

Information!

Check the auxiliary hydraulics pedal for correct function.

Maintenance of attachments

Information!

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.

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 earth-moving applications, and for loosening, picking up, digging and loading loose material (or material to be loosened).

Inadmissible work procedures

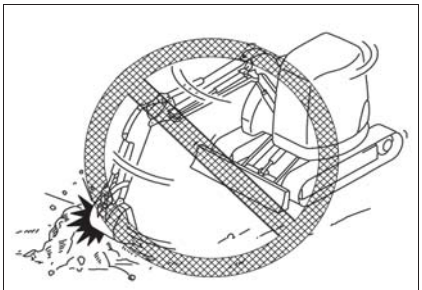


Fig. 170: Working with the swivel force

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 touch the ground with the bucket as you rotate the upper carriage.*

➥ Working this way damages the attachments.

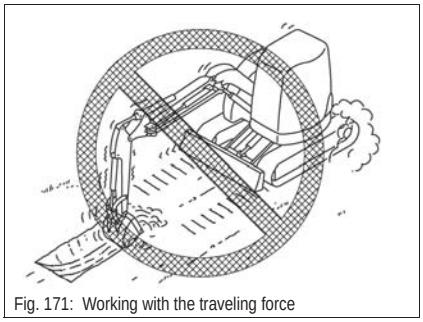


Fig. 171: Working with the traveling force

Working with the traveling force

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

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

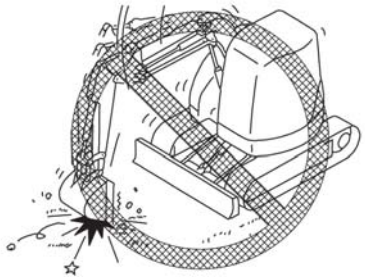


Fig. 172: Working with the falling force by lowering the bucket

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

☞ *Do not use the machine's falling force for excavating, and do not use the bucket's falling force as a hoe, hammer or pile-driver.*

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

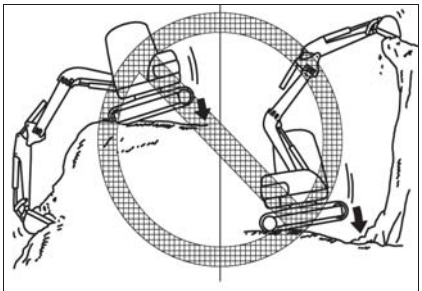


Fig. 173: Working with the machine's falling force

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

☞ *Do not use the machine's falling force for excavating.*

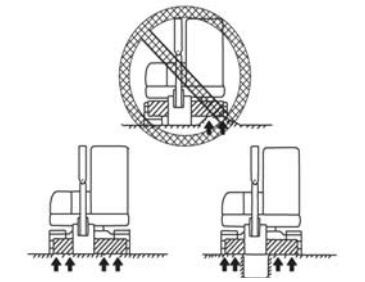


Fig. 174: Fully lowering the stabilizer blade

No thrusting the stabilizer blade

☞ *Do not thrust the stabilizer blade against rocks or blocks to avoid damage to the cylinders and the blade itself.*

Fully lowering the stabilizer blade

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

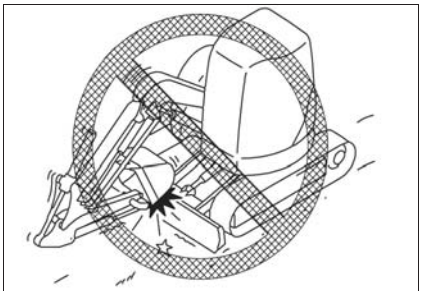


Fig. 175: Retracting attachments

Retracting attachments

☞ *Ensure that the bucket does not hit the stabilizer blade as you retract attachments for traveling or transport.*

Excavator work position

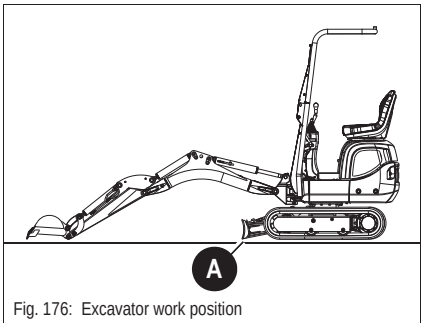


Fig. 176: Excavator work position

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

Bucket position when digging

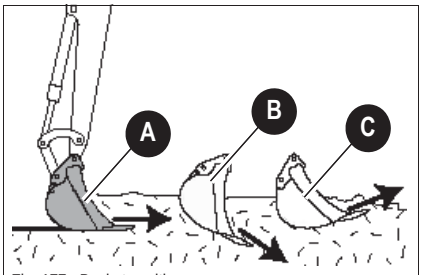


Fig. 177: Bucket position

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

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

Information!

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.

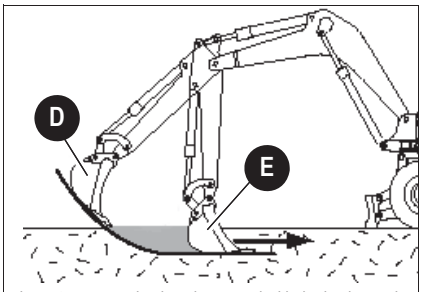


Fig. 178: Penetrating into the ground with the bucket and

☞ *Excavate as follows:*

- Penetrate into the ground with bucket **D**
- Lower the stick and at the same time align bucket **E** until
- reaching the required digging depth and
- the flat side of the bucket is parallel to ground

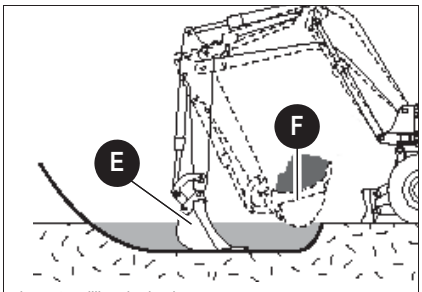


Fig. 179: Filling the bucket

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

- Move the stick toward the excavator
- Lower boom

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

- Keep on moving the stick toward the excavator and at the same time
- Curl stick **F**

Excavating trenches

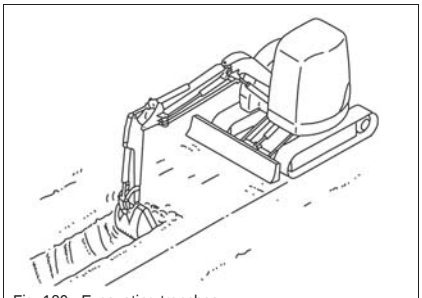


Fig. 180: Excavating trenches

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

Loading

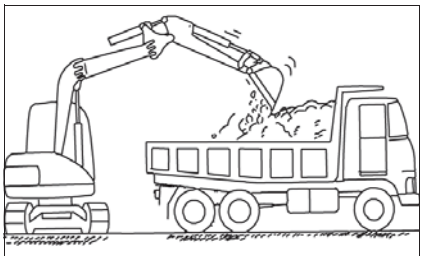


Fig. 181: Loading

- Loading in confined areas with a limited angle of rotation is more efficient
  ☞ by positioning the transport vehicle so as to ensure maximum visibility of the transport vehicle for the operator of the excavator.
- Loading material onto transport vehicles is more efficient
  ☞ if the excavator is at the rear end of the transport vehicle and not at the side.

Grading

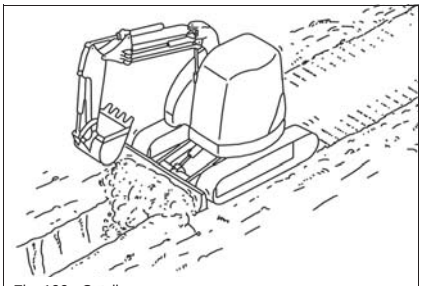


Fig. 182: Grading

- Use the stabilizer blade to fill in trenches and to grade (even out) surfaces.

Information!

Work on level ground. Grade (even out) with the stabilizer blade first in case of sloping ground.

Excavating trenches sideways

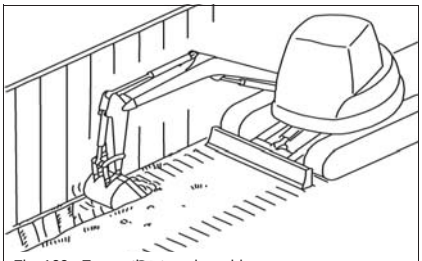


Fig. 183: Excavating trenches sideways

- The machine can be used for excavating trenches sideways in confined areas
  ☞ by rotating the upper carriage and swiveling the main boom (combined position and movement of both).

Further recommendations for digging

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

- Exits from pits must be outside the digging line and as level as possible.
- Dig by removing adjacent strips if possible.
- Ensure that you can travel forward when traveling out of the digging area with a fully loaded bucket.
- Whenever possible, travel in reverse when transporting a full bucket down a steep slope.

Freeing the machine

If the machine gets stuck in the ground:

☞ *Dump out/rotate the bucket until the blade/teeth are vertical above the ground*

☞ *Lower the boom all the way*

☞ *Slowly dump out the bucket*

➥ The machine is pushed backward

☞ *Reverse slowly*

☞ *Repeat this procedure until the tracks reach firm ground*

☞ *Reverse the machine away*

3.21 Grading

WARNING

Accident hazard when grading!

Can cause serious injury or death.

- Ensure that no one is in the danger zone when working with the stabilizer blade

Grading

☞ *Lower the stabilizer blade to the ground*
– see chapter ***Stabilizer blade operation*** *on page 3-22*

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

➥ The machine must not be raised by lowering the stabilizer blade

➥ The clearance between the stabilizer blade and the ground should be about 1 cm

Working alongside trenches

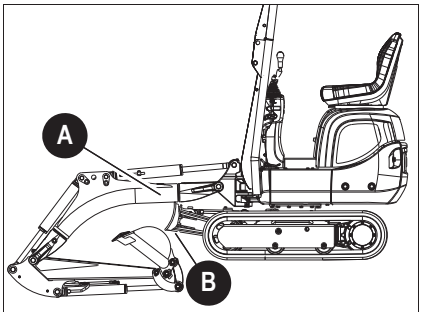


Fig. 184: Working alongside trenches

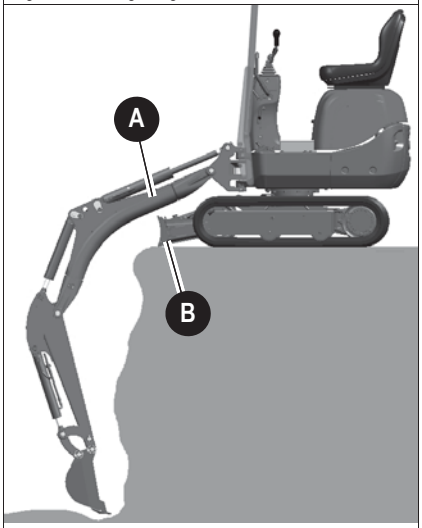


Fig. 185: Deep excavation

NOTICE

Possible boom damage when working alongside trenches, slopes etc. and operating the stabilizer blade and the boom incorrectly.

- Always use stabilizer blade **B** for stabilization during excavation work
- Ensure that stabilizer blade **B** never touches boom **A** *Fig. 184*
- If you perform deep excavations with stabilizer blade **B** at the front, ensure that boom **A** does not touch or rest on stabilizer blade **B** (*Fig. 185*)

Stabilizer blade at rear

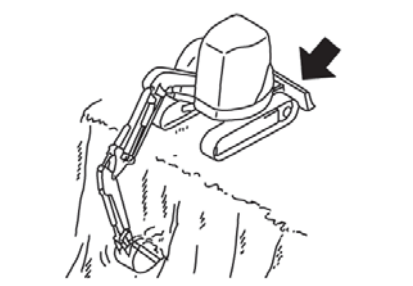


Fig. 186: Deep excavation

WARNING

Falling hazard when working alongside trenches!

Can cause serious injury or death.

- This work position is prohibited since the machine can tip over forward into the trench.
- We recommend using the first work position (*Fig. 186*) described above and to ensure that piston rod **A** does not touch stabilizer blade **B** under any circumstances.

4 Malfunctions

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

Repairs must only be performed by authorized personnel.

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	*5-35*
	Fuel grade does not comply with specifications	*5-35*
	Malfunctioning or empty battery	*5-30*
	Loose or oxidized cable connections in starter circuit	
	Malfunctioning starter, or pinion does not engage	
	Wrong valve clearance	
	Malfunctioning injection nozzle	
	Malfunctioning cutoff solenoid	
	Malfunctioning fuse	
Engine starts, but does not run smoothly or faultless	Fuel grade does not comply with specifications	*5-35*
	Dirty fuel filter	
	Wrong valve clearance	
	Air in fuel system	
	Injection line leaks	
	Malfunctioning injection nozzle	
Engine overheats. Temperature warning system responds	Oil level too low	*5-7*
	Oil level too high	*5-7*
	Dirty air filter	*5-12*
	Dirty oil radiator fins	*5-8*
	Coolant level too low	
	Cooling system leaks	
	Malfunctioning fan, torn or loose V-belt	*5-15*
	Resistance in cooling system too high, flow capacity too low	
	Malfunctioning injection nozzle	

Problem		Possible causes	See
Insufficient engine output		Oil level too high	*5-7*
		Fuel grade does not comply with specifications	*5-35*
		Dirty air filter	*5-12*
		Wrong valve clearance	
		Injection line leaks	
		Malfunctioning injection nozzle	
Engine does not run on all cylinders		Malfunctioning fuel injection pump	
		Injection line leaks	
		Malfunctioning injection nozzle	
Insufficient or no engine oil pressure		Oil level too low	*5-7*
		Machine inclination too high (max. 15°)	
		Wrong SAE grade of engine lubrication oil	*5-35*
Engine oil consumption too high		Oil level too high	*5-7*
		Worn oil scraper rings	
		Machine inclination too high (max. 15°)	
		Wrong SAE grade	
Engine smoke	Blue	Oil level too high	*5-7*
		Machine inclination too high (max. 15°)	
		Wrong oil	
	White	Engine starting temperature too low	
		Fuel grade does not comply with specifications	*5-35*
		Wrong valve clearance	
		Malfunctioning injection nozzle	
		Malfunctioning cylinder-head gasket	
	Black	Dirty air filter	*5-12*
		Wrong valve clearance	
		Malfunctioning injection nozzle	

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 mandatory maintenance

Bear in mind the following points before performing servicing and maintenance:

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

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

Secure the open engine cover and other open covers appropriately. Do not open the engine cover and other covers on slopes or in strong wind.

When using compressed air, dirt and debris can be blown into your face. Therefore, wear safety glasses, protective masks and clothing when using compressed air.

Daily servicing and maintenance, and maintenance according to maintenance plan **“A”** must be performed by a specifically trained operator. All other maintenance must be performed by trained and qualified personnel only.

The following maintenance plans indicate the maintenance to be performed.

This is necessary to ensure optimal functioning.

– *see* ***Maintenance plan (overview)*** on page 5-38.

Immediately repair or replace parts that are already damaged or not working properly before they are due for replacement.

Information!

Safety-relevant parts may only be repaired or replaced by a Wacker Neuson dealer or a Wacker Neuson service center.

Parts	Interval
Hydraulic hoses	Replace hydraulic hoses every 6 years from the date of manufacture, even if they do not seem to be damaged.
Seat belt	No replacement necessary. Replace the seat belt after an accident.

5.2 Fuel system

Specific safety instructions

WARNING

Burn hazard when refueling!

Can cause serious injury or death.

- Fire, open flames and smoking is prohibited.
- Keep the maintenance area clean.
- Do not refuel in closed rooms.
- Do not add gasoline to the diesel fuel.
- Let the engine cool down.

WARNING

Health hazard due to diesel fuel!

Can cause serious injury or death.

- Avoid contact with the skin, eyes and mouth.
- Seek medical attention immediately in case of accidents with diesel fuel.
- Wear protective equipment.

WARNING

Fire hazard due to diesel fuel!

Can cause serious injury or death.

- Fire, open flames and smoking is prohibited.
- Adding gasoline is prohibited.

- Before refueling, stop the engine, raise the lock lever and remove the starting key!
- Do not refuel in closed rooms!
- Wipe away fuel spills immediately!
- Keep the machine clean to reduce the fire hazard!

Refueling

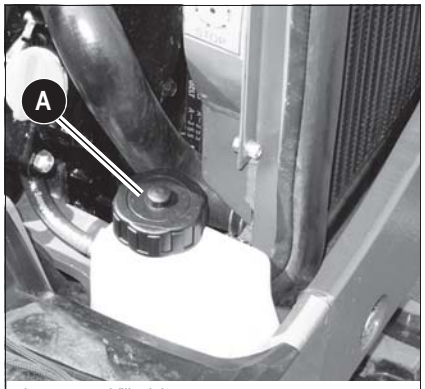


Fig. 187: Fuel filler inlet

Filler inlet **A** for the fuel tank is located in the engine compartment, on the left in traveling direction.

Environment!

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

Information!

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

Information!

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 over night. Do not fill the tank completely but leave some space for the fuel to expand.

Draining fuel

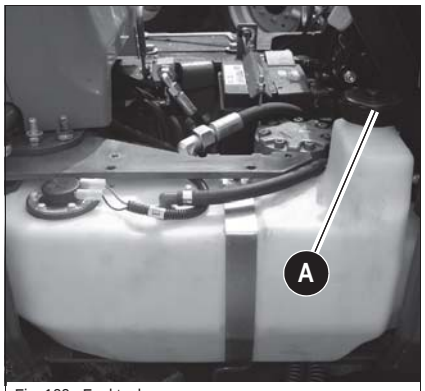


Fig. 188: Fuel tank

Environment!

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

Filler inlet **A** for the fuel tank is located in the engine compartment, on the left in traveling 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 can cause

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

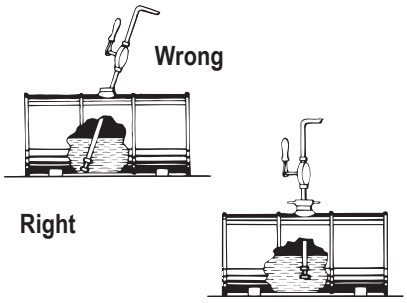


Fig. 189: Refueling from a barrel

Refueling from barrels

If refueling from barrels cannot be avoided, note the following points (see fig. 189):

- 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 opening down to a max. 15 cm (6 in) above 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

Bleeding the fuel system

WARNING

Injury hazard due to rotating parts!

Can cause serious injury or death.

- Before starting the engine, ensure that no one is within danger zone of the engine/the machine!
- Start the engine only if the engine cover is closed!

Bleed the fuel system in the following cases:

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

Bleed the fuel system as follows:

- Fill the fuel tank
- Turn the starting key to the first position
- Wait about 5 minutes while the feed pump bleeds the fuel system automatically
- Start the engine
- Check for leaks after starting the engine
- Let the fuel system run by performing a test run of 5 minutes at idling speed

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

- Stop the engine
- Raise the lock lever
- Remove the starting key
- Bleed the fuel system again as described above
- Have this checked by authorized personnel if necessary

Fuel prefilter with water separator

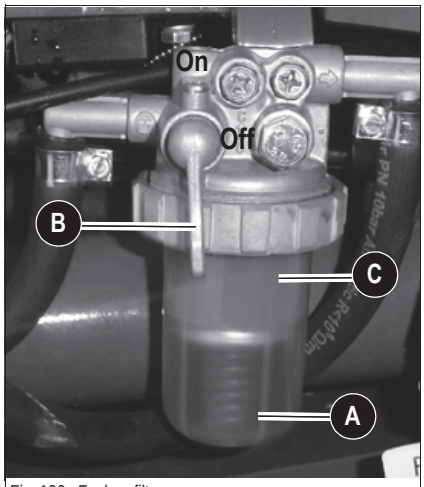


Fig. 190: Fuel prefilter

Interrupt the 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

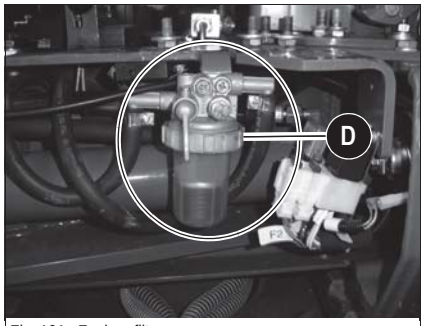


Fig. 191: Fuel prefilter

Check the fuel prefilter as follows:

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

☞ *Unscrew threaded fitting **D***

☞ *Prepare a suitable container for collecting the fuel/water mixture.*

➥ Fuel/water mixture drains

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

☞ *Screw threaded fitting **D** back on again*

Environment!

Collect the fuel/water mixture as it drains with a suitable container and dispose of it in an environmentally friendly manner.

5.3 Engine lubrication system

Information!

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

NOTICE

In order to avoid engine damage, use the oil quantity and grade specified in the fluids and lubricants table.

- The oil level must be between the MAX and MIN marks.
- Use only the specified engine oil (refill with the same engine oil).
- Have the oil changed only by a Wacker Neuson service center.

Information!

In order to avoid engine damage, add the engine oil slowly so it can go down without entering the intake system.

Environment!

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

Checking the oil level

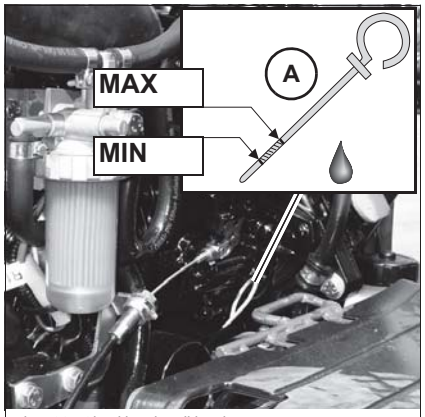


Fig. 192: Checking the oil level

- Park the machine on level ground
- Stop the engine
- Raise the lock lever
- Remove the starting key
- 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 off the oil level

- Close and lock the engine cover

Adding engine oil

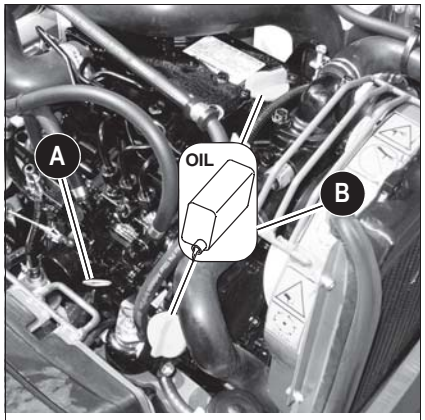


Fig. 193: Oil dipstick and oil filler cap

- Clean the area around oil filler cap **B** with a lint-free cloth
- Open filler cap **B**
- Pull out oil dipstick **A** and wipe it with a lint-free cloth
- 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 5-7
- 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
- Close and lock the engine cover

5.4 Engine cooling system

The radiator is located in the engine compartment, on the right-hand side of the engine, and cools the diesel engine.

The coolant reservoir is also located in the engine compartment, behind the engine

Specific safety instructions

WARNING

Poisoning hazard due to hazardous substances!

Can cause serious injury or death.

- Wear protective equipment.
- Do not inhale or swallow coolant.
- Avoid contact of the coolant or antifreeze with the skin and eyes.

WARNING

Burn hazard due to coolant or antifreeze!

Can cause serious injury or death.

- Only perform maintenance on an engine that has cooled down.
- Do not smoke, avoid fire and open flames. Wear protective equipment.

WARNING

Burn hazard due to hot coolant!

Can cause serious injury or death.

- Wear protective equipment.
- Let the engine cool down.
- Carefully open the radiator cap.

NOTICE

Do not add a different coolant to the one in the reservoir.

- Only use the coolant recommended by Wacker Neuson
– see chapter 6.10 ***Coolant compound table*** on page 6-9.

- Dirt on the radiator fins reduces the radiator's heat dissipation capacity!
  To avoid this:
  - ☞ Clean the outside of the radiator at regular intervals. Use oil-free compressed air (2 bar max.) to clean. Maintain a certain distance from the radiator to avoid damage to the radiator fins. Refer to the maintenance plans in the appendix 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 cause engine damage! Therefore:
  - ☞ 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 a Wacker Neuson service center!
  - ☞ Never add cold water/coolant if the engine is warm!
- The use of the wrong coolant can destroy the engine and the radiator. Therefore:
  - ☞ 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 6-9.
  - ☞ Do not use radiator cleaning compounds if an antifreeze compound has been added to the coolant – otherwise this causes sludge to form that can damage the engine.
- Once you have filled the coolant reservoir:
  - ☞ Test run the engine.
  - ☞ Stop the engine.
  - ☞ Raise the lock lever.
  - ☞ Remove the starting key.
  - ☞ Let the engine cool down.
  - ☞ Check the coolant level again.
  - ☞ Close and lock the engine cover

Environment!

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

Checking the coolant level/adding coolant

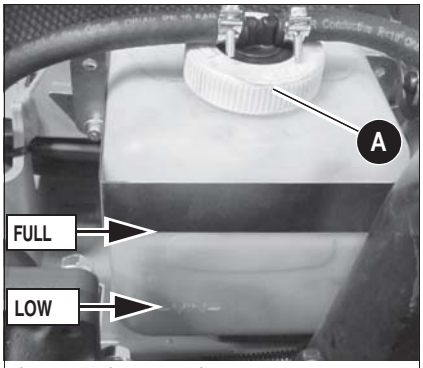


Fig. 193:Coolant reservoir

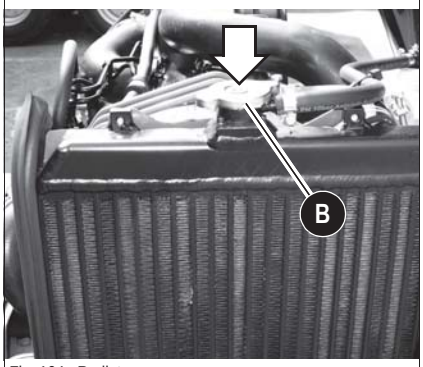


Fig. 194: Radiator

Checking the coolant level

- Park the machine on level ground
- Stop the engine
- Raise the lock lever
- Remove the starting 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 reservoir **A** and on the radiator **B**

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

➥ Add coolant

☞ Close and lock the engine cover

Information!

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

Adding coolant

After the engine has cooled down:

☞ *Release overpressure in the radiator*

☞ Carefully open cap ***B*** 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*

☞ *Raise the lock lever*

☞ *Remove the starting 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** reservoir seams

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

☞ *Close and lock the engine cover*

Information!

Check the antifreeze every year before the cold season sets in

Cleaning the radiator

Information!

Dirt on the radiator fins reduces the radiator's heat dissipation capacity and can cause damage to the diesel engine!

- Check and if necessary clean the radiator once a day.
- In dusty or dirty work conditions, clean more frequently than indicated in the maintenance plans.

Information!

In order to ensure the radiator's optimal cooling capacity, do not damage the radiator fins as you clean them with a compressed-air gun!

- Maintain a sufficient distance from the radiator to avoid damage to the radiator fins.
- Use oil-free compressed air (2 bar/29 psi max.) to clean.

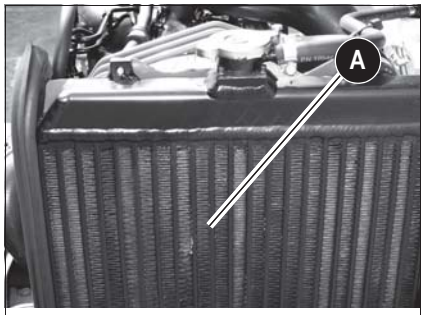


Fig. 195: Cleaning the radiator

Radiator **A** is located on the left-hand side under the engine cover.

1 Stop the machine on firm, level and horizontal ground
2 Position the boom straight ahead at the center of the machine
3 Lower the stabilizer blade to the ground
4 Stop the engine
5 Raise the lock lever
6 Remove the starting key and carry it with you
7 Let the engine and the coolant cool down
8 Open the engine cover
9 Remove dust and other foreign bodies from the radiator fins with compressed air

5.5 Air filter

NOTICE

The filter elements will be damaged if they are washed or brushed out!
Bear in mind the following to avoid premature engine wear or damage:

- Do not clean the filter elements.
- Replace the air filter element according to the maintenance plan.
- Never reuse damaged filter elements.
- Ensure cleanliness when replacing the filter elements.

NOTICE

Filter elements degrade prematurely when in service in acidic air for longer periods of time. This risk is present for example in acid production facilities, steel and aluminum mills, chemical plants and other nonferrous-metal plants.

- Replace air filter element ***D*** after 50 operating hours at the latest!

Information!

Ensure that dust valve **G** shows downward once it is installed!

Air filter (up to serial no. AI00875)

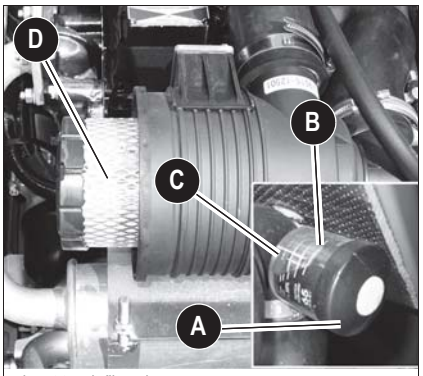


Fig. 196: Air filter element

Replace the air filter elements:

- If the yellow piston **B** in dirt indicator **A** reaches the red service mark **C**.
- Every 1000 operating hours or once a year at the latest.

General instructions for air filter maintenance:

- Store filter elements in their original packaging and in a dry place.
- Do not knock the filter element against other objects as you install it.
- Check air filter attachments, air intake hoses and the air filter element for damage, and immediately have them repaired or replaced if necessary.
- Check the screws at the induction manifold and the clamps for tightness.
- Check the discharge slot of the dust valve, clean it and replace it if necessary.

  ☞ Squeeze the end of the valve with your hand.

Replacing air filter elements

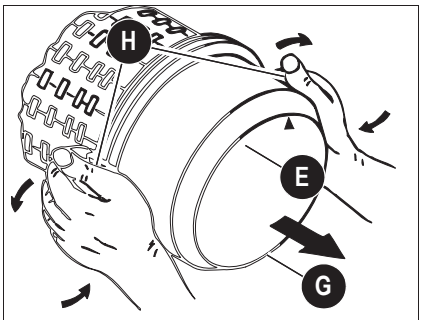


Fig. 197: Removing the housing section

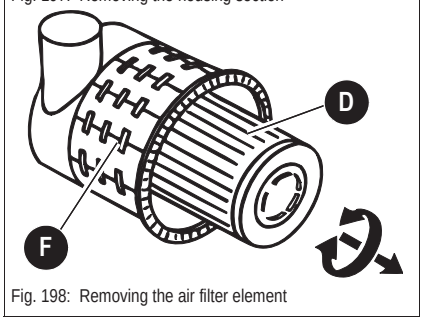


Fig. 198: Removing the air filter element

- Replace air filter element ***D*** as follows:

☞ *Stop the engine*

☞ *Raise the lock lever*

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

☞ *Let the engine cool down*

☞ *Open the engine cover*

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

☞ *Open bow clips* **H** *on housing section* **E**

☞ *Remove housing section* **E**

☞ *Carefully remove air filter element* **D** *with slightly turning movements*

☞ *Ensure that all contamination (dust) inside the housing section and dust valve has been removed*

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

☞ *Check the air filter element for damage, only install intact air filter elements*

☞ *Carefully insert the new air filter element* **D** *in housing section* **F**

☞ *Position housing section* **E** *(ensure that it is properly seated)*

☞ *Close bow clips* **H**

Air filter (from serial no. AI00876)

Replacing air filter elements

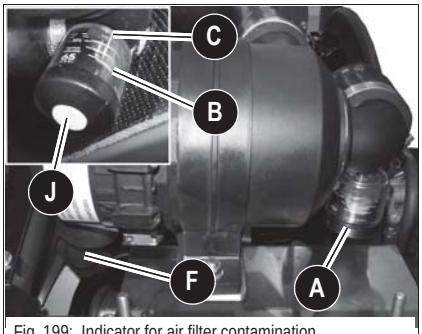


Fig. 199: Indicator for air filter contamination

Replace the air filter elements:

- If the yellow piston **B** in dirt indicator **A** reaches the red service mark **C**.
- Every 1000 operating hours or once a year at the latest.

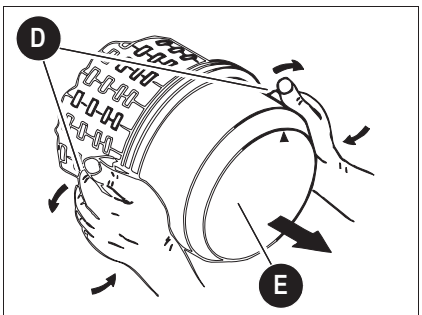


Fig. 200: Lower housing section

1 Park the machine, stop the engine, remove the starting key and carry it with you.

2 Open the engine cover.

3 Remove dirt and dust from the air filter housing and the area around it.

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

5 Remove lower housing section **E**.

M

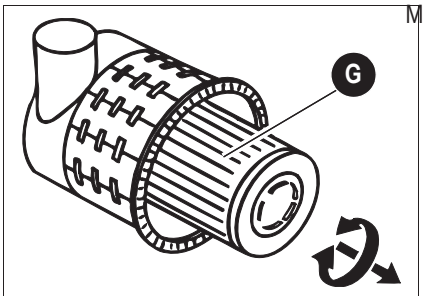


Fig. 201: Outside filter

6 Carefully remove outside filter **G** with slightly turning movements.

7 Ensure that all contamination (dust) inside the upper and lower housing sections (including the dust valve) has been removed.

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

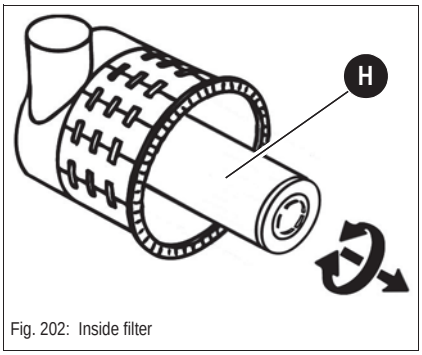


Fig. 202: Inside filter

9 Carefully remove inside filter **H** with slightly turning movements.

10 Check the new inside filter **H** and outside filter **G** for damage and carefully insert them in the air filter housing.

11 Close bow clips **D**.

12 Ensure that dust valve **F** shows downward once it is installed.

13 After replacing the filters, press button **J** to reset the yellow piston **B**.

5.6 V-belt

WARNING

Injury hazard when checking the V-belt tension!

Can cause serious injury or death.

- Stop the engine before performing inspection work in the engine compartment
- Raise the lock lever
- Remove the starting key
- Disconnect the battery
- Let the engine cool down

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, and retighten it if necessary.
Retighten new V-belts after about 15 minutes of running time.

Checking V-belt tension

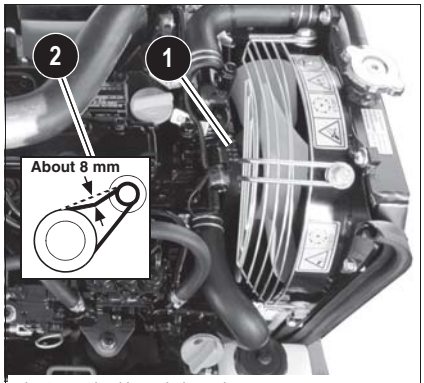


Fig. 203: Checking V-belt tension

☞ Stop the engine
☞ Raise the lock lever
☞ Remove the starting key and carry it with you
☞ Disconnect the battery
☞ 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 if the pulleys are damaged.
☞ Press with your thumb about 100 N (22.5 lbf) 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 in), a used V-belt (after about 5 minutes running time) should have a deflection of 7 to 9 mm (0.27 to 0.35 in) (see figure)
☞ Retighten the V-belt if necessary

- If the V-belt is damaged:

☞ Have the V-belt replaced by authorized personnel
☞ Close and lock the engine cover

Retightening the V-belt

May only be performed by a Wacker Neuson service center.

5.7 Hydraulic system

Important information on the hydraulic system

DANGER

Burn hazard during maintenance on a hot engine and hydraulic system!

Can cause serious injury or death.

- Wait at least 10 minutes after stopping the engine.
- Wear protective equipment.

DANGER

Fluid ejection hazard! Removing the filler plug can cause oil to escape.

Can cause serious injury or death.

- Do not operate the machine with leaking or damaged hydraulic system components.
- Wear protective equipment.
- Wear safety glasses to protect the eyes. If oil contacts the eye flush immediately with clean water and seek medical treatment.

NOTICE

In order to avoid damage to the hydraulic system:

- Use hydraulic oil and grade according to fluids and lubricants table.
- Always add hydraulic oil using the filling screen.
- Check the hydraulic oil level once a day.
- If the hydraulic oil in the sight glass is cloudy, this indicates that water or air has penetrated the hydraulic system. Contact a Wacker Neuson service center.
- If the hydraulic system is filled with biodegradable oil, then use only biodegradable oil of the same type for filling up – observe the sticker on the hydraulic oil reservoir.
- Contact a Wacker Neuson service center if the filter of the hydraulic system is dirty.

Checking the hydraulic oil level

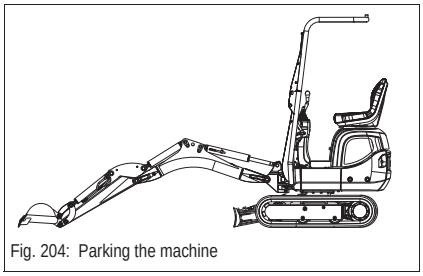


Fig. 204: Parking the machine

1 Park the machine on firm, level and horizontal ground.
2 Position the boom straight ahead at the center of the machine (see figure).
3 Lower the boom and the stabilizer blade to the ground.
4 Stop the engine.
5 Operate the control lever repeatedly to release the pressure in the hydraulic system.
6 Remove the starting key and carry it with you.

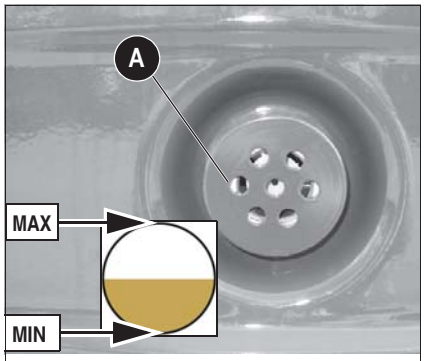


Fig. 205: Oil level indicator on the hydraulic oil reservoir

7 Sight glass **A** is located at the rear of the machine.
8 Check the oil level on sight glass **A**

➥ The oil level must be at the **MIN** mark if the machine has not reached its operating temperature yet.

➥ The oil level must be at the **MAX** mark after the machine reaches its operating temperature.

Add hydraulic oil if the oil level is below these marks.

Adding hydraulic oil

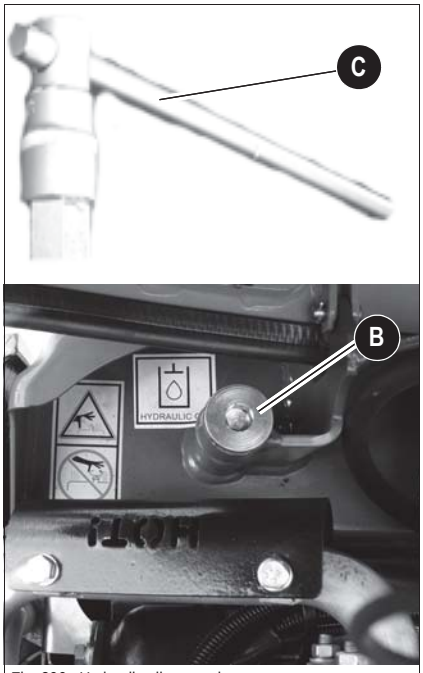


Fig. 206: Hydraulic oil reservoir

9 Slowly open filler cap **B** with tool **C** included in the tool kit
10 Add hydraulic oil up to the corresponding mark.
11 Check the hydraulic oil level on sight glass **A**.
12 Add if necessary and check again.
13 Close filler cap **B**.

Information!

Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.

Important information on the use of biodegradable oil

- Use only the biodegradable hydraulic fluids that have been tested and released by Wacker Neuson. Always contact a Wacker Neuson dealer before using other products that 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 that can be proved to be due to the hydraulic fluid.
- Use only biodegradable oil of the same type for adding oil. 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 joint use of two different biodegradable oils can severely affect the quality of one of the oil types. Therefore when using a different kind of biodegradable oil, ensure that the remaining amount of initial biodegradable oil does not exceed the indications of the manufacturer of biodegradable oil.
- Do not add 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 5.16* ***Maintenance plan (overview)*** on page 5-38.
- Always have the condensation water in the hydraulic oil reservoir drained by a 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 installed or operated, use the same type of biodegradable oil for these attachments to avoid mixtures in the hydraulic system.

Subsequent change from mineral oil to biodegradable oil must be performed by a Wacker Neuson service center or your Wacker Neuson dealer.

Checking hydraulic pressure lines

Specific safety instructions

WARNING

Injury hazard when checking hydraulic pressure lines!

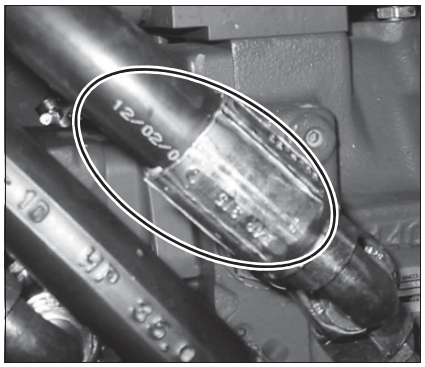
Can cause serious injury or death.

- Wear protective gloves and safety glasses.
- Search for hydraulic leaks with a piece of paper, for example.
- Always consult a doctor immediately, even if the wound seems insignificant. Hydraulic oil causes blood poisoning.
- Observe the following instructions:
  - Retighten leaking screwed fittings and hose connections only when the system is not under pressure; in other words, release the pressure before working on pressurized lines!
  - Never weld or solder damaged or leaking pressure lines and threaded fittings. Replace damaged parts (or have them replaced) with new ones
  - Never use an unprotected light or open flame to check for minor leaks!
  - Have damaged flexible lines replaced by a Wacker Neuson service center only!
  - Do not remove protective hoses from hydraulic hoses.

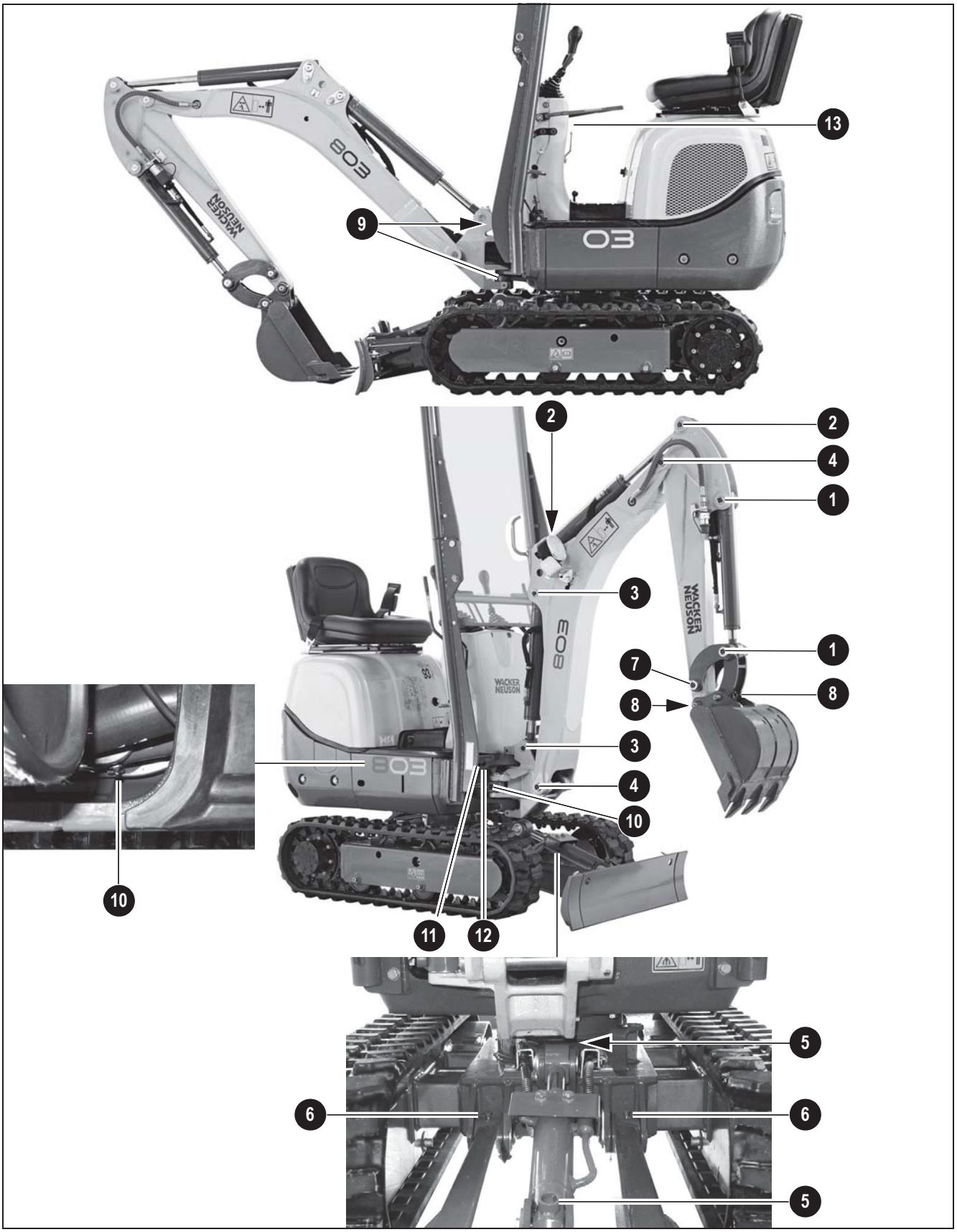
- Leaks and damaged pressure lines must be immediately repaired or replaced by a Wacker Neuson service center or after-sales personnel. This not only increases the operating safety of the machine but also helps to protect the environment.
- Replace hydraulic hoses every 6 years from the date of manufacture, even if they do not seem to be damaged.

In this respect, we recommend that you observe all the relevant safety regulations for hydraulic lines, as well as the safety regulations regarding accident prevention and occupational health and safety in your country. Also observe DIN 20066, part 5.

The article number is marked on the clamping section, and the date of manufacture is indicated on the hose of each hose connection.



5.8 Overview of lubrication points



Pos.	Lubrication point	Quantity
1	Bucket cylinder	2
2	Stick cylinder	2
3	Boom cylinder	2
4	Boom	2
5	Stabilizer blade cylinder	2
6	Stabilizer blade	2
7	Stick	1
8	Bucket	2
9	Swiveling console	2
10	Swiveling cylinder	2
11	Live ring (ball bearing) *– see chapter* ***Lubricating the live ring (ball bearing)*** on page 5-22	1
12	Live ring (teeth) *– see chapter* ***Lubricating the teeth of the live ring*** on page 5-23	1
13	Ball sockets (ISO/SAE changeover option)	2

Information!

Keep the lubrication points clean and remove ejected grease.

Parking the machine

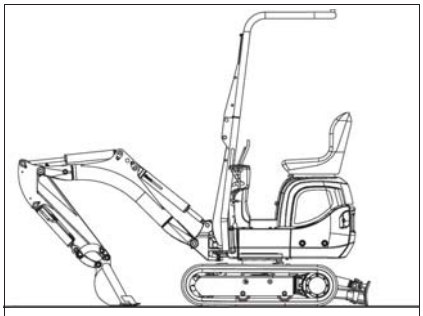


Fig. 207: Parking the excavator

☞ Park the machine on level and horizontal ground.
☞ Lower the boom and the attachment to the ground.
☞ Lower the stabilizer blade to the ground.
☞ Stop the engine.
☞ Remove the starting key and carry it with you.
☞ Move control levers **15** and **16** in all directions repeatedly.
☞ Raise the lock lever.
☞ Get off the machine, lock the engine cover.

Swiveling cylinder lubrication points

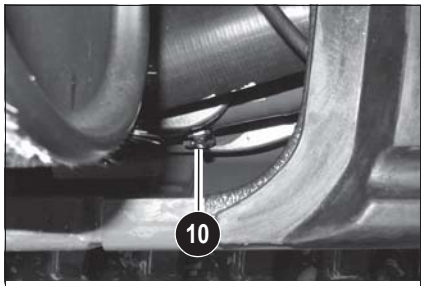


Fig. 208: Engine cover lubrication point

☞ Stop and park the machine.
☞ Open the engine cover.
☞ The lubrication point is located on the right under the engine cover.
☞ Apply grease to lubrication point **10** with a grease gun.
☞ Remove ejected grease.

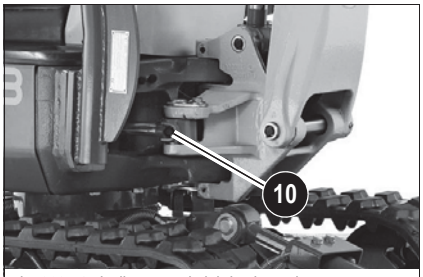


Fig. 209: Swiveling console lubrication point

☞ A further lubrication point is located on the right on the swiveling console.

☞ Apply grease to lubrication point **10** with a grease gun.

☞ Remove ejected grease.

Lubricating the live ring (ball bearing)

DANGER

Crushing hazard! Do not rotate the upper carriage during lubrication.

Serious crushing hazard causing death or serious injury.

- Stop and park the machine – *see chapter* ***Parking the machine*** on page 5-21.
- Do not rotate the upper carriage.

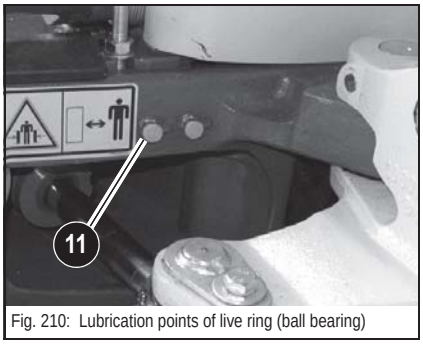


Fig. 210: Lubrication points of live ring (ball bearing)

1 Park the machine on firm, level and horizontal ground.

2 Lower the boom and the stabilizer blade to the ground.

3 Stop the engine, remove the starting key and carry it with you.

4 Raise the lock lever.

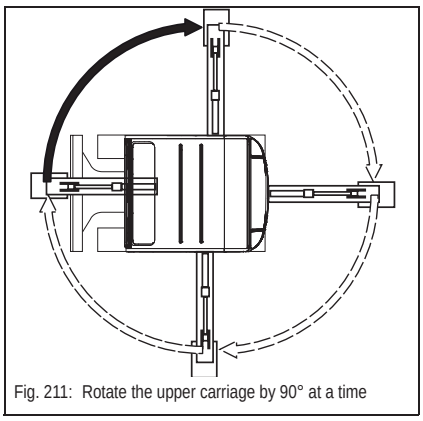


Fig. 211: Rotate the upper carriage by 90° at a time

5 Apply grease to lubrication point **11** with one stroke of the grease gun.

6 Start the engine, raise the boom and the stabilizer blade.

7 Rotate the upper carriage by 90°.

8 Repeat steps 2 – 7 three times until the upper carriage is back in its initial position.

9 Rotate the upper carriage several times by 360°.

Lubricating the teeth of the live ring

DANGER

Crushing hazard! Do not rotate the upper carriage during lubrication.

Serious crushing hazard causing death or serious injury.

- Stop and park the machine – *see chapter* ***Parking the machine*** on page 5-21.
- Do not rotate the upper carriage.

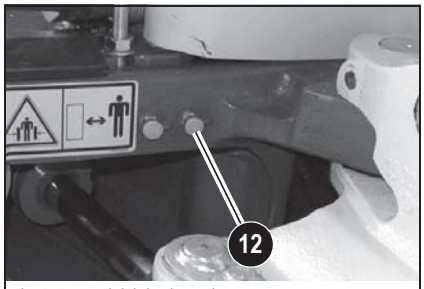


Fig. 212: Teeth lubrication point

1 Park the machine on firm, level and horizontal ground.
2 Lower the boom and the stabilizer blade to the ground.
3 Stop the engine, remove the starting key and carry it with you.
4 Raise the lock lever.

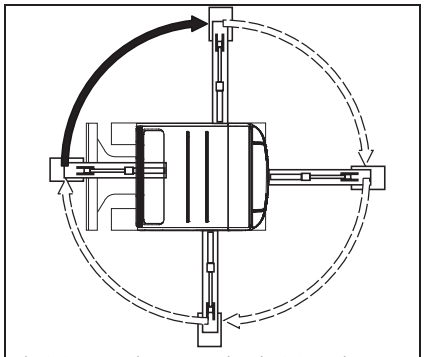


Fig. 213: Rotate the upper carriage by 90° at a time

5 Apply grease to lubrication point **12** with five strokes of the grease gun.
6 Start the engine, raise the boom and the stabilizer blade.
7 Rotate the upper carriage by 90°.
8 Repeat steps 2 – 7 three times until the upper carriage is back in its initial position.
9 Rotate the upper carriage several times by 360°.

Ball sockets (ISO/SAE changeover option)

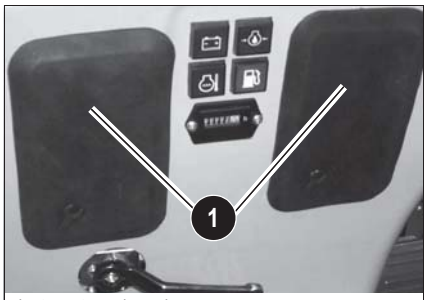


Fig. 214: Control stand covers

☞ Stop and park the machine.

☞ Raise covers **1**.

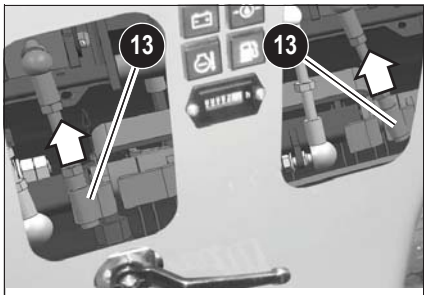


Fig. 215: Ball pins (SAE controls shown)

☞ Slide the knurled sleeve **13** upward, and hold, unhitch and grease it.
The sleeve is safely locked if it is firmly connected with the ball pin and if it is engaged in the lower position.

☞ Lower covers **1**.

5.9 Tracks

Track wear can vary according to work and ground conditions.

Checking track tension

DANGER

Crushing hazard when working under the machine!

Causes serious injury or death.

- Ensure that no one is in the danger zone!
- Support the machine so as to allow the tracks to sag freely.

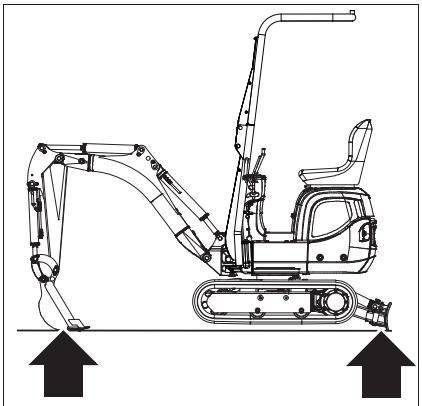


Fig. 216: Raising the machine

1 Park the machine on firm, level and horizontal ground.

2 Raise the machine evenly and horizontally by means of the boom and the stabilizer blade.

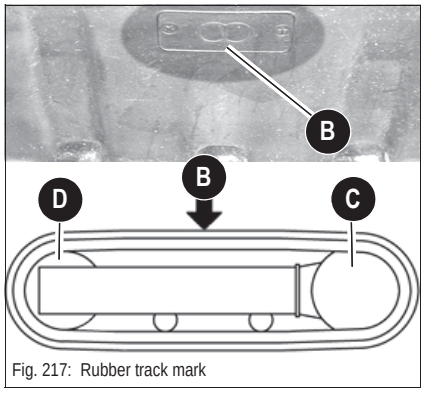


Fig. 217: Rubber track mark

3 Place the tracks so that mark **B** is in the middle between the drive pinion **C** and the track tension roller **D**.

4 Stop the engine.

5 Raise the control lever base.

6 Remove the starting key and carry it with you.

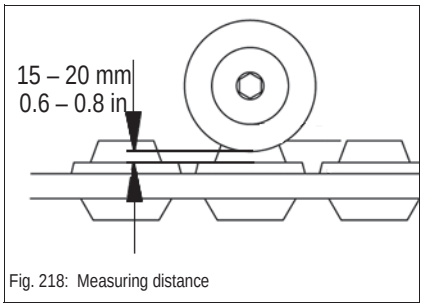


Fig. 218: Measuring distance

7 Adjust the correct track tension if the play between the track roller and the track is not 15 – 20 mm (0.6 – 0.8 in).

Tightening the tracks

WARNING

Injury hazard due to grease escaping under pressure!

Can cause serious injury or death.

- Wear protective gloves and safety glasses.
- Open the lubricating valve only very carefully and do not unscrew it more than a revolution.
- Loosen no other component except the lubricating valve.
- Keep your face away from the lubricating valve connection.
- Release grease only as described below.

NOTICE

Excessive tension of the tracks causes serious damage to the cylinder and the track.

- Tighten the tracks only up to the prescribed measuring distance

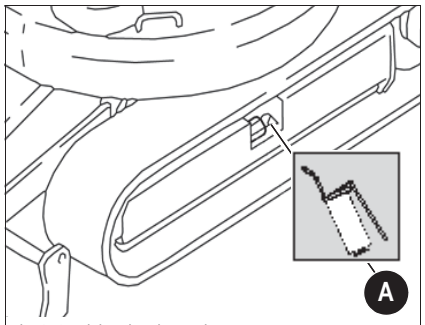


Fig. 219: Tightening the tracks

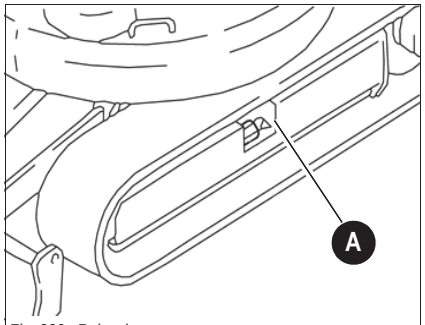


Fig. 220: Releasing grease

Tightening the tracks

☞ *Inject grease with a grease gun through lubricating valve **A**.*

☞ *Check the tension is correct by lowering the machine to the ground, starting the engine, letting it run at idling speed without any load and slowly moving the machine forward and reverse and switching it off again. Raise the machine again with the boom.*

☞ *Check the tension of the tracks again.*

➥ If it is not correct:

☞ Adjust again.

☞ *Should the tracks still be slack after injecting more grease, replace the tracks or the seals in the cylinders. Contact a Wacker Neuson dealer in this case.*

Reducing tension

☞ *Place a suitable container underneath to collect the grease.*

☞ *Slowly turn lubricating valve **B** one revolution counterclockwise to release the grease.*

☞ *Retighten the lubricating valve **B**.*

➥ The grease flows out of the groove of the lubricating valve.

☞ *Check the tension is correct by lowering the machine to the ground, starting the engine, letting it run at idling speed without any load and slowly moving the machine forward and reverse and switching it off again. Raise the machine again with the boom.*

☞ *Check the tension of the tracks again.*

Environment!

Use a suitable container to collect the grease and dispose of it in an environmentally friendly manner.

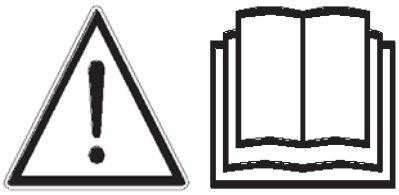
5.10 Traveling drive

Information!

The traveling drive is designed as a **maintenance-free gerotor motor**. The hydraulic oil that flows through it lubricates and cools all moving components, therefore an oil change is not necessary.

5.11 Electrical system

Specific safety instructions



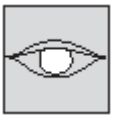
- Use only 12 V power sources. Higher voltages will damage the electrical components.
- When connecting the battery leads, ensure that the poles +/− are not inverted, otherwise sensitive electrical components will be damaged.
- Do not interrupt voltage-carrying circuits at the battery terminals – sparking hazard!
- Never place tools or other conductive articles on the battery – short circuit hazard.
- Disconnect the negative (**–**) battery terminal from the battery before starting repair work on the electrical system.
- Dispose of used batteries properly.

Servicing and maintenance at regular intervals

Before starting machine travel

☞ *Check every time before starting machine travel:*

- Is the light system OK?
- Do the lights and the acoustic warning system work?



Every week

☞ *Check once a week:*

- Electric fuses
  – see chapter ***Fuses behind the right-hand trim*** on page 6-4
- Cable and grounding connections
- Battery charge condition *– see* ***Battery*** on page 5-30
- Condition of battery terminals

Instructions concerning specific components

Cables, lamps and fuses

Always observe the following instructions:

- Malfunctioning components of the electrical system must always be replaced by a Wacker Neuson service center. Lamps and fuses may be replaced by unqualified persons.
- When performing maintenance on the electrical system, pay particular attention to ensuring good contact in leads and fuses.
- Blown fuses indicate overloading or short circuits. The electrical system must therefore be checked before installing a new fuse.
- Only use fuses with the specified load capacity (amperage)
  – see chapter ***Fuses behind the right-hand trim*** on page 6-4

Alternator

Observe the following instructions:

- Start the engine only if the battery is connected
- When connecting the battery, ensure that the poles (+/−) are not inverted
- Always disconnect the battery before performing welding work or connecting a quick battery charger!
- Have malfunctioning charge indicator lights immediately replaced *– see chapter* ***Indicator light (red) – alternator charge function*** on page 3-11

Battery

WARNING

Battery acid is highly caustic!

Caustic injury hazard due to battery acid!

Can cause serious injury or death.

- Always wear safety glasses and protective clothing with long sleeves.

If acid is spilt:

- Thoroughly rinse all affected surfaces immediately with plenty of water.
- Thoroughly wash any part of the body touched by the acid immediately with plenty of water and seek medical attention at once!

WARNING

Injury hazard due to malfunctioning batteries!

Can cause serious injury or death.

- The battery contains sulfuric acid! This acid must not be allowed to come into contact with the skin, the eyes, clothing or the machine.
- Do not use open flames near open battery cells, avoid sparks close by and do not smoke – otherwise the gas that is also produced during normal battery operation (not only during battery charging) could ignite!
- Do not attempt to jump-start the machine if the battery is frozen or if the acid level is low. The battery can rupture or explode!
  - Replace the battery immediately
- Always disconnect the negative terminal (–) from the battery before starting repair work on the electrical system!

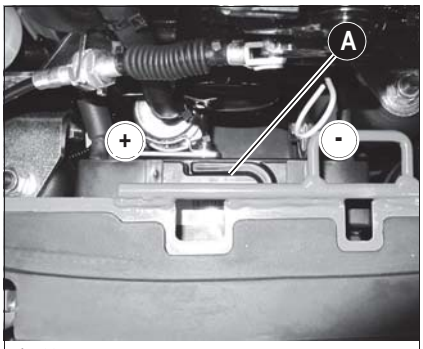


Fig. 221: Battery

Battery **A** is located under the floor panel directly in front of the control stand. The battery is “maintenance-free”. However check the battery at regular intervals to ensure that the electrolyte level is between the MIN and MAX marks.

Checking the battery requires it to be removed and must be performed by a Wacker Neuson service center.

Always follow the specific battery safety instructions!

Information!

Do not disconnect the battery while the engine is running!

5.12 General maintenance

Cleaning

Cleaning the machine is divided into 2 separate areas:

- Exterior of the machine
- Engine compartment

The wrong choice of cleaning equipment and agents can impair the operating safety of the machine on the one hand, and on the other undermine the health of the persons in charge of cleaning the machine. It is therefore essential to observe the following instructions.

General instructions for all areas of the machine

Cleaning with washing solvents

- Ensure adequate room ventilation
- Wear suitable protective clothing
- Do not use flammable liquids, such as gasoline or diesel

Cleaning with compressed air

- Work carefully
- Wear safety glasses 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

Cleaning with a high-pressure cleaner or steam jet

- Electrical components and damping material must be covered and not directly exposed to the jet
- Cover the hydraulic oil reservoir and the covers of the fuel tank, the hydraulic oil reservoir, etc.
- Protect the following components from moisture:
  - Engine
  - Electrical components such as the alternator, etc.
  - Control devices and seals
  - Air intake filters, etc.

Cleaning with volatile and easily flammable anticorrosion agents and sprays:

- Ensure adequate room ventilation
- Do not use unprotected lights or open flames
- Do not smoke

Control stand

NOTICE

Never use high-pressure cleaners, steam jets or high-pressure water to clean the control stand. Water under high pressure can

- penetrate into the electrical system and cause short circuits and
- damage seals and disable the controls!

We recommend using the following aids to clean the control stand:

- Damp cloth
- Brush
- Water with mild soap solution

Cleaning the seat belt:

- Clean the seat belt (which remains fitted in the machine) with a mild soap solution only. Do not use chemical agents as they can destroy the fabric!

Exterior of the machine

The following articles are generally suitable:

- High-pressure cleaner
- Steam jet

Engine compartment

WARNING

Burn hazard due to hot engine parts!

Can cause serious injury or death!

- Stop the engine and let it cool down.
- Wear protective equipment.

WARNING

Injury hazard due to rotating parts!

Can cause serious injury or death!

- Stop the engine before cleaning

NOTICE

When cleaning the engine with a water or steam jet

- The engine must be cold
- and do not point the jet directly at electric sensors such as the oil pressure switch.

The humidity penetrating any such sensors causes them to fail and possibly leads to engine damage!

Threaded fittings and attachments

All threaded fittings must be checked regularly for tightness, even if they are not listed in the maintenance schedules. This applies in particular to:

☞ *Engine fastening screws*

☞ *Fastening screws on the hydraulic system*

☞ *Bucket teeth and pin fastenings on the attachment*

☞ *Rollbar fastening screws*

Retighten loose connections immediately. Contact a Wacker Neuson service center if necessary.

Pivots and hinges

All mechanical pivot points on the machine (door hinges, joints, for example) and fittings (door arresters, for example) must be lubricated regularly, even if they are not listed in the lubrication plan.

5.13 Preparatory work before taking out of service

The measures indicated below refer to putting the machine out of operation for 30 days or longer.

- *– see chapter 2.7* ***Safety instructions for maintenance*** on page 2-12
- Store the machine indoors if possible.
- If the machine is stored outdoors, place it on a wooden base and cover it with a watertight tarp to protect it against humidity.
- Check whether oil or other fluids leak from the machine.
- Lower the boom and the stabilizer blade to the ground.
- Clean the engine with a high-pressure cleaner in a suitable place.
  Observe the following chapter *– see chapter* ***Cleaning with a high-pressure cleaner or steam jet*** on page 5-31.
- Carefully clean and dry the entire machine.
- Spray an anticorrosion agent onto bare metal parts of the machine (piston rods of hydraulic cylinders, for example).
- Apply grease to all lubrication points.
- Change engine oil.
- Check the oil levels in all units and add oil if necessary.
- Check the hydraulic oil level and if necessary, add oil.
- Fill up the fuel tank to the maximum level.
- Check the coolant, change as required.
- Remove the grounding strap from the battery, or remove the battery and store it in a safe place. Charge the battery and perform battery maintenance at regular intervals.
- Close the exhaust pipe and the air intake opening of the air filter system.

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

The following measures must be taken if the machine is out of service for more than 30 days.

Putting into operation again

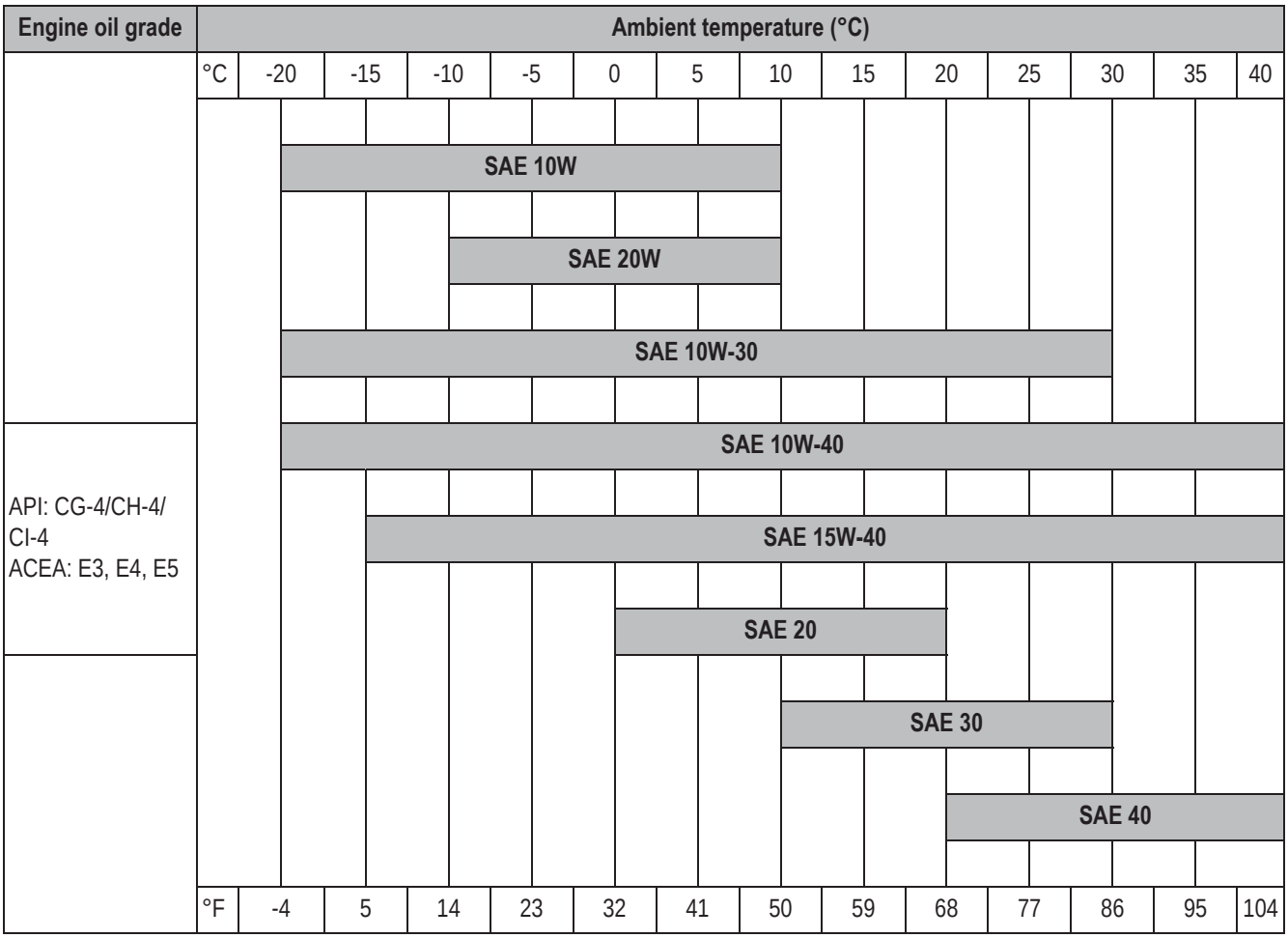
- Remove anticorrosion agent from the piston rods.
- Charge, install and connect the battery.
- Remove the seals from the exhaust pipe and the air filter intake.
- Check the condition of the air filter element and replace the element if necessary.
- Check the dust valve.
- Refuel.
- Switch on the fuel prefilter on the upper carriage and the fuel filter on the engine (turn to ON).
- Turn the starter to position 1 for 2 minutes (to supply the engine with fuel).
- If the machine was out of service for over 6 months, change the oil in the gearbox, engine, etc. and the hydraulic oil reservoir.
- Check the engine oil.
- Also replace hydraulic oil filters (return and breather filters) if the machine has been out of service for over 6 months.
- Lubricate the machine according to the lubrication plan.
- Check the levels.
- Check the coolant, change as required.
- Remove the starting key, remove fuse F2 on the right-hand cover.
- Let the engine run 15 seconds.
- Wait 15 seconds.
- Let the engine run 1 minute again.
- Remove the starting key, put fuse F2 back in.
- Start the diesel engine.
- Let the engine run at idling speed at least 15 minutes without load.
- Check the oil levels in all units and add oil if necessary.

5.15 Fluids and lubricants

Component/application	Fluid/lubricant	Specification	Season/ temperature	Capacities [1]
Diesel engine	Engine oil	API: CG-4/CH-4/CI-4 ACEA: E3, E4, E5	−15 °C (−5 °F) +45 °C (+104 °F)	2.5 l (0.66 gal)
		ACEA E3, E4, E5 (SAE10 W 40)[2]		
Hydraulic oil reservoir	Hydraulic oil	HVLP 46[3]	Year-round[4]	13.8 l (3.6 gal)
	Biodegradable oil[5]	PANOLIN HLP Synth 46[6]		
		BP BIOHYD SE-S 46[6]		
Grease	Roller and friction bearings	KPF 2 K-20[7] ISO-L-X-BCEB 2[8]	Year-round	As required
	Live ring gears			
	Live ring (ball bearing)			
	Grease nipples			
Battery terminals	Acid-proof grease [9]	FINA Marson L2	Year-round	As required
Fuel tank [10]	Diesel fuel [11]	ASTM D975-94: 1D, 2D (USA)	Depending on outside temperatures Summer or winter diesel fuel	7 l (1.85 gal)
		EN 590 (EU)		
		ISO 8217 DMX (International)		
		BS 2869-A1, A2 (GB)		
		JIS K2204 (Japan)		
		KSM-2610 (Korea)		
		GB252 (China)		
	Biodiesel	EN 14214		
		ASTM D-6751		
Radiator	Coolant	Distilled water + antifreeze ASTM D4985 (reddish)[12]	Year-round	2.9 l (0.76 gal)
		Distilled water + antifreeze ASTM 6210 (violet)[13]		

1. The capacities indicated are approximate values; the oil level check alone is relevant for the correct oil level
   Capacities indicated are no system fills
2. According to DIN 51511
3. According to DIN 51524 section 3
4. Depending on local conditions – *see* ***Hydraulics oil grade*** on page 5-37
5. Biodegradable hydraulic oil based on saturated synthetic esters with an iodine value of < 10, according to DIN 51524, section 3, HVLP, HEES.
6. Dual Power option: During operation with the electrohydraulic power unit HPU8, there must be no biodegradable hydraulic oil in the excavator or the power unit. Both must be filled with HVLP 46. Contact a Wacker Neuson service center before using power units from other manufacturers.
7. KPF 2 K-20 according to DIN 51502 multipurpose lithium grease.
8. ISO-L-X-BCEB 2 according to DIN ISO 6743-9.
9. Standard acid-proof grease
10. Sulfur content below 0.05 %, cetane number over 45
11. In countries where level 3A/Tier IV exhaust emission regulations apply provisionally, use diesel fuels with a sulfur content of < 15 ppm.
12. Up to serial no. WNCE0801EPAL00899
13. From serial no. WNCE0801VPAL00900

Oil grades for the diesel engine, depending on temperature



Oil change and filter replacement (hydraulics)

NOTICE

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)		Replace the first time after 500 o/h, then every 1000 o/h	Replace the first time after 50 o/h, then every 500 o/h
Percentage of hammer work	20 %	Every 800 o/h	300 o/h
	40 %	Every 400 o/h	
	60 %	Every 300 o/h	100 o/h
	Over 80 %	Every 200 o/h	

Information!

Please refer to the maintenance plan on page *5-38* for additional maintenance.

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

5.16 Maintenance plan (overview)

Work description

For servicing and maintenance on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer.

	Maintenance plan/operating hours (o/h)							
	Maintenance (once a day)	Every 50 o/h	Every 250 o/h	Every 500 o/h	Every 1000 o/h once a year	Every 2000 o/h	Customer	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]		●		●				●
• Water separator					●			●
• Coolant					●			●
• Hydraulic oil filter insert [4]		●		●				●
• Hydraulic oil[5]				●	●			●
• Drain condensation water from the hydraulic oil reservoir (from serial no. AH02272)				●				●
• Air filter element (up to serial no. AI00875)			●				●	
• Air filter element according to dirt indicator (from serial no. AI00876) [6]					●		●	
Inspection work ( ):								
Check the following material. Refill if necessary:								
• Engine oil	●						●	
• Engine coolant	●						●	
• Fuel	●						●	
• Hydraulic oil	●						●	
Check the function of the pedals (up to serial no. AI00975) • Clean, lubricate or repair the pedals	●						●	

5.16 Maintenance plan (overview)

Work description

For servicing and maintenance on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer.

	Maintenance plan/operating hours (o/h)							
	Maintenance (once a day)	Every 50 o/h	Every 250 o/h	Every 500 o/h	Every 1000 o/h once a year	Every 2000 o/h	Customer	Wacker Neuson service center
Check the function of the pedals, they must flip back automatically (from serial no. AI00976) • Clean, lubricate or repair the pedals, check the torsion springs	●						●	
Clean water ducts [7]					●			●
Check radiator for engine and hydraulic oil for dirt. Clean if necessary	●						●	
Check cooling systems and hoses for leaks and pressure (visual check)	●						●	
Air filter (damage)	●						●	
Remove dust from dust valve	●						●	
Prefilter with water separator: drain water	●						●	
• Clean			●				●	
Check V-belt condition and tension	●						●	
Replace the V-belt				●				●
Check the exhaust system for damage and condition	●						●	
Check the rollbar for damage	●						●	
Check valve clearance. Adjust if necessary					●			●
Clean and adjust the fuel injection pump [8]					●			●
Check and adjust the injection pressure of the injection nozzles, clean the injection needles/nozzles					●			●
Check and adjust injection time [9]					●			●
Empty the fuel tank and check for dirt				●				●

5.16 Maintenance plan (overview)

Work description

For servicing and maintenance on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer.

	Maintenance plan/operating hours (o/h)							
	Maintenance (once a day)	Every 50 o/h	Every 250 o/h	Every 500 o/h	Every 1000 o/h once a year	Every 2000 o/h	Customer	Wacker Neuson service center
Check battery electrolyte. Add distilled water if necessary		●		●			●	
Check alternator, starter and electric connections, bearing play and function				●				●
Check preheating system and electric connections				●				●
Pressure check of primary pressure limiting valves[10]		●		●				●
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 the threaded fittings of the safety devices (for example rollbar, etc.) for tightness	●						●	
Check the threaded fittings 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 engine compartment for damage/condition		●					●	
Check labels and Operator's Manual for completeness and condition		●					●	
Lights and acoustic warning system[11]		●					●	
Check lubricant on live ring[12]		●		●				●
Check gearing of swivel unit pinion					●			●
Lubrication service ( ):								
Lubricate the following assemblies/components – *see Maintenance label* on page 5-43:								

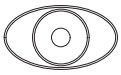
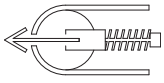
5.16 Maintenance plan (overview)

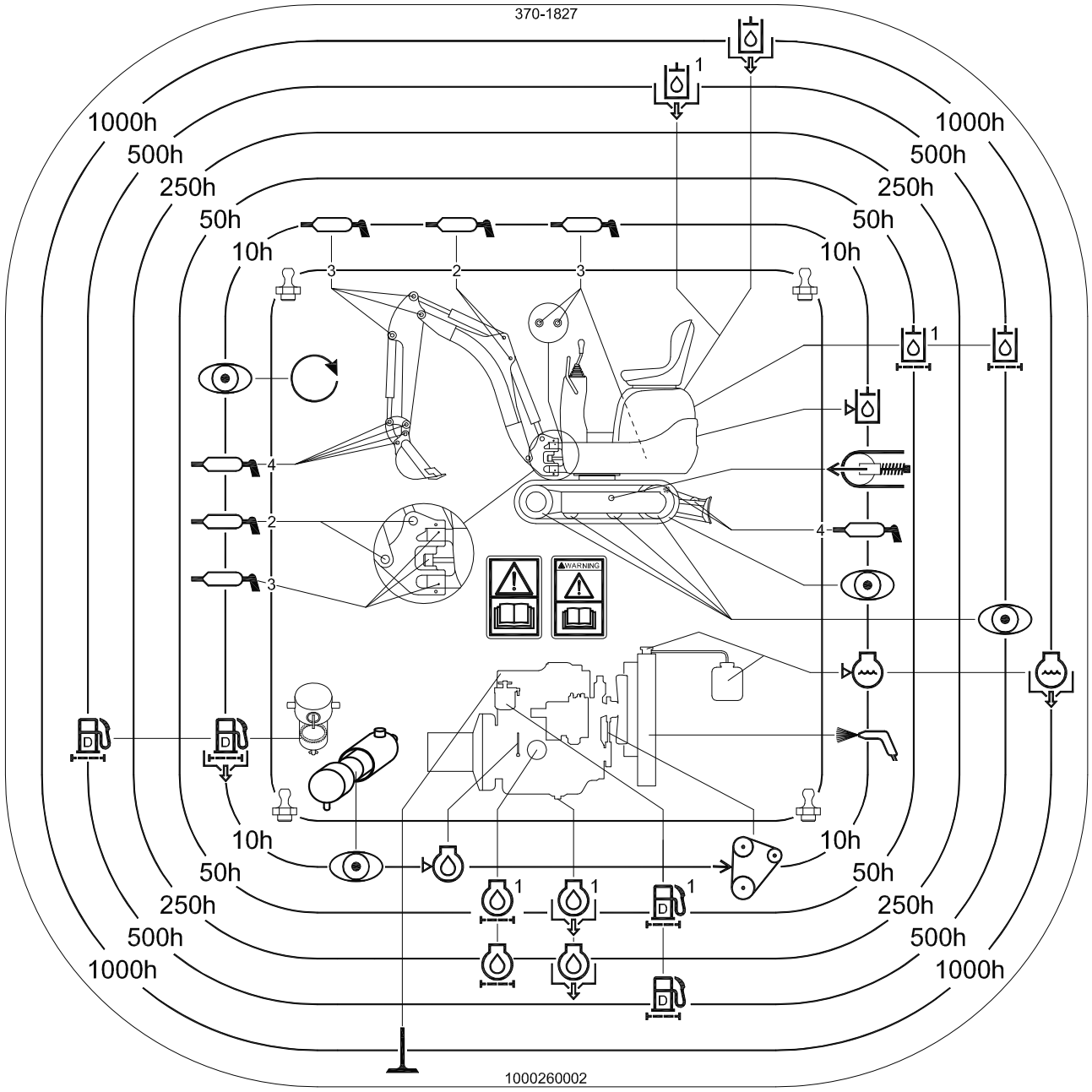
Work description	Maintenance plan/operating hours (o/h)							
For servicing and maintenance on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer.	Maintenance (once a day)	Every 50 o/h	Every 250 o/h	Every 500 o/h	Every 1000 o/h once a year	Every 2000 o/h	Customer	Wacker Neuson service center
• Stabilizer blade	●						●	
• Swiveling console	●						●	
• Swiveling cylinder	●						●	
• Boom	●						●	
• Stick	●						●	
• Attachments	●						●	
• Teeth of live ring					●		●	
• Live ring (ball bearing)	●						●	
• Ball sockets (ISO/SAE changeover option)			●				●	
Functional check ( ):								
Check the function of the following assemblies/components. Rectify if necessary:								
• Lights and acoustic warning system	●						●	
• Check pedal function	●						●	
Leakage check ( ):								
Check for tightness, leaks and chafing: pipes, flexible lines and threaded fittings of the following assemblies and components. Rectify if necessary:								
• Visual check	●						●	
☞ Engine, hydraulic system and hydraulic components	●						●	
☞ Cooling circuit	●						●	
☞ Traveling drive	●						●	

1. Drain engine oil the first time after 50 o/h, then every 250 o/h
2. Replace the engine oil filter the first time after 50 o/h, then every 250 o/h
3. Replace the fuel filter the first time after 50 o/h, then every 500 o/h
4. Replace the hydraulic oil filter insert the first time after 50 o/h, then every 500 o/h
5. Replace the hydraulic oil the first time after 500 o/h, after 1000 o/h the second time, then every 1000 o/h
6. According to the dirt indicator, every 1000 o/h or once a year at the latest. (Replace after 50 o/h when in extensive use in environments with acidic air, such as acid production facilities, steel and aluminum mills, chemical plants and other nonferrous-metal plants)
7. Clean the water ducts every other 1000 o/h servicing
8. Clean and adjust the fuel injection pump every other 1000 o/h servicing
9. Check and adjust injection time every other 1000 o/h servicing
10. Check the first time after 50 o/h, then every 500 o/h
11. Check once a week
12. Check the first time after 50 o/h, then every 500 o/h

5.17 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 the engine oil
	Engine	Replace the oil filter
	Engine	Check the V-belt tension
	Hydraulic system	Check oil level
	Hydraulic system	Change the hydraulic oil
	Hydraulic system	Replace the hydraulic oil filter
	Travel gear	Check track tension
	Radiator fins	Clean


370-1827
1000h
500h
250h
50h
10h
1
2
3
4
WARNING
D
1000260002

6 Technical data

6.1 Chassis

Sturdy steel sheet chassis, rubber-mounted engine

6.2 Engine

Engine	Model 803
Product	Yanmar diesel engine
Type	3TNV70-VNS
Design	Water-cooled 4 stroke diesel engine
Number of cylinders	3
Displacement	854 cm^3 (52.1 in^3)
Nominal bore and stroke	70 x 74 mm (2.8 x 2.9 in)
Output	9.6 kW at 2100 rpm (12.9 hp/2,100 rpm)
Max. torque	51.5 Nm at 1500 rpm (38 ft.lbs/1,500 rpm)
Max. engine speed without load	2270 +/− 25 rpm
Idling speed	1300 +/− 25 rpm (1,300 +/− 25 rpm)
Fuel injection system	Indirect injection
Starting aid	Glow plug (preheating time 4 seconds)
Exhaust values according to	EPA – Tier IV final (up to 2012)

Engine	Model 803
Product	Yanmar diesel engine
Type	3TNV74F-SNNS
Design	Water-cooled 4 stroke diesel engine
Number of cylinders	3
Displacement	993 cm³ (60.6 in^3)
Nominal bore and stroke	74 x 77 mm (2.9 x 3.0 in)
Output	11.5 kW at 2500 rpm (15.4 hp/2,500 rpm)
Max. torque	53 Nm at 1800 rpm (39 ft.lbs/1800 rpm)
Max. engine speed without load	2675 +/− 25 rpm (2,675 +/− 25 rpm)
Idling speed	1300 +/− 25 rpm (1,300 +/− 25 rpm)
Fuel injection system	Indirect injection
Starting aid	Glow plug (preheating time 4 seconds)
Exhaust values according to	EPA – Tier IV final (from 2012)

Information!

The machine has about 17 % less output at altitudes over 800 m (2625 ft) above see level. However, this does not affect operation.

6.3 Travel gear and swivel unit

Travel gear/swivel unit	Model 803
Travel speed	1.82 kph (1.1 mph)
Climbing ability	30°/58 %
Track width	180 mm (7 in)
No. of track rollers on either side	2
Ground clearance	132 mm (5 in)
Ground pressure	0.24 kg/cm² (3.4 lbs/in^2)
Upper carriage swivel speed	8 rpm

6.4 Stabilizer blade

Stabilizer blade	Model 803
Width with stabilizer blade folded in/out	700/860 mm (27.6/34 in)
Height	198 mm (7.8 in)
Max. lift over/under subgrade	197/174 mm (7.8/6.9 in)

6.5 Operating hydraulics

Operating hydraulics	Model 803
Pump Tier IV final (up to 2012)	Twin gear pump 2 x 5 cm^3 (2 x 0.3 in^3)
Pump Tier IV final (from 2012)	Twin gear pump 2 x 4 cm^3 (2 x 0.24 in^3)
Hydraulic pump displacement Tier IV final (up to 2012)	2 x 11.35 l/min at 2270 rpm (2 x 3 gal/min at 2270 rpm)
Hydraulic pump displacement Tier IV final (from 2012)	2 x 10.7 l/min at 2675 rpm (2 x 2.8 gal/min at 2675 rpm)
Control valve	9 sections
Max. operating pressure (work and drive hydraulics)	170 ± 3 bar (2466 psi)
Main pressure restriction for boom/bucket/stick	170 ± 3 bar (2466 psi)
Main pressure restriction for stabilizer blade	170 ± 3 bar (2466 psi)
Main pressure restriction for swivel drive (hydraulic motor pressure restriction)	70 bar (1,015 psi)
Filter	Return filter
Hydraulic reservoir capacity	13.8 l (3.65 gal)

6.6 Connection values of Dual Power option

Hydraulic system	
Operating pressure at excavator connections	Max. 170 bar (2,466 psi)
Oil flow	Max. 20 l/min (5.3 gal/min)

6.7 Electrical system

Electrical system	
Dynamo	12 V 20 A
Starter	12 V 1.1 kW (1.5 hp)
Battery	12 V 30 Ah

Fuses behind the right-hand trim

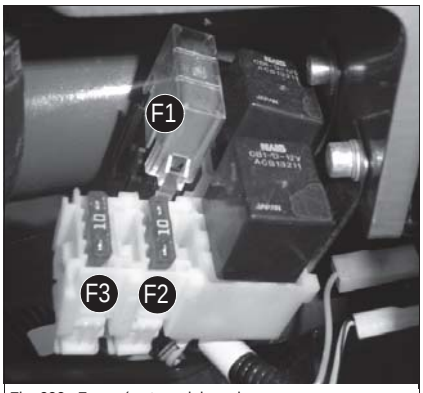


Fig. 222: Fuses (up to serial number WNCE0801CPAL0050)

Fuse no.	Rated current (A)	Protected circuit
F1	40 A	Main fuse: air-pressure sensor/output adaptation (Yanmar 3TNV74F-SNNS)
F2	10 A	Fuse: relay, indicator, cutoff solenoid
F3	10 A	Fuse: horn, working light 12 V power outlet (up to serial number WNCE0801CPAL0050), travel signal (option)
F4	10 A	12 V power outlet (from serial number WNCE0801TPAL0051)

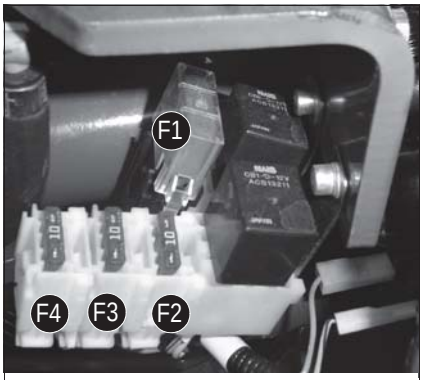


Fig. 223: Fuses (from serial number WNCE0801TPAL0051)

Relays behind the right-hand trim

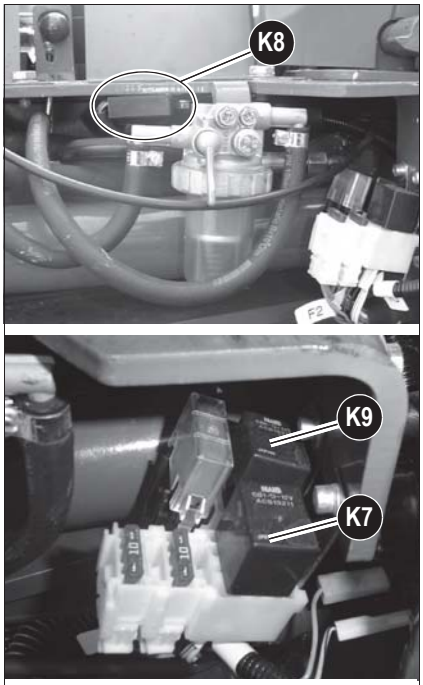


Fig. 224: Relays

Relay no.	Protected circuit
K 7	Starting relay
K 8	Cutoff solenoid time lag relay 1s
K 9	Cutoff solenoid switching relay

Fuses and relays with Dual Power option

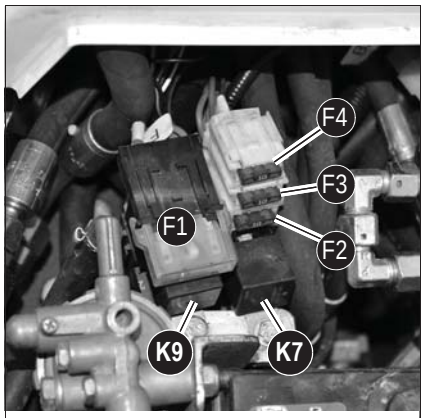


Fig. 225: Fuses and relays with Dual Power option

If the machine is equipped with the **Dual Power** option, the fuses and relays are located under the base plate.

Fuse no.	Rated current (A)	Protected circuit
F1	40 A	Main fuse: air-pressure sensor/output adaptation (Yanmar 3TNV74F-SNNS)
F2	10 A	Fuse: relay, indicator, cutoff solenoid
F3	10 A	Fuse: horn, working light 12 V power outlet (up to serial number WNCE0801CPAL0050), travel signal (option)
F4	10 A	12 V power outlet (from serial number WNCE0801TPAL0051)

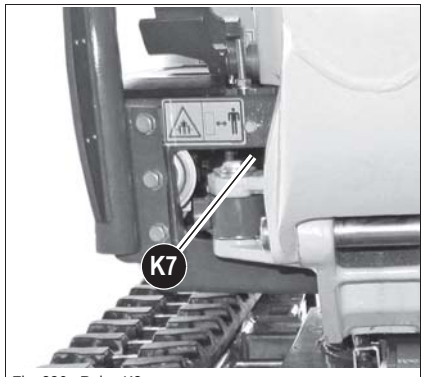


Fig. 226: Relay K8

Relay no.	Protected circuit
K7	Starting relay
K 8	Cutoff solenoid time lag relay 1s
K9	Cutoff solenoid switching relay
K116 **(A)**	Battery control

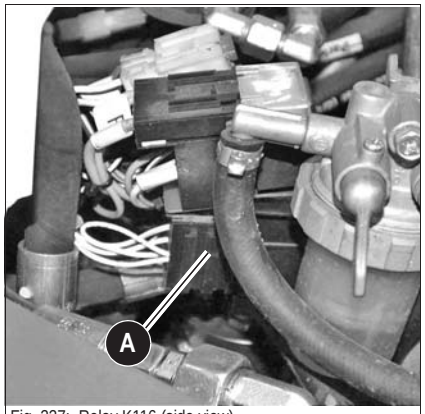


Fig. 227: Relay K116 (side view)

6.8 Noise levels

Sound power level (Yanmar 3TNV70-VNS)	
Sound power level (L_{WA})[1]	93 dB (A)
Uncertainty factor[2]	1.2 dB (A)
Operator-perceived sound pressure level (L_{PA}) [3]	77 dB (A)

1. ISO 6395 (EC Directives 2000/14/EC and 2005/88/EC)
2. EN ISO 4871 (EC Directives 2000/14/EC and 2005/88/EC)
3. ISO 6394 (EC Directives 84/532/EEC, 89/514/EEC, 95/27/EEC)

Information!

Measurements performed on asphalted surface.

6.9 Vibration

Vibration	
Effective acceleration value for the upper extremities of the body (hand-arm vibration)	< Trigger value < 2.5 m/s^2
Effective acceleration value for the body (whole-body vibration)	< 0.5 m/s^2

Vibration values indicated in m/s^2.

Directive 2002/44/EC of European Parliament and Coucil on minimum health and safety requirements regarding exposure of workers to risks arising from physical agents (vibration).

Indications on hand-arm vibration

Hand-arm vibration is less than 2.5 m/s^2 during correct machine operation.

Indications on whole-body vibration

Whole-body vibration is less than 0.5 m/s^2 during correct machine operation.

Uncertainty of measurement K has been taken into account for the specified values.

The degree of vibration is influenced by various parameters.

Some of them are listed below:

- Operator: training, behavior, working method and strain.
- Work site: organization, preparation, surroundings, weather conditions and material.
- Machine: version, seat quality, quality of suspension system, attachments and condition of attachments.

Precise indications on the vibration degrees cannot be made for the machine.

Determination of vibration level for the three vibration axes.

- Under typical operating conditions, use the average vibration values measured.
- In order to obtain the estimated vibration value for an experienced operator on level ground, subtract the factors from the average vibration value.
- In case of an aggressive working method or difficult terrain, add the environmental factors to the average vibration level in order to obtain the estimated vibration level.

Note:

For further vibration indications, refer to the indications in ISO/TR 25398 Mechanical Vibrations – Directive on Estimation of whole-body vibration when driving earth moving machines. This publication uses measuring values of international institutes, organizations and manufacturers. It contains information on whole-body vibration for operators in earth moving machines. For more information on the vibration values of the machine, refer to Directive 2002/44/EC of European Parliament and Coucil on minimum health and safety requirements regarding exposure of workers to risks arising from physical agents (vibration).

It explains the values for vertical vibration under heavy operating conditions.

Directives on reduction of vibration values in earth moving machines:

- Perform correct adjustments and maintenance on the machine.
- Avoid jerky movements during machine operation.
- Keep slopes in a perfect condition.

Whole-body vibration can be reduced with the following guidelines:

- Use a machine and equipment of correct type and size.
- Follow the manufacturer's recommendations for maintenance.
  - Tire pressure.
  - Brake and steering systems.
  - Control elements, hydraulic system and linkage.
- Keep the job site in good condition:
  - Remove large rocks or obstacles.
  - Fill up ditches and holes.
  - Provide a machine and enough time to keep the job site in good condition.
- Use an operator seat according to the ISO 7096 requirements. Keep the operator seat in good condition and adjust it correctly:
  - Adjust the operator seat and suspension to the operator's weight and size.
  - Check and maintain the seat adjustment and suspension.
- Perform the following activities smoothly without any jerks:
  - Steering
  - Braking
  - Acceleration
  - Shifting gears
- Move attachments without any jerks.
- Adapt your speed and the itinerary to minimize vibration:
  - Travel around obstacles and uneven ground.
  - Reduce your speed when traveling across rough terrain.

- Reduce vibration to a minimum during long work cycles or when traveling over long distances:
  - Use a machine with a suspension system (operator seat, for example).
  - Enable the hydraulic oscillation damping if the machine is equipped with tracks.
  - If the machine is not equipped with hydraulic oscillation damping, reduce your speed to avoid bumps and jolts.
  - Load the machine on a truck or trailer to move between work sites.
- Other risk factors can affect drive comfort negatively. The following measures can improve drive comfort:
  - Adjust the operator seat and the control elements to a relaxed body posture.
  - Adjust the rearview mirrors to ensure optimal visibility so you can adopt an upright seating position.
  - Provide breaks to avoid sitting for long periods.
  - Do not jump off the control stand.
  - Picking up and raising loads repeatedly must be limited to a minimum.

Reference:

The vibration values and calculations are based on the indications made in ISO/TR 25398 Mechanical Vibrations – Guidelines for assessment of exposure to whole-body vibration when operating earth moving machines.

The harmonized data comply with measurements made by international institutes, organizations and manufacturers. This publication offers information on the calculation of whole-body vibrations for operators of earth moving machines. This method is based on vibration measurements under real operating conditions for all machines. Read the original guidelines. This chapter summarizes part of the legal regulations. However, its aim is not to replace the original references. Other parts of this document are based on information of the United Kingdom Health and Safety Executive.

For more information on vibration, refer to Directive 2002/44/EC of European Parliament and Coucil on minimum health and safety requirements regarding exposure of workers to risks arising from physical agents (vibration).

Your Wacker Neuson dealer provides information on other machine functions reducing vibration and on safe operation.

6.10 Coolant compound table

Outside temperature[1]	Water	Coolant[2]
Up to °C (°F)	% by volume	% by volume
−37 (−34.6)	50	50

1. Use the 1:1 concentration for warm outside temperatures, too, to ensure protection against corrosion, cavitation and deposits.
2. Do not mix the coolant with other coolants.

6.11 Weight

803 without rollbar	
Operating weight [1]	1032 kg (2,275 lbs)
Transport weight[2]	935 kg (2,061 lbs)
803 with rollbar	
Operating weight[1]	1087 kg (2,396 lbs)
Transport weight[2]	990 kg (2,182 lbs)

1. Operating weight: basic machine + full fuel tank + backhoe bucket (250 mm/10 in) + operator (75 kg/165 lbs).
2. Transport weight: basic machine + 10 % fuel capacity.

Information!

The actual machine weight depends on the selected options and must be read off the type label.
Add the weight of all subsequently installed equipment to the weight of the machine.
Weight indications can vary by +/− 2 %.

6.12 Dimensions model 803 (up to serial no. AI00966)

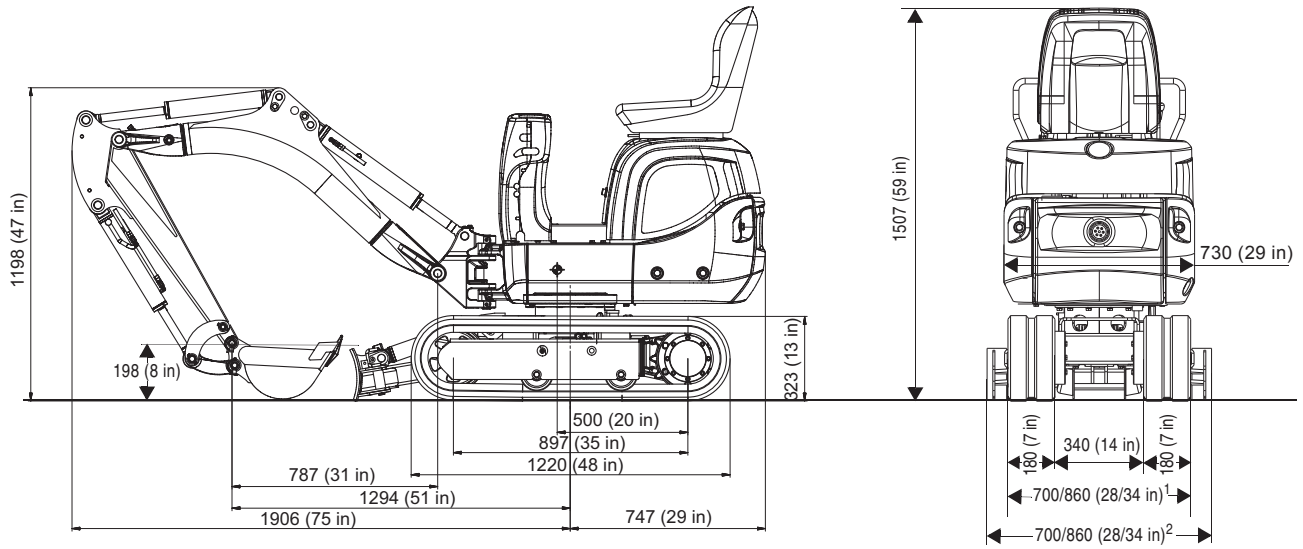
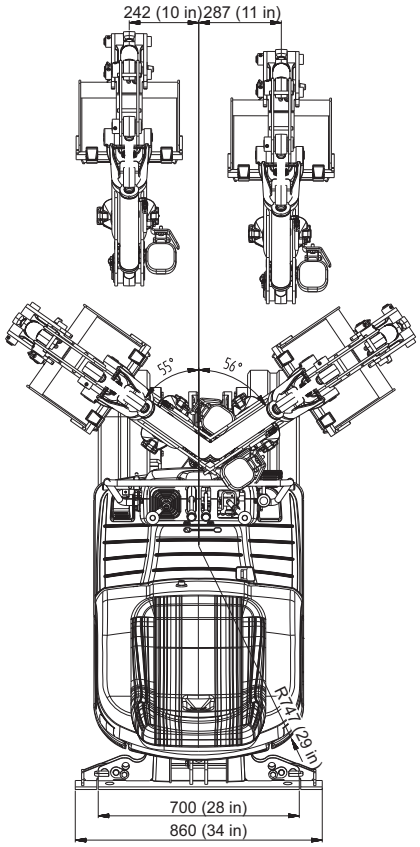


Fig. 228: Machine dimensions (model 803)

1 Retracted/extended telescopic travel gear
2 folded/unfolded stabilizer blade



Main data	Model 803
Height (transport position)	1507 mm (59 in)
Upper carriage width	730 mm (29 in)
Width of retracted/extended telescopic travel gear	700/860 mm (28/34 in)
Width of stabilizer blade folded in/out	700/860 mm (28/34 in)
Transport length	2747 mm (9')
Max. digging depth	1731 mm (68 in)
Stick length	890 mm (35 in)
Max. vertical digging depth	1349 mm (53 in)
Max. digging height	2863 mm (9'-5")
Max. tilt-out height	2035 mm (80 in)
Max. digging radius	3074 mm (10'-1")
Max. reach at ground level	3028 mm (9'-11")
Max. breakout force at bucket tooth	899 daN (2021 daN)
Max. tearout force	451 daN (1014 daN)
Min. tail end slewing radius	747 mm (29 in)
Max. tail end lateral projection of upper carriage, 90° rotation With retracted/extended telescopic travel gear With stabilizer blade folded in/out	 397/317 mm (16/12 in) 397/317 mm (16/12 in)
Max. boom displacement to bucket center (right side)	287 mm (11 in)
Max. boom displacement to bucket center (left side)	242 mm (10 in)

6.13 Dimensions model 803 with rollbar (from serial no. AI00967)

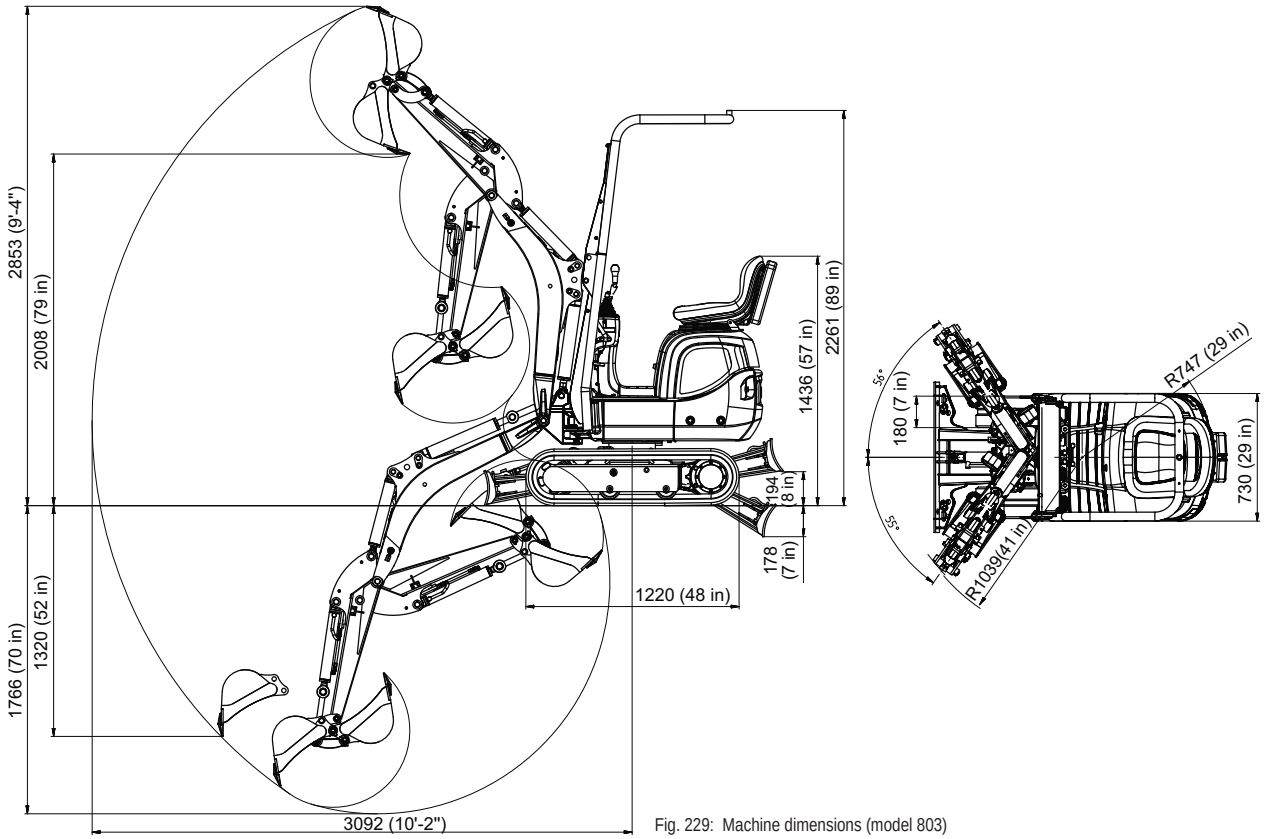


Fig. 229: Machine dimensions (model 803)

Main data	Model 803
Height	2261 mm (89 in)
Upper carriage width	730 mm (29 in)
Width with retracted/extended telescopic travel gear	700/860 mm (28/34 in)
Width with stabilizer blade folded in/out	700/860 mm (28/34 in)
Transport length	2747 mm (9')
Max. digging depth	1766 mm (70 in)
Stick length	890 mm (35 in)
Max. vertical digging depth	1320 mm (52 in)
Max. digging height	2853 mm (9'-4")
Max. tilt-out height	2008 mm (79 in)
Max. digging radius	3092 mm (10'-2")
Max. reach at ground level	3046 mm (10')
Max. breakout force at bucket tooth	899 daN (2021 daN)
Max. tearout force	451 daN (1014 daN)
Min. tail end slewing radius	747 mm (29 in)
Max. tail end lateral projection of upper carriage, 90° rotation With retracted/extended telescopic travel gear With stabilizer blade folded in/out	 397 mm/317 mm (16/12 in) 397 mm/317 mm (16/12 in)
Max. boom displacement to bucket center (right side)	287 mm (11 in)
Max. boom displacement to bucket center (left side)	242 mm (10 in)

6.14 Dimensions model 803 without rollbar (from serial no. AI00967)

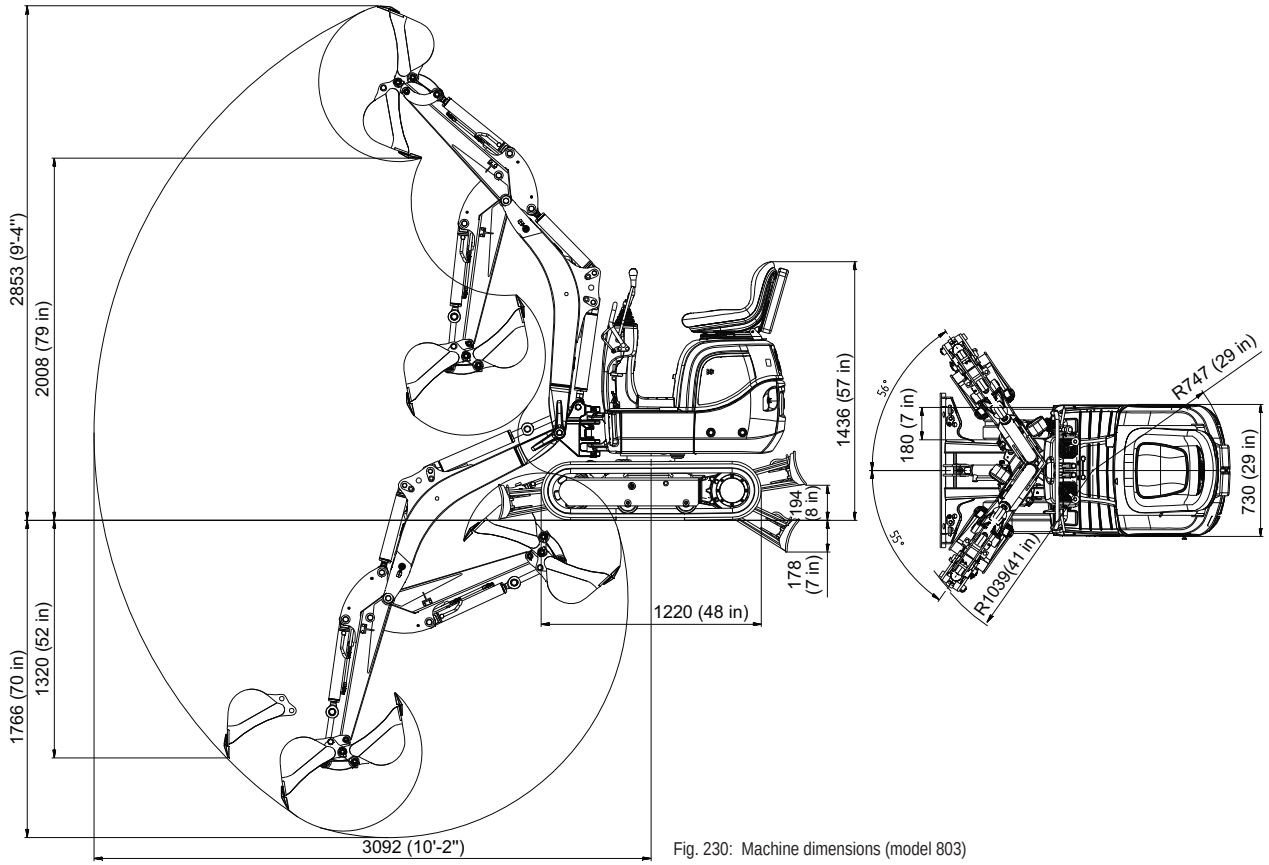


Fig. 230: Machine dimensions (model 803)

Main data	Model 803
Height	1436 mm (57 in)
Upper carriage width	730 mm (29 in)
Width with retracted/extended telescopic travel gear	700/860 mm (28/34 in)
Width with stabilizer blade folded in/out	700/860 mm (28/34 in)
Transport length	2747 mm (9')
Max. digging depth	1766 mm (70 in)
Stick length	890 mm (35 in)
Max. vertical digging depth	1320 mm (52 in)
Max. digging height	2853 mm (9'-4")
Max. tilt-out height	2008 mm (79 in)
Max. digging radius	3092 mm (10'-2")
Max. reach at ground level	3046 mm (10')
Max. breakout force at bucket tooth	899 daN (2021 daN)
Max. tearout force	451 daN (1014 daN)
Min. tail end slewing radius	747 mm (29 in)
Max. tail end lateral projection of upper carriage, 90° rotation With retracted/extended telescopic travel gear With stabilizer blade folded in/out	 397 mm/317 mm (16/12 in) 397 mm/317 mm (16/12 in)
Max. boom displacement to bucket center (right side)	287 mm (11 in)
Max. boom displacement to bucket center (left side)	242 mm (10 in)

6.15 Lift capacity tables 803

Safety instructions – lift capacity table

DANGER

Crushing hazard due to tipping over of machine.

Causes serious crushing or injury resulting in death.

- The authorized lift capacity specified in the table must never be exceeded. The lowest value applies.
- Get informed on the lift capacity of the attachment before using it.
- If a bucket or attachment (hammer, etc.) is installed, the dead weight and the contents of the bucket must be subtracted from the lift capacity specified in the table. Load density must also be taken into account.
- All lifting gear applications are prohibited with this machine.

NOTICE

If the specified lift capacity is exceeded, possible property damage due to tipping over of machine.

- The authorized lift capacity specified in the table must never be exceeded. The lowest value applies.

Information!

The indications are only approximate values. Attachments, uneven ground and soft or bad ground conditions affect lift capacity. The operator must take these influences into account.

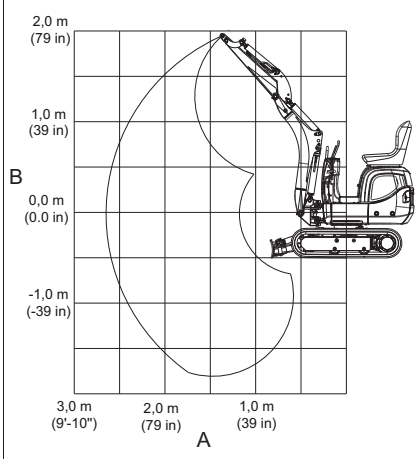


Fig. 231: Lift capacity table (model 803)

A	Reach from live ring center
B	Height

All table indications in kg (lbs) and horizontal position on firm and level ground, and without bucket or attachment.

Calculation basis: according to ISO 10567.

Setting pressure on boom cylinder: 17000 kPa (2466 psi)

The machine's lift capacity is restricted by the hydraulic output and the hydraulic system's stabilizing features.

Neither 75 % of the static tilt load nor 87 % of the hydraulic lift capacity is exceeded.

The lift capacity applies under the following conditions:

- Lubricants and engine/machine fluids at the mandatory levels.
- Full fuel tank.
- Machine at operating temperature.
- Operator weight 75 kg (165 lbs).

Longitudinal direction, stabilizer blade at front and raised

A / B			2.5 m (98 in)	2.0 m (79 in)	1.5 m (59 in)	1.0 m (39 in)
	A max (m/ft)	kg/lbs				
2.4 m (94 in)	1.41 (4.61)	216 (477)	--	--	--	--
2.0 m (79 in)	2.03 (6.64)	205 (453)	--	203 (448)	--	--
1.5 m (59 in)	2.40 (7.86)	163 (358)	--	189 (416)	--	--
1.0 m (39 in)	2.59 (8.49)	142 (314)	151 (332)	212 (469)	247 (544)	--
0.5 m (20 in)	2.65 (8.7)	135 (298)	147 (325)	204 (450)	311 (685)	--
0.0 m (0.0 in)	2.60 (8.52)	137 (303)	145 (319)	197 (434)	296 (653)	570 (1,257)
−0.5 m (−20 in)	2.41 (7.91)	146 (323)	--	194 (428)	292 (644)	561 (1,236)
−1.0 m (−39 in)	2.05 (6.73)	138 (304)	--	149 (328)	243 (536)	418 (922)

Longitudinal direction, stabilizer blade at front and lowered

A / B			2.5 m (98 in)	2.0 m (79 in)	1.5 m (59 in)	1.0 m (39 in)
	A max (m/ft)	kg/lbs				
2.4 m (94 in)	1.41 (4.61)	216 (477)	--	--	--	--
2.0 m (79 in)	2.03 (6.64)	205 (453)	--	203 (448)	--	--
1.5 m (59 in)	2.40 (7.86)	191 (420)	--	189 (416)	--	--
1.0 m (39 in)	2.59 (8.49)	177 (391)	185 (407)	217 (478)	247 (544)	--
0.5 m (20 in)	2.65 (8.70)	166 (365)	184 (407)	247 (544)	366 (807)	--
0.0 m (0.0 in)	2.60 (8.52)	155 (343)	171 (377)	247 (544)	379 (835)	678 (1,495)
−0.5 m (−20 in)	2.41 (7.91)	146 (323)	--	215 (475)	325 (718)	561 (1,236)
−1.0 m (−39 in)	2.05 (6.73)	138 (304)	--	149 (328)	243 (536)	418 (922)

Longitudinal direction, stabilizer blade at rear

A / B			2.5 m (98 in)	2.0 m (79 in)	1.5 m (59 in)	1.0 m (39 in)
	A max (m/ft)	kg/lbs				
2.4 m (94 in)	1.41 (4.61)	216 (477)	--	--	--	--
2.0 m (79 in)	2.03 (6.64)	205 (453)	--	203 (448)	--	--
1.5 m (59 in)	2.40 (7.86)	175 (386)	--	189 (416)	--	--
1.0 m (39 in)	2.59 (8.49)	154 (339)	162 (358)	217 (478)	247 (544)	--
0.5 m (20 in)	2.65 (8.70)	146 (322)	159 (351)	220 (484)	335 (738)	--
0.0 m (0.0 in)	2.60 (8.52)	148 (327)	156 (344)	213 (469)	320 (705)	618 (1,363)
−0.5 m (−20 in)	2.41 (7.91)	146 (323)	--	210 (462)	316 (696)	561 (1,236)
−1.0 m (−39 in)	2.05 (6.73)	138 (304)	--	149 (328)	243 (536)	418 (922)

Transverse direction, travel gear extended

A / B			2.5 m (98 in)	2.0 m (79 in)	1.5 m (59 in)	1.0 m (39 in)
	A max (m/ft)	kg/lbs				
2.4 m (94 in)	1.41 (4.61)	216 (477)	--	--	--	--
2.0 m (79 in)	2.03 (6.64)	167 (367)	--	170(376)	--	--
1.5 m (59 in)	2.40 (7.86)	126 (277)	--	172 (378)	--	--
1.0 m (39 in)	2.59 (8.49)	109 (240)	116 (255)	166 (366)	247 (544)	--
0.5 m (20 in)	2.65 (8.70)	103 (227)	113 (248)	158 (347)	241 (531)	--
0.0 m (0.0 in)	2.60 (8.52)	104 (230)	110 (242)	150 (332)	226 (499)	431 (951)
−0.5 m (−20 in)	2.41 (7.91)	115 (253)	--	148 (325)	222 (490)	433 (955)
−1.0 m (−39 in)	2.05 (6.73)	138 (304)	--	149 (328)	225 (497)	418 (922)

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 that have already been delivered and that will not be implemented on these machines.

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

Wacker Neuson Linz GmbH

Flughafenstr. 7

A-4063 Hörsching

Austria

COMPACT EXCAVATOR

www.aem.org

SAFETY MANUAL

FOR OPERATING AND MAINTENANCE PERSONNEL

Contents

Acknowledgment

We wish to acknowledge the contributions of the members of AEM's Compact Loader/Compact Excavator Council to the preparation of this Safety Manual.

Foreword

This safety manual is intended to point out some of the basic safety situations that may be encountered during the normal operation and maintenance of the machine and to suggest possible ways of dealing with these conditions. This manual is **NOT** a substitute for the compact excavator manufacturer's operator manual(s).

Additional precautions may be necessary, or some instructions may not apply, depending on equipment, attachments and conditions at the worksite or in the service area. The manufacturer has no direct control over equipment application, operation, inspection or maintenance. Therefore, it is **YOUR** responsibility to use safe work practices in these areas.

The information provided in this manual supplements the specific information about the machine that is contained in the manufacturer's manual(s). Other information that may affect the safe operation of the machine may be contained on safety signs or in insurance requirements, employer's safety and training programs, safety codes, local, state/provincial and federal laws, rules and regulations.

IMPORTANT! Before you operate the compact excavator, make sure you have the manufacturer's manual(s) for this machine and all attachments. If the manufacturer's manuals are missing, obtain replacement manuals from your employer, equipment dealer or directly from the manufacturer. Keep this safety manual and the manufacturer's manuals with the machine at all times. Read and understand all manuals.

Safety videos and other training resources are available from some manufacturers. Operators are encouraged to periodically review the safety video.

Safety Alerts

Symbol

This Safety Alert Symbol means: **"ATTENTION! STAY ALERT! YOUR SAFETY IS INVOLVED!"**

The Safety Alert Symbol identifies important safety messages on equipment, safety signs, in manuals or elsewhere. When you see this symbol, be alert to the possibility of death or personal injury. Carefully read the message that follows and inform other operators. Follow instructions in the safety message.

Signal Words

Signal words are distinctive words that will typically be found on safety signs on the compact excavator and other worksite equipment. These words may also be found in this manual and the manufacturer's manuals. These words are intended to alert the operator to a hazard and the degree of severity of the hazard.

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

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

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

NOTICE indicates a property damage message.

One-Call First

Call Before You Dig
Dial 811 (USA only)

888-258-0808
(USA and Canada)

Call

Before starting any digging project, contact the local One-Call service by dialing 811 (USA only) to have underground utilities located. A One-Call referral number, **1-888-258-0808**, is also available for both USA and Canada.

One-Call will notify participating utility companies that you intend to dig. You must also call utility companies that do not participate in the One-Call service.

Always inspect the jobsite for evidence of unmarked utilities and contact others if necessary.

Plan The Work

Be aware of the lead time for marking the work area. This time may vary from state to state and county to county. If you do not locate utilities, you may have an accident or suffer injuries, cause service interruptions, damage the environment or experience job delays.

Dig

Most utilities mark their underground facilities using American Public Works Association (APWA) underground color codes. Verify marks before digging.

In the United States, OSHA Standard 29 CFR 1926.651 requires that the estimated location of underground utilities be determined before beginning an excavation. When actual excavation approaches an estimated utility location, the exact location of the underground installation must be determined by a safe, acceptable and dependable method. Other OSHA regulations may also apply to the jobsite.

A Word To The User/Operator

It is **YOUR** responsibility to read and understand the safety manual and the manufacturer's manuals before operating this machine. This safety manual takes you step by step through the working day.

Graphics have been provided to help you understand the text.

IMPORTANT: This manual covers safe practices for Compact Excavators. If the machine is equipped with special attachments, read the manufacturer's operator and safety manuals pertaining to those attachments before using them.

Read And Understand All Safety Signs

Remember that **YOU** are the key to safety. Good safety practices not only protect you but also protect the people around you. Study this manual and the manufacturer's manuals for the specific machine. Make them a working part of your safety program. Keep in mind that this safety manual is written only for compact excavators.

Contact the manufacturer of the equipment to answer any questions about safe operation that remain after studying the manufacturer's manual(s) and this safety manual.

Practice all other usual and customary safe working precautions and remember:

SAFE OPERATION IS UP TO YOU!

YOU CAN PREVENT DEATH OR SERIOUS INJURY CAUSED BY UNSAFE WORK PRACTICES!

Follow A Safety Program

Be Alert!

Know where to get assistance. Know where to find and how to use a first aid kit and fire extinguisher/fire suppression system.

Be Aware!

Take advantage of training programs offered.

Be Careful!

Human error is caused by many factors: carelessness, fatigue, overload, preoccupation, unfamiliarity of the operator with the machine or attachment, drugs, and alcohol to name a few. You can prevent death or serious injury caused by unsafe work practices.

For your safety and the safety of others, encourage fellow workers to act safely.

For Safe Operation

You must be a qualified and authorized operator for safe operation of this machine. You must clearly understand the written instructions supplied by the manufacturer, be trained—including actual operation of the compact excavator—and know the safety rules and regulations for the worksite. It is a good safety practice to point out and explain safety signs and practices and ensure others understand the importance of following these instructions.

WARNING! Drugs and alcohol affect an operator's alertness and coordination and the operator's ability to safely operate the equipment. **Never operate the compact excavator while impaired by use of alcohol or drugs. Never knowingly allow the operation of this machine when operator alertness or coordination is impaired.** An operator taking prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder the ability to safely operate this equipment.

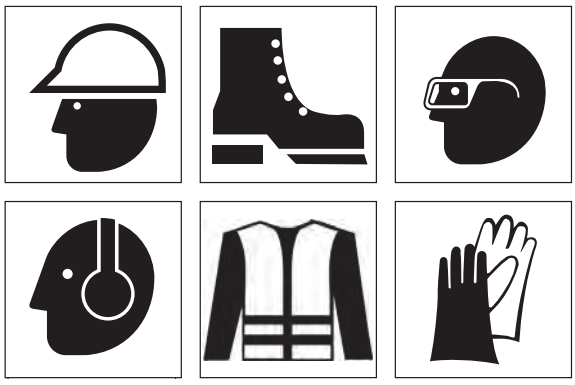
Follow A Safety Program

Protect Yourself

Wear personal protective clothing and Personal Protective Equipment (PPE) issued to you or called for by job conditions.

You may need:
— Hard hat
— Safety boots with non-slip soles
— Safety glasses, goggles or face shield
— Heavy-duty gloves
— Hearing protection
— Reflective or high-visibility clothing
— Wet weather gear
— Respirator or filter mask

Wear whatever is needed to protect yourself—do not take chances.



WARNING! Prevent death or serious injury from entanglement. **Do not wear loose clothing or accessories. Restrain long hair. Stay away from all rotating components when the engine is running.** Contact, wrapping or entanglement with rotating or moving parts could result in death or serious injury.

Follow A Safety Program

Know The Rules

Most employers have rules governing operation and maintenance of equipment. Before you start work at a new location, check with your supervisor or the safety coordinator. Ask about the rules you will be expected to obey.

The Occupational Safety and Health Administration (OSHA) enforces federal laws within the United States that apply to the safe operation, application and maintenance of equipment on a worksite. It is the employer's responsibility to comply with these laws. A federal representative may periodically inspect a worksite to see that these laws are being followed.

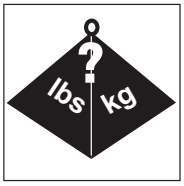
There may also be local, state/provincial, federal laws or international regulations that apply to this equipment and its use, along with specific worksite or employer rules. It is important that you know and comply with all applicable laws and rules, including those requiring operator training and certification.

Know And Understand Rules Of Operation

Follow A Safety Program

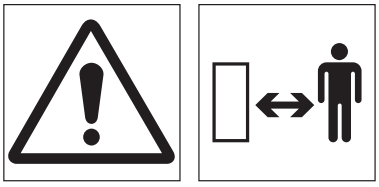
Some Rules You Must Work By

— Know the limitations and operating characteristics of the compact excavator. Do not overload it.
— Always wear the seat belt, if equipped. If the compact excavator is equipped with a foldable TOPS/ROPS, do not fasten the seat belt when the TOPS/ROPS is in the down position.
— Always have all shields and guards properly installed before operating the machine.
— Inspect the machine and all attachments before each use as specified by the manufacturer and your employer. Ensure the attachment is properly installed. (See page 17, **Quick-coupling Device Safety**.)
— Only use parts and attachments that are approved by the original equipment manufacturer.
— Never modify or remove any part of the equipment (except for service—then make sure it is replaced).
— Read and understand all safety signs installed on the machine.
— Know the location of other personnel and machines and make sure they are a safe distance from the machine.
— Know the worksite. Be aware of possible hazards that you may encounter.



Know Machine Limitations And Operating Characteristics

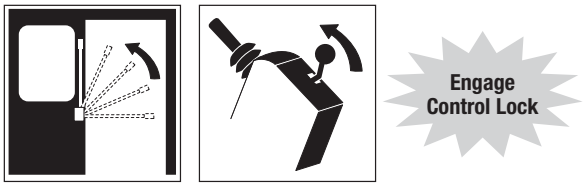
Inspect The Machine Before Each Workday



Be Aware Of Worksite Hazards, Keep Bystanders Away

Follow A Safety Program

— Always look in the direction of machine or boom movement. Drive facing the travel direction whenever possible.
— Make sure you understand the rules covering traffic at the worksite. Know what all signs, flags and markings mean.
— Understand hand, flag, horn, whistle, siren and bell signals, if used at the worksite.
— Know when to use lights, turn signals, flashers and horns, if equipped.
— Do not allow riders.
— Keep hands and feet on controls when operating.
— Never lift or swing a load or attachment over anyone.
— Whenever you leave the machine, lower the excavator blade, bucket or other attachments to the ground. Stop the engine. Cycle the hydraulic controls, including auxiliary hydraulic control, to relieve trapped pressure. Engage control lock if equipped, and remove the ignition key. (See page 39, **Machine Shutdown**.)
— When transporting the compact excavator on a trailer, follow the manufacturer's instructions for loading, tying down and unloading the compact excavator.

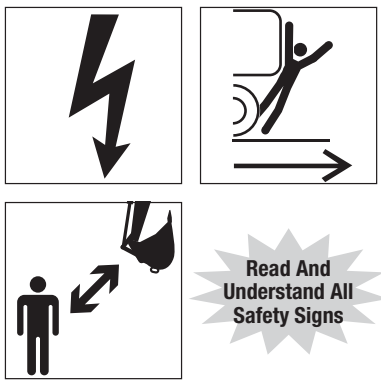


Follow A Safety Program

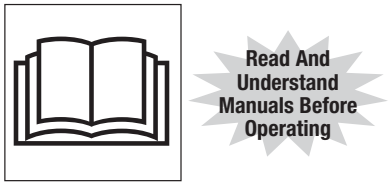
Know The Equipment

Read and understand the DANGER, WARNING, CAUTION and NOTICE safety signs and other informational signs found on the compact excavator and in the manufacturer's operator manual. Ask your supervisor to explain any information you do not understand. Failure to obey safety instructions could result in death or serious injury.

Make sure all the manufacturer's protective structures, guards, shields, screens and panels are in good repair, in place and securely fastened. Damaged, missing or weakened safety components can create a hazardous situation for you as the operator. **Never** remove or modify any safety components on the compact excavator. The excavator can be operated temporarily with a foldable TOPS/ROPS lowered for access through height-restricted openings. Do not fasten the seat belt when the TOPS/ROPS is in the down position.



Know the following about this compact excavator and all attachments.
— Function, purpose and use of controls
— The functions of all gauges, lights, dials, switches
— Slope and uneven terrain capabilities and proper operation – never operate on a slope with a foldable TOPS/ROPS in the down position.
— Braking and steering characteristics
— Turning radius and clearances
— How to quickly stop equipment in an emergency



Prepare For Safe Operation

Check And Use All Available Protective And Safety Devices

Keep all protective devices in place and tightly fastened. Make certain all guards, screens and panels, manufacturer's operator manuals, and safety signs are installed on the machine and legible as supplied by the manufacturer. See that each item is securely in place and in operating condition.

The machine may be equipped with:

— A seat belt or other type of restraint
— Control locking device
— Safety signs
— Access and egress system (i.e., grab handles, handrails) and protective covers
— Travel alarm and back-up alarm
— Falling object guard structure (FOGS), falling object protective structure (FOPS), roll-over protective structure (ROPS)/tip-over protective structure (TOPS)
— Guards
— Special enclosures or accessories required for task or worksite conditions
— Operator protective structure (OPS) – side, front and rear shields, screens and doors
— Warning lights and devices
— Alternate exits
— Mirrors
— Fire extinguisher
— First aid kit
— Windshield wipers and washers
— Window defroster
— Operating lights
— Horn

Know which devices are required for protection during your specific operation and use them. The excavator can be operated temporarily with the TOPS/ROPS lowered for access through height restricted openings. Do not fasten the seat belt when the TOPS/ROPS is in the down position.

WARNING! NEVER remove or modify safety equipment. Operating a machine without a protective structure (TOPS/ROPS, FOGS/FOPS or OPS) could result in death or serious injury. (See page 44, **Protective Structure Safety**.)

Follow A Checklist

Prepare For Safe Operation

Check The Machine

Before you begin the workday, inspect the machine and have all systems in good operational condition. Do not operate the machine until all problems are corrected.

— Perform daily and periodic service procedures as instructed by the equipment manufacturer.
— Check that no safety switches or interlocks have been bypassed and that no warning tags have been placed on the machine.
— Check that safety signs, special instructions, lift capacity charts and operator manuals are legible and in the proper location.
— Check condition and operation of the seat belt and its mounts, if equipped.
— Make sure that the foldable TOPS/ROPS, if equipped, is properly secured in the raised position.
— Check condition and operation of the attachment quick-coupling device, if equipped. Perform daily cleaning and maintenance following the manufacturer's instructions. (See page 17, **Quick-coupling Device Safety**.)
— Inspect steps, guardrails, platforms and handholds for damage or loose parts.

Maintain Machine

Check Manuals And Safety Signs

Check Seat Belt And Its Mounts

Check That TOPS/ROPS Is Raised And Properly Secured

Prepare For Safe Operation

— Check the fuel and hydraulic systems. Have leaks repaired and fill to proper level.
— Check all exposed hydraulic components for leaks, routing problems or damage. Report worn or damaged components.

WARNING! Diesel fuel and hydraulic fluid under pressure can penetrate the skin or eyes and cause serious injury, blindness or death. Fluid leaks under pressure may not be visible. **Use a piece of cardboard or wood to find leaks, not your hand. Wear a face shield or safety goggles for eye protection.** If fluid is injected into the skin, it must be removed within a few hours by medical personnel familiar with this type of injury. (See page 46, **Hydraulic System Hazards**.)

— Check the cooling system.

WARNING! Prevent possible injury from explosive release of hot fluids. **Allow the radiator to cool before checking the fluid level**. (See page 45, **Cooling System Hazards.**)

— Keep radiators and coolers clean and free of oil, grease, dirt, debris and moisture.
— Make sure all doors, guards and covers are in place and secured properly.

Prepare For Safe Operation

Check The Machine (continued)

— Check the tracks for broken or damaged pins, bushings, and other parts.
— Check the tracks for proper tension adjustment according to manufacturer's instructions.
— Check the tracks for damage or wear. Replace badly worn or damaged tracks.
— Check the slew/swing brake for proper operation.
— Inspect working and other lights for proper operation.
— Inspect boom, arm and attachment for wear and damage.
— Make sure fire extinguishers are fully charged and in good working order.

Check Attachment And Coupler Installation

When changing buckets or installing attachments, follow the manufacturer's instructions for proper maintenance and coupling. Make sure all connectors are securely fastened. Tighten all bolts, nuts and screws to torques recommended.

Check the attachment coupler and the attachment for wear and hydraulic leaks before coupling the attachment.

Before operating, ensure that quick-coupler pins or wedges are fully engaged and visibly locked to the attachment.

WARNING! Avoid possible crushing injury. **Failure to properly secure the attachment to the machine coupler can allow the attachment to come off and could result in death or serious injury.** (See page 17, **Quick-coupling Device Safety**.)

Prepare For Safe Operation

Quick-coupling Device Safety

Before using a quick-coupling device you must know and understand proper installation, maintenance and operation.

WARNING! Failure to read and follow manufacturer's instructions for the correct operation and maintenance of the quick-coupler can allow the attachment to come off and cause death or serious injury.

Protect yourself from injury:
— Install and maintain equipment, attachments and their operating systems according to manufacturers' instructions.
— Securely latch attachments before work begins.
— Follow the manufacturer's instructions for using positive locks on quick-coupling equipment.
— Make frequent visual inspections of quick-coupling systems—especially after changing attachments.
— Always check for interference limits of the coupler or tool with the carrier before operating.

Do not operate the machine if:
— there exists an incompatibility among components.
— there are broken, damaged or badly worn components.
— the lock/secure feature of the quick-coupler is impaired.
— the engaging lever or device is not fully engaged in a lock/secure condition.

WARNING! A quick-coupler that is not properly locked/secured could result in death or serious injury. **Perform all steps to lock/secure the device.** The steps to confirm that the device is properly locked/secured may include any or all of the following:
— Manually installing a locking pin, actuating a lever or other device.
— Movement of the attached work tool to confirm its engaged lock/secure condition.
— A visual check of the components as instructed by the quick-coupler manufacturer.

WARNING! A quick-coupler that is disengaged when the attachment is in an unstable position could result in death or serious injury. **Place the attachment in a stable position, as instructed by the manufacturer, whenever coupling or uncoupling the attachment.**

Prepare For Safe Operation

Clean Up

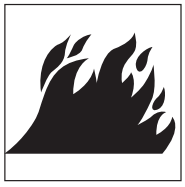
Clean windshields, mirrors and all lights. Use water and a clean cloth. Know and follow the manufacturer's recommendations for using cleaning agents other than clean water on polycarbonate glazing.

Clean out the operator's area. Steps and handholds must be clean and functional. Oil, grass, leaves, needles, snow, ice or mud in these areas can cause you to slip and fall.

Clean your boots before getting on the machine.

Clean out trash and debris buildup promptly, especially in the engine compartment, the battery box, around exhaust components, under the machine and around rotating components.

Remove all loose personal items or other objects from the operator's compartment. Secure these items in a fixed tool box or remove them from the machine. Do not store any flammable material such as ether/cold-start fluid or oily rags in the operator's compartment.



Prepare For Safe Operation

Check The Work Area

Know—beforehand—as much about the worksite as possible. Locate all ground workers near the worksite and make sure clothing worn is easily seen. Be aware of weather conditions that can affect visibility, ground stability and traction.

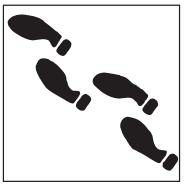
Check for:
— Location of steep slopes, slide areas, drop-offs and overhangs
— Adequate traction on slopes
— Traffic locations and movement
— Thick dust, smoke and fog
— Soil conditions—look for signs of instability such as cracks or settlement
— Standing water and marshy areas
— Rocks and stumps
— Holes, obstructions, mud or ice
— Location of open trenches
— Exact location of any buried and/or overhead electrical, gas, telephone, water, sewer or other utility lines

Have the utility company mark, shut off or relocate the utility before you begin working.

Know the location and work plan for other machines on the worksite.

Correct unsafe conditions. Avoid operating in problem areas that cannot be corrected.

When operating the machine inside a building, know what clearances you will encounter—overhead, doorway, aisles, etc. Also, know the weight limitations of floors and ramps. Make sure there is sufficient ventilation for inside operation.



Walk Around The Worksite

Be Seen – Wear Visible Clothing

Prepare For Safe Operation

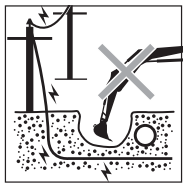
Check The Work Area (continued)

Know the exact location of electrical, telephone, gas or other utility lines. (See page 5, **One-Call First**.)

DANGER! Death or serious injury will result from touching or being near a machine that is in contact with or near an energized electrical source. **Never approach power lines with any part of the machine or load unless all local, state/provincial and federal (OSHA) required safety precautions have been taken.** Use extreme caution because high voltage sources can arc without contact.

When working near power lines, you must assume all lines are energized.

Maintain a safe distance from all utilities.
(See page 31, **Utilities—Overhead And Underground**.)



Locate All Utilities, Maintain A Safe Distance

Use Caution When Fueling

IMPORTANT! Always use approved fuel containers and dispensing equipment.

Fuels are flammable, so observe these practices to reduce the possibility of a serious accident.
— Shut off engine and ignition during refueling.
— Always ground the fuel nozzle against the filler neck to avoid sparks.
— Keep sparks and open flames away from fuel.
— Do not use a cell phone or two-way radio while fueling or handling fuel—they could cause sparks.
— Do not smoke while refueling or when handling fuel containers.
— Do not overfill the tank or spill fuel. Clean up spilled fuel immediately.

Prepare For Safe Operation

Mount And Dismount Properly

When you enter or leave the machine:

— Maintain a three-point contact with the machine. Three-point contact is defined as maintaining contact with at least one hand and two feet, or two hands and one foot, at all times.
— Face the machine when either mounting or dismounting.
— Use handholds, handrails, ladders or steps (as provided).
— The upperstructure and undercarriage must be oriented to align the access system.
— Never use control levers as handholds.
— Never step on foot controls when entering or leaving.
— Clean your boots and wipe your hands before mounting or dismounting.
— Never jump on or off the machine.
— Never attempt to mount or dismount a moving machine.
— Never mount or dismount while carrying tools or objects that prevent three-point contact.

Maintain Three-Point Contact – Face Machine

Do Not Jump Off Machine

Do Not Use Controls As Handholds

Start Safely

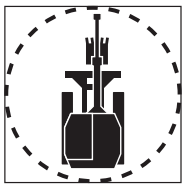
Look Out For Others

Before starting, walk completely around the machine operating area. Make sure no one is under it, on it or close to it. Do not start the engine until everyone is clear of the operating area.

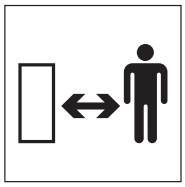
Starting The Engine

Do not start the engine or move any of the controls if there is a “DO NOT OPERATE” or similar warning tag attached to the start switch or controls. Check with your supervisor.

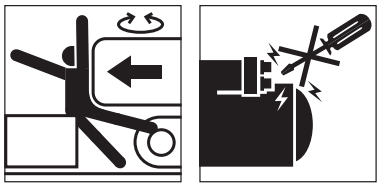
WARNING! Start the engine only from the operator’s seat. Never attempt to start the engine by shorting across starter terminals or reaching for the key from outside the cab. This could result in the machine moving suddenly and unexpectedly and cause death or serious injury.



Walk-Around Inspection



Keep Bystanders Away



Start Only From Operator’s Position

Start Safely

Know the exact starting procedures for this machine. See the manufacturer's manual(s) for starting procedures.

— Clear the area of all persons.
— Sit in the operator's seat and adjust the seat so you can operate all the controls properly.
— Familiarize yourself with warning devices, gauges and operating controls.
— Close or secure the cab door, if equipped.
— Fasten the seat belt, if equipped. If the compact excavator is equipped with a foldable TOPS/ROPS, do not fasten the seat belt when the TOPS/ROPS is in the down position.
— Put all controls, including those for auxiliary equipment, in the neutral/park position.
— Activate controls by releasing the control lock, if equipped.
— Start the engine following the instructions in the manufacturer's manual(s).

If it is necessary to run the engine or operate the machine within an enclosed area, be sure there is adequate ventilation.

WARNING! Never operate any type of engine without proper ventilation—exhaust fumes can kill.

Start Safely

Starting Aids

Do not use ether/cold-start fluid if the engine is equipped with glow plugs or intake manifold preheater.

Ether/cold-start fluid is HIGHLY FLAMMABLE. Before using it, always read the instructions on the ether/cold-start fluid container and the instructions in the manufacturer's manual(s). **Do not** carry loose cans of starting fluid on the machine while operating.

If booster cables are used, follow the instructions in the manufacturer's manual(s). The operator must be in the operator's seat when boost-starting the engine so that the machine will be under control when the engine starts. Boost-starting is a two-person operation. A battery explosion or a run-away machine could result from improper starting procedures.

Never boost-start a frozen battery. (See page 48, **Avoid Battery Explosion**.)

After Starting The Engine

Observe gauges, instruments, and warning lights to ensure that they are functioning and their readings are within the operating range.

With the control levers or joysticks in neutral, test engine speed control.

Run An Operating Check

Do not use a machine that is not in proper operating condition. It is the **operator's responsibility** to check the condition of all systems, and to run the check in a safe area.

WARNING! Do not allow anyone to stand within the operating work radius of the machine and load. Contact with moving parts of the compact excavator or load can cause death or serious injury.

Start Safely

Test All Controls

Follow the manufacturer's recommended warm-up procedures and bring all machine systems to operating temperature.

Machines come equipped with various control configurations, patterns and operating modes. Some have selectable or configurable controls that allow operation to suit personal preferences or specific applications. Make sure that you know which control pattern has been selected and understand how the machine will operate.

Make sure the engine is operating correctly. Operate each machine control to check all functions.

Check for possible interference between the attachment and the cab and operate appropriately.

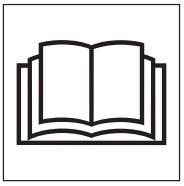
Make sure the attachment quick-coupling device (if equipped) is operating properly, fully engaged and visibly locked. (See page 17, **Quick-coupling Device Safety**.)

Check the blade location before traveling. When the blade is in the rear, operate the steering levers in the opposite direction as when the blade is in the front. See the machine manufacturer's manual.

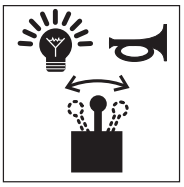
Operate the control(s) to ensure correct operation in forward, neutral and reverse.

Test steering—right and left—while moving slowly.

WARNING! Prevent possible injury from loss of control. **Know and understand the selected control pattern and operating mode before operating. Be certain you can control speed, direction, braking and boom motion before operating the machine.**



Read And Understand Manuals Before Operating



Check Instruments And Controls

Operate Safely

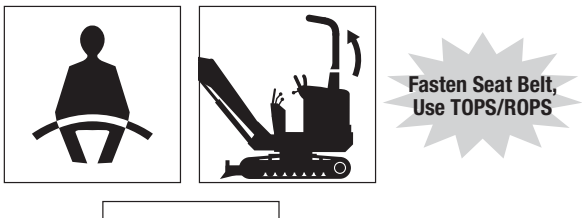
Remember

— Stay in the operator's seat, with the seat belt fastened, if equipped. If the compact excavator is equipped with a foldable TOPS/ROPS, do not fasten the seat belt when the TOPS/ROPS is in the down position.
— Understand the machine's limitations. Be in control of the machine at all times.
— Assure yourself that the work area is clear of all bystanders and other machines. Stop the machine immediately if anyone approaches.
— If a failure that causes loss of control occurs, stop all machine motion as quickly as possible. Shut the machine down and remove the key. Correct or report the problem immediately.

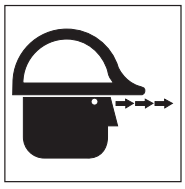
Remember The Other Person

WARNING! Never allow an untrained or unqualified person to operate this machine. Handled improperly, this machine could cause death or serious injury.

Do not allow anyone within the operating work radius of the compact excavator.



Fasten Seat Belt, Use TOPS/ROPS



Look Before Moving The Machine Or Boom

Never use a bucket or other attachment as a work platform or personnel carrier.

WARNING! Prevent possible injury from fall or runover. The compact excavator is a one-person machine. **NEVER PERMIT RIDERS.**

Always look around before you travel or move the boom. Look in the direction of machine movement.

Awareness on your part can prevent accidents.

Operate Safely

Traveling On The Worksite

Know and understand the worksite traffic flow patterns and obey signalmen, road signs and flagmen.

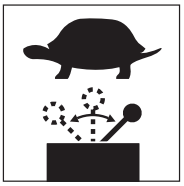
Check blade location before traveling. When blade is positioned to the rear, operate the steering levers in the opposite direction as when the blade is in the front.

The retractable track frame, if equipped, should be extended for traveling on the worksite. The track frame can be retracted to access narrow areas. Read and know manufacturer's instructions before operation.

Know the maximum height and width of the machine. Do not obstruct your vision when traveling. Always look in the direction of travel. Drive facing the travel direction when possible.

Operate the controls smoothly and slowly. Rapid and jerky movement of the controls can cause loss of both machine stability and control of the load.

When moving the machine, watch that enough clearance is available on both sides and above the boom and cab. Be especially careful to allow extra clearance on uneven ground.



Operate Controls Smoothly And Slowly

Know Weight Limits

Check for hazards or obstructions before entering an underpass or other area with restricted clearance. Check height and side clearances.

WARNING! Avoid possible injury. The weight of the machine may cause the ground, dock, ramp or floor to give way, causing loss of control, fall or tipover. **Know weight limits and stay clear of the edges of excavations and drop-offs.** Failure to know and observe weight limits and use caution could result in death or serious injury.

Operate Safely

Traveling On The Worksite (continued)

Make sure all surfaces will support the weight of the machine.

Do not cross ditches, creeks or wet draws without an adequate fill or bridge crossing.

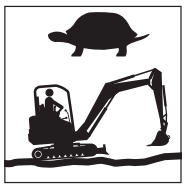
Match travel speed to the traffic, weather and ground conditions. Take it slow and easy when traveling. Travel cautiously over rough or slippery ground and on slopes. Reduce speed when travelling over a rise.

Always give the right of way to loaded machines. Maintain a safe distance from other machines.

If you encounter a blind corner, stop and then proceed with caution.

Avoid traveling over obstacles (logs, tree stumps, rough terrain, ditches, curbs, railroad tracks) whenever possible. If you must cross an obstacle, do so slowly and with caution.

Avoid steep slopes or unstable surfaces. If it is necessary to travel on a slope, follow manufacturer's specific instructions. When on a slope, keep the boom centered and attachment as low and as close to the machine as possible. Proceed with extreme caution. Do not drive **ACROSS** a steep slope under any circumstances. Drive straight up and down a slope.



Travel Slowly Over Rough, Hazardous Terrain

Drive Straight Up And Down – NOT ACROSS – Steep Slopes

Avoid turning on a slope. If it is necessary, use extreme caution and make the turn **WIDE and SLOW** with the boom centered and attachment as low and as close to the machine as possible.

Avoid sudden movement of the travel controls.

Operate Safely

Safety Precautions

Never reach into the compact excavator and attempt to operate the controls from outside the cab.

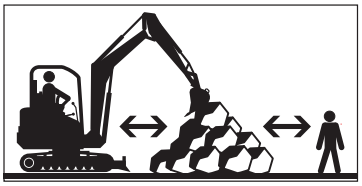
Before starting to excavate, set up safety barriers to the sides and rear area of the swing pattern to prevent anyone from walking into the working area.

Read and know manufacturer's instructions before operation.

Make sure you are aware of personnel or machines that may be hidden in blind spots on the worksite, such as piles or stacks of material.

Make sure the machine has sufficient clearance from other machines or material on the worksite to prevent contact during machine or attachment movement.

WARNING! Prevent death or serious injury. **Never lift, move or swing a load over any person or any machine cab.**



Check Clearance, Look Out For Others

Do Not Lift Or Swing A Load Or Attachment Over Anyone

Know and use the hand signals required for particular jobs. Know who has the responsibility for signaling. Take signals from one person only.

Do not operate during storms with high winds or lightning strikes. Do not mount or dismount during a period of lightning strikes. If you are on the machine, stay on it. Warn others to stay clear of the machine in case of a lightning strike.

Operate Safely

Load Lifting

Consult the rated lift capacity chart. Do not overload this machine. Know the exact lifting capacity of the machine as equipped. Make sure you have and know how to use a current lift capacity chart for the machine. Changing conditions such as slopes, wind, ice, mud, soft ground, type of load or the weight of attachments will affect the capacity and operating characteristics of the machine.

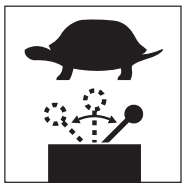
Consult your lift chart. Lifting and handling loads over the end of the machine, rather than over either side, will improve the lifting performance of the machine.

The retractable track frame, if equipped, should be fully extended for increased lifting performance.

Attach loads only to the manufacturer's designated lifting points, if equipped.

If equipped, keep blade lowered for increased lifting performance. If ground is soft, place pads or timbers under the blade.

Operate the controls smoothly and slowly. Rapid and jerky movement of the controls can cause loss of both machine stability and control of the load.



Operate Controls Smoothly And Slowly

When lifting, be sure the load is properly balanced. Move slowly so the load does not sway or swing around. Use a tag line for control.

If tracks or blade leave the ground, slowly lower the load to return the machine to the ground. Do not drop the load suddenly, because this can lead to loss of control.

Do not exceed rated lift capacity. Excessive load can cause tipping or loss of control.

Carry the load/attachment low and as close to the machine as possible. You must allow for movement in all directions. Be careful to maintain clearance of the attachment and load from the cab.

Keep all guards in place and windows closed or locked open. Keep cab doors closed or otherwise secured, if equipped.

Never leave the operator's seat with a load suspended. (See page 39, **Machine Shutdown.**)

Operate Safely

Utilities – Overhead And Underground

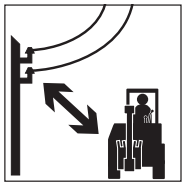
DANGER! Electrocution or serious injury will result from CONTACTING or APPROACHING power lines or apparatus. Maintain Minimum Approach Distance. (See chart.)

DANGER! Death or serious injury will result from touching or being near a machine that is in contact with or near an energized electrical source. **Never approach power lines with any part of the machine or load unless all local, state/provincial and federal (OSHA) required safety precautions have been taken.** Use extreme caution because high voltage sources can arc without contact.

REQUIRED CLEARANCE FOR OPERATION NEAR HIGH VOLTAGE POWER LINES

Normal Voltage, kV (Phase to Phase)	Minimum Approach Distance [Note (1)] ft	(m)
to 50	10	(3.0)
Over 50 to 200	15	(4.6)
Over 200 to 350	20	(6.1)
Over 350 to 500	25	(7.6)
Over 500 to 750	35	(10.7)
Over 750 to 1,000	45	(13.7)

NOTE: (1) Environmental conditions such as fog, smoke or precipitation may require increased clearances.



Maintain Minimum Approach Distance

Stay Clear Of Energized Equipment

Check overhead clearances. If possible, have power to the lines de-energized and visibly grounded. If not possible, request a signal person for guidance to maintain at least the Minimum Approach Distance. (See chart.)

If the machine or load contacts an energized line, stay in the machine and attempt to break contact. Warn others to stay away from the machine. If machine catches fire and you are forced to leave, jump clear of the machine with both feet together and hop or shuffle away. **DO NOT** touch machine and ground at the same time.

Operate Safely

Locate All Underground Utilities

Confirm that One-Call has been contacted. Confirm that any utilities not subscribing to One-Call have been contacted. Confirm that the site has been marked or cleared. (See page 5, **One-Call First**.)

Obtain all information pertaining to the locate request, including the One-Call confirmation code or ticket number. If the facility owner has provided a locate sketch, obtain a copy. Review any engineering drawings provided by utilities. This information should be retained.

Personally verify One-Call utility marks. There are variations from state to state.

Take a copy of the locate sketch to the job site. Confirm all of the locates. Review the site for signs of unmarked utilities. These signs may include pedestals, pole risers, meters, trench lines, manhole covers, sewer drain outlets, etc. Review not only the immediate area, but also the perimeter of the area for utility markers.

Additionally, the area should be swept by an experienced operator using a device to locate utilities and large metal objects.

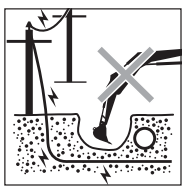
Any inconsistencies with line locations or any inaccurate locates must be resolved.

When excavating near underground services, expose the service by hand-digging or by using soft excavation, such as vacuum excavation, if permitted by local utilities.

When gas lines are present on the site, do not smoke or do anything to cause a spark in the vicinity of a gas line.

Make plans to restrict working area access—with cones and tape, barriers, warning signs, fences, etc.—until the job is complete.

Make certain that you are in compliance with all local, state/provincial, national and other requirements and regulations, including those regarding open excavations, or “potholes.”



Locate All Utilities, Maintain A Safe Distance

Operate Safely

Trenching Safety Precautions

Follow the worksite plan for proper construction of the trench. Check with your supervisor if you are unsure of correct trench construction or if operating conditions change.

Stay alert to changes in soil conditions. Trench collapse is hazardous to all workers in the area and could cause the machine to slide into the trench.

Keep heavy loads and equipment as far from the trench as possible.

Keep spoil and stored materials such as pipe at least two feet from the edge of the trench.

Keep personnel away from the equipment and attachments.

Never swing a load or attachment over anyone.

Do not undercut the machine.

WARNING! Do not dig under the machine or blade. A resulting cave-in could cause death or serious injury.

WARNING! Avoid possible death or serious injury from trench wall collapse. **Before backfilling, see the manufacturer's manual for any specific instructions. Do not get too close to the edge of the cut.** The weight of the machine plus the fill could cause the trench wall to collapse.

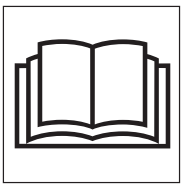
Keep Personnel Away From Equipment And Attachments

Operate Safely

Slope And Uneven Terrain Operation

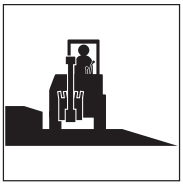
Compact excavator stability and load capacity are greatly reduced on slopes. Ensure the operation can be done safely. Prevent overturns and maintain stability control:

— Use machines equipped with TOPS/ROPS and a seat belt. Make sure folding TOPS/ROPS is raised and locked in place—always use the seat belt.
— The retractable track frame, if equipped, should be extended for operating on slopes or uneven terrain. Read and know manufacturer's instructions before operation.
— Review the manufacturer's manual for specific instructions and limitations, including those for proper operation of alternate/emergency exits.
— Avoid extremely steep slope operation.
— Keep machine movements slow and smooth.
— Level the working area and machine as much as possible.
— Avoid working with the tracks across a slope. This will reduce stability and increase the tendency of the machine to slide. Position the machine with the tracks running up and down the slope—blade downhill and lowered.
— Avoid slippery ground conditions.



Always Check Manuals For Specific Instructions

Fasten Seat Belt, Use TOPS/ROPS



Level The Work Area If Possible

Operate Safely

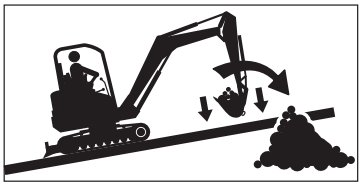
— Travel straight up and down the slope with the attachment low and close to the machine. Do not move the boom while travelling.
— Avoid swinging to the downhill side of a slope. Always keep the boom and attachment as low and close to the machine as possible.

If the machine begins to tip, roll or slide, stay in the machine with the seat belt securely fastened. Lower the attachment immediately. Hold on firmly and brace your feet on the floor. Lean away from the point of impact.

When operating the compact excavator on a slope, swing to the uphill side to dump load, if possible. If downhill dumping is necessary, swing only as far as required to dump the bucket. Use extreme caution. Always drop spoil a sufficient distance from a trench to prevent cave-ins.

If possible, avoid working with the tracks across a slope.

Before moving the machine, raise the blade sufficiently to clear the ground, and then drive the machine forward or backward as required. Lower the blade to level the machine.



Swing Load Uphill When On A Slope

Operate Safely

Hazardous Conditions

When working in hazardous areas, be extremely alert.

Always consult the manufacturer's operator manual for specific instructions.

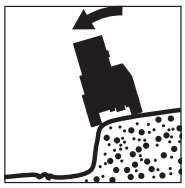
Extreme caution is required when working near the edge of an excavation. Keep the machine a safe distance away from the edge. Avoid undercutting.

WARNING! Never undercut a high bank. The edges could collapse or a slide could occur, resulting in death or serious injury.

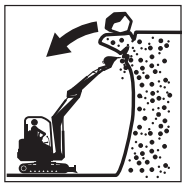
Work the jobsite in a manner that avoids creating overhangs or the need to be on top of banks or slopes. Never operate the machine close to the edge of an overhang or stockpile.

Extreme caution should be used when working along the top of banks and slopes. Keep as far back from the edge as possible. Level the area if possible. Keep the machine tracks perpendicular to the edge so that if part of the edge collapses, the machine can be moved back.

Immediately move the machine back at any indication the edge may be unstable.



Use Caution – Stay Safely Away From Bank Or Excavation Edge

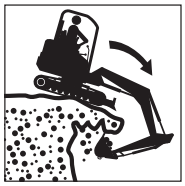


Never Undercut A High Bank

Operate Perpendicular To Banks – Stay Back From The Edge

Operate Safely

WARNING! Do not dig under the machine. A cave-in could result and the machine could fall into the excavation, resulting in death or serious injury.



Use Caution Near Excavation Edge – Do Not Undercut Machine

Avoid Silica Dust

Cutting or drilling concrete or rock containing quartz may result in exposure to silica dust. **Do not exceed Permissible Exposure Limits (PEL) to silica dust as determined by OSHA or other worksite rules and regulations.** Use a respirator, water spray or other means to control dust. Silica dust can cause lung disease and is known to cause cancer.

Avoid Silica Dust

Operation In Flammable/Explosive Atmosphere

WARNING! Avoid possible death or serious injury. **Never operate an excavator in these areas. Use of these excavators in explosive atmospheres can result in fires and explosions, causing death or serious injury.**

Do Not Operate In Explosive/Flammable Atmosphere

.

Operate Safely

Towing

Many compact excavators may not be towed. Refer to the manufacturer's manual(s) for specific towing instructions.

Never straddle a tow line or stand near a tow line under tension.

Consult Manufacturer's Manual Before Towing

Parking

Park the machine in a designated area out of traffic, preferably on level ground. (See page 39, **Machine Shutdown**.)

If freezing conditions are expected, the tracks should be first cleared of mud and dirt and the machine parked on planks or suitable debris.

Public roads are not suitable for parking. If the machine is disabled or you must park on a public road, barricade and mark the machine according to local and worksite regulations.

Shut Down Safely

Machine Shutdown

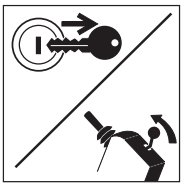
Properly shutting down a compact excavator can help prevent accidents when the machine is left unattended. Shut down the excavator following the specific procedures in the manufacturer's operator manual.

A typical list includes:
— Stop the machine.
— Make sure the area around the machine is clear of personnel.
— Slew the machine to align the upperstructure with the undercarriage, if possible.
— Return controls to neutral, including the auxiliary hydraulic controls.
— Lower the attachment and blade to the ground with slight down-pressure.
— Idle engine for a short cool-down period.
— Stop the engine.
— Cycle all hydraulic controls to relieve system pressure.
— Engage the control locking device, if equipped.
— Remove ignition key.
— Block the tracks if on a slope or incline.
— Check for and clean out trash build-up, especially in the engine compartment, battery box, around exhaust components, in confined spaces, under the machine and around rotating components.

Safe Dismounting

Never dismount from moving equipment. Observe proper shutdown practices before dismounting. Check for slippery steps and handholds.

Dismount carefully using three-point contact facing the machine. (See page 21, **Mount And Dismount Properly**.)



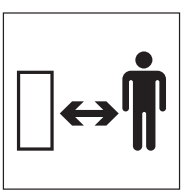
Load And Unload The Machine Safely

Loading And Unloading For Transport

All machines are not loaded in the same way, and the procedures given in the manufacturer's manual(s) should always be followed.

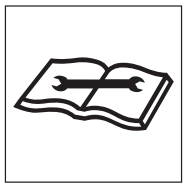
Some precautions apply to all machines:
— Keep bystanders away.
— Wear the seat belt, if equipped.
— If the compact excavator is equipped with a foldable TOPS/ROPS, make sure it is properly secured in the raised position.
— Place transport vehicle on a firm, level surface.
— Block or support the rear of the trailer.
— Secure the parking brake and block transport vehicle so it cannot move.
— Use ramps with slip-resistant surfaces, adequate size and strength, low angle (15 degrees or less) and proper height.
— Keep trailer bed and ramps clear of mud, oil, ice, snow, leaves and other debris.
— Position the attachment to the front of the machine.
— Drive forward up the ramps, raising the blade high enough for clearance.
— Cover or remove any SMV (Slow-Moving Vehicle) emblem.
— Secure the cab door, attachment and accessories in the transport position.
— Engage upperstructure slew lock, if equipped.
— Chain and block the excavator securely for transport. Refer to the manufacturer's operator manual for tie-down procedures.

Measure the transport height and width of the loaded machine to avoid overhead and width obstructions. Make sure clearance flags, all lights and warning signs are in place and visible.



Perform Maintenance Safely

Maintain Equipment



Be sure to maintain equipment according to manufacturer's instructions. Regularly check the operation of the protective and safety devices.

Do not perform any work on the compact excavator unless you are authorized and qualified to do so.

If you have been authorized to maintain the equipment, **read the operator, maintenance and service manuals.** Study the instructions, check the lubrication charts and examine all the instruction messages on the machine. Maintenance can be dangerous unless performed properly. Be sure you have the necessary skill, information, tools and equipment to do the job correctly.

If adjustments must be made with the engine running, always work as a 2-person team with one person sitting in the operator's seat while the other works on the machine.

IMPORTANT! Do not modify equipment or add components not approved by the manufacturer. Use parts, lubricants and service techniques recommended by the manufacturer.

Protect Yourself

Wear personal protective clothing and Personal Protective Equipment (PPE) issued to you or called for by job conditions.

You may need:
— Hard hat
— Safety boots with non-slip soles
— Safety glasses, goggles or face shield
— Apron and heavy-duty gloves
— Hearing protection
— Welding helmet or goggles
— Respirator or filter mask

Wear whatever is needed to protect yourself—do not take chances.

Perform Maintenance Safely

WARNING! Prevent death or serious injury from entanglement. **Do not wear loose clothing or accessories. Restrain long hair. Stay away from all rotating components when the engine is running.** Contact with or entanglement in rotating or moving parts could result in death or serious injury.

Wear a rubber apron and rubber gloves when working with corrosives. Wear gloves and safety shoes when handling wooden blocks, wire rope or sharp-edged metal.

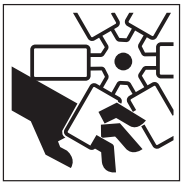
Always use safety glasses, goggles or a face shield. They provide eye protection from fluids under pressure, during grinding and while servicing batteries. Protection is also needed from flying debris, liquids and loose material produced by equipment, tools and pressurized air/water/oil/fuel.

Wear a face shield when you disassemble spring-loaded components or work with battery acids. Wear a welding helmet or goggles with a shaded filter when you weld or cut with a torch.

Do not sand, grind, flame-cut, braze or weld without an approved respirator or appropriate ventilation. If welding is required on the machine, refer to the manufacturer's manuals or consult the equipment dealer for proper procedures. Make sure all flammable material is cleared from the area.

Keep pockets free of all objects that could fall out and drop into machinery.

Handle tools and heavy parts sensibly, with regard for yourself and other persons. Lower items—do not drop them.



Perform Maintenance Safely

Prepare The Work Area

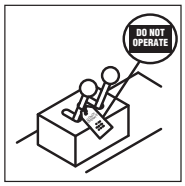
— Position the compact excavator in a level area out of the way of other working equipment.
— Make sure there is adequate light, ventilation and clearance.
— Remove oil, grease, ice and snow or water to eliminate any slippery surfaces.
— Clean around the machine and work area to minimize contamination. Clean up oil or fuel spills promptly and dispose of the material properly.

Prepare The Machine

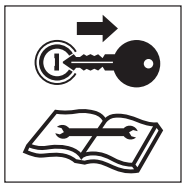
— Attach a “DO NOT OPERATE” warning tag to the control levers and remove the ignition key if the machine should not be started.
— Block the tracks.
— Release all hydraulic, water and air pressure. Lower, lock or block all hydraulically supported components.

WARNING! Disconnecting or loosening any hydraulic component or a part failure can cause unsupported equipment to drop. **Do not go under or near raised equipment unless supported by a manufacturer-approved support device(s).** Death or serious injury could result from falling equipment.

— Remove only guards or covers that provide access to the area being serviced. Replace all guards and covers when work is complete.



Use Warning Tags



Remove Key And Read Maintenance Manual

Use Approved Support Device

Perform Maintenance Safely

Use Approved Ventilation

If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

WARNING! Prevent possible injury. **Never work on machinery with the engine running unless instructed by the manufacturer’s manuals for specific service.**

WARNING! Never operate any type of engine without approved ventilation—EXHAUST FUMES CAN KILL.

Ventilate Work Area

Use Jacks And Hoists Carefully

If you must work beneath raised equipment, use solid wood blocks, jack-stands or other rigid and stable supports. Never use concrete blocks. When using jacks or hoists, always be sure they are adequately supported and of adequate capacity.

Make sure the hoists or jacks you use are in good repair. Never use jacks with cracked, bent or twisted parts. Never use frayed, twisted or pinched cables. Never use bent, worn or distorted hooks.

Protective Structure Safety

Do not remove or modify a protective structure (TOPS/ROPS, FOGS/FOPS OPS) except for service. Reinstall with manufacturer-approved fasteners before further machine operation.

Replace a damaged protective structure. Refer to the manufacturer’s manual for specific instructions and inspection requirements.

Perform Maintenance Safely

Common Maintenance Safety Practices

Fuel Hazards

IMPORTANT! Always use approved fuel containers and dispensing equipment.

Fuels are flammable, so observe these practices to reduce the possibility of a serious accident.
— Shut off engine and ignition before refueling.
— Always ground the fuel nozzle against the filler neck to avoid sparks.
— Keep sparks and open flames away from fuel.
— Do not use a cell phone or two-way radio while fueling or handling fuel—they could cause sparks.
— Do not smoke while refueling or when handling fuel containers.
— Do not cut or weld on or near fuel lines, tanks or containers.
— Do not overfill the tank or spill fuel. Clean up spilled fuel immediately.

Always use a nonflammable solvent when you clean parts. Do not use gasoline, diesel fuel or other flammable fluids.

Store all flammable fluids and materials away from work areas in suitable containers, per local regulations.

Cooling System Hazards

Liquid cooling systems build up pressure as the liquid gets hot, so **use extreme caution** before removing the radiator or tank cap. Be sure to:
— Stop the engine and wait for the system to cool.
— Wear protective clothing and safety glasses.
— Turn the radiator or tank cap slowly to the first stop to allow the pressure to escape before removing the cap completely.

Perform Maintenance Safely

Hydraulic System Hazards

The hydraulic system is under pressure whenever the engine is running and may hold pressure even after the engine is shut off. Cycle all hydraulic controls, including auxiliary controls, after the engine is shut down to relieve trapped pressure in the lines.

During inspection of the hydraulic system:
— Wait for fluid to cool before disconnecting the lines. Hot hydraulic fluid can cause SEVERE BURNS.
— **Do not** use your hand to check for leaks.
— Wear appropriate eye protection. Hydraulic fluid can cause permanent eye injury.

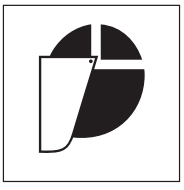
WARNING! Diesel fuel and hydraulic fluid under pressure can penetrate the skin or eyes and cause serious injury, blindness or death. Fluid leaks under pressure may not be visible. **Use a piece of cardboard or wood to find leaks, not your hand. Wear a face shield or safety goggles for eye protection.** If fluid is injected into the skin, it must be removed within a few hours by medical personnel familiar with this type of injury.

When venting or filling the hydraulic system, loosen the filler cap slowly and remove it gradually.

Never reset any relief valve in the hydraulic system to a pressure higher than recommended by the manufacturer.

Follow manufacturer's instructions when taking oil samples.

Do not permit an open flame around the hydraulic system.



Perform Maintenance Safely

Electrical System Hazards

Before working on the electrical system, disconnect the battery cable(s).
— Remove the battery negative (-) cable(s) first.
— When reconnecting the battery, connect the battery negative (-) cable(s) last.

Battery electrolyte contains acid, which is a POISON and can cause SEVERE CHEMICAL BURNS.

Avoid Injury

— Wear a face shield to prevent electrolyte contact with your eyes.
— Wear chemical-resistant gloves and clothing to keep electrolyte off your skin and regular clothing.

WARNING! Electrolyte will damage eyes or skin on contact. **Always wear a face shield to avoid getting electrolyte in eyes.** If electrolyte contacts eyes, flush immediately with clean water and get medical attention. **Wear rubber gloves and protective clothing to keep electrolyte off skin.** If electrolyte contacts exposed skin or clothing, wash off immediately with clean water.

If electrolyte is ingested, seek MEDICAL ATTENTION IMMEDIATELY. NEVER give fluids that would induce vomiting.

Perform Maintenance Safely

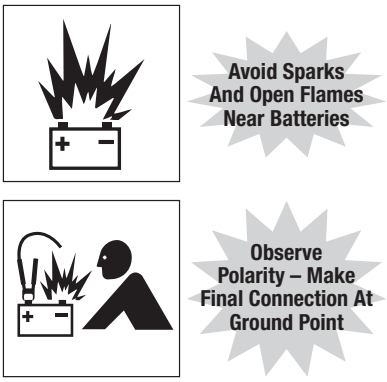
Avoid Battery Explosion

WARNING! Avoid possible death or serious injury from explosion. Lead-acid batteries produce extremely explosive gases, especially when being charged. **Keep arcs, sparks, flames and lighted tobacco away.**
— **Do not** smoke near batteries.
— Check battery cables for worn or damaged insulation.
— Keep arcs, sparks and open flames away from batteries.
— Provide adequate ventilation.

Never check the battery by placing a metal object across the battery posts; the resulting spark could cause an explosion.

WARNING! Avoid possible death or serious injury from battery explosion. **Do not charge a battery or boost-start the engine if the battery is frozen. Warm to 60°F (15.5°C) or the battery may explode.**

Safety rules during battery boost-starting:
— Follow the instructions for proper “battery boost-starting” as specified in the manufacturer’s manual.
— Be sure the machines are not touching.
— Observe the polarity of the batteries and connections.
— Make the final cable connection to the engine or the ground point farthest from the battery and away from fuel lines. Never make the final connection at the starter or dead battery—sparks may ignite the explosive gases present at the battery.
— When disconnecting cables after boost-starting, remove the cables in reverse order of connection (i.e., final connection first).



Perform Maintenance Safely

Track Maintenance And Adjustment

Check the tracks daily because the stability of the compact excavator can be dramatically affected by damage to tracks.

Check for:
— Damage or wear
— Correct tension according to manufacturer's instructions
— Proper lubrication of track rollers and idlers—refer to the manufacturer's manuals.

Track tension is important for good performance, reducing excessive track wear and preventing the tracks from coming off. Track and roller wear varies with working conditions and soil conditions. Special tools and procedures may be needed to check or adjust track tension. Follow manufacturer's specific service procedure(s) when removing and installing tracks.

Follow Maintenance Instructions

Check For Track Damage

WARNING! Track tensioning systems have compressed springs or pressurized fluid (oil or grease). Improperly releasing track tension forces can result in death or serious injury. **Always follow the manufacturer's warnings and instructions for track adjustment and other maintenance and servicing procedures.**

WARNING! Avoid possible death or serious injury. **Never strike or pound on track tension springs.** They may be under very high compression and could shatter explosively.

Perform Maintenance Safely

Complete Service And Repairs Before Machine Is Released

Tighten all bolts, fittings and connections to torques specified by the manufacturer.

Clean or replace all damaged, missing or painted-over signs, plates and decals that cannot be read.

Inspect and install all guards, covers and shields after servicing. Replace or repair any damaged parts. Refill and recharge pressure systems only with manufacturer-approved or recommended fluids.

Check readiness of fire extinguishers, if so equipped. Do not paint over or otherwise interfere with fire detectors or fire extinguisher access points.

Follow the instructions in the manufacturer's manual(s) for proper service of any fire suppression equipment on the machine.

Air conditioning service is limited to approved service personnel. Refer to the manufacturer's manual(s).

Verify Service Work When Completed

Start the engine and check for leaks. (See page 46, **Hydraulic System Hazards**.) Operate all controls to make sure the machine is functioning properly. Test the machine if necessary. After testing, shut down and check the work you performed. Are there any missing cotter pins, washers, locknuts, etc.? Recheck all fluid levels before releasing the compact excavator for operation.

All parts should be inspected during repair and replaced if worn, cracked or damaged. Excessively worn or damaged parts can fail and cause death or injury.

Final Word To The User

You have just finished reading the AEM Compact Excavator Safety Manual. It is impossible for this manual to cover every safety situation you may encounter on a daily basis. Knowledge of these safety precautions and your application to the basic rules of safety will help to build good judgment in all situations. Our objective is to help you develop, establish and maintain good safety habits to make operating a Compact Excavator easier and safer for you.

This manual is another in a series on the safe operation of machinery published by AEM.
Many pictorials in this safety manual can be found and downloaded at http://pictorials.aem.org.
For additional publications visit our website at www.safetymaterials.org.

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