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WACKER NEUSON
all it takes!

Operator's manual

Track excavator

EZ17



Machine model	**E13-01**
Edition	**1.2**
Document order number	**5200019151**
Language	**us/us**

This Operator's Manual includes the AEM Safety Manual

AEM MEMBER

5200019151

Documentation	Language	Order no.
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Technical data, dimensions and weights are only given as an indication. Non-metric values are rounded off. Responsibility for errors or omissions not accepted.

The cover features the vehicle with possible optional equipment. Not all options in this operator's manual must be available in every destination country.

Photographs and graphics are symbolic representations and may differ from the actual products.

The Operator’s Manual and any amendments to it must always be available at the location where the vehicle is operated. Possible amendments are included at the end of the Operator’s Manual.

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WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

WARNING

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

WARNING

Cancer and Reproductive Harm -

www.P65Warnings.ca.gov.

WARNING

Batteries, battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. WASH HANDS AFTER HANDLING.



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EC Compliance Statement

Manufacturer

Wacker Neuson Linz GmbH, Flughafenstraße 7, 4063 Hörsching, Austria

CE

Product

Machine designation	**Hydraulic excavator**
Machine model	**E13-01**
Trade name	**EZ17**
Serial number	**--**
Engine/output kW	**3TNV76-SNSE12V/13.8**
Measured sound power level dB(A)	**93**
Guaranteed sound power level dB(A)	**93**

Conformity assessment procedure

Notified body according to directive 2006/42/EC, appendix XI:
DGUV Test, test and certification body
construction department, Am Knie 6, 81241 München, Germany
Notified body of the EU, identification number: 0515

For 2000/14/EG notified body involved in procedure

Industrial Supervisory Board SÜD Industrie Service GmbH
Westendstraße 199
D 80686 München
Notified Body of the EU, identification number: 0036

Directives and standards

We hereby declare that this product corresponds to the relevant regulations of the following Directives and standards:

2006/42/EG, 2005/88/EG, 2000/14/EG - Appendix VIII, 2014/30/EU, 2014/53/EU (if telematics option is installed);

DIN EN ISO 12100:2010, DIN EN 474-1:2006+A4:2013, DIN EN 474-5:2006+A3:2013 (except for point 5.3.2.1 and 5.5), DIN EN ISO 3471:2010, DIN EN ISO 3744:1995, DIN EN ISO 3449:2009

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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 vehicle). Applies to EU countries, and countries with legislation similar to that of the EU. Applies to all vehicles with CE marks that have not been modified without authorization since the product was placed on the market.

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1 Foreword

1.1 Operator’s manual

Information on this Operator’s Manual

The Operator’s Manual is stored in the document box on the headliner.

This operator’s manual contains important information on how to work safely, correctly and economically with the vehicle. Therefore, it aims not only at new personnel, but it also serves as a reference for experienced personnel.

Furthermore, the reliability and the service life of the vehicle will be increased by following the instructions in the Operator’s Manual. This is why the Operator’s Manual must be kept at hand in the vehicle.

The operator must carefully read and understand the Operator’s Manual before starting up, servicing or repairing the vehicle.

This Operator’s Manual will help to familiarize yourself more easily with the vehicle, thereby enabling you to use it more safely and efficiently.

This Operator’s Manual does not include special superstructures.

Please contact your dealer if you require more information on the vehicle or the Operator’s Manual.

The term “cab” used in this Operator’s Manual is used synonymously with the term “canopy” since this machine is only available with a canopy.

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Explanation of symbols and abbreviations

Explanation of symbols

- Identifies a list
  - Identifies a subdivision of a list
  - ➥ Description of a result

1. Identifies an activity
   Follow the order of the activity!
2. Continuation of an activity
   Follow the order of the activity!

A Identifies an alphabetical list

B Continuation of an alphabetical list

Cross references: see page *1-1* (page)

Cross references: **7** (pos. no. or table no.)

Cross-references: *Fig. 5* (fig. no. 1)

Cross references: *– see chapter “5.2 Accelerator actuation” on page 5-1* (see chapter)

Cross references: *– see "Accelerator actuation" on page 5-1* (-see text)

Information

Identifies an information that, when followed, provides for a more efficient and economical use of the vehicle.

Environment

Failure to observe the instructions identified by this symbol can cause damage to the environment.

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Abbreviations

Fig.	=	Figure
AUX	=	Additional control circuit
B	=	Width
o/h	=	Operating hours
approx.	=	approximately
DPF	=	Diesel particulate filter
FGPS	=	Front Guard Protective Structure
FOPS	=	Falling Objects Protective Structure
if nec.	=	if necessary
Hydraulic quick-hitch	=	Hydraulic quickhitch (for example Easy Lock)
max.	=	maximum
min.	=	minimum
MSWS	=	Mechanical quickhitch
Pos.	=	Position
hp	=	Stabilizer blade
ROPS	=	Roll Over Protective Structure (without losing contact with the ground)
TOPS	=	Tip Over Protective Structure
e. g.	=	for example

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Glossary

Attachment	All exchangeable equipment (for example buckets) released by Wacker Neuson and developed for work with the vehicle.
Working lights	The lights on the roof, chassis and boom are referred to as working lights.
Towing	The excavator is towed out of an immediate danger zone (railroad crossing or job site, for example).
DOC	Diesel oxidation catalytic converter; removes carbon monoxide and residues of unburned fuel from the exhaust fumes.
DPF	Diesel particulate filter; burns soot particles in the exhaust fumes
Operating company/person	A company (or person) operating the vehicle. This can be a job site operating company, for example.
Operators	Person performing vehicle travel or operation.
Vehicle	Unless otherwise specified, the term **“machine”** refers to the excavator described in this Operator’s Manual. In some cases, the vehicle is also referred to as excavator to avoid confusion with other vehicles.
Machine operation	All work (for example machine travel, moving material, daily maintenance) an operator is allowed to or has to perform in connection with the machine. The term **“machine operation”** does not include maintenance only a Wacker Neuson service center is allowed to perform.
Lift capacity table	The maximum weight which may be lifted in excavating operations. If the upper carriage is rotated, pay attention to the values of the **load diagrams**.
Creep gear	Perform vehicle travel as slowly as possible and jerk free.
Hose rupture	Hydraulic oil under pressure escapes from a hydraulic hose.
Check the threaded fittings for tightness	• Operator: Visually check the screwed connections and corresponding elements/sub-assemblies visually or manually (without using tools) for tightness • Authorized service center: if an attachment has to be used in the event of abnormalities for the control procedures, restore the screwed connection with new materials (screws, nuts)
Visual aids	Visual aids are, for example, rearview mirrors, cameras, but also persons assisting the operator during machine operation.
Control lever base	The foldable control lever base on the left.
EU Stage V/EPA Tier 4	The vehicles comply with different exhaust-gas standards depending on optional equipment. Engine variants are described separately if there are engine-specific differences (for example regarding operation).
Load diagram	Specifies the maximum load at a given boom extension with which the upper carriage may be rotated by 360° and the excavator may travel in creep gear with the stabilizer blade raised without tipping over.
Loading weight	The actual weight of the vehicle at the beginning of transportation. This weight refers to vehicles which are equipped exclusively with options approved by Wacker Neuson.

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Additional control circuits	Additional control circuits required for certain attachments. • AUX I: auxiliary hydraulics (for example for hydraulic hammer or offset bucket) • AUX II: 3rd control circuit (for example for universal grab) • AUX III: for example Powertilt • AUX IV: hydraulic quickhitch (for example Easy Lock) • AUX V: oscillating grab

Right/left/front/rear

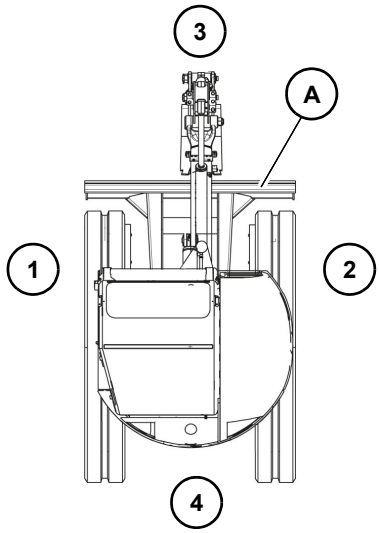


Fig. 1

These terms are used from the view of an operator in the cabin if the front of the cabin faces toward the stabilizer blade **A**.

- **1**: left
- **2**: right
- **3**: front
- **4**: rear

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Target-group definition

This Operator's Manual is intended for professional construction site personnel.

Any operator must have fully read and understood this Operator's Manual completely.

A dealer or person renting the vehicle must instruct the operator and have this confirmed in writing.

Operator qualification and requirements for safe operation

Among other things, safe vehicle operation depends on the following points:

- Machine model and its outfitting
- Machine maintenance
- Work and driving speed
- Nature of ground and work environment

The most important points are the operator's qualification and power of judgment. A well-trained operator following the Operator's Manual and maintenance plan ensures a long service life and durability of the vehicle.

Specific training enables the operator to acquire, among other things, the following skills:

- Correct assessment of work situations
- Feeling for the vehicle
- Recognition of possible risk situations
- Safe working by making the correct decisions for man, vehicle and the environment

The operator is at risk if the vehicle is not operated correctly.

Follow the operating procedures and instructions described for the vehicle.

Access to the vehicle or vehicle operation is prohibited for children and persons under the influence of alcohol, drugs, or medicine.

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Conversion table

The rounded imperial values are indicated in brackets, for example 1060 cm³ (64.7 in³).

Volume unit	
1 cm³	(0.061 in³)
1 m³	(35.31 ft³)
1 ml	(0.034 US fl.oz.)
1 l	(0.26 gal)
1 l/min	(0.26 gal/min)
Unit of length	
1 mm	(0.039 in)
1 m	(3.28 ft)
Weight	
1 kg	(2.2 lbs)
1 g	(0.035 oz)
Pressure	
1 bar	(14.5 psi)
1 kg/cm²	(14.22 lbs/in²)
Force/output	
1 kN	(224.81 lbf)
1 kW	(1.34 hp)
1 PS	(0.986 hp)
Torque	
1 Nm	(0.74 ft.lbs.)
Speed	
1 km/h	(0.62 mph)
Acceleration	
1 m/s²	(3.28 ft/s²)

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1.2 Warranty and liability

Exemption from warranty and liability

Warranty

Warranty claims can be made only if the conditions of warranty have been observed. They are included in the General Conditions of Sales and Delivery for new vehicles and spare parts sold by the dealers of Wacker Neuson Linz GmbH. Furthermore, all instructions in this Operator's Manual must be observed.

Have the maintenance, delivery inspection and the entries in the service booklet performed by a Wacker Neuson service center, otherwise warranty claims will not be acknowledged.

Liability

- Modifying Wacker Neuson products and fitting them with additional equipment and attachments not included in the delivery program requires Wacker Neuson's written authorization, otherwise warranty and product liability for possible damage caused by these modifications shall not be applicable.
- The safety of the machine can be negatively affected by performing machine modifications without proper authority and by using spare parts, equipment, attachments and optional equipment that have not been checked and released by Wacker Neuson. Warranty and product liability for possible damage caused by these modifications shall not be applicable.
- Wacker Neuson Linz GmbH shall not be liable for personal injury and/or damage to property caused by failure to observe the safety instructions and the Operator's Manual, and by the negligence of the duty to exercise due care when:
  - Handling
  - Operating
  - Servicing and performing maintenance
  - Repairing the vehicle. This is also applicable in those cases in which special attention has not been drawn to the duty to exercise due care, in the safety instructions as well as in the Operator's and maintenance manuals.
  - Read and understand the Operator's Manual before starting up, servicing or repairing the vehicle. Observe all safety instructions.

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2 Safety

2.1 Safety symbols and signal words

Explanation

The following symbol identifies safety instructions. It is used for warning against potential personal risk or danger.

DANGER

DANGER identifies a situation causing death or serious injury if it is not avoided.

Consequences in case of non-observance.

► Avoidance of injury or death.

WARNING

WARNING identifies a situation that can cause death or serious injury if it is not avoided.

Consequences in case of non-observance.

► Avoidance of injury or death.

CAUTION

CAUTION identifies a situation that can cause injury if it is not avoided.

Consequences in case of non-observance.

► Avoidance of injury.

NOTICE

NOTICE identifies a situation that causes damage to the machine if it is not observed.

► Avoidance of damage to property.

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2.2 Qualification of operating personnel

Owner's duties

- Only allow specifically authorized, trained and experienced persons to operate, drive and perform maintenance on the vehicle.
- Do not allow persons to be trained or instructed by anyone other than an authorized and experienced person.
- Have persons to be trained or instructed practice under supervision until they are familiar with the machine and its behavior (for example, with the steering and braking behavior).
- Access to the vehicle or vehicle operation is prohibited for children and persons under the influence of alcohol, drugs or medicine.
- Clearly and unequivocally define the responsibilities of the operating and maintenance personnel.
- Clearly and unequivocally define the responsibilities on the job site, also in view of traffic regulations.
- Give the operator the authority to refuse instructions by other persons that are contrary to safety.
- Have the vehicle serviced and repaired only by an authorized service center.

Required knowledge of operator

- The operator is responsible for other persons.
- Avoid any operational mode that might be prejudicial to safety.
- The specific national driving license is required.
- The vehicle may only be operated by authorized and safety-conscious persons who are fully aware of the risks involved in operating the vehicle.
- The operator and owner are obligated to operate the vehicle only in a safe and working condition.
- All persons working on or with the vehicle must have read and understood the safety instructions in this Operator's Manual before starting work.
- Follow, and instruct the operator in, legal and other mandatory regulations relevant to accident prevention.
- Observe and instruct the operator in regulations regarding road traffic and environmental protection.
- Use only the defined accesses for getting on and off the vehicle.
- Be familiar with the emergency exit of the machine.

Preparatory measures for the operator

- Before starting, check the vehicle whether it can be driven and operated safely.
- Tie back long hair and remove all jewelry.
- Wear close-fitting work clothes that do not hinder movement.

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2.3 Conduct

Prerequisites for operation

- The vehicle has been designed and built in accordance with state-of-the-art standards and the recognized safety regulations. Nevertheless its use can cause danger to the operator or other persons, or damage to the vehicle.
- Store this Operator's Manual in the place provided for this in or on the vehicle. Immediately replace a damaged or illegible Operator's Manual and any supplements to it.
- The vehicle must only be operated in accordance with its designated use and the instructions set forth in this Operator's Manual.
- The operator and owner are obligated not to put into operation or operate a damaged or malfunctioning vehicle.
  - If a damage or malfunction occurs during operation, put the vehicle out of operation immediately and secure it against restart.
  - Have all malfunctions jeopardizing the safety of the operator or other persons immediately repaired by an authorized service center.
- Do not put the vehicle into operation or operate it after an accident; have it inspected for damage by an authorized service center.
  - Have the seat belt replaced by an authorized service center after an accident, even if there is no visible damage.
  - Cabin and protective structures
- Remove all dirt, snow and ice from climbing aids (for example from the handholds, footholds, handrails).
- The owner is responsible for requiring the operating and maintenance personnel to wear protective clothing and equipment as required by the circumstances.

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2.4 Operating

Preparatory measures

- Operation is only allowed with correctly installed and intact protective structures.
- Keep the vehicle clean. This reduces injury, accident and fire hazards.
- Safely store objects you carry with you in the places provided for this (for example, in the storage compartment, drinks holder).
- Do not carry objects with you that protrude into the operator’s work space. They can create another danger in case of an accident.
- Observe all safety, warning and information labels.
- Start and operate the vehicle only with the seat belt fastened and only from the place provided for this.
- Check the condition and the fastening of the seat belt. Have malfunctioning seat belts and mounting hardware replaced by an authorized service center.
- Before starting work, adjust the seating position so that all control elements can be reached and fully operated.
- Perform the personal adjustment at machine standstill only (for example, of the operator's seat, steering column).
- Ensure that all safety devices are properly installed and functional before starting work.
- Before starting work or after interrupting work, ensure that the brake, steering, signaling and light systems are functional.
- Before putting the machine into operation, ensure that nobody is in the danger zone.

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Job site

- The operator is responsible for other persons.
- Before starting work, familiarize yourself with the job site. This applies to, for example:
  - Obstacles in the job site and vehicle travel area
  - Any barriers separating the job site from public roads
  - Soil weight-bearing capacity
  - Existing overhead and underground lines
  - Special operating conditions (for example, dust, steam, smoke, asbestos)
- The operator must know the maximum dimensions of the machine and the attachment – see “Technical data”.
- Maintain a safe distance (for example, from buildings, edges of building pits).
- During work in buildings or in enclosed areas, look out for:
  - Height of the ceiling/clearances
  - Width of entries/passages
  - Maximum load of ceilings and floors
  - Sufficient room ventilation (for example, risk of carbon monoxide poisoning)
- Use existing visual aids to stay aware of the danger zone.
- In conditions of darkness and poor visibility, switch on existing work lights and ensure that motorists are not blinded by these lights.
- If the existing lights of the vehicle are not sufficient for performing work safely, ensure additional lighting of the job site.
- Due to hot machine parts, maintain a safe distance from easily flammable material (for example from hay, dry leaves).

Danger zone

- The danger zone is the area in which persons are in danger due to the movements of the machine, attachment and/or load.
- The danger zone also includes the area that can be affected by falling material, equipment or by parts that are thrown out.
- Extend the danger zone sufficiently in the immediate vicinity of buildings, scaffolds or other elements of construction.
- Seal off the danger zone should it not be possible to keep a sufficient safety distance.
- Stop vehicle operation immediately if persons do not stay clear of the danger zone.

Carrying passengers

- Carrying passengers with the vehicle is PROHIBITED.
- Carrying passengers on/in attachments/tools is PROHIBITED.
- Carrying passengers on/in trailers is PROHIBITED.

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Mechanical integrity

- The operator and owner are obligated to operate the vehicle only in a safe and working condition.
- Operate the machine only if all protective and safety-oriented equipment (for example, protective structures such as a cabin or rollbar, removable safety devices) is installed and functional.
- Check the vehicle for visible damage and defects.
- In case of damage and/or unusual behavior, put the vehicle out of operation immediately and secure it against restart.
- Have all malfunctions jeopardizing the safety of the operator or other persons immediately repaired by an authorized service center.

Starting the engine of the machine

- Start the engine only according to the Operator's Manual.
- Observe all warning and indicator lights.
- Do not use any liquid or gaseous starting aids (for example ether or starting fuel).

Machine operation

- Start and operate the vehicle only with the seat belt fastened and only from the place provided for this.
- Put the vehicle into operation only if visibility is sufficient (have another person guide you if necessary).
- Operation on slopes:
  - Travel/work only uphill or downhill.
  - Avoid machine travel across a slope, observe the machine's permissible inclination (and of the trailer if necessary).
  - Keep loads on the uphill side of the vehicle and as close as possible to it.
  - Keep attachments/work equipment close to the ground.
- Adapt the travel speed to the circumstances (for example, the ground conditions, weather conditions).
- There is increased danger during backward vehicle travel. Persons in the blind spot of the machine cannot be seen by the operator.
  - Ensure that nobody is in the danger zone when you change the travel direction.
- Never get on a moving vehicle and never jump off the vehicle.

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Machine travel on public roads/sites

- The specific national driving license is required.
- Observe the national regulations (for example, the road traffic regulations) during machine travel on public roads/sites.
- Ensure that the vehicle is in compliance with the national regulations.
- In order not to blind other motorists, using the existing work lights during vehicle travel on public roads/site is prohibited.
- When crossing for example, underpasses, bridges, tunnels, ensure that the clearance height and width is sufficient.
- The attachment fitted onto the machine must be certified for travel on public roads/sites (see for example, the registration documents).
- The attachment fitted onto the vehicle must be empty and in transport position.
- The attachment fitted onto the vehicle must be equipped with the mandatory lights and protective equipment.
- Take measures against unintentional operation of the operating hydraulics.
- If the vehicle has different steering modes, ensure that the mandatory steering mode is selected.

Stopping the engine of the machine

- Stop the engine only according to the Operator’s Manual.
- Before stopping the engine, lower the work equipment/attachment to the ground.

Stopping and securing the vehicle

- Unbuckle the seat belt only after stopping the engine.
- Before leaving the machine, secure it to prevent it from rolling away (for example, with the parking brake, suitable wheel chocks).
- Remove the starting key and secure the vehicle against unauthorized operation.

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2.5 Lifting gear applications

Requirements

- Have loads fastened and the operator guided by a qualified person having specific knowledge of lifting gear applications and the usual hand signals.
- The person giving instructions to the operator must stay in visual contact with the operator when fastening, guiding or removing the load (maintain visual contact).
- If this is not possible, ask one more person with the same qualifications to guide.
- The operator may not leave his seat as long as the load is raised.

Fastening, guiding and removing loads

- Follow the applicable specific regulations for fastening, guiding and removing a load.
- Wear protective clothing and equipment when fastening, guiding and removing loads (for example a hard hat, safety glasses, protective gloves, safety boots).
- Do not place lifting and fastening gear over sharp edges or rotating parts. Loads must be fastened so as to prevent them from slipping or falling.
- Move loads only on horizontal, level and firm ground.
- Move loads close to the ground.
- In order to avoid oscillating movements of loads:
  - Perform smooth, slow movements with the vehicle.
  - Use cables to guide the load (do not use hands to guide).
  - Bear in mind the weather conditions (for example, the wind force).
  - Keep a minimum safety distance from objects.
- The operator may allow the load to be fastened and removed only if the vehicle and its work equipment are not being moved.
- Danger zones must not overlap with the work zones of other vehicles.

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Lifting gear applications

- The vehicle must be certified for lifting gear applications.
- Observe the national regulations for lifting gear applications.
- Lifting gear applications are procedures involving raising, transporting and lowering loads with the help of lifting and fastening gear.
- The help of an accompanying person is necessary for fastening, guiding and removing the load.
- There must be nobody under the load.
- Stop the vehicle immediately and stop the engine if persons enter the danger zone.
- Use the machine for lifting gear applications ONLY if the mandatory lifting gear (for example, a joint rod and load hook) and safety equipment (for example, optical and acoustic warning devices, hose burst valve, stability table) is installed and functional.
- Use only lifting and fastening gear certified by a test/certification body, observe the inspection intervals (use only chains and shackles. No belts, slings or cables).
- Do not use any lifting and fastening gear that is dirty, damaged or not of sufficient size.
- Do not interrupt the work process with a load attached.

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2.6 Trailer operation

Trailer operation

- The vehicle must be certified for trailer operation.
- Observe the national regulations for trailer operation.
- The specific national driving license is required.
- Carrying passengers on/in trailers is PROHIBITED.
- Observe the maximum permissible vertical and trailer load.
- Do not exceed the permissible trailer speed.
- Trailer operation with the towing gear of the machine is prohibited.
- Trailer operation changes the machine’s operating behavior, the operator must be familiar with this and act accordingly.
- Bear in mind the machine’s steering mode and the trailer’s turning circle.
- Before hitching/unhitching the trailer, secure it to prevent it from rolling away (for example, with the parking brake, suitable wheel chocks).
- There must be nobody between the vehicle and the trailer when hitching a trailer.
- Hitch the trailer onto the vehicle correctly.
- Ensure that all equipment works correctly (for example, the brakes, lights).
- Before starting vehicle travel, ensure that nobody is between the vehicle and the trailer.

2.7 Attachment operation

Attachments

- Use only attachments that are certified for the machine or its protective equipment (for example, a shatter protection).
- All other attachments require the vehicle manufacturer’s release.
- The danger zone and the work zone depend on the attachment used – see the Operator’s Manual of the attachment.
- Secure the load.
- Do not overload attachments.
- Check the correct position of the lock.

Operating

- Carrying persons on/in an attachment is prohibited.
- Installing a work platform is prohibited.
  - Exception: The vehicle is certified and equipped with the necessary safety equipment.
- Attachments and counterweights modify handling, as well as the steering and braking capability of the machine.
- The operator must be familiar with these modifications and act accordingly.
- Before starting work, operate the attachment to check that it works correctly.
- Before putting the attachment into operation, ensure that nobody is in danger.
- Lower the attachment to the ground before leaving the operator's seat.

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Removing and fitting attachments

- Before uncoupling or coupling hydraulic connections:
  - Stop the engine.
  - Release the pressure in the operating hydraulics
- Picking up and lowering attachments to the ground requires special care:
  - Pick up and safely lock the attachment in accordance with the Operator's Manual.
  - Lower the attachment only to firm, level ground and secure it to prevent it from tipping over or rolling away.
- Put the vehicle and the attachment into operation only if:
  - The protective equipment has been installed and is functional.
  - The connections for the lights and the hydraulic system have been established and are functional.
- Perform a visual check of the lock after locking the attachment.
- There must be nobody between the vehicle and the equipment when picking up or lowering an attachment to the ground.

2.8 Towing, loading and transporting

Towing

- Seal off the danger zone.
- Ensure that no one is near the towing bar or cable. The safety distance is equal to 1.5 times the length of the towing equipment.
- Observe the mandatory transport position, permissible speed and itinerary.
- A tractor vehicle of the same weight category must be used as a minimum. Furthermore, the tractor vehicle must be equipped with a safe braking system and sufficient tractive power.
- Use only towing bars or cables certified by a test/certification body, observe the inspection intervals.
- Do not use any towing bars or cables that are dirty, damaged or not of sufficient size.
- Fasten towing bars or cables only at the defined points.
- Tow away only in accordance with this Operator's Manual to avoid damage to the vehicle.
- Observe the national regulations (for example the light regulations) when towing on public roads/sites.

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Crane-lifting

- Seal off the danger zone.
- The crane and the lifting gear must have suitable dimensions.
- Observe the machine's overall weight – see "Technical data".
- Wear protective clothing and equipment when fastening, guiding and removing the machine (for example a hard hat, safety glasses, safety boots).
- Use only lifting and fastening gear certified by a test/certification body (for example, cables, belts, hooks, shackles), observe the inspection intervals.
- Do not use any lifting and fastening gear that is dirty, damaged or not of sufficient size.
- Perform a visual check to ensure that all slinging points are neither damaged nor worn (no widening, no sharp edges, no cracks).
- Have loads fastened and crane operators only guided by experienced persons.
- The person guiding the crane operator must be within sight or sound of him.
- Observe all movements of the machine and lifting gear.
- Secure the vehicle against unintentional movement.
- Raise the vehicle only after it is safely attached and the person attaching the vehicle has given his approval.
- Use only the slinging points provided for fastening the lifting gear (for example, cables, belts).
- Do not attach the machine by twining the lifting gear (for example, cables, belts) around it.
- Ensure an even load distribution (center of gravity!) when fastening the lifting gear.
- Ensure that no one is in, on or under the vehicle when loading the vehicle.
- Observe the national regulations (for example, "Merkheft Erdbau-maschinen", leaflet on earth moving machines of the German employers' liability insurance association for construction engineering).
- Load the vehicle only in accordance with this Operator's Manual to avoid damage to the vehicle.
- Do not raise a machine that is for example, stuck or frozen onto the ground.
- Bear in mind the weather conditions (for example, the wind force, visibility conditions).

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Transportation

- For the safe transportation of the machine:
  - The transport vehicle must have a sufficient load capacity and platform – see “Technical data”
  - The maximum weight rating of the transport vehicle must not be exceeded.
- Use only lifting and fastening gear certified by a test/certification body, observe the inspection intervals.
- Do not use any lifting and fastening gear that is dirty, damaged or not of sufficient size.
- In order to secure the machine on the platform, use only the fastening points provided for this purpose.
- Ensure that nobody is in or on the vehicle during transportation.
- Observe the national regulations (for example, “Merkheft Erdbaumaschinen”, leaflet on earth moving machines of the German employers’ liability insurance association for construction engineering).
- Bear in mind the weather conditions (for example, ice, snow).
- Ensure the minimum load on the steering axle(s) of the transport vehicle, and ensure an even load distribution.

2.9 Maintenance

Maintenance

- Observe the intervals prescribed by law and 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 adapted to the performance of the task described in this Operator’s Manual.
- Do not use any damaged or malfunctioning tools.
- The vehicle and the engine must be stopped during maintenance.
- Once maintenance is over, correctly install safety equipment again that has been removed.
- Wait for the vehicle to cool down before touching components.

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Personal safety measures

- Avoid any operational mode that might be prejudicial to safety.
- Wear protective clothing and equipment (for example a hard hat, protective gloves, safety boots).
- Tie back long hair and remove all jewelry.
- If maintenance on a running engine cannot be avoided:
  - Only work in groups of two.
  - Both persons must be authorized and trained for the operation of the machine.
  - One person must be seated on the operator's seat and stay in contact with the second person.
  - Keep a safe distance from rotating parts (for example from fan blades, belts).
  - Keep a safe distance from hot parts (for example, from the exhaust system).
  - Perform maintenance only in well-ventilated rooms or rooms with an exhaust-gas suction system.
- Safely lock/support vehicle components before starting work.
- Apply special care when working on the fuel system due to the increased fire hazard.

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Preparatory measures

- Attach a warning label to the control elements (for example “Machine being serviced, do not start”).
- Before performing assembly work on the vehicle, support the areas to be serviced and use suitable lifting and supporting equipment for the replacement of parts over 9 kg (20 lbs).
- Perform maintenance only if:
  - the vehicle is positioned on firm and level ground
  - the machine is secured to prevent it from rolling away (for example with the parking brake, wheel chocks), and if all attachments/the work equipment is lowered to the ground
  - the engine is stopped
  - the starting key has been removed
  - the pressure in the operating hydraulics has been released
- If maintenance has to be performed under a raised machine/ attachment, support the machine/attachment (for example with a lift platform, trestles) ensuring safety and stability.
- Hydraulic cylinders or jacks alone do not sufficiently secure a raised vehicle/attachment.

Measures for performing maintenance

- Perform only the maintenance described in this Operator’s Manual.
- All work that is not described in this Operator’s Manual must be performed by qualified and authorized technical personnel.
- Follow the maintenance plan – see “Maintenance plan”.
- Always use specially designed or otherwise safety-oriented ladders and working platforms to perform overhead maintenance. Do not use vehicle parts or attachments as a climbing aid.
- Do not use attachments/work equipment as a lift platform for persons.
- Remove all dirt, snow and ice from climbing aids (for example from the handholds, footholds, handrails).
- Disconnect the negative terminal of the battery before working on the electrical system.

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Modifications and spare parts

- Do not modify the machine and the work equipment/attachment (for example, the safety equipment, lights, tires, straightening and welding work).
- Modifications must be approved by the manufacturer and performed by an authorized service center.
- Use only original spare parts.

Protective structures

- The cabin, rollbar and protective screen are tested protective structures and may not be modified (for example no drilling, bending, welding).
- Perform a visual check according to the maintenance plan (for example, check the fastenings for damage).
- If damage or defects are detected, have them immediately checked and repaired by an authorized service center.
- Have retrofitting work only performed by an authorized service center.
- Replace self-locking fasteners (for example, self-locking nuts) by new ones after removing them.

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2.10 Measures for avoiding risks

Tires

- Have repair work on the tires only performed by trained technical personnel.
- Check the tires for correct pressure and visible damage (for example, cracks, cuts).
- Check the wheel nuts for tightness.
- Use only approved tires.
- The machine must have identical tires (for example, profile, revolutions per mile).

Tracks

- Repair work on tracks may be performed only by trained technicians.
- Check the tracks for correct tension and visible damage (for example, cracks, cuts).
- Proceed with extreme care on slippery ground (for example, on steel plates, ice), increased slipping hazard.
- Use only approved tracks.

Hydraulic and compressed-air system

- Check all lines, hoses and screw connections regularly for leaks and visible damage.
- Splashed oil can cause injury and fire.
- Leaking hydraulic and compressed-air lines can cause the full loss of the brake effect.
- Have damage and leaks immediately repaired by an authorized service center.
- Check the hydraulic hose in the recommended interval and get it changed.

Electrical system

- Use only fuses with the specified current rating.
- In case of damage or malfunction in the electrical system:
  - Put the vehicle out of operation immediately and secure it against restart
  - Disconnect the battery or operate the battery master switch
  - Have the malfunction repaired
- Ensure that work on the electrical system is only performed by trained technical personnel.
- Have the electrical system checked regularly and malfunctions repaired immediately (for example, loose connections, scorched cables).
- The operating voltage of machine, the attachment and the trailer must be the same (for example, 12 V).

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Battery

California proposal 65

WARNING

Batteries, battery poles, terminals and corresponding accessory parts contain lead and its compounds and other chemicals that, according to the state of knowledge of the state of California, cause cancer, birth defects or reproductive harm. Wash your hands after use.

WARNING

Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

- Batteries contain caustic substances (for example, sulfuric acid). When handling the battery observe the specific safety instructions and regulations relevant to accident prevention.
- A volatile oxyhydrogen mixture forms in batteries during normal operation and especially during charging. Always wear gloves and eye protection when working with batteries.
- Do not perform battery maintenance near open flames.
- Perform battery maintenance only in well-ventilated areas (for example, due to vapors harmful to health, explosion hazard).
- Starting the machine with battery jumper cables is dangerous if performed improperly. Observe the safety instructions regarding the battery.

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Safety instructions regarding internal combustion engines

California proposal 65

WARNING

The engine exhaust fumes of this product contain chemicals that, according to the state of knowledge of the state of California, cause cancer, birth defects or reproductive harm.

WARNING

Diesel engine exhaust fumes and some of its components cause, according to the state of knowledge of the state of California, cancer, birth defects or reproductive harm.

WARNING

Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

- Internal combustion engines present special hazards during operation and fueling.
- Failure to follow the warnings and safety instructions can cause serious injury or death.
- Keep the area around the exhaust system free of flammable materials.
- Check the engine and fuel system for leaks (for example, loose fuel lines). Don't start or let the engine run in case of leaks.
- Breathing the exhaust fumes causes death very quickly.
- Engine exhaust contains gases you cannot see or smell (for example, carbon monoxide and dioxide).
  - Never operate the machine in enclosed premises or areas (for example in pits), if there is no suitable ventilation (for example exhaust-gas filters, suction systems).
- Do not operate the vehicle in potentially explosive areas.
- Do not touch the engine, exhaust system and cooling system as long as the engine is still running or has not cooled down yet.
- Do not remove the radiator cap when the engine is running or hot.
- The coolant is hot, under pressure and can cause serious burns.

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Bleeding the fuel system and refueling

- Do not bleed the fuel system or refuel near open flames.
- Bleed the fuel system and refuel only in well-ventilated areas (for example, due to vapors harmful to health, explosion hazard).
- Wipe away fuel spills immediately (for example, due to fire hazard, slipping hazard).
- Firmly close the fuel tank cap; replace a malfunctioning fuel tank cap.

Handling oil, grease and other substances

- When handling oil, grease and other chemical substances (for example the battery acid, coolant), observe the safety data sheets.
- Wear appropriate protective equipment (for example protective gloves, safety glasses).
- Be careful when handling hot consumables – burn hazard.
- In polluted environment (dust, vapors, smoke, asbestos), work only with appropriate personal protective equipment (for example with a breathing mask).
- Do not operate the vehicle in radioactively, biologically or chemically contaminated areas.

Fire hazard

- Fuel, lubricants and coolants are flammable.
- Do not put the vehicle into operation if there is a fire hazard.
- Do not use flammable detergents.
- Keep the area around the exhaust system free of flammable materials.
- Due to hot machine parts, maintain a safe distance from easily flammable material (for example from hay, dry leaves).
  - Stop and park the machine only in fire-protected areas.
- If the vehicle is equipped with a fire extinguisher, have it installed in its specific location.
- Keep the vehicle clean to reduce the fire hazard.

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Working near electric supply lines

- Before performing any work, the operator must check whether there are any electric supply lines in the job site.
- If there are electric supply lines, only a vehicle with cabin may be used (Faraday cage).
- Keep a safe distance from existing electric supply lines.
- If this is not possible, the operator must take other safety measures (for example, switching off the current) in agreement with the operating company or owner of the supply lines.
- If supply lines are exposed, they must be fastened, supported and secured accordingly.
- If live supply lines are touched nevertheless:
  - Do not leave/touch the cabin (Faraday cage)
  - If possible, drive the vehicle out of the danger zone
  - Warn others against approaching and touching the machine
  - Have the live wire de-energized
  - Do not leave the machine until the supply lines that have been touched or damaged have been safely de-energized.

Working near non-electric supply lines

- Before performing any work, the operator must check whether there are any non-electric supply lines in the job site.
- If there are non-electric supply lines, the operator must take safety measures (for example, switching off the supply line) in agreement with the operating company or owner of the supply lines.
- If supply lines are exposed, they must be fastened, supported and secured accordingly.

Behavior during thunderstorm

- Stop machine operation if a thunderstorm is gathering, stop the machine, secure and leave it, and avoid being near it.

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Noise

- Observe the noise regulations (for example, during applications in enclosed premises).
- Bear in mind external sources of noise (compressed-air hammer, concrete saw).
- Do not remove the sound baffles of the machine/attachment.
- Have damaged sound baffles immediately replaced (for example, an insulating mat, muffler).
- Before starting work, get informed on the noise level of the machine/attachment (for example on the adhesive label) – wear ear protectors.
- Do not wear ear protectors during machine travel on public roads/sites.

Cleaning

- Risk of injury from compressed air and high-pressure cleaners.
  - Wear appropriate protective clothes.
- Do not use any dangerous and aggressive detergents.
  - Wear appropriate protective clothes.
- Operate the machine only in a clean condition.
  - Remove all dirt, snow and ice from climbing aids (for example from the handholds, footholds, handrails).
  - Keep the cabin glazing and visual aids clean.
  - Keep the light system and reflectors clean.
  - Keep the control elements and indicators clean.
  - Keep the safety, warning and information labels clean, and replace damaged and missing labels by new ones.
- Perform cleaning work only if the engine is stopped and cooled down.
- Bear in mind sensitive components and protect them accordingly (for example electronic control units, relays).

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3 Introduction

3.1 Machine overview



Fig. 2

Position	Description	Position	Description
1	Working light on boom	8	Tie-down point for tying down the machine
2	Roof lights (option)	9	Stabilizer blade
3	Lifting eye	10	Chassis
4	Rotating beacon (option)	11	Handhold
5	Engine cover	12	Extra weight (option)
6	Fuel tank filler inlet	13	Towing eye
7	Exhaust pipe	--	--

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Overview of models and trade name

Machine model/machine designation	Trade name
E13-01	EZ17

3.2 Brief description of machine

The Wacker Neuson model EZ17 track excavator is a self-propelled work machine.

It is a powerful, highly flexible, efficient and environmentally friendly construction machine. They are mainly used for loosening and moving earth, for example for digging and filling up construction pits. A wide range of attachments offers a large number of applications, for example hammer operation or bulk-material handling with a grab.

Other possible applications can be found in chapter 1.4 *Technical data of attachments on page 9-10*.

Information

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

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Canopy

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

- ROPS/TOPS tested canopy.
- Protective FOPS structure level I (option); Protective structure against falling objects.
- Shatter protection (option); Protective structure against frontal flying fragments.

The machine is not available with a closed cab.

A restricted work range applies to work with attachments (for example breaker) that can cause fragments to fly around *– see chapter " Shatter protection (option)" on page 4-14*, figure *Fig. 84*.

Installing a protective Front Guard structure according to EN 474-5 (item 5.3.2.1) is not possible. Only perform work that does not require a protective Front Guard structure.

Definition of FOPS/Front Guard levels

Level I:

Protection against small falling objects (FOPS) or small objects penetrating into the cabin from the front (Guard), such as bricks, small pieces of concrete, tools, for machines that are used for repairing roads, landscaping work and for working on other construction sites, for example.

Level II:

Protection against heavy falling objects (FOPS) or heavy objects penetrating into the cabin from the front (Front Guard), such as trees, pieces of rock, for machines that are used for clearance work, demolition work and forestry work, for example.

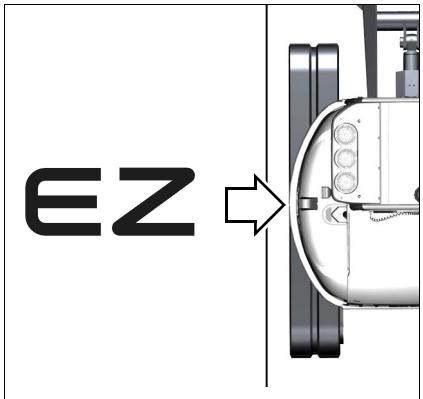


Fig. 3 (symbolic representation)

Upper carriage

EZ: Zero tail revolving superstructure; the revolving superstructure does not project over the width of the vehicle with an extended telescopic travel gear **without a rear weight** when rotating.

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3.3 Information and regulations on use

Designated use

- The vehicle is intended for:
  - Moving earth, gravel or rubble, for hammer and grab operation as well as for
  - applications only with the attachments indicated in chapter *Technical data of attachments on page 9-10*.
  - Every other use is regarded as not designated for the use of the vehicle. Wacker Neuson will not be liable for damage resulting from use other than mentioned above. The user/operating company alone will bear the risk.
    Designated use also includes observing the instructions set forth in the Operator's Manual and observing the maintenance and service conditions.
- The vehicle may not be used on public roads.
- In applications with lifting gear, the vehicle is used according to its designated use only if the mandatory devices are installed and functional.
- Use the quickhitch only with the corresponding attachments.
- A restricted work range applies to work with attachments (for example hammer) that can cause fragments to fly around.

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3.4 Labels

WARNING

Injury hazard due to missing or damaged labels!

A missing, incomplete or poor indication of danger can cause serious injury or death.

- ► Do not remove warning and information labels.
- ► Immediately replace damaged warning and information labels.

Information

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

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Type labels



Fig. 4

The vehicle nameplate is located at the front left on the revolving superstructure.

Serial number

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

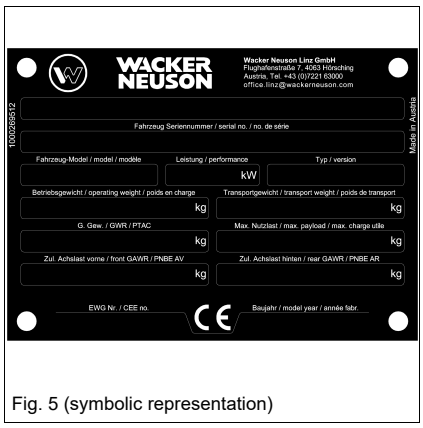


Fig. 5 (symbolic representation)

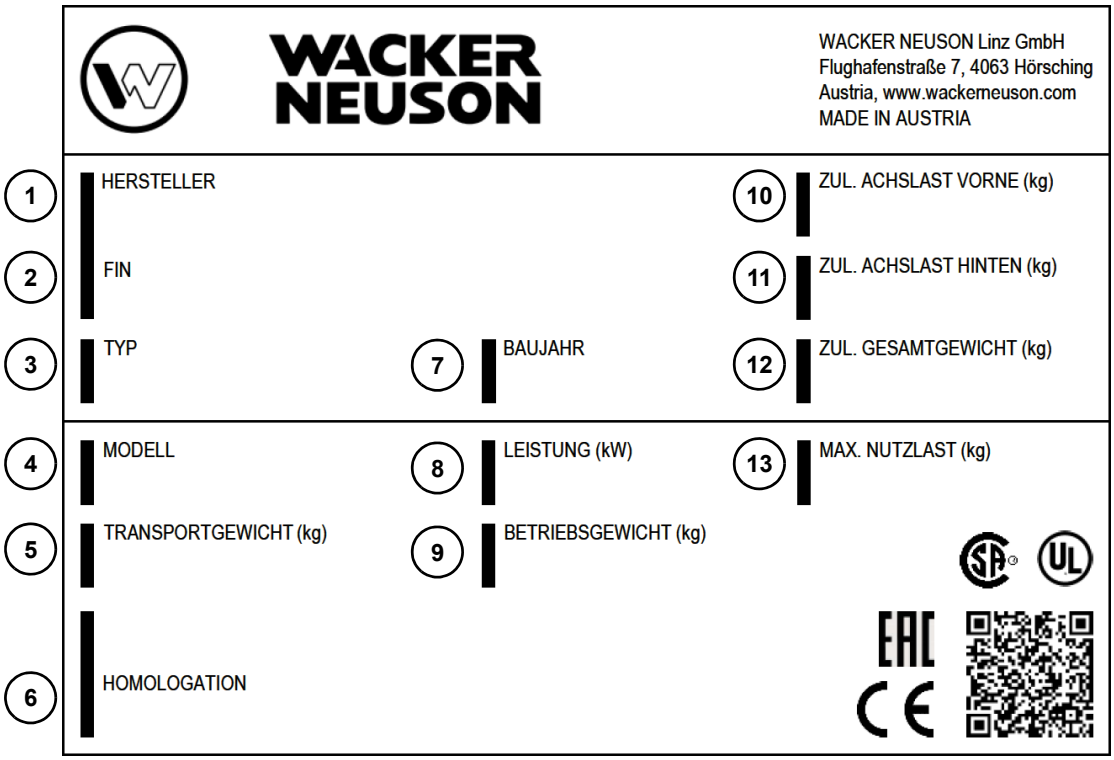
Type label (version 1)

The vehicle type label contains the following information:

Description of attachment	HYDRAULIC EXCAVATOR
Vehicle serial no. /serial no.	Machine serial number
Fahrzeug Modell/model/modèle:	Machine designation
Leistung/performance:	Engine power
Typ/version:	Machine type
Betriebsgewicht/operating weight/poids en charge:	Operating weight
Transportgewicht/transport weight/poids en transport:	Transport weight
G. weight/GWR/PTAC:	Gross weight rating (permissible)
Max. Nutzlast/max. payload/max. charge utile:	Maximum payload
Zul. Achslast vorne/front GAWR/PNBE AV:	Front gross axle weight rating
Zul. Achslast hinten/rear GAWR/PNBE AR:	Rear gross axle weight rating
EWG Nr./CEE no.:	EEC check number
Baujahr/model year/année fabr.:	Year of construction

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Type label (version 2)



.

Number	Type label
1	Manufacturer
2	Machine serial number
3	Internal model designation
4	Trade name
5	Transport weight
6	Certification
7	Year of construction
8	Power
9	Operating weight
10	Front gross axle weight rating
11	Rear gross axle weight rating
12	Permissible maximum weight
13	Maximum payload

Information

The type label is bright for better legibility. The language on the type label may vary.

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17-digit serial number

The 17-digit serial number has additional information, in order to make vehicle identification easier.

Version 1:

Manufacturer code	Machine model	Internal model designation	Check letter	Production site	Serial number
WNC	E (Excavator)	1301	K	PAL	12345
	D (Dumper)				
	A (Unit)				
	S (Skid steer loader)				

Variant 2:

Manufacturer code	Machine model	Internal model designation	Check letter	Serial number
WNC (Austria) WNP (China)	E (Excavator)	1301	K	00012345
	D (Dumper)			
	A (Unit)			

Information

Wacker Neuson components (for example Easy Lock, tilt bucket, rollbar) have numeric serial numbers only.

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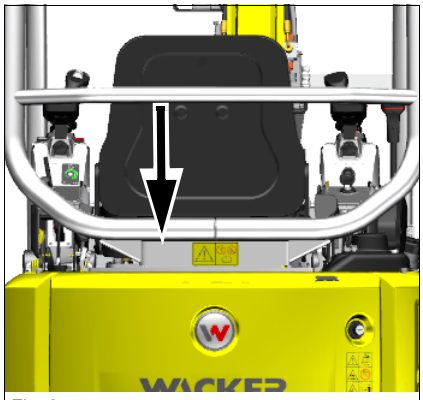


Fig. 6

Canopy type label

The type label is located behind the seat on the chassis.

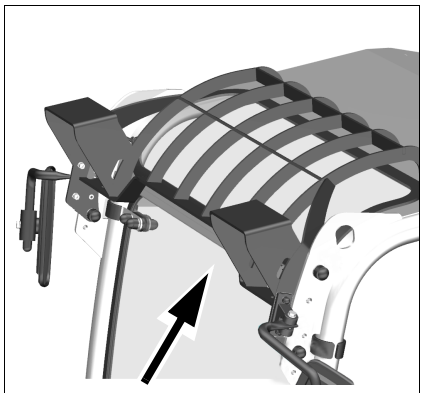


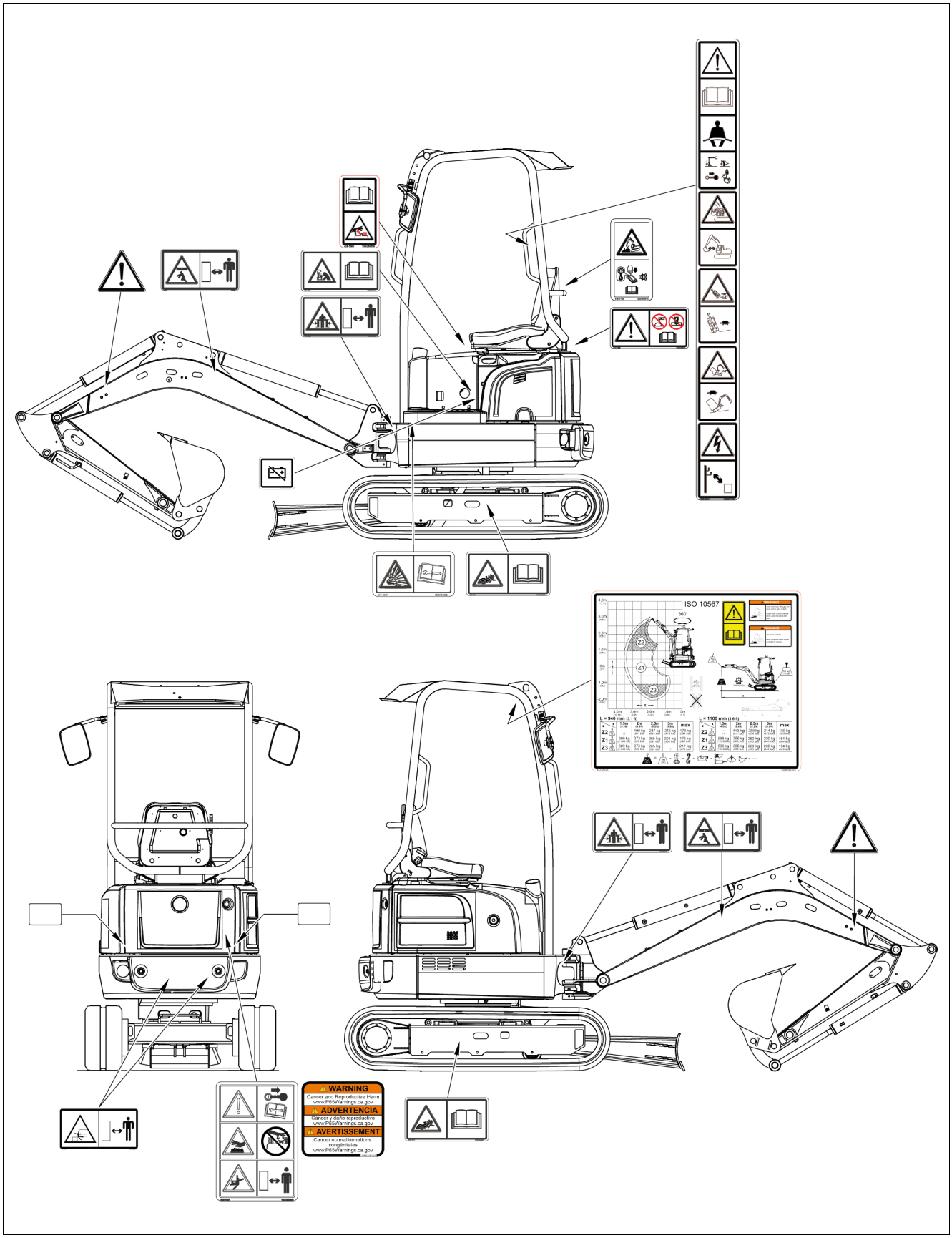
Fig. 7

FOPS screen type label

The type label is located at the front on the lower side of the frame.

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Warning labels



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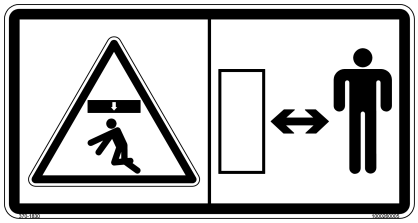


Fig. 9

Meaning

Crushing hazard.

All persons must stay clear of a raised load or of the danger zone.

Position

On the left and right side on the lifting arm

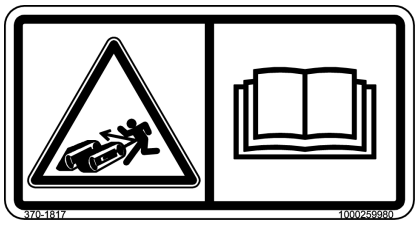


Fig. 10

Meaning

Injury hazard due to grease escaping under pressure.

Read the operator’s manual before working with the track tensioner.

Position

On left and right-hand undercarriage

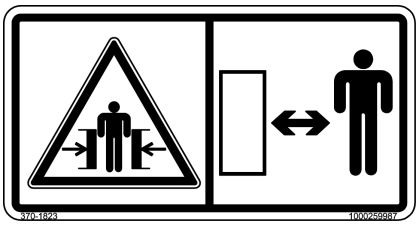


Fig. 11

Meaning

Crushing hazard.

Do not allow anyone to stay in the danger zone of the vehicle.

Position

At the front left and right of the chassis

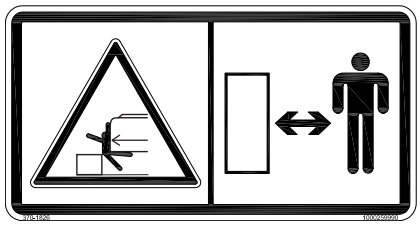


Fig. 12

Meaning

Crushing hazard.

Do not allow anyone to stay in the swiveling range of the vehicle.

Position

On the left and right side on the rear weight

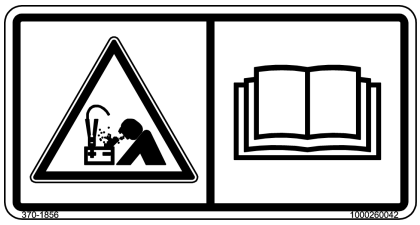


Fig. 13

Meaning

Explosion hazard due to wrong connection of battery jumper cables.

Position

On the inside the battery cover

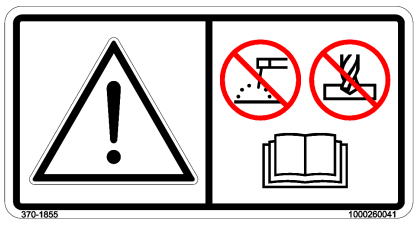


Fig. 14

Meaning

Modifications to the structure (for example welding, drilling), retrofitting and incorrect repairs affect the protective effect of the canopy and can cause serious injury and even death.

Position

At the rear of the operator’s seat.

https://truckmanualshub.com/

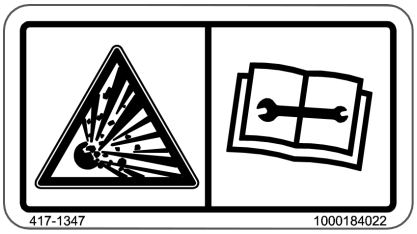


Fig. 15

Meaning

Accumulator is under high pressure. Maintenance or repair work may be performed only by a Wacker Neuson service center.

Position

Left underneath the foot mat

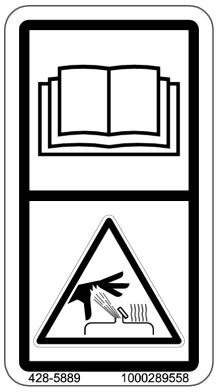


Fig. 16

Meaning

Releasing pressure in the hydraulic system.

Read and understand the Operator’s Manual.

Position

Inside on the right

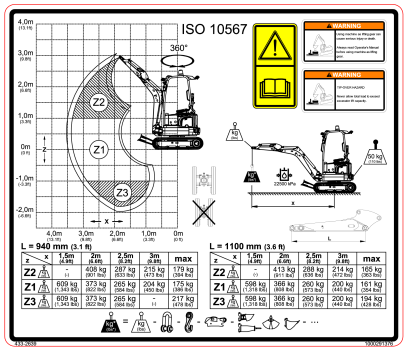


Fig. 17

Meaning (option)

Load diagram

Position

On the headliner

https://truckmanualshub.com/



Fig. 18

Meaning

Read the Operator’s Manual before starting the vehicle.

Fasten your seat belt.

Lower the boom and the stabilizer blade to the ground.

Remove the starting key and carry it with you.

Raise the control lever base.

Crush Hazard

Possible serious vehicle damage

Keep a safe distance from the cabin.

Crush Hazard

Possible serious vehicle damage

During vehicle operation on slopes, pay attention to the maximum gradient angle and maximum lateral angle of inclination.

Do not drive in speed range 2.

Risk of fatal injuries due to electric shock

During vehicle operation, maintain a safe distance from overhead electric lines.

Position

On the B pillar on the left



Fig. 19

Meaning (option)

Switch on the safe load indicator during lifting gear applications.

A vehicle can cause serious injury or death if it tips over.

Possible serious vehicle damage

Read and understand the Operator’s Manual

Position

At the rear of the operator’s seat

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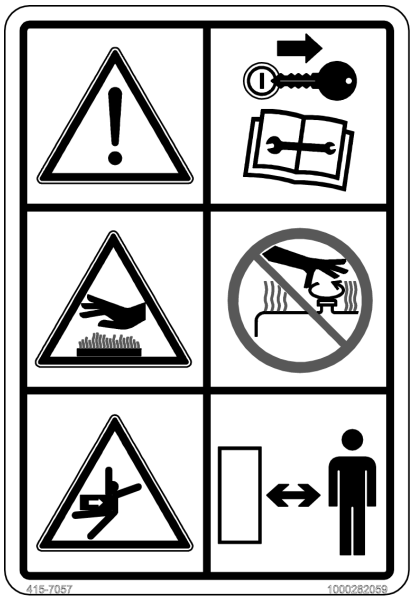


Fig. 20

Meaning

Read the Operator’s Manual before starting the vehicle.

Remove the starting key and carry it with you.

Injury hazard due to rotating parts.

- Open the engine cover only at engine standstill.

Burn hazard due to hot surfaces.

- Let the engine cool down.

Burn hazard due to hot fluid.

Injury hazard due to fluid escaping under pressure.

- Let the engine cool down.
- Releasing pressure in the hydraulic system, and then carefully opening covers.

Meaning

Crush Hazard

Do not allow anyone to stay in the swiveling range of the vehicle.

Position

On the engine cover



Fig. 21

Meaning

Burn hazard due to hot surfaces (lines, plug connections, screw connections, hydraulic cylinders, couplings, etc.)

Position

On the boom on the left and right



Fig. 22

Meaning

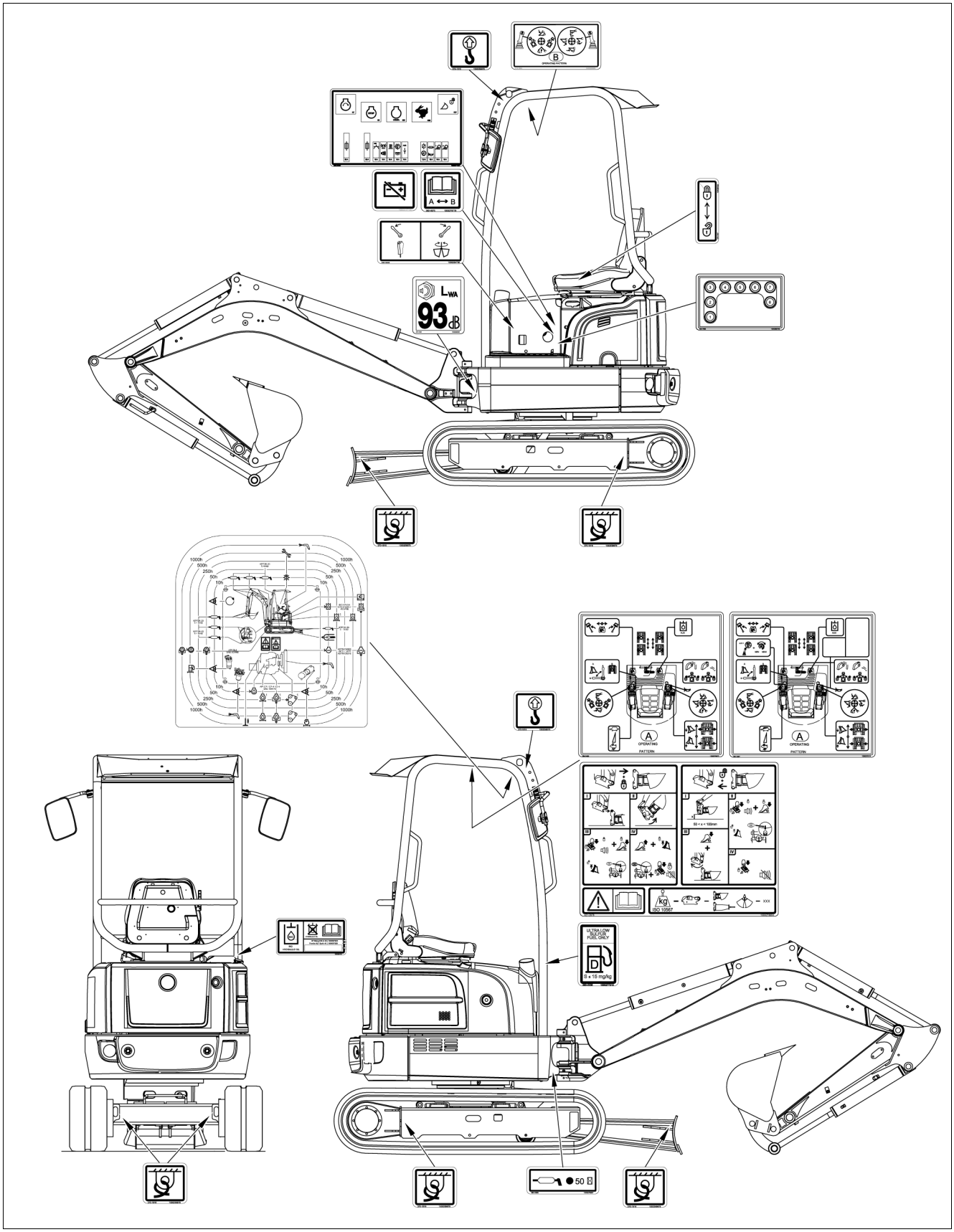
Reflectors

Position

At the rear left and right of the vehicle

https://truckmanualshub.com/

Information labels



https://truckmanualshub.com/



Fig. 24

Meaning

Only refuel with diesel fuel with a sulfur content of < 15 mg/kg (= 0.0015%).

Position

Next to the fuel tank filler inlet

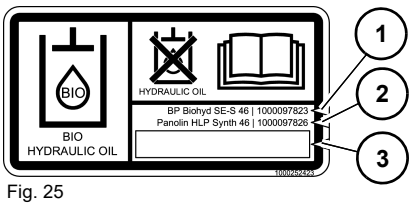


Fig. 25

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 biodegradable hydraulic oil

Position

Next to the filler neck of the hydraulic oil tank

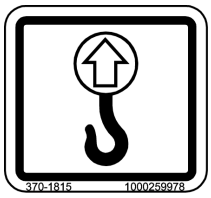


Fig. 26

Meaning

Lifting eyes

Position

At the roof left and right



Fig. 27

Meaning

Tie-down points

Position

- On (outside) left and right of travel gear
- On (inside) left and right of travel gear
- On the dozer blade on the left and right

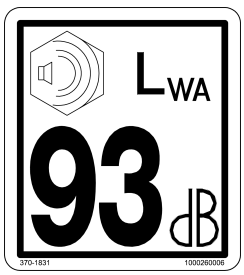


Fig. 28

Meaning

Indication of sound power level produced by the vehicle.

L_{WA} = sound power level

Position

At the front left of the chassis

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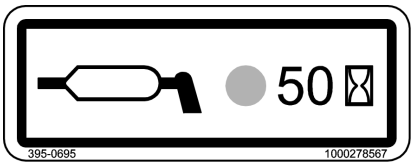


Fig. 29

Meaning

Lubrication interval

Position

On the right side of the chassis.

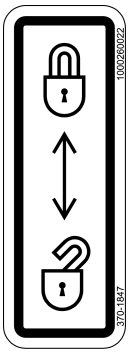


Fig. 30

Meaning

Hydraulic functions active or locked

Position

On control lever base

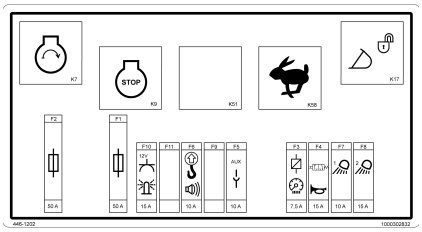


Fig. 31 (symbolic representation)

Meaning

Fuses and relays

Position

On the inside of the battery cover

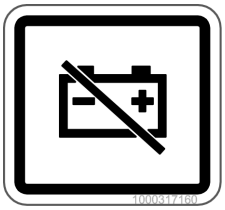


Fig. 32

Meaning

Battery master switch

Position

Outside on the battery cover



Fig. 33

Position

On the engine cover

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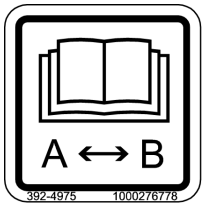


Fig. 34

Meaning (option)

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

Wiring diagram	Controls
A	ISO controls
B	SAE controls

Position

At the left under the operator seat.

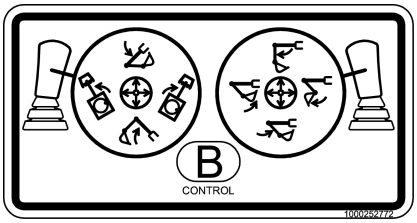


Fig. 35

Meaning (option)

Operating procedures differing from the ISO controls if the SAE controls are set.

Position

On the headliner

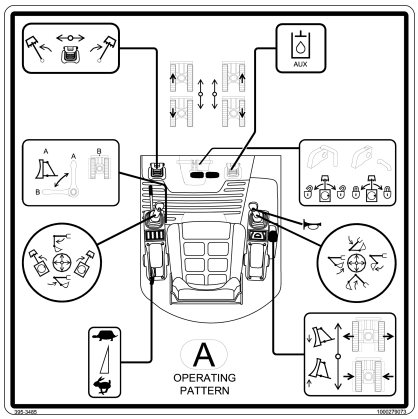


Fig. 36

Meaning

Functional overview (ISO controls)

Check the selected control mode before starting the vehicle.

Position

On the headliner

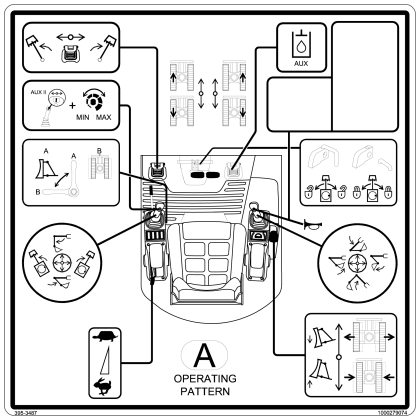


Fig. 37

Functions of the pedals and control lever and of the 3rd control circuit / Powertilt with proportional control (ISO control).

Check the selected control mode before starting the vehicle.

Position

On the headliner

https://truckmanualshub.com/

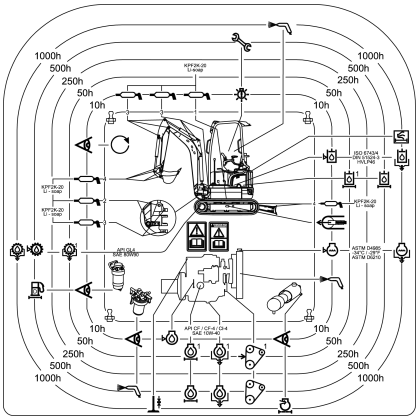


Fig. 38

Meaning

Maintenance intervals

Position

On the roof window

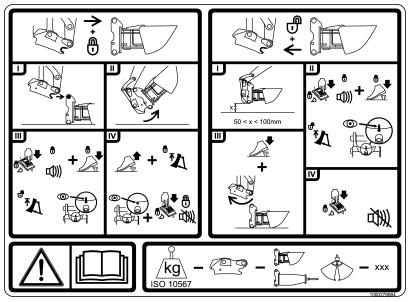


Fig. 39

Meaning

Hydraulic Easy Lock quickhitch

Position

On the headliner

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ANSI label (option)

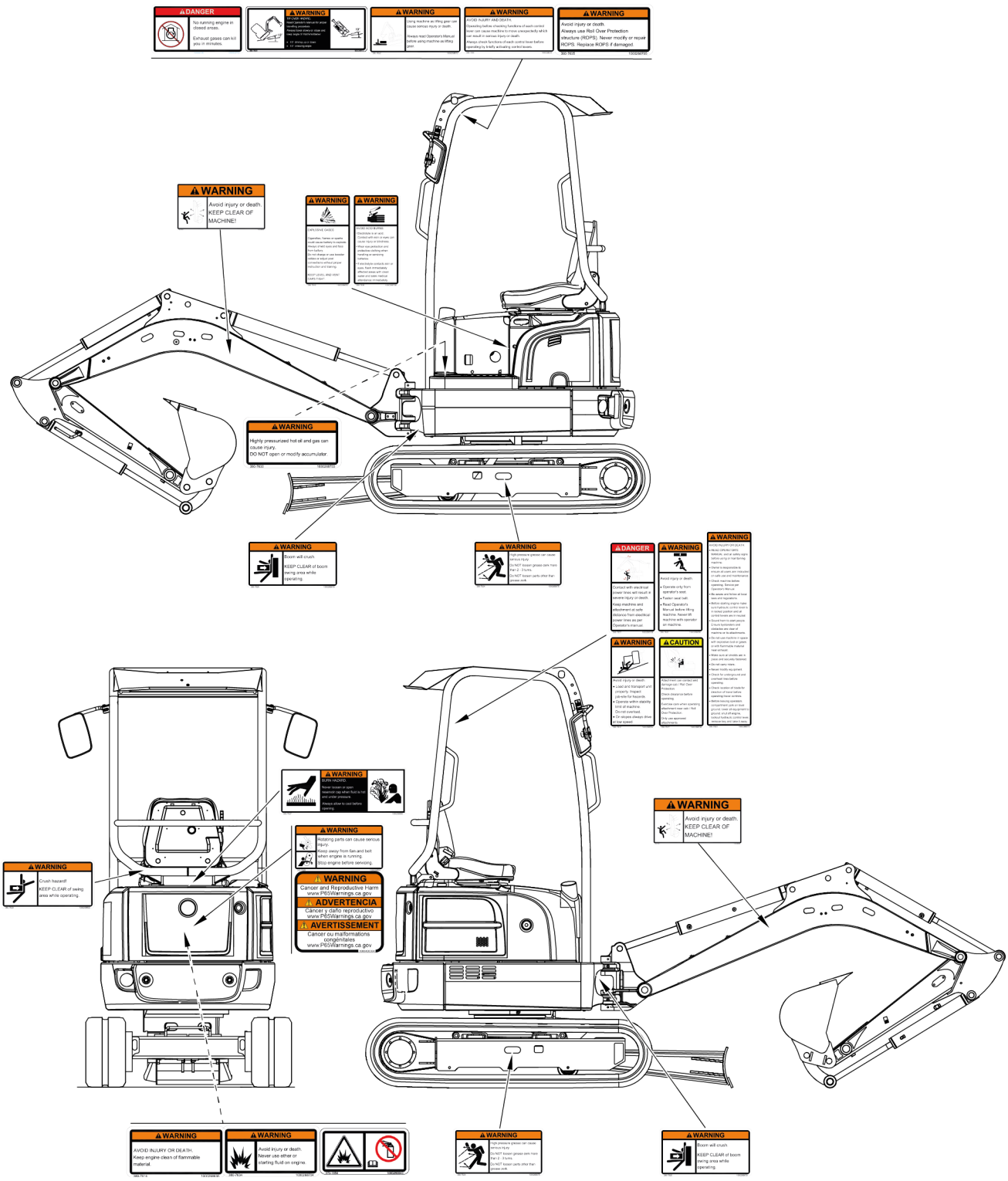


Fig. 40 (symbolic representation)

https://truckmanualshub.com/

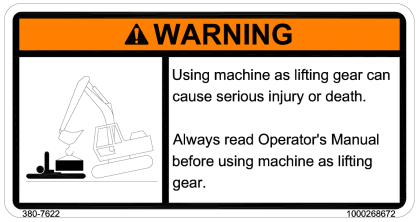


Fig. 41

Position

On the headliner

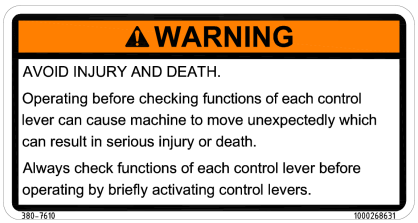


Fig. 42

Position

On the headliner



Fig. 43

Position

On the headliner

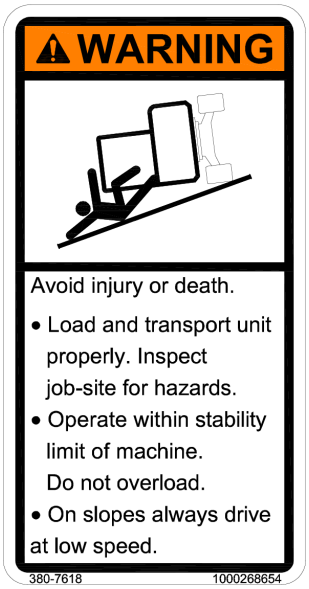


Fig. 44

Position

On the right C pillar

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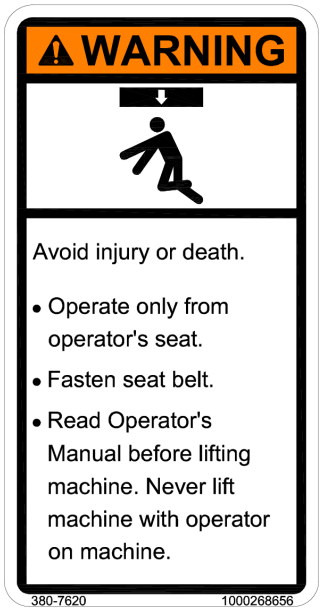


Fig. 45

Position

On the right C pillar

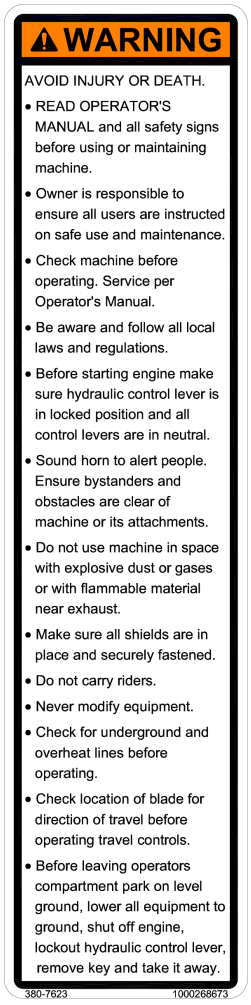


Fig. 46

Position

On the right C pillar

https://truckmanualshub.com/

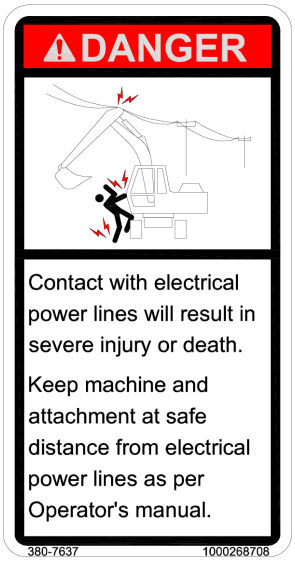


Fig. 47

Position

On the right C pillar

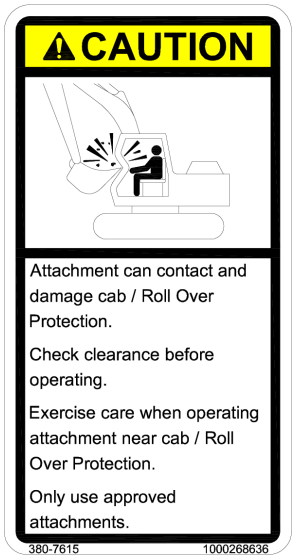


Fig. 48

Position

On the right C pillar



Fig. 49

Position

In the engine compartment



Fig. 50

Position

In the engine compartment

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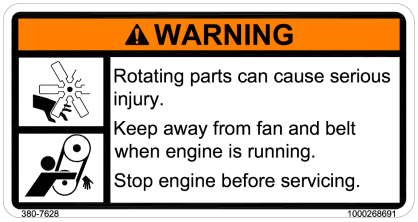


Fig. 51

Position

On the engine cover



Fig. 52

Position

At the back of the canopy

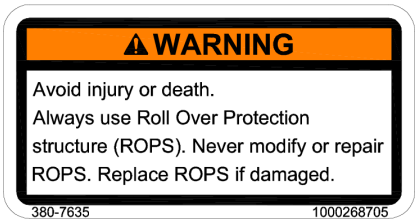


Fig. 53

Position

On the headliner



Fig. 54

Position

On the boom on the left and right

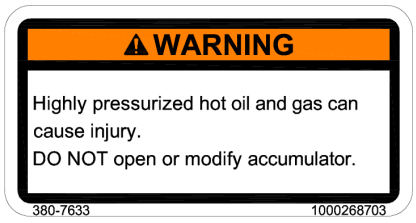


Fig. 55

Position

Left front under the floor mat

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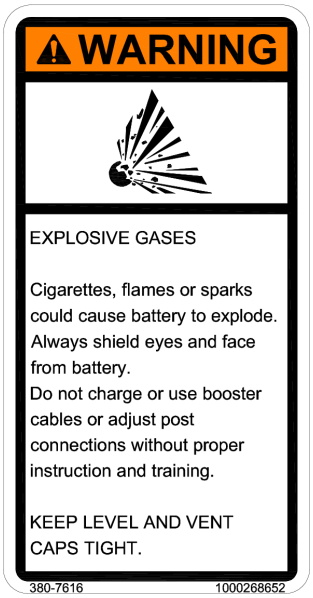


Fig. 56

Position

On the battery cover

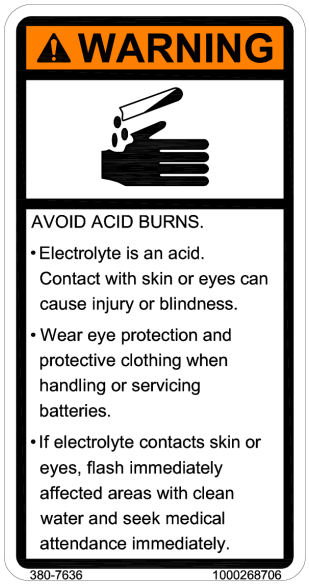


Fig. 57

Position

On the battery cover

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Fig. 58

Position

At the back of the canopy

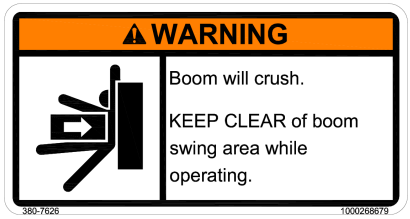


Fig. 59

Position

At the front left and right of the chassis



Fig. 60

Position

On left and right-hand undercarriage



Fig. 61

Position

On the headliner

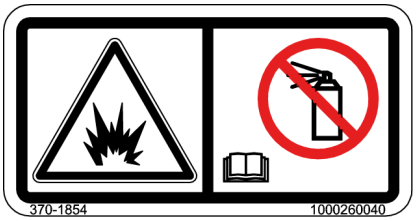


Fig. 62

Position

On the inside on the engine cover

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Fig. 63

Position

On the engine cover

Information

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

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Notes:

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4 Putting into operation

4.1 Cabin/control stand

CAUTION

Risk of injury when getting on and off!

Entering or exiting incorrectly can cause injury.

- ► Keep the mandatory stages **A** and handles **B** clean and only use them for entering and exiting.
- ► Face the vehicle as you enter and leave it.
- ► Have damaged stages and handles replaced. Do not operate the vehicle.

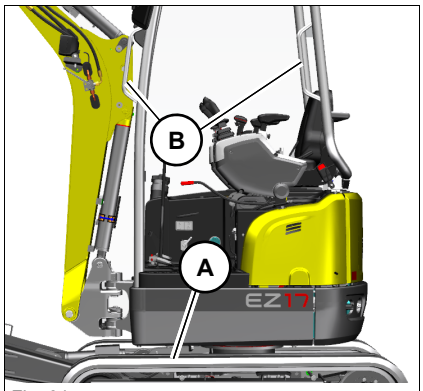


Fig. 64

Getting on and off

Use footholds **A** and handles **B** when getting in and out. Do support yourself on the control elements.

Two hands and one foot must be always in contact with the vehicle when getting on and off.

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Rear tarpaulin (option)

Installing/removing

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Roll up the rear tarpaulin and secure it with both straps **A**.

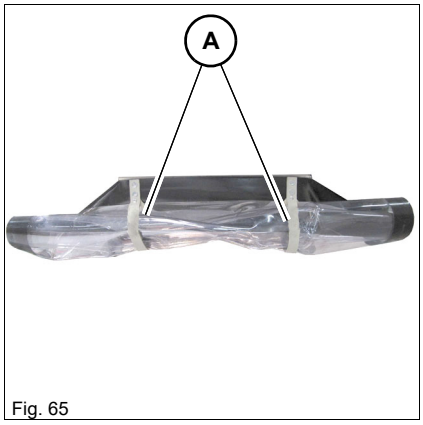


Fig. 65



Fig. 66

3. Push the rear tarpaulin into the frame or pull it out of the rail under it.

➥ Hooks **B** must show inward (see figure 67).

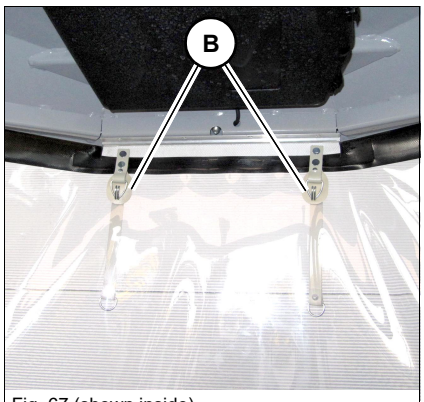


Fig. 67 (shown inside)

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Unrolling/rolling up the rear tarpaulin

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Unhitch both straps **A** and unroll the rear tarpaulin.

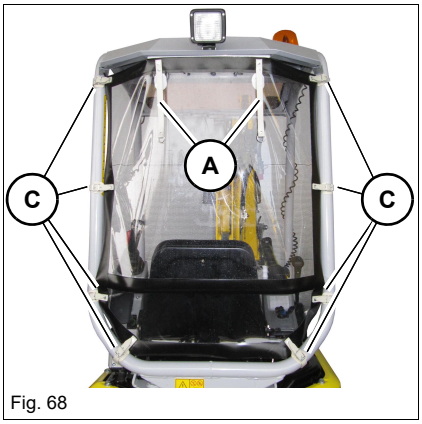


Fig. 68

3. Fasten the belt **C** to the six points on the outside of the canopy.

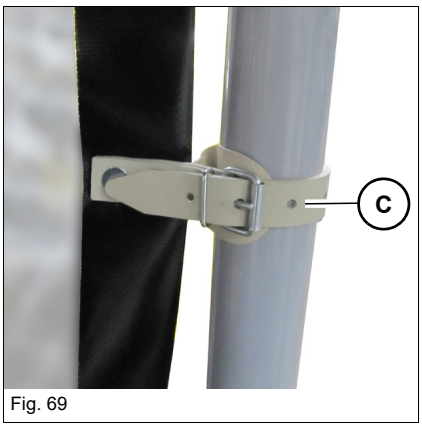


Fig. 69

Do not unhitch both upper straps **C** when rolling up the tarpaulin.

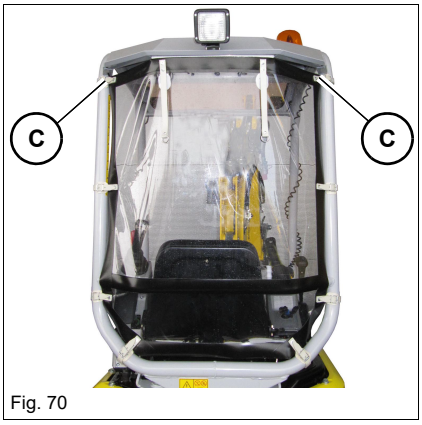


Fig. 70

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Seat adjustment

WARNING

Accident hazard when adjusting the operator seat during machine operation!

Adjusting the operator seat during vehicle operation can cause serious injury or death.

► Adjust the operator seat before putting the vehicle into operation.

► Ensure that the levers are locked into place.

Weight adjustment

CAUTION

Spinal cord injury due to incorrect seat adjustment!

An incorrect weight adjustment can cause injury to the spinal cord.

► Ensure that the seat is correctly adjusted to the operator's weight before vehicle travel or operation.

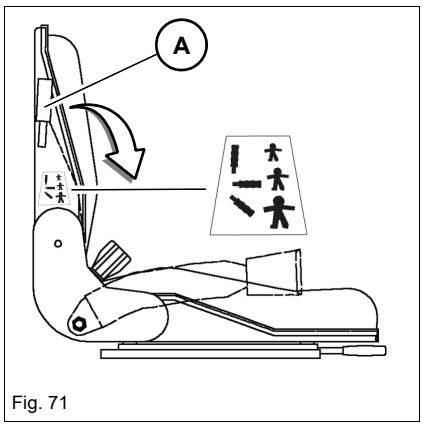


Fig. 71

No load must be applied to the seat while adjusting it.

To adjust to a higher weight:

- Turn lever **A** downward.

To adjust to a lower weight:

- Turn lever **A** upward.

Information

Adjust the seat suspension correctly to ensure an optimal level of ride comfort.

A label on the seat shows the correct position for a specific weight. Weight adjustment: 50 – 120 kg (110 – 265 lb).

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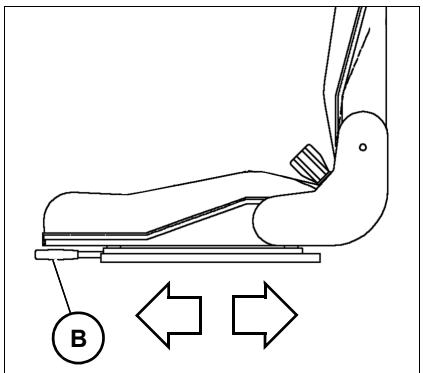


Fig. 72

Horizontal adjustment

1. Sit down on the operator seat.
2. Press lever **B** to the left and lock seat into place in the required position.

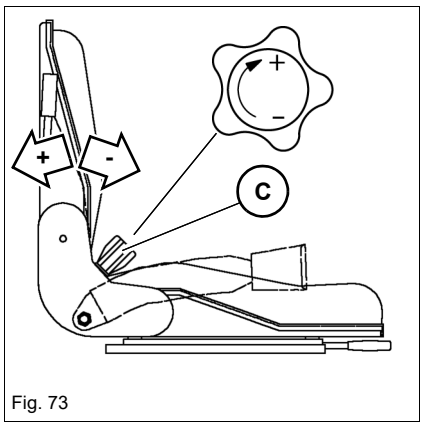


Fig. 73

Backrest adjustment

Sit down on the operator seat.

Backrest inclination to the rear:

- Turn button toward **+**.

Backrest inclination to the front:

- Turn button toward **−**.

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Seat belt

DANGER

Injury hazard if the seat belt is not fastened correctly or not at all!

Fastening the seat belt incorrectly, or not at all, causes serious injury or death.

- ► Firmly fasten your seat belt over your hips before starting the engine.
- ► Do not loosen the seat belt while the engine is running. This also applies to the work interruptions.
- ► Do not fasten a twisted seat belt, and do not place it over hard, edged or fragile items in your clothes.
- ► Ensure that the buckle is inserted.
- ► Do not use seat belt extensions.

CAUTION

Injury hazard due to damaged or dirty seat belt!

A damaged or dirty seat belt can cause serious injury or death.

- ► Keep the seat belt and buckle clean, and check them for damage.
- ► Have a damaged seat belt and buckle immediately replaced by an authorized service center.
- ► Have the seat belt immediately replaced after every accident and the load-bearing capacity of the fastening points and seat fixtures checked by an authorized service center.

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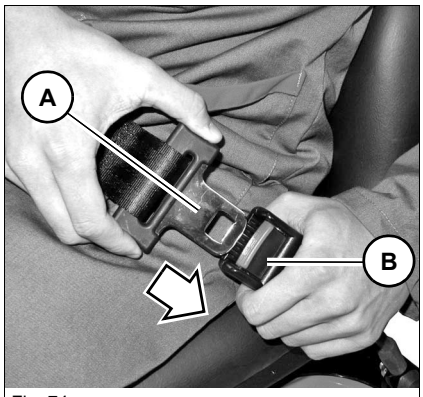


Fig. 74

Fastening the seat belt

1. Insert buckle latch **A** into seat belt buckle **B** until it engages.

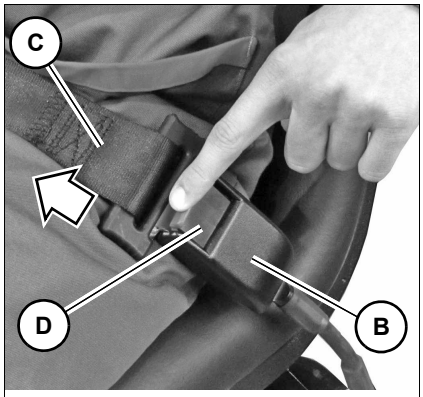


Fig. 75

Unfastening the seat belt

1. Press the red button **D** on the buckle **B** until the buckle latch comes out.
   ➥ Seat belt **C** is automatically retracted.

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Visual aids

WARNING

Risk of injury to persons in the danger zone!

Persons in the danger zone are possibly not seen when reversing the machine and may be injured. This can cause accidents with serious injuries or death.

- ► Adjust the existing visual aids (for example the rearview mirrors) correctly.
- ► Interrupt work immediately if persons enter the danger zone.
- ► Pay attention to the movements and changing positions of attachments and persons.

WARNING

Accident hazard due to restricted field of vision on the job site!

Accidents resulting in serious injury or death can be caused by a restricted field of vision.

- ► Do not allow anyone to stay in the danger zone.
- ► Use suitable visual aids if necessary (for example a camera, mirrors, guide).
- ► Additional equipment or attachments must not be installed if they impair visibility.

WARNING

Accident hazard due to incorrect adjustment of visual aids!

Incorrectly adjusted visual aids can cause serious injury or death.

- ► Before starting work, ensure that all visual aids are clean, functional and adjusted in accordance with the instructions in this Operator's Manual.
- ► Immediately replace damaged or broken visual aids.
- ► Convex mirrors enlarge, reduce or distort the field of view.
- ► The operator must follow the national and regional regulations.

- Use safety-oriented ladders and work platforms for adjustment work on the vehicle.
- Do not use vehicle parts or attachments as a climbing aid.
- Set the boom to travel position before adjusting the mirrors.

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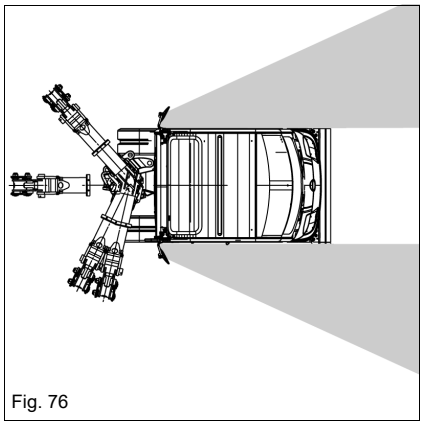


Fig. 76

Adjusting the mirrors

- Ensure sufficient visibility from the operator seat onto the job site.
- Ensure maximum visibility to the rear.
- Ensure visibility of the rear left edge of the vehicle in the mirror on the left.
- Ensure visibility of the rear right edge of the vehicle in the mirror on the right.

Information

Wacker Neuson recommends adjusting the mirrors with two persons.

Information

Do not make any modifications that impair visibility. Otherwise the vehicle does not meet the requirements for conformity and registration.

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Arm rest

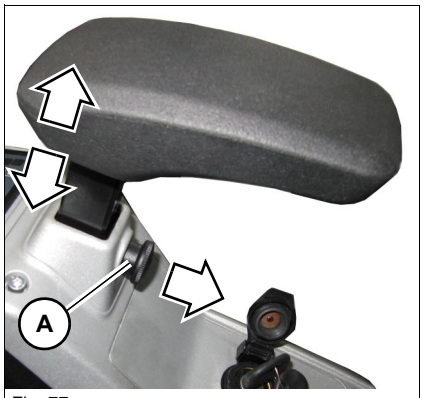
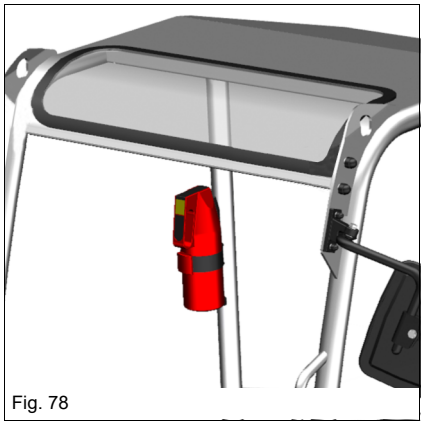


Fig. 77

1. Hold the armrest and pull out button **A**.
2. Adjust the armrest height.
3. Release button **A**.

Fire extinguisher


Fig. 78

A fire extinguisher is not available from Wacker Neuson.

Contact a Wacker Neuson service center for the installation of a fire extinguisher (DIN-EN 3).

Information

Ensure the firm and safe installation of the fire extinguisher. Check the fire extinguisher at regular intervals; also ensure that it is safely installed. Observe the manufacturer's indications.

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Protective structures

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

DANGER

Accident hazard due to modified cabin or protective structures!

Modifications (for example drilling) weaken the structure and can cause serious injury or death.

- ► No drilling, cutting or grinding.
- ► Do not install any brackets.
- ► No welding, straightening or bending.
- ► Replace the complete protective structure if it is damaged, deformed or cracked.
- ► Contact a Wacker Neuson service center in case of doubt.
- ► Retrofit, assembly and repair work may only be performed by a Wacker Neuson service center.
- ► Replace self-locking fasteners.

Information

Machine operation is only allowed with a correctly installed and intact canopy.

For additional protection, only use correctly installed and intact Wacker Neuson protective structures that have been released for the vehicle.

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

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

DANGER

Crushing hazard due to falling objects!

Falling objects cause serious injuries or death.

► Install a protective FOPS structure for vehicle operation in areas with danger of falling objects.

Information

The protective FOPS structure corresponds to category I according to ISO 3449:1992

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

► The vehicle owner must ensure that only work is performed that does not require any higher protection.

► Accidents cannot be fully avoided despite equipping a vehicle with protective structures.

Assembly

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Remove the headlights and mirror
3. A minimum 2 persons are required for installing/removing.
4. Mounting point for protective structure: **A**

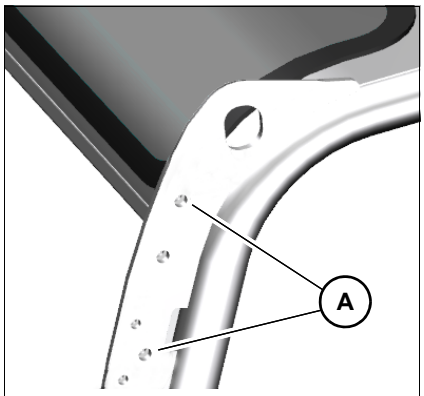


Fig. 79

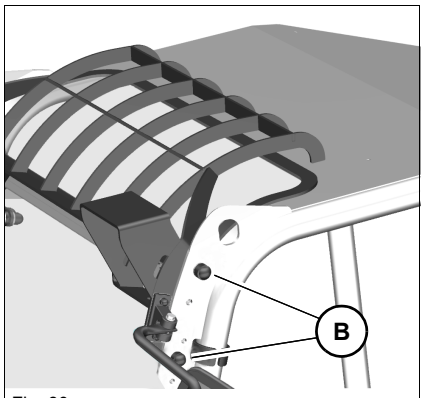


Fig. 80

5. Install lock nuts and screws on the left and right at the points **B** and tighten them with 87 Nm (64 ft.lbs.).

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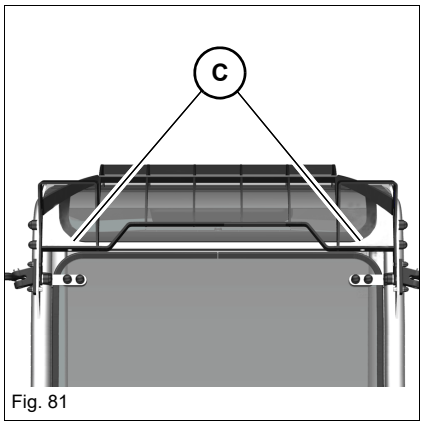


Fig. 81

6. Install the lights in positions **C** (option).

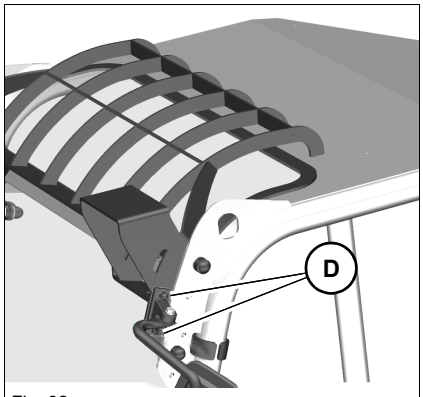


Fig. 82

7. Install the mirror on the left and right in positions **D** (option).

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Shatter protection (option)

DANGER

Danger of piercing/penetration by objects from the front!

Work involving risk of piercing/penetrating by objects from the front can cause accidents with serious injury or death.

- ► To operate the vehicle, shatter protection must be installed if an attachment (a breaker, for example) causes fragments to fly around. This shatter protection takes over the function of a front window.
- ► Observe the prescribed work area - see *Job site*.

CAUTION

Danger of accident with restricted visibility!

Restricted visibility (e.g. weather influences, dust) can cause serious injury or death.

- ► Resume work only if visibility is no longer restricted.

NOTICE

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

Information

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

- ► The vehicle owner must ensure that the hazard situation is evaluated and that the national regulations are observed.
- ► The vehicle owner must ensure that only work is performed that does not require any higher protection.
- ► Accidents cannot be fully avoided despite equipping a vehicle with protective structures.

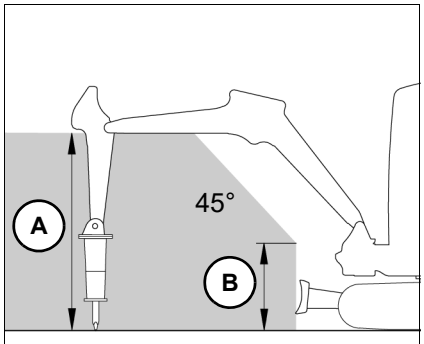


Fig. 83 (symbolic representation)

Job site

Work range height **A**: 120 cm (47 in), **B**: 50 cm (20 in)

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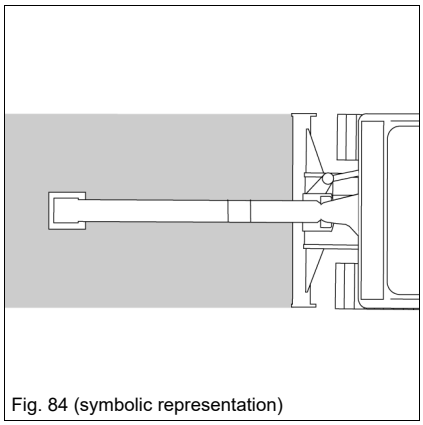


Fig. 84 (symbolic representation)

Figures 83 and 84 refer to work with a Wacker Neuson hydraulic hammer. Working with another tool can result in a different work area.

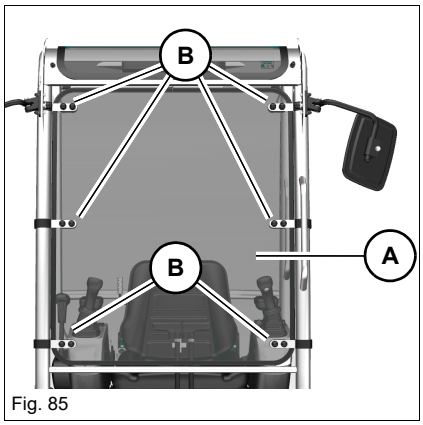


Fig. 85

Assembly

1. 2 persons are required for installing.
2. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.

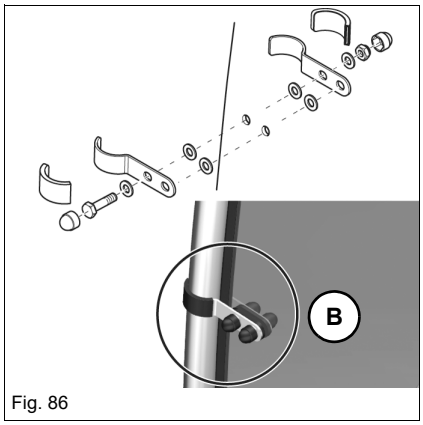


Fig. 86

3. Attach shatter protection **A** to the tie-down lugs **B**.

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Power outlet



Fig. 87

The machine is equipped with a 12 V socket on the right.

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4.2 Overview of control elements

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

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

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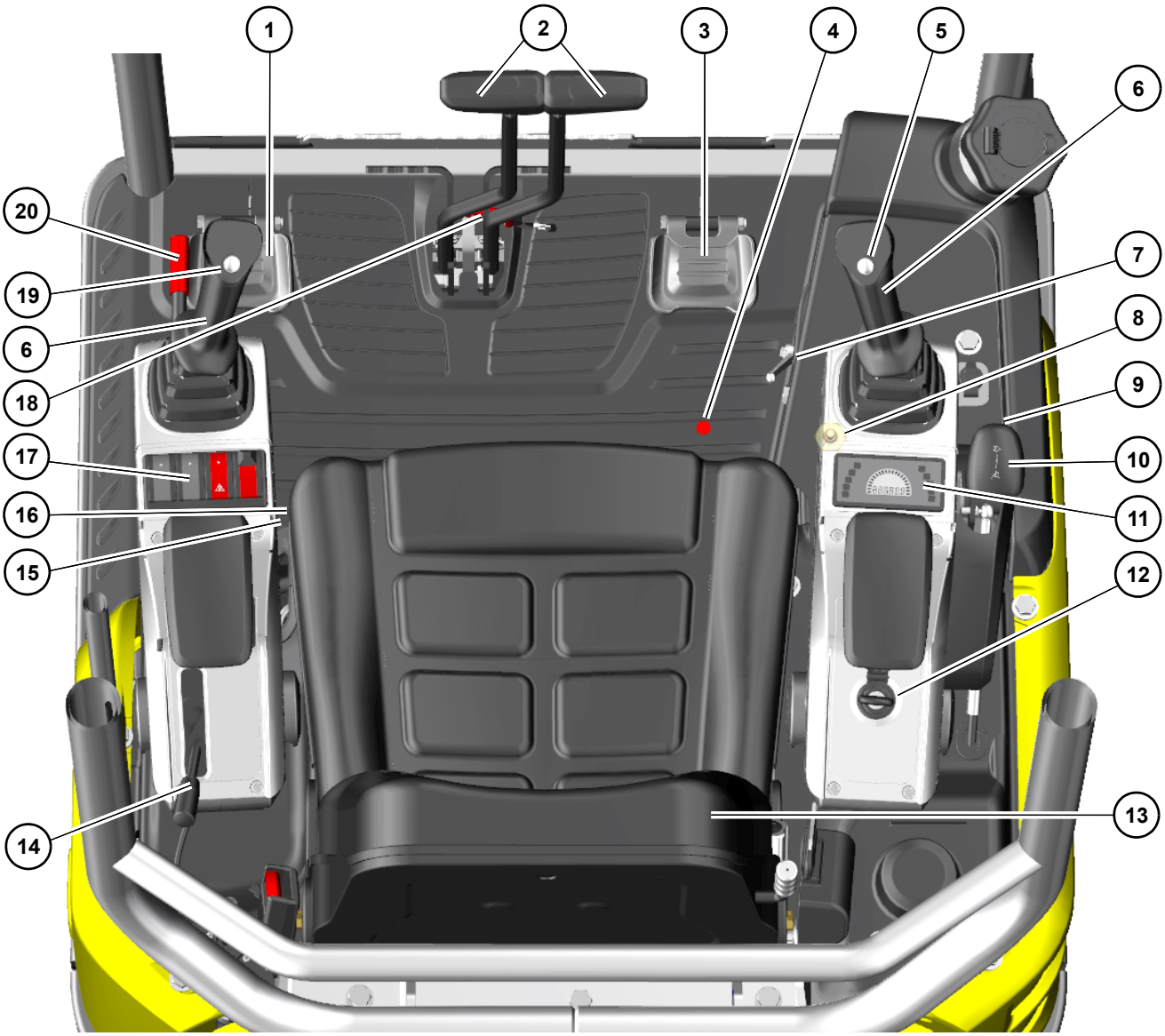


Fig. 88 Standard controls



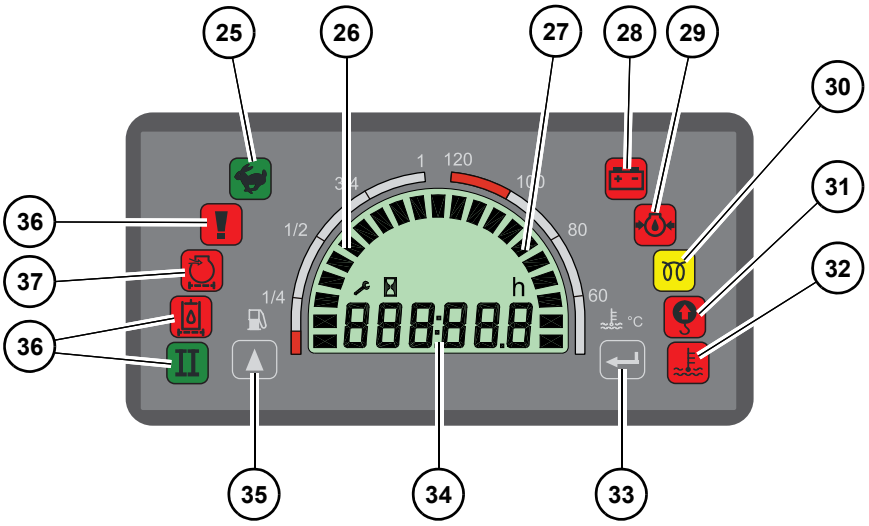
Fig. 88 Proportional controls

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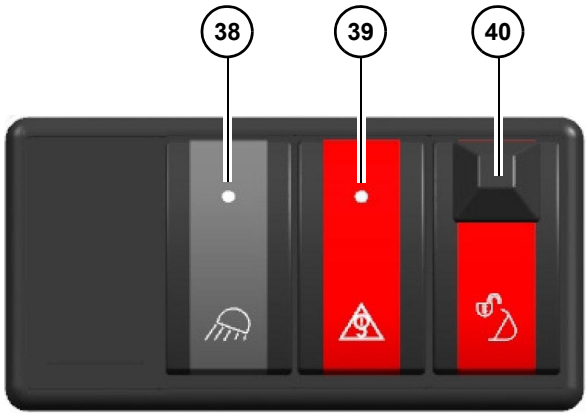
Description		See page
14	Boom swivel pedal	*5-26*
15	Drive levers	*5-1*
16	Auxiliary hydraulics pedal	*5-26*
17	Foot-operated push button for hydraulic quickhitch (option)	*5-38*
18	Horn	*5-10*
19	Control levers	*5-12*
20	Changeover for hammer/auxiliary hydraulics operation	*5-25*, *5-26*
21	Reservoir ventilation	*7-41*
22	Travel speed changeover	*5-2*
23	Stabilizer-blade lever	*5-16*
24	Display element	*4-20*
25	Ignition lock	*4-29*
26	Operator seat	*4-4*
27	Throttle	*5-1*
28	ISO/SAE changeover (option)	*5-15*
29	Changeover for stabilizer blade/travel gear extension/retraction	*5-16*, *5-19*
30	Switch panel on control lever base	*4-20*
31	Upper carriage lock	*6-7*
32	Not assigned	--
33	Control lever base	*4-29*
34	Rotary switch for oil flow (AUX II and AUX III) (proportional controls) (option)	*5-22*
35	Operation of Powertilt (AUX III) or 3rd control circuit (AUX II) proportional controls (option)	*5-28*, *5-27*

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Display element and switches



Switch panel on left-hand control lever base



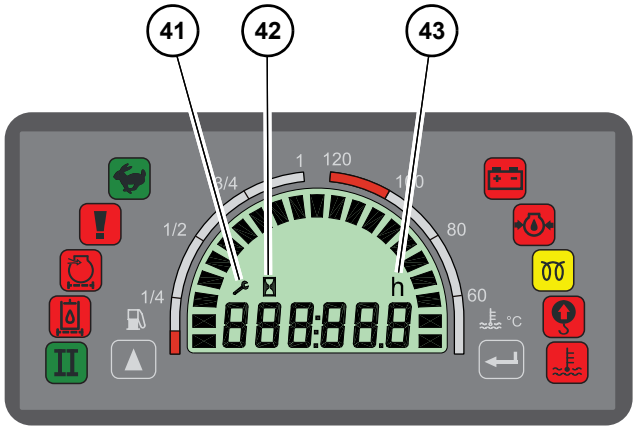


Fig. 89

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Description		See page
38	Speed range 2	5-2
39	Fuel level indicator	4-23
40	Coolant temperature	4-23
41	Charge indicator light	4-22
42	Engine oil pressure	4-22
43	Preheating	4-22
44	Safe load indicator light	4-22
45	Coolant temperature	4-23
46	For Wacker Neuson service center	--
47	Hour meter/maintenance meter	4-23
48	Hour meter/maintenance meter changeover	4-23
49	Not assigned	--
50	Not assigned	--
51	Working lights	5-9
52	Safe load indicator (option)	5-31
53	Hydraulic quickhitch (option)	5-38
54	Maintenance meter	4-23
55	Operating hours	4-23
56	Hours	--

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4.3 Indicator lights and warning lights (overview)

Display element

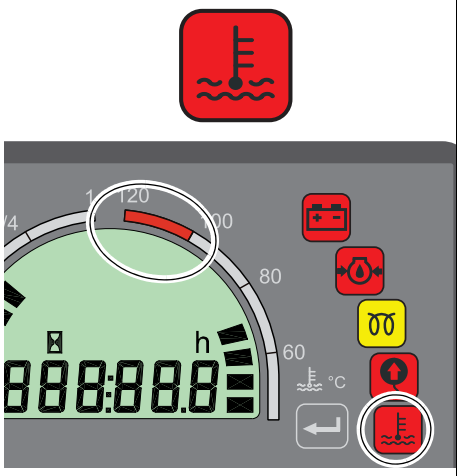
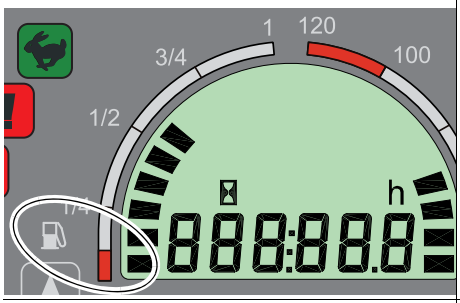
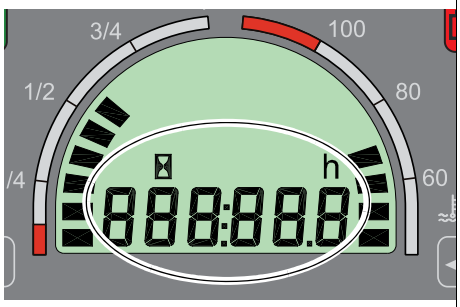
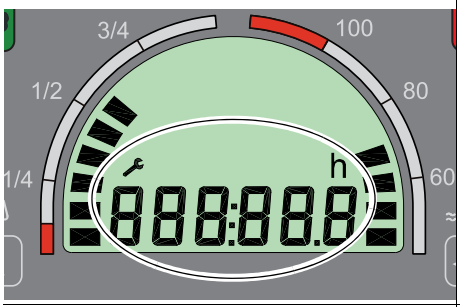
The display element and the multifunctional display inform the operator about operating states, required maintenance procedures and possible machine malfunctions.

Information

The indicator lights are tested when the starter is engaged and are illuminated for a few seconds. The maintenance counter and then the hours of operation are displayed.

Symbol	Description
	**Speed range 2** The control lamp (green) lights up if the speed 2 is active.
	**Charge indicator light** This indicator light (red) illuminates if the electrical system has a malfunction. The battery is no longer or insufficiently charged. **Note:** This indicator light also illuminates if the starting key is turned to position 2. The indicator light goes out after the engine is started. Increase engine speed if the indicator light illuminates. The electrical system works if the indicator light of the electrical system goes out within one minute.
	**Engine oil pressure** The indicator light (red) illuminates and the buzzer sounds. • Stop the engine immediately and check the engine oil level. • If the engine oil level is correct, contact a Wacker Neuson service center. **Note:** The indicator light illuminates when the starter is turned on and goes out as soon as the engine runs. At low temperatures, the indicator light can illuminate a few seconds after the engine is started.
	**Preheating** The indicator light (yellow) illuminates if the starting key is in position 2. Contact a Wacker Neuson authorized service center if the indicator light does not go out even after 20 seconds.
	**Overload warning light** The overload warning device (red) gives the operator visual (red) and acoustic warnings when the values from the stability table are exceeded. • Reduce reach or the lift load until both the acoustic signal and the indicator light in the display element go out.

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Symbol	Description
	**Coolant temperature** The control lamp **A** lights up if the segments reach the red area. • Let the engine run at idling speed without any load. • Wait until the temperature drops and the indicator light goes out. • Stop the engine. • Check the coolant level.
	**Fuel tank capacity** Refuel if the segments reach the red range.
	**Hour meter** Counts the engine operating hours with the engine running.
	**Maintenance meter** Counts the remaining engine operating hours down to the next maintenance work due. If less than 10 hours are displayed, the wrench symbol flashes.
	Switch-over between **the operating hour meter** and **the** maintenance counter

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4.4 Preparatory work

Important information before putting the vehicle into operation

Perform a visual check before starting work:

- There must be no leaks.
- There must be no damaged or loose parts.
- Do not allow anyone to stay in the danger zone.

Before putting the vehicle into operation, the operator must familiarize himself with the position of the controls and instruments.

Only operate the vehicle from the seat with the seat belt fastened.

Before using the vehicle in work operation for the first time, Wacker Neuson recommends trying out the vehicle on open ground without any obstacles.

When using the vehicle, check the surroundings constantly in order to identify potential hazards in time.

Before starting work, ensure that all visual aids are clean, functional and adjusted in accordance with the instructions in this Operator's Manual.

The operator must follow the national and regional regulations.

Perform a **functional check of the control lever base**.

Perform a **functional check of the safe load indicator**.

Do not make any modifications that impair visibility. The vehicle does not meet the requirements for conformity and registration.

Follow the safety instructions in chapter **Safety 2.4**.

Requirements and information for the operating personnel

Read, understand and follow this Operator's Manual and all other Operator's Manuals supplied with the vehicle.

The machine may only be put into operation by authorized personnel that have been instructed. See chapter **"Safety 2.3"**.

The operator must know and bear in mind the requirements and risks at the work place.

Perform daily maintenance according to the Lubrication and maintenance plan (see chapter **"Maintenance 7.2"**)

Face the machine as you enter and exit it and only use the mandatory climbing aids for entering and exiting.

Keep the footholds and the handholds clean to ensure a safe hold at all times. Immediately remove contamination, oil, snow, etc.

Do not get on a moving vehicle, or jump off it.

Do not operate the vehicle if the standard protective equipment (for example the cabin) has been removed.

No clothes or parts of the body may protrude outside the machine during operation.

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Check lists

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

Wacker Neuson does not claim those lists to be exhaustive.

If the answer to one of the questions is **No**, first rectify the cause of the fault (or have it rectified) before starting work.

The checking and monitoring work listed below is described in greater detail in the following chapters.

Start-up checklist

Check and observe the following points before putting the vehicle into operation or starting the engine:

nr.	Question	Page
1	Enough fuel in the tank?	*7-29*
2	Water in water separator and fuel filter checked and drained if necessary?	*7-30* *7-31*
3	Correct engine oil level?	*7-34*
4	Coolant level OK?	*7-36*
5	Correct oil level in the hydraulic oil reservoir?	*7-41*
6	Lubrication points greased?	*7-8*
7	Tracks checked for cracks, cuts, etc.?	--
8	Light system, mirrors, signaling, warning and indicator lights operational and/or adjusted correctly?	--
9	Windows, mirrors, lights, steps, all pedals and control levers clean?	--
10	All control levers and pedals in neutral position?	--
11	Control lever base raised?	*4-29*
12	Are other persons required to guide you?	--
13	Attachment safely locked?	*5-38* *5-52*
14	Engine cover locked? Filler cap closed tightly?	*7-16* *7-29*
15	Tools and other loose objects removed?	--
16	Seating position adjusted correctly?	*4-4*
17	Are all visual aids functional, clean and adjusted correctly?	*4-8*
18	Seat belt fastened?	*4-6*

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Operation checklist

Check/observe the following points before beginning operation or after starting the engine:

nr.	Question	Page
1	Are there any persons or objects in the danger zone of the vehicle?	*5-54* *5-55*
2	All indicator lights gone out?	*4-22*
3	Coolant temperature of engine in normal range?	*4-23*
4	Do the pedals and control levers work correctly?	*5-12*
5	Performed functional check of control lever base?	*4-29*
6	Functional check of the overload warning device performed?	*5-32*
7	Braking effect sufficient?	*5-2*

Engine shut-off checklist

Check and observe the following points when parking the vehicle:

nr.	Question	Page
1	Attachment lowered to the ground?	*5-43* *5-51*
2	Stabilizer blade lowered to the ground?	*5-16*
3	Control lever base raised?	*4-29*
When parking on slopes:		
4	Machine secured with wheel chocks in addition to prevent it from rolling away?	*5-8*

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Putting into operation for the first time and running-in period

Before putting the vehicle into operation for the first time, check whether the equipment supplied with the vehicle is complete.

- Check the fluid levels according to chapter “**Maintenance**”.

Each vehicle is correctly adjusted and checked before it is delivered.

Handle the vehicle carefully during its first 50 operating hours.

- Do not load a cold engine.
- Warm up the vehicle at low engine speed and little load, do not warm it up at a standstill.
- Do not change engine speed abruptly.
- Avoid using the vehicle under heavy loads or at high speeds.
- Avoid abrupt acceleration, braking and changing travel direction.
- Do not run the engine at high speed for extended periods.
- Observe the maintenance plans – *see chapter “7.2 Maintenance overview” on page 7-4*.

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4.5 Starting and stopping the engine

Preparatory work

WARNING

Accident hazard due to unintentional operation of the vehicle!

Unintentional operation can cause serious injury or death.

► Only operate the vehicle from the seat with the seat belt fastened.

Set the throttle to the middle position if the engine is cold.

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 two minutes so the battery can recover and the starter does not overheat before trying again.

NOTICE

Possible damage to preheater if the preheating system is operated too long.

► Do not preheat the engine for more than 20 seconds.

NOTICE

Possible damage if the engine is started again immediately after stopping it.

► Wait at least two minutes before starting the engine again.

Information

All controls must be within easy reach. You must be able to move the forward + reverse travel levers to their limit positions.

Information

Provide for sufficient ventilation when operating in enclosed areas.

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Ignition lock

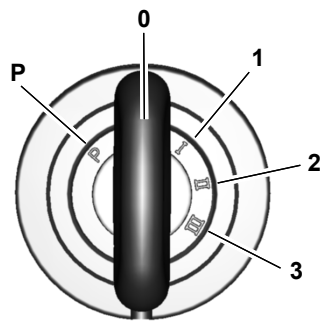


Fig. 90

Position	Function	
P	Park position	Not assigned
0	Stop position	Insert or remove the starting key
1	Machine travel position	All electric functions are enabled
2	Preheats the engine	Preheater active
3	Starts the engine	Starter is actuated

Starts the engine

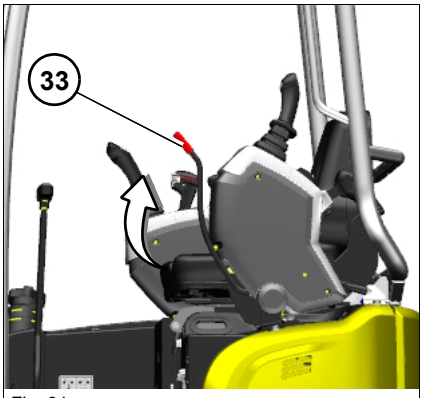


Fig. 91

Control lever base

Raise the control lever base **33** after stopping the engine.

Control lever base raised:

- The engine will not start unless the control lever base is raised.

Control lever base lowered:

- The engine cannot be started.

All hydraulic functions are locked if the control lever is raised with a running engine.

Functional check of control lever base

Before starting work, perform a functional check of the control lever base.

1. Start the vehicle.
2. Fold down the control **20** lever base.
3. Perform vehicle travel on open terrain.
4. Secure the danger zone.
5. Stop the vehicle.
6. Fold up the control **20** lever base.
7. Move all control levers and pedals in all directions.
   ➥ The selected elements do not move:
   ➥ Work may be performed with the vehicle.
8. The selected elements move:
   ➥ Stop operation immediately.

Contact a Wacker Neuson service center and have the malfunction rectified.

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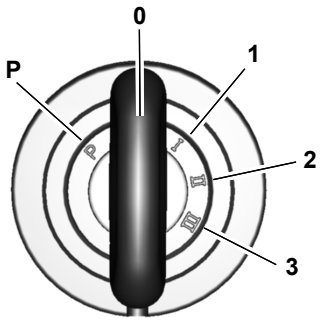


Fig. 92

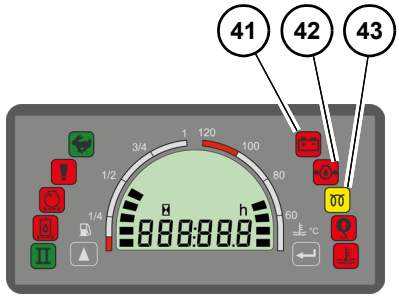


Fig. 93

1. Insert the starting key.
2. Turn the starting key to position **1**.
3. All control lamps light up for a few seconds.

➥ If a control lamp does not function, contact a Wacker Neuson service center.

4. Turn and hold the ignition key in position **2** until indicator light **43** (preheating) goes out.

➥ Charge indicator light **41** illuminates.

➥ Indicator light **42** for the engine oil pressure illuminates.

5. Turn the starting key to position **3** until the engine runs.

➥ All indicator lights go out.

➥ If the engine does not start after 20 seconds:

6. Interrupt the start procedure and repeat it after two minutes.

➥ If the engine still does not start after a few tries, contact a Wacker Neuson service center and have the error rectified.

7. Release the starting key as soon as the engine runs.

Information

The engine will not start unless the control lever base is raised.

Warm-up phase of vehicle

After the engine has started, allow it to warm up at slightly increased idling speed until the coolant reaches its operating temperature of about 80°C (176°F).

Do not let the vehicle warm up at standstill.

Check for unusual noise, exhaust color, leaks, malfunctions, or damage.

In case of malfunctions, damage, or leaks:

Secure the machine, park it and find out the cause for the damage and have it repaired.

Information

Fold up the control lever base after shutting off **G** the engine.

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Starting aid

WARNING

Explosion hazard in case of incorrect handling of battery!

Incorrect battery handling can cause serious injury or death.

- ► Wear protective equipment.
- ► Fire, open flames and smoking is prohibited
- ► Do not jump start the engine if the battery is malfunctioning or frozen, or if the acid level is too low.

WARNING

Injury hazard due to rotating parts!

Rotating parts can cause serious injury or death.

- ► Open the engine cover only at engine standstill.

CAUTION

Burn hazard due to hot surfaces!

Can cause serious burns or death.

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

NOTICE

Possible damage due to electrical short circuit or over-voltage.

- ► The positive terminal of the starting battery must not be brought into contact with electrically conductive vehicle components.
- ► The vehicles must not touch each other during the starting aid.
- ► If the engine still does not start despite a starting aid, contact a Wacker Neuson service center.

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NOTICE

Possible damage due to wrong battery voltage.

► Only use batteries with the same voltage (12 V).

NOTICE

Possible damage to vehicle with empty battery due to voltage peaks.

NOTICE

Possible damage to battery jumper cables when placing them near rotating parts.

► Do not place the battery jumper cables near rotating parts.

Information

Use only authorized battery jumper cables which conform to national and regional safety requirements.

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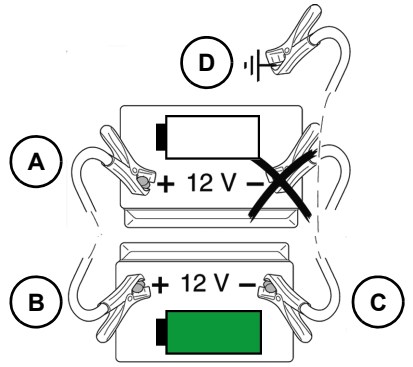
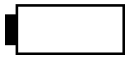


Fig. 94

Designations/symbols	Meaning
X	Machine with empty battery
Y	Vehicle with full battery
A	Positive/vehicle **X**
B	Positive/vehicle **Y**
C	Negative/vehicle **Y**
D	Negative/vehicle **X**
	Full battery
	Dead battery

1. Move vehicle **Y** close to machine **X** so that the length of the battery jumper cables is sufficient.
2. Stop the engine of vehicle **Y**.
3. Open the battery cover of the vehicle **X** *– see chapter " Battery cover" on page 7-18*.
4. Open the battery maintenance access from the vehicle **Y**.
5. Connect the battery jumper cables in the following order: **A-B-C-D**.
6. Start the engine of vehicle **Y**.
7. Wait five minutes for the empty battery to be charged a little.
8. Start the engine of machine **X**.
9. Switch on the boom light of vehicle **X** in order to avoid voltage peaks and to protect the electronic system.
10. Disconnect the battery jumper cables in the following sequence: **D – C – B – A**.

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Low-load operation

NOTICE

Possible damage to the engine due to low-load operation.

► Run the engine at idling speed or at high engine speed at over 20% engine load.

Possible consequences of low-load operation are:

- Increased engine oil consumption.
- Engine oil in the exhaust system causes engine contamination.
- Blue smoke in exhaust gas.

Stopping the engine

NOTICE

Possible damage to the engine when it is stopped after running under high load.

► Operate the engine at idling. This avoids engine damage and increases the service life.

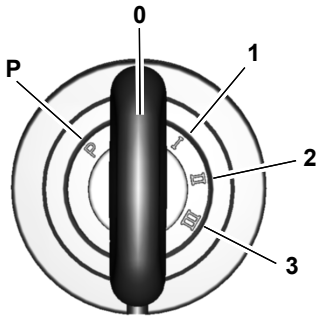


Fig. 95

1. Let the engine run at idling speed for five minutes without any load.
2. Turn the starting key to “**0**” and remove it.

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Battery master switch

NOTICE

Possible damage to the electronics due to improper actuation of the battery master switch!

- ► Do not operate the battery master switch with a running engine.
- ► Operate the battery master switch no sooner than three minutes after shutting down the engine

From serial number WNCE1301HPAL01808, the vehicle has a battery isolator switch.

Actuate the battery isolator switch:

- If the vehicle is parked for longer periods of time (e.g. over the weekend).
- If the vehicle is to be protected against unintentional taking into service.
- If required by national and regional provisions.

The battery isolator switch is located under the operator's seat.

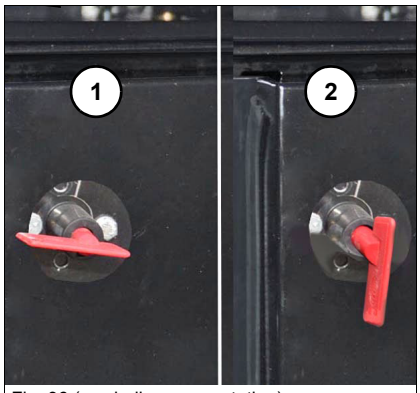


Fig. 96 (symbolic representation)

Version 1:

Power supply	Key position
Established	**1**
Interrupted	**2** (key removed)

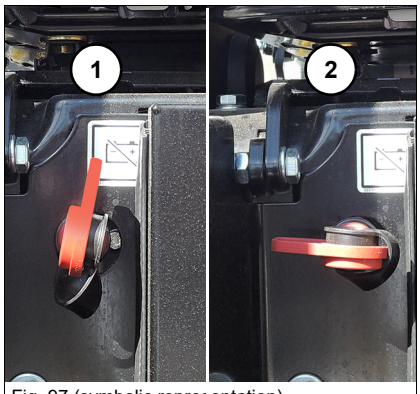


Fig. 97 (symbolic repres entation)

Variant 2:

Power supply	Key position
Established	**1**
Interrupted	**2** (key removed)

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Notes:

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5 Operation

5.1 Steering system

Movement	Drive levers/accelerator pedals
Steering to the left	
Steering to the right	
Rotation to the left	
Rotation to the right	

5.2 Accelerator actuation

Manual throttle

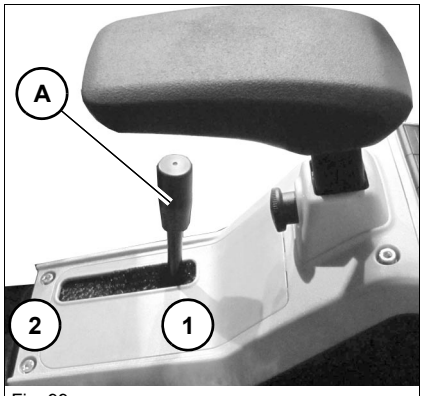


Fig. 99

The engine speed can be variably set with the throttle lever **A**.

Engine speed	Position
Idling speed	**1**
Maximum	**2**

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Speed range selection

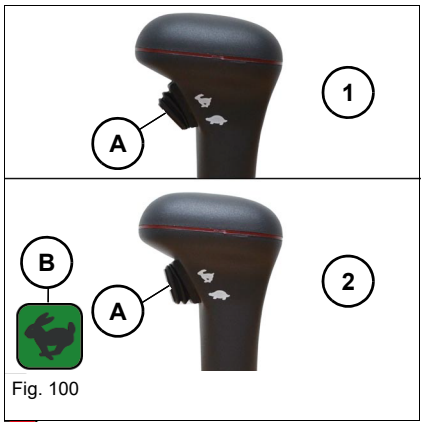


Fig. 100

The machine has two speed ranges that can be selected with the dozer blade lever.

1: Speed 1

2: Speed 2 (control lamp **B** appears in the display element)

Information

In speed 2, reduced tractive power jerky movements may occur when cornering due to the lower traction force.

5.3 Brakes

Hydraulic brake

The vehicle will slow down when the drive levers or accelerator pedals are released.

During downhill vehicle travel, the automatic hydraulic brake valves prevent the vehicle from moving faster than the permissible travel speed.

Information

Reduce the speed with the drive levers or accelerator pedals, and not with the throttle.

Mechanical brake

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

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5.4 Machine travel

Machine travel position

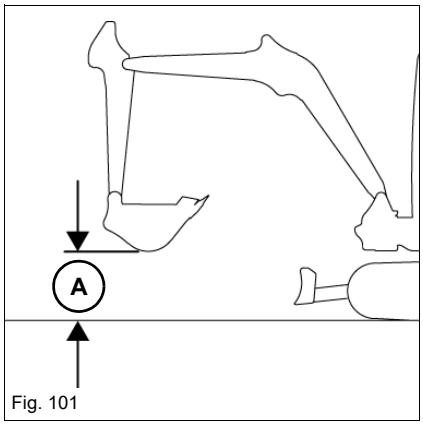


Fig. 101

Position the vehicle as shown.

Position the boom at the center and raise it off the ground.

- **A** = 20-30 cm (8-12 in)

Starting vehicle travel and stopping

WARNING

Accident hazard due to incorrect vehicle operation!

The vehicle moves in the opposite direction if the upper carriage is rotated by 180° and the drive levers are actuated.

Incorrect operation can cause serious injury and death.

► Slowly and carefully actuate the control levers.

WARNING

Accident hazard due to incorrectly rotated upper carriage!

If rotated incorrectly, the upper carriage blocks the visibility of the travel path. This may cause serious injury or death.

► Before starting vehicle travel on a construction site, align the upper carriage so that the operator has an unrestricted view of the travel path.

Starting vehicle travel

Operate the drive levers or accelerator pedals.

➥ The vehicle starts moving.

Stopping

Release the drive levers or accelerator pedals.

➥ The vehicle stops.

Information

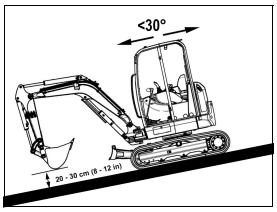
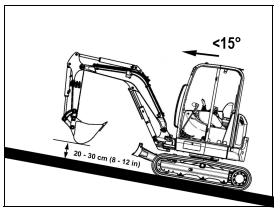
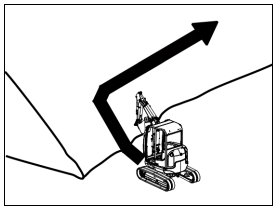
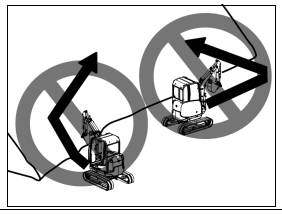
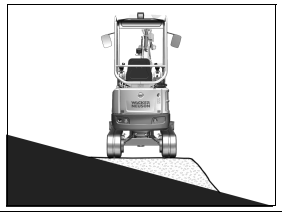
The control lever base must be folded down in order to start vehicle travel.

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Operating temperature range

Operate the machine only at ambient temperatures between −15°C (5°F) and +45°C (+113°F).

Application limits of the vehicle

Application	Description
	**Driving uphill and downhill (boom on the downhill side)** Allows up to a slope of 30°
	**Driving uphill (boom on the uphill side)** Allows up to a slope of 15°
	**Lateral slope travel** Allows up to a slope of 10°
	**Diagonal drive** Prohibited
	**Working with lateral inclinations** Only permitted on a horizontal, firm and level standing surface

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WARNING

Crushing hazard due to tipping over of vehicle!

A tipping vehicle can cause serious injury or death.

- ► Raise the boom 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.
- ► Travel on slopes only on firm and level ground.
- ► Adapt the travel speed to the prevailing conditions.
- ► Pay attention to persons and obstacles.
- ► Adhere to the application limits of the vehicle.
- ► Perform uphill and downhill machine travel only in speed range 1.
- ► Never reverse downhill.
- ► Ensure that no parts of the body protrude outside the vehicle.
- ► Do not exceed the permissible payloads.
- ► Do not turn or swivel the upper carriage and the boom during downhill or uphill vehicle operation with a full attachment.
- ► Diagonal machine travel is prohibited.

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

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

On soft ground, the vehicle sinks into it or the tracks dig into it. This increases the vehicle angle (maximum gradient angle and maximum lateral angle of inclination), and the vehicle can tip over.

If the engine dies as you perform uphill or downhill vehicle travel, immediately put the control levers to neutral position and restart the engine.

Observe under all circumstances during uphill or downhill travel:

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

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

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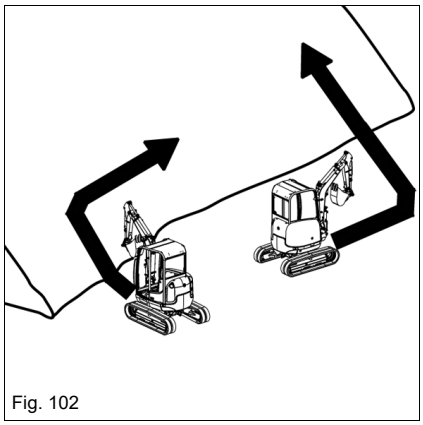


Fig. 102

Preparations for performing vehicle travel on slopes

Always perform uphill or downhill vehicle travel in a straight line.

If the position changes, do not exceed the application limits.

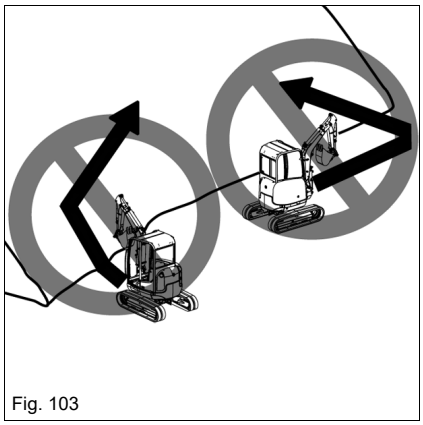


Fig. 103

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

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Machine travel on slopes

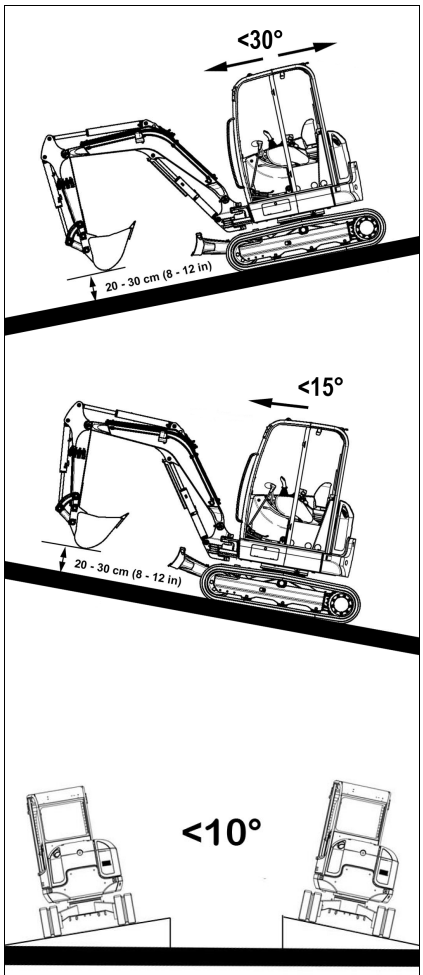


Fig. 104

Uphill and downhill travel (boom on downhill side)

- Raise the boom 20-30 cm (8-12 in) off the ground and align it at the center of the machine.
- Do not exceed the maximum angle of inclination of 30°.

Uphill travel (boom on uphill side)

- Raise the boom 20-30 cm (8-12 in) off the ground and align it at the center of the machine.
- Do not exceed the maximum angle of inclination at 15°.

Lateral slope travel

- Raise the boom 20-30 cm (8-12 in) off the ground and align it at the center of the machine.
- Do not perform machine travel on slopes with a lateral angle of inclination over 10°.

Working with lateral inclination



Fig. 105

On lateral inclination, pile up material to create a horizontal, firm and level standing surface.

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Parking the vehicle

WARNING

Crushing hazard due to vehicle rolling away under its own weight after parking it!

Serious injury or death can be caused by not securing the vehicle.

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

► Secure the machine accordingly (for example with chocks).

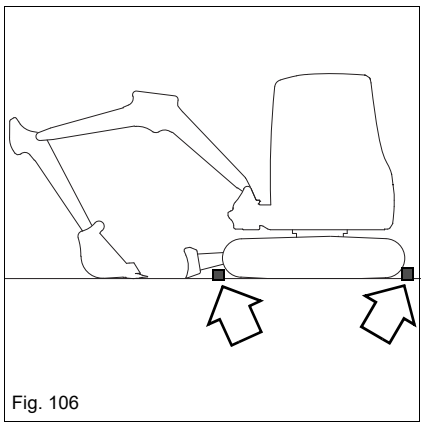


Fig. 106

1. Park the vehicle on firm, level, and horizontal ground.
2. Position the boom straight ahead at the center of the vehicle.
3. Lower the boom and the stabilizer blade to the ground.
4. Stop the engine.
5. Releasing pressure in the hydraulic system.
6. Remove the starting key and carry it with you.
7. Raise the control lever base.
8. Close and lock all covers.
9. Secure the tracks accordingly (for example with chocks, blocks) as shown in *Fig. 106*.

Information

In order to prevent the formation of condensation water, fill up the fuel tank nearly completely at the end of each working day.

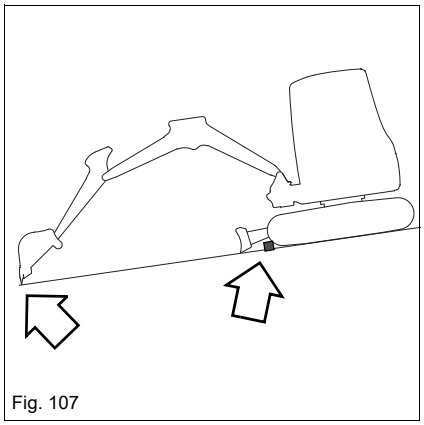


Fig. 107

Parking the vehicle on slopes

If parking the vehicle on a slope cannot be avoided, observe the following in addition:

- Position the boom on the downhill side of the vehicle and firmly press the attachment into the ground.
- Place stabilizer blade on the downhill side.
- Press the stabilizer blade against the ground.
- Secure the vehicle with wheel chocks (see *Fig. 107*).

5.5 Differential lock

Not available.

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5.6 Lights/signaling system

WARNING

Accident hazard due to blinded motorists!

Working lights can blind motorists. This can cause serious injury or death.

- ► Stop vehicle operation if motorists are blinded.
- ► Take up operation again only when sufficient illumination of the working area is ensured without blinding motorists.

Working lights

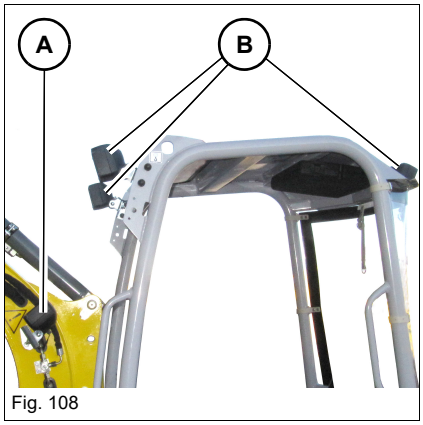


Fig. 108

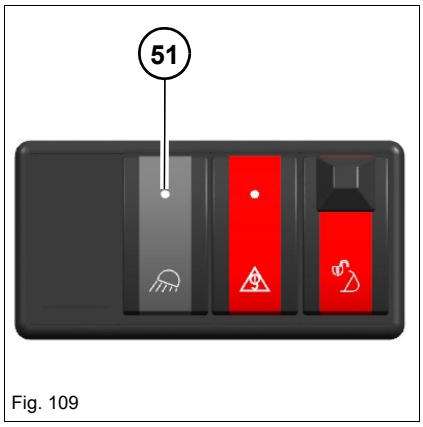


Fig. 109

Position	Description
A	Boom light
B	Front and rear roof lights (option)

Information

With the **roof-mounted spotlight** option, all work lights are switched on and off together.

The switch is located on the control lever base.

Position	Function	
ON	Press switch **51** down	Working lights switched on, the indicator light in switch **51** illuminates
OFF	Press switch **51** up	Working lights switched off, the indicator light in switch **51** goes out

Information

Switch on the working lights in conditions of poor visibility. If illumination still is not sufficient, use external lights. If this is yet not enough to illuminate the job site sufficiently, stop vehicle operation and only start it again when sufficient illumination can be ensured.

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Horn

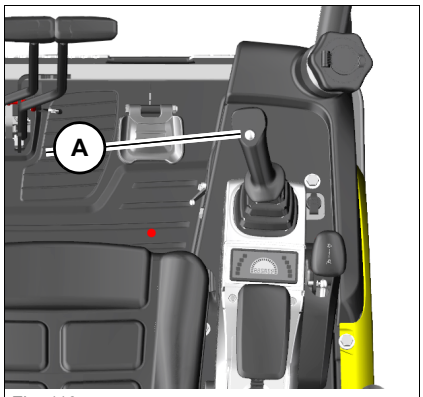


Fig. 110

Press touch control **A** on the right-hand control lever to actuate the horn.

Rotating beacon (option)


Fig. 111

The rotating beacon has a magnetic base and is attached to the cabin roof. The electric power supply has a 12 volt connection **A.**

Information

Wrap the power cable around the right A-column.

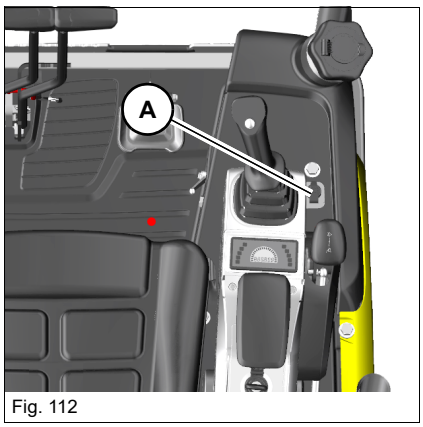


Fig. 112

Information

Observe the national and regional regulations.

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Travel signal (option)

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

DANGER

Accident hazard during forward/backward vehicle operation!

Serious crushing hazard causing death or serious injury may result.

- ► Do not allow anyone to stay in the danger zone.
- ► Despite the traveling signal, the danger zone must also be monitored visually.
- ► If the travel signal does not sound, stop vehicle operation immediately and contact a Wacker Neuson service center. Follow the relevant national and regional regulations.

5.7 Wiper/wash system

Not available.

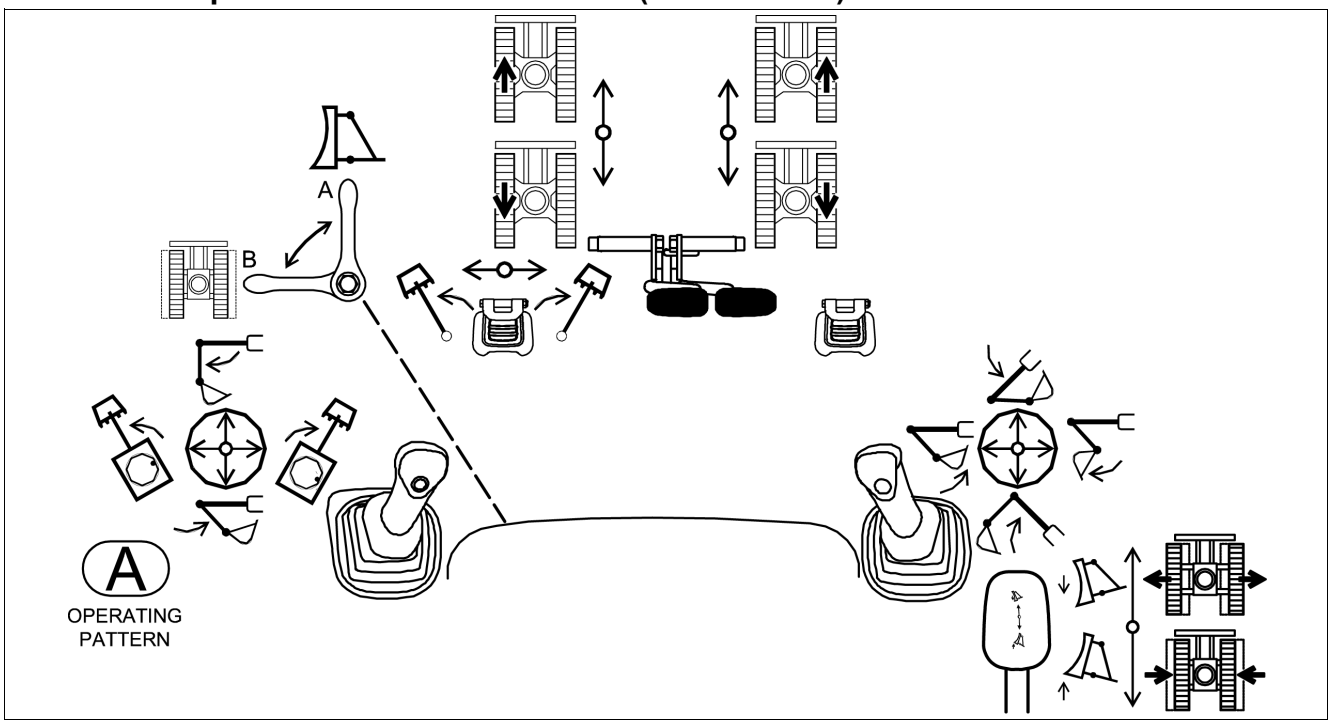
5.8 Heating, ventilation and air conditioning system

Not available.

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5.9 Work hydraulics

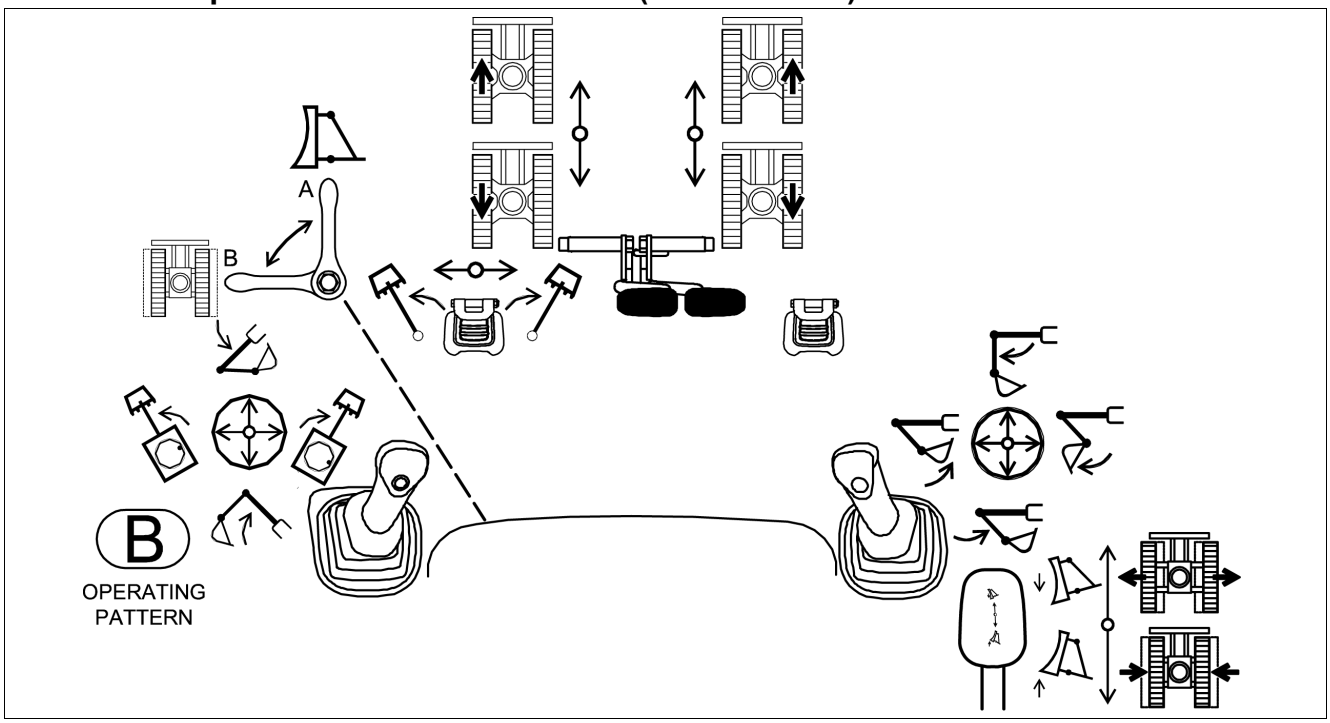
Overview of pedals and control levers (ISO control)



Symbol	Description	Symbol	Description
	Left track (forward)		Right track (forward)
	Left track (reverse)		Right track (reverse)
	Extend stick		Swivel upper carriage to the right
	Retract stick		Swivel upper carriage to the left
	Swivel boom to the right		Swivel boom to the left
	Lower the boom		Tilt out the bucket
	Raise the boom		Tilt in the bucket
	Lower stabilizer blade		Raise stabilizer blade
	ISO controls		

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Overview of pedals and control levers (SAE control)



Symbol	Description	Symbol	Description
	Left track (forward)		Right track (forward)
	Left track (reverse)		Right track (reverse)
	Extend stick		Swivel upper carriage to the right
	Retract stick		Swivel upper carriage to the left
	Swivel boom to the right		Swivel boom to the left
	Lower the boom		Tilt out the bucket
	Raise the boom		Tilt in the bucket
	Lower stabilizer blade		Raise stabilizer blade
B OPERATING PATTERN	SAE controls		

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Rotating the upper carriage

WARNING

Crushing hazard due to rotating range of vehicle!

Persons in the rotation range of the vehicle can be seriously injured or killed.

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

NOTICE

Possible damage to vehicle when working in the immediate vicinity of walls, parts of buildings or other obstacles.

► Ensure that there are no obstacles is in the danger zone.

Information

As long as the hydraulic fluid has not reached its operating temperature, the upper carriage can continue moving after releasing the control lever. Operate the control lever carefully in a cold operating state.

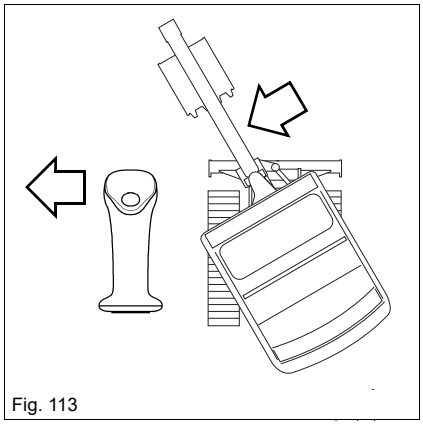


Fig. 113

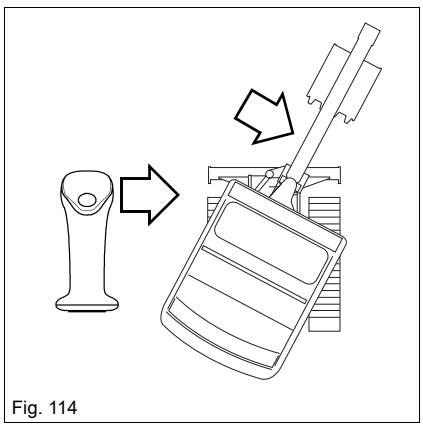


Fig. 114

Rotating the upper carriage	Position
To the left	Push the control lever on the left to the left
To the right	Push the control lever on the left to the right

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Hydraulic swivel unit brake:

Normal braking: release the control lever.

Maximum braking: press the control lever in the opposite direction until the upper carriage is at a standstill.

ISO/SAE controls (option)

The standard equipment of the vehicle includes ISO controls. SAE controls are available as an option. This results in a different control lever operation

WARNING

Accident hazard due to modified control mode!

Modified controls can cause incorrect operation, and serious injury or death.

- ► Before starting work, check the selected control type.
- ► Always secure the wing nut on the reversing valve.
- ► Do not operate the machine with a defective wing nut. Contact a Wacker Neuson service center.

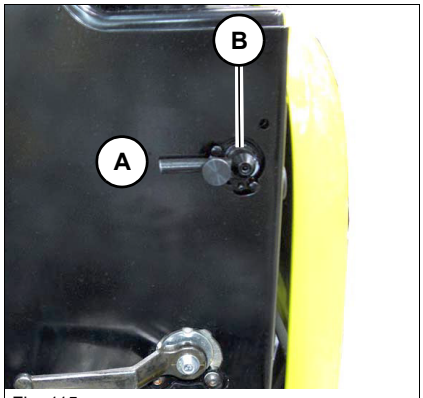


Fig. 115

The reversing valve is located at the left under the operator's seat.

Wiring diagram	Controls
A	ISO controls
B	SAE controls

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Dozer blade

WARNING

Crushing hazard due to unintentional actuation!

Unintentional actuation can cause serious injury or death.

- ► Raise the control lever base.
- ► Lower the stabilizer blade to the ground after the work shift.
- ► Do not allow anyone to stay in the danger zone.

NOTICE

Lowering the stabilizer blade too deeply into the ground can create increased resistance.

- ► Slightly raise the stabilizer blade. The clearance between the stabilizer blade and the ground should be about 1 cm (0.4 in).
- ► Check the stabilizer-blade position before performing vehicle travel.

Information

In order to achieve the best possible stability, lower the stabilizer blade.

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

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Position	Function
1	The dozer blade is actuated.
2	The telescopic travel gear is actuated.

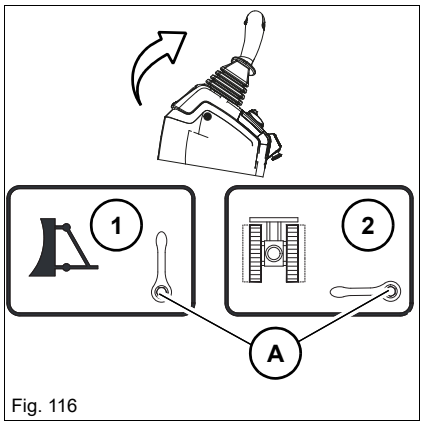
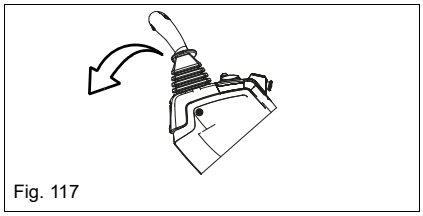


Fig. 116

1. Raise the control lever base.
2. Make sure that the lever **A** located to the left under the operator's seat is in position **1**.


Fig. 117

3. Lower the control lever base.

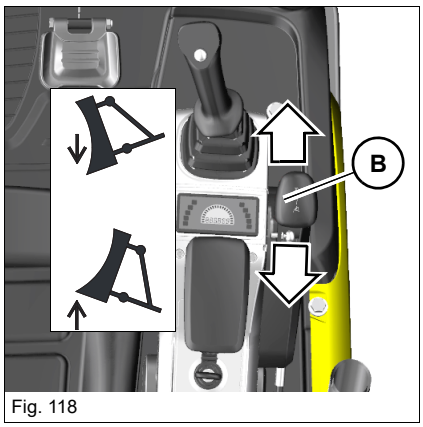


Fig. 118

4. Set the dozer blade to the desired position:

Function	Position
Raise stabilizer blade	Pull lever **B** backward
Lower stabilizer blade	Push lever **B** forward

Information

In order to ensure maximum stability during work:

► Only perform work with an extended telescopic travel gear.

► Lower the stabilizer blade and turn out the extensions.

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Changing the width of the stabilizer blade

NOTICE

Damage to machine when travelling through passages.

► The dozer blade and telescopic travel gear must have the same width.

Reducing the width of the stabilizer blade

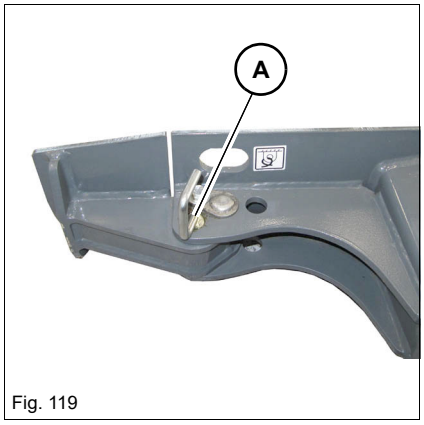


Fig. 119

1. Raise the dozer blade a little.
2. Shut off the engine and store the ignition switch key safely.
3. Pull out the bolts **A** left and right.

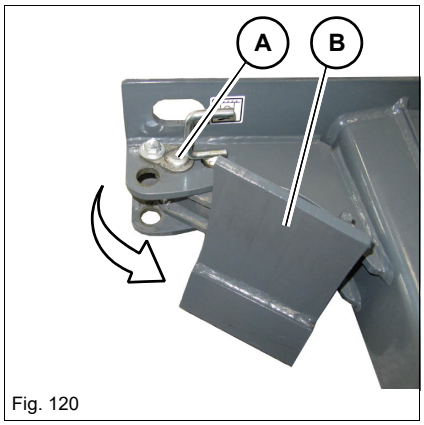


Fig. 120

4. Screw in the dozer blade preparation **B** left and right.
5. Insert the bolts **A** left and right.

Increasing the width of the stabilizer blade

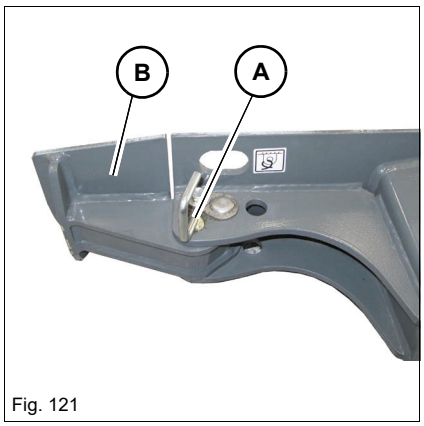


Fig. 121

1. Start the engine.
2. Raise the dozer blade a little.
3. Pull out the bolts **A** left and right.
4. Fold out the dozer blade preparation **B** left and right.
5. Insert the bolts **A** left and right.

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Telescopic travel gear

WARNING

Crushing hazard due to tipping over of vehicle!

A tipping vehicle can cause serious injury or death.

- ► Only perform work with an extended telescopic travel gear.
- ► Performing machine travel with a retracted telescopic travel gear is only allowed for machine travel over very short distances through passages. Pay attention to the reduced stability.
- ► Raise the boom about 20 – 30 cm (8 – 12 in) off the ground and position it straight ahead at the center of the machine.
  If a hose bursts on the telescopic cylinder, lower the boom immediately to prevent the machine from tipping over.
- ► Extend and retract the travel gear only on horizontal, level and firm ground.
- ► Retract or extend the telescopic travel gear completely.

WARNING

Danger of crushing when retracting the telescopic travel gear!

Retracting and extending the telescopic travel gear can cause serious crushing of body parts.

- ► Do not allow anyone to stay in the danger zone.
- ► Retract or extend the telescopic travel gear completely.

NOTICE

Damage to machine when travelling through passages.

- ► The dozer blade and telescopic travel gear must have the same width.

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Position	Function
1	The dozer blade is actuated.
2	The telescopic travel gear is actuated.

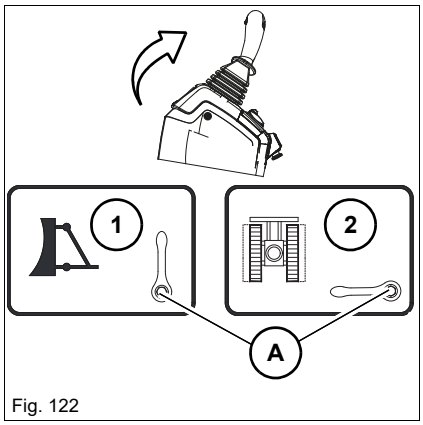
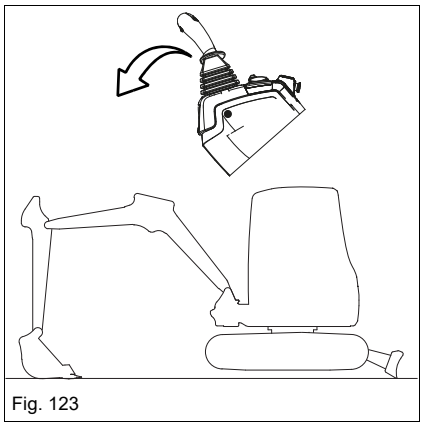


Fig. 122

1. Raise the control lever base.
2. Make sure that the lever **A** located to the left under the operator's seat is in position **1**.


Fig. 123

3. Lower the control lever base.
4. Using the boom and dozer blade, raise the vehicle so that it is no longer in contact with the ground and no foreign body is in the travel gear during extension or retraction.

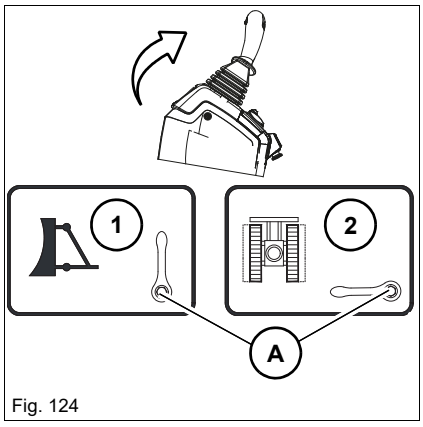
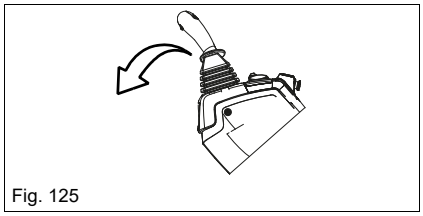


Fig. 124

5. Raise the control lever base.
6. Set lever **A** in position **2**.


Fig. 125

7. Lower the control lever base.

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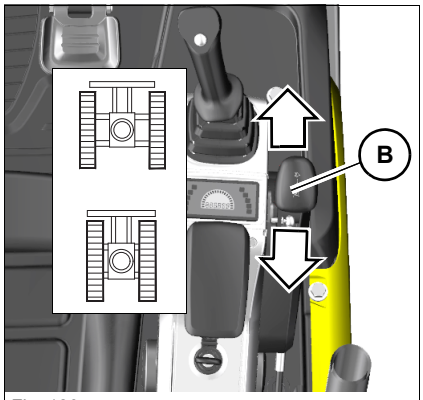


Fig. 126

8. Set the travel gear to the desired position.

Telescopic travel gear	Position
Extend	Push lever **B** forwards.
Retract	Pull lever **B** backward

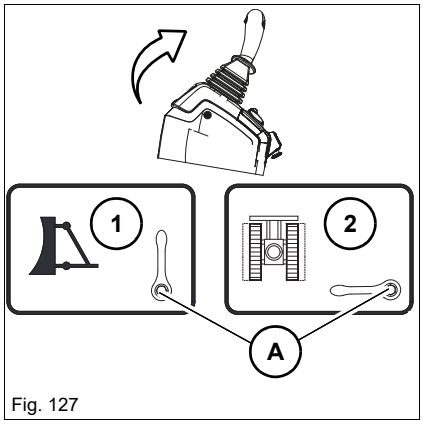


Fig. 127

9. Raise the control lever base.
10. Set lever **A** in position **1**.

Information

In order to ensure maximum stability during work:

- ► Only perform work with an extended telescopic travel gear.
- ► Lower the stabilizer blade and turn out the extensions.

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Proportional controls (option)

The proportional controls allow to continuously adjust the oil flow for the attachment.

Actuate gate **A** to the left or right.

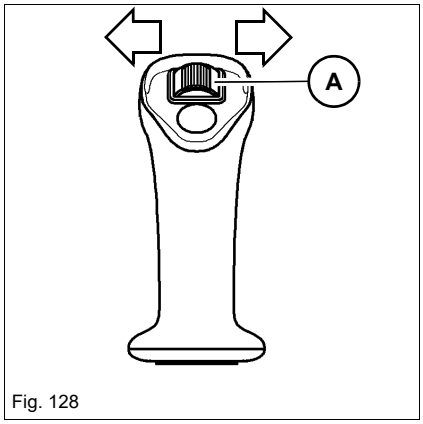


Fig. 128

Set the desired flow rate with the rotary switch **B**.

The proportional control is only available for control circuits AUX II and AUX III.

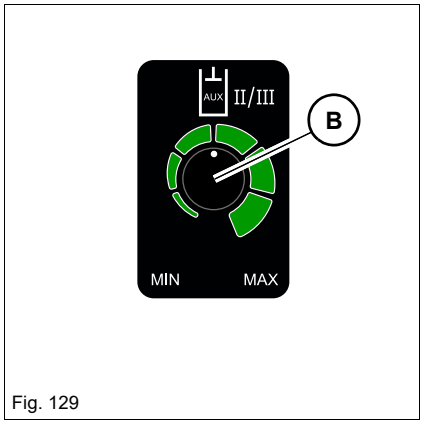


Fig. 129

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Hammer operation

Only break in the prescribed work area with shatter protection.

– *see chapter " Shatter protection (option)" on page 4-14*

The machine is not certified for demolition work according to EN 474-5.

A front guard cannot be attached.

WARNING

Danger of piercing/penetration by objects from the front!

Work involving risk of piercing/penetrating by objects from the front can cause accidents with serious injury or death.

- ► During operation, all persons must stay clear of the job site of the vehicle.
- ► Observe the mandatory limits of the work area.
- ► Do not hammer horizontally or upward.
- ► Only break with the attached shatter protection.

WARNING

Accident hazard due to tipping over of vehicle!

A tipping vehicle can cause serious injury or death.

- ► During operation, all persons must stay clear of the job site of the vehicle.
- ► The vehicle can lose its balance and tip over if a hammer or other heavy attachment is used.
- ► Never turn, lower or set down the attachment abruptly.
- ► Do not extend or retract the boom abruptly.
- ► Do not use the impact force of the attachment to perform demolition work. Broken or falling pieces can cause serious injury.
- ► Use a hammer only at vehicle standstill.

Information

In combination with Powertilt, only use the smallest possible released hydraulic breaker.

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Working with a hydraulic hammer

NOTICE

In order to avoid damage to the vehicle or hydraulic hammer, observe the following points:

- ► Observe the Operator's Manual of the hydraulic hammer.
- ► Do not hammer horizontally or upward.
- ► Do not use the hammer to raise loads.
- ► Do not hit the hammer against rocks, concrete, etc.
- ► Do not hammer in the same spot uninterruptedly for more than 15 seconds.
- ► Do not raise the vehicle with the boom.
- ► Do not work with fully extended cylinders or arm system. Do not pivot the Powertilt unit beyond 30° during breaker operation, otherwise the load on the boom increases tremendously.
- ► Stop vehicle operation immediately if a hydraulic hose moves back and forth in an unusual manner. The pressure accumulator could be malfunctioning. Contact a Wacker Neuson service center and have the malfunction rectified immediately.
- ► Do not use the impact force of the attachment to perform demolition work. Broken or falling pieces can cause damage to the equipment.

Job site

Work range height **A**: 120 cm (47 in), **B**: 50 cm (20 in)

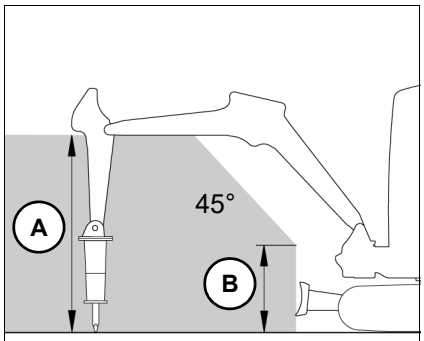


Fig. 130 (symbolic representation)

Figures 130 and 131 refer to work with a Wacker Neuson hydraulic hammer.

Working with another tool can result in a different work area.

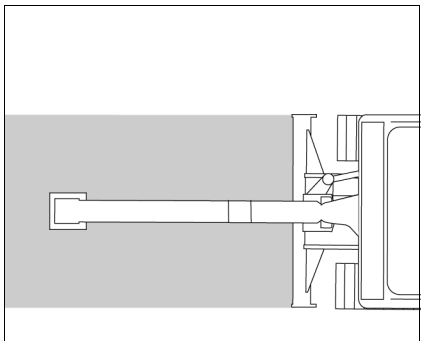


Fig. 131 (symbolic representation)

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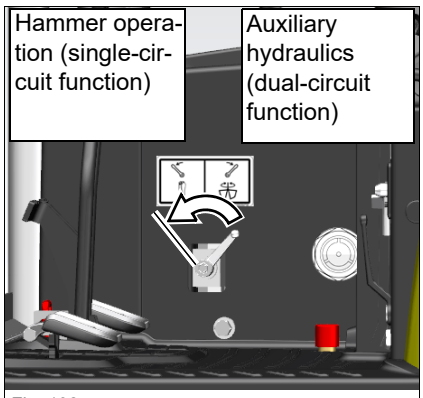


Fig. 132

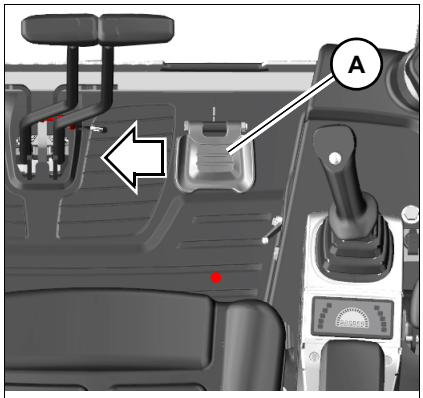


Fig. 133

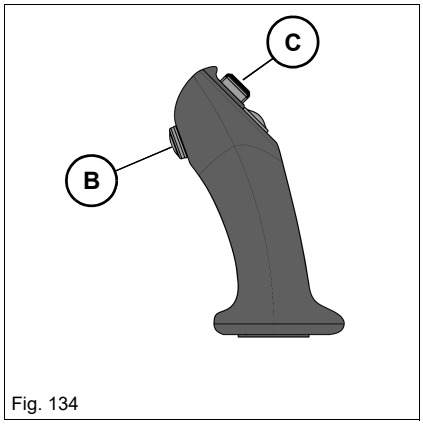


Fig. 134

Switch over to breaker operation:

Set the ball valve as shown.

Hammer operation	Position
Switch on	Actuate the pedal **A** to the left
Switch off	Release the pedal **A**

Breaker operation (proportional control)[1]	Position
Switch on	Hold downtouch control **B** on the right joystick
Switch off	Releasetouch button **B**

1. From serial number WNCE1301TPAL01716

Information

The hydraulic breaker can be operated with the gate **C**.

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Additional control circuit – AUX I (option)

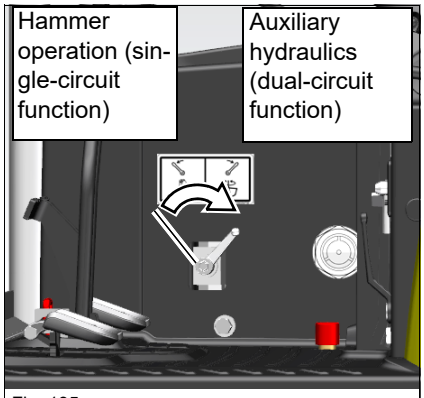


Fig. 135

Changeover to the dual-circuit function. The ball-type cock is located on the right in travelling direction in the machine.

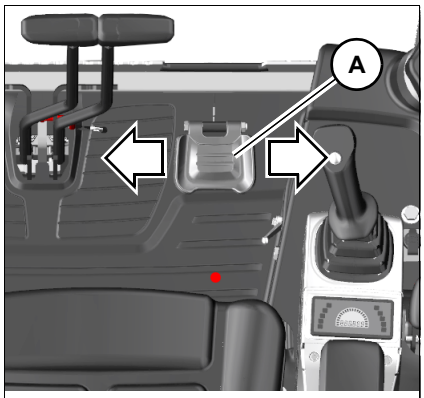


Fig. 136

Operating the additional control circuit

Oil flow	Position
To the line on the left	Actuate pedal **A** to the left
To the line on the right	Actuate pedal **A** to the right

Swiveling the boom

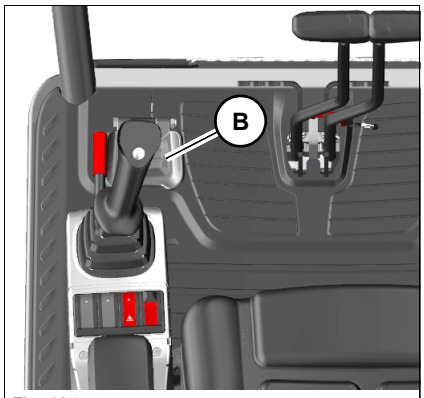


Fig. 137

Boom	Position
Swivel to the left	Actuate pedal **B** to the left
Swivel to the right	Actuate pedal **B** to the right

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Additional control circuits

AUX II (option)

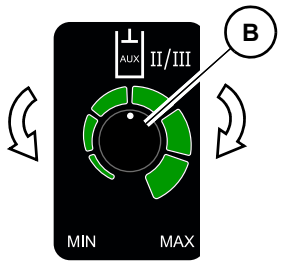


Fig. 138

Set the desired flow rate with the rotary switch **B**.

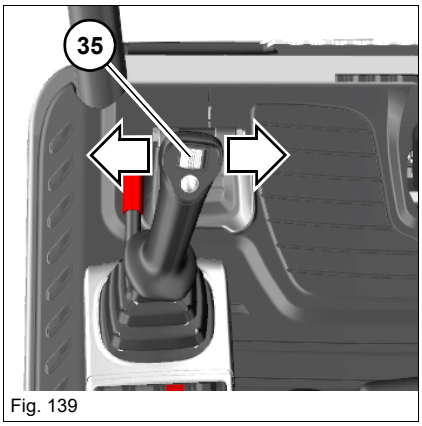


Fig. 139

Oil flow	Position
To the line on the left	Press gate **22** to the left
To the line on the right	Press gate **22** to the right

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Powertilt – AUX III (option)

WARNING

Crushing hazard due to rotating movements of the Powertilt unit!

Rotating the Powertilt unit can cause serious injury or death.

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

Information

For more information, see **Easy Lock/Powertilt with Easy Lock** Operator's Manual.

Information

The Powertilt unit may only be installed and removed by a Wacker Neuson service center!

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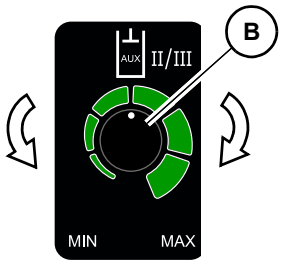


Fig. 140

Set the desired flow rate with the rotary switch **B**.

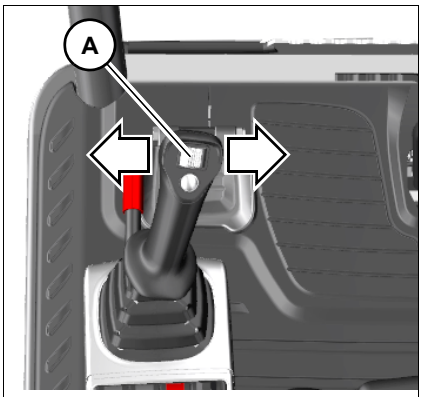


Fig. 141

Actuating the Powertilt unit

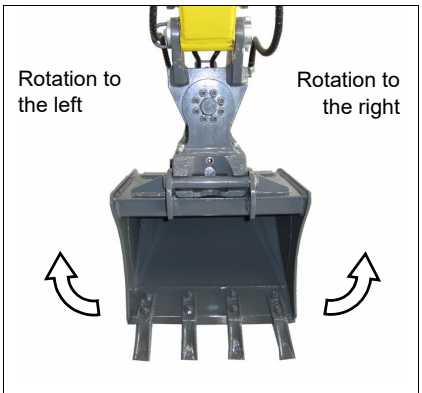


Fig. 142

Function[1]	Operation
Rotation to the left	Press rocker switch **A** to the left
Rotation to the right	Press rocker switch **A** to the right

1. Depending on the system used or the valid norm, the rotation of direction may differ.

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Lifting gear applications

Lifting gear applications are procedures involving raising, transporting and lowering loads with the help of lifting and fastening gear.

DANGER

Crushing hazard due to tipping over of vehicle!

The vehicle causes serious injury or death when it tips over.

- ► Do not exceed the weights indicated in the load diagrams.
- ► Subtract the weight of the attachment from the weight specified in the relevant load diagram.
- ► Use the vehicle for lifting gear applications only if the mandatory lifting gear and safety equipment is installed, functional and enabled.
- ► The subgrade must be horizontal, even, and have a high load-bearing capacity.
- ► Only work with completely extended telescopic travel gear

WARNING

Risk of vehicle tipping over due to failure to pay attention to the safe load indicator!

Serious injury or death can be caused by a vehicle tipping over.

- ► Reduce the load until both the buzzer and the indicator light on the display element go out.
- ► Observe the load diagrams.

WARNING

Accident hazard due to switched-off or malfunctioning safe load indicator!

Serious injury or death can be caused by a vehicle tipping over.

- ► Switch on the safe load indicator during lifting gear applications.
- ► Operate the vehicle only with an intact safe load indicator.

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NOTICE

Machine damage due to a vehicle tipping over if the weight in the load diagram is exceeded.

► Do not exceed the weights indicated in the load diagrams.

Safe load indicator

The safe load indicator alerts the operator visually and acoustically if the load on the boom is too high.

There are two versions:

- Overload warning device **basic** (option) / **advanced** (option)

Position	basic	advanced
Boom	Hose burst valve	Hose burst valve
Shovel arm	Hose burst valve	Hose burst valve
Stabilizer blade	Hose burst valve	Counterbalance valve

The overload warning device switch is located on the control lever base.

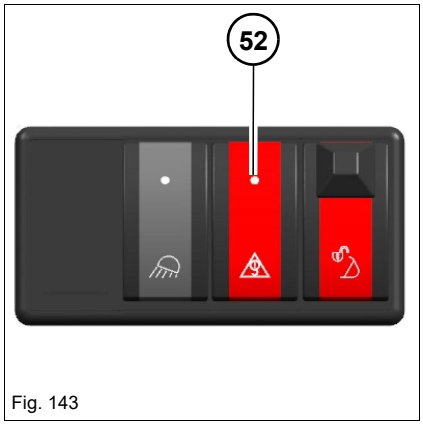


Fig. 143

Switching on the safe load indicator

Press switch **52** on the instrument panel down.

Switching off the safe load indicator

Press switch **52** on the instrument panel forward.

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Functional check of safe load indicator

Always perform a functional check of the safe load indicator before performing lifting gear applications.

1. Start the vehicle.
2. Perform vehicle travel on open terrain.
3. Secure the danger zone.
4. Stop the vehicle.
5. Switch on the safe load indicator.
6. Raise the boom as far as it will go and hold the control lever in this position.

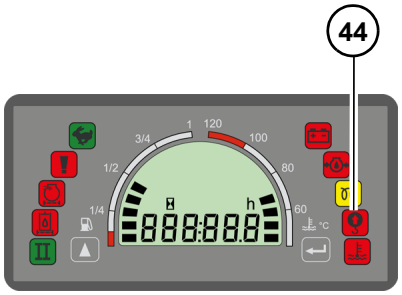


Fig. 144

Warning devices	Result
Buzzer sounds and control lamp lights up **31**	The vehicle may be used for lifting gear applications.
The buzzer does not sound or the control lamp does not light up **31**	The vehicle may not be used for lifting gear applications. Contact a Wacker Neuson service center.

Perform a functional check of the control lever base.

– see chapter " Functional check of control lever base" on page 4-29

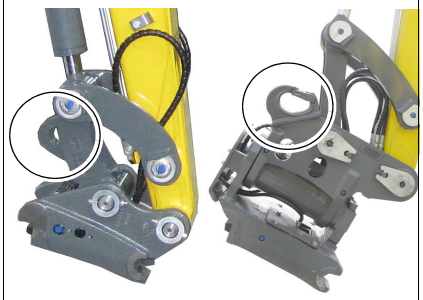


Fig. 145 (symbolic representation)

Only the following lifting gear may be used for lifting gear applications:

- Powertilt/quickhitch with load hook
- Joint rod with lifting eye

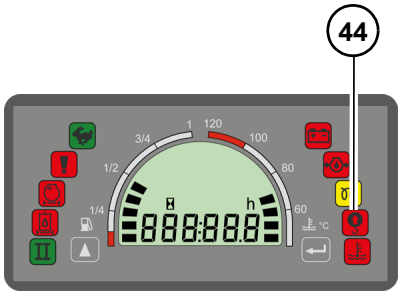


Fig. 146

As soon as control lamp **44** lights up and the buzzer sounds:

- Reduce the load until the buzzer goes out and the symbol disappears.

Suitable equipment for fastening and securing loads must be available.

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Lehnhoff mechanical quickhitch system (optional)

- The quick coupler system and the attachment support must be undamaged and clean.
- Store the Operator's Manual of the mechanical quick coupler system together with the Operator's Manual of the vehicle.
- The described operation does not apply to the face shovel. Contact an authorized workshop for face shovel operation.

WARNING

Crushing hazard when picking up attachments!

If an attachment is not locked correctly, it can come off and cause serious injury or death.

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

► During locking and unlocking procedures, make sure that hands and feet are not crushed.

► Only use undamaged attachments and quick coupler systems.

► Before starting any work and after every locking process, press the attachment to the ground and quickly move it back and forth over just over the ground a few times to check the secure locking.

► Only operate the vehicle with a safely locked attachment.

WARNING

Crushing hazard when attachments are removed!

If an attachment is not removed correctly, it can tip over and cause serious injury or death.

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

► Lower the attachment to level and firm ground ensuring stability.

MS01

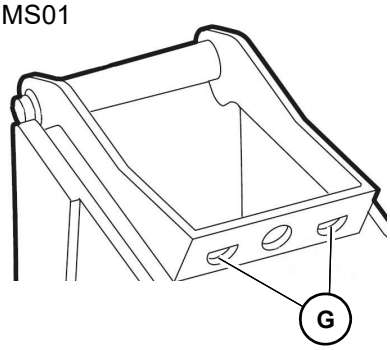


Fig. 147

Support

EZ17: Support for MS01

G: Openings for quick coupler system bolts

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Picking up an attachment

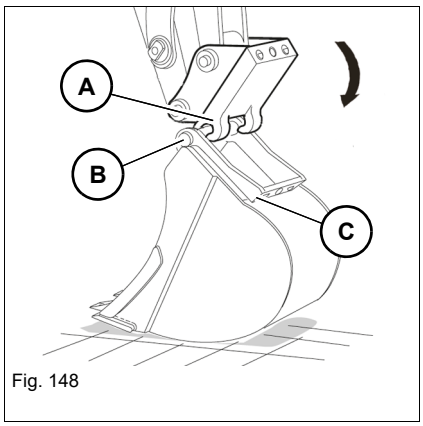


Fig. 148

1. Hook up the quick coupler system **A** in the attachment bolt **B**.
2. Slightly screw in the quick coupler system **A**, lift the shovel arm until the attachment is suspended about 30 cm (12 in) above the ground.
3. Extend the bucket cylinder so that the edge **C** of the attachment touches the quick coupler system.

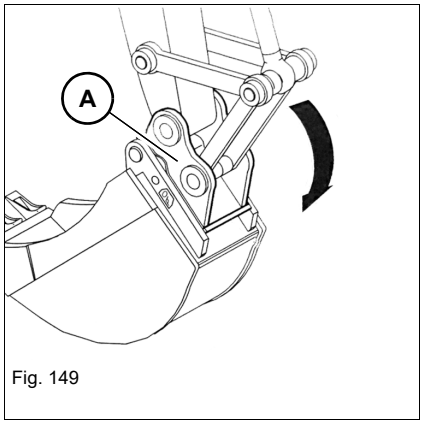


Fig. 149

4. Screw in the quick coupler system **A** until the attachment lies completely on the quick coupler system **A** due to its weight.
5. Shut off the engine and store the ignition switch key safely.

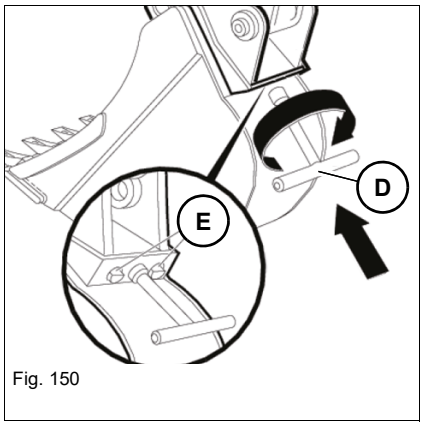


Fig. 150

6. Screw socket wrench **D** clockwise until the bolts **E** completely engage in the openings **G** of the quick coupler system **A**.
   ➥ The quick coupler system is locked.
7. Remove the socket wrench and perform a visual inspection.
8. Start the engine.

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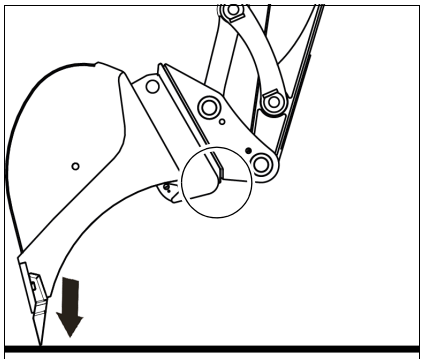


Fig. 151

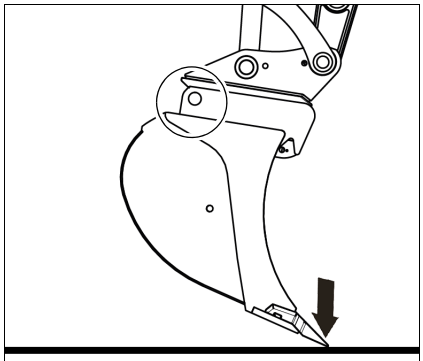


Fig. 152

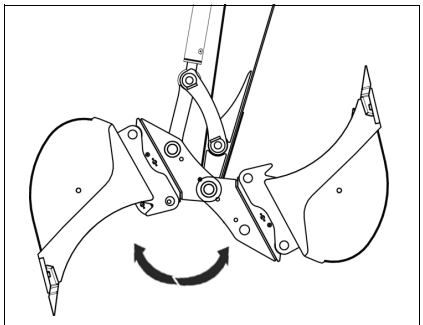


Fig. 153

9. Before starting any work and after every locking process, press the attachment to the ground and quickly move it back and forth over just over the ground a few times.
   ➥ The attachment may not detach from the quick coupler system in the process.

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Setting down an attachment

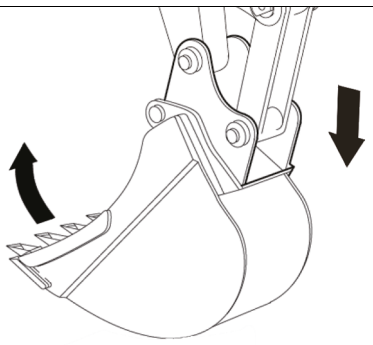


Fig. 154

1. Screw in the attachment and position it at 5–10 cm (2–4 in) above the ground.
2. Shut off the engine and store the ignition switch key safely.

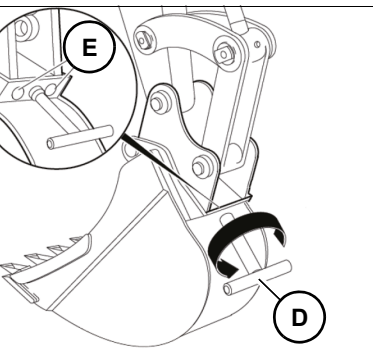


Fig. 155

3. Turn the socket wrench **D** counter-clockwise until the bolts **E** are completely retracted.
   ➥ The quick coupler system is unlocked.
4. Remove the socket wrench.
5. Start the engine.
6. Lower the attachment to level and firm ground ensuring stability.

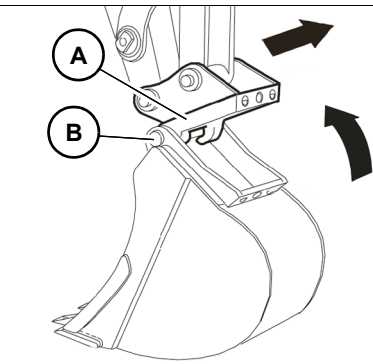


Fig. 156

7. Retract the bucket cylinder and quick coupler system **A** from the attachment bolt **B**.

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Preparation for hydraulic quickhitch (option)

The HSWS preparation is a hydraulic auxiliary control circuit attached to the vehicle boom that was designed, developed and released for the hydraulic quick coupler systems described in this operator's manual.

Wacker Neuson is not liable for injuries or damage if at least one of the following items is not complied with:

- Follow the operator's manual for the hydraulic quickhitch.
- Store the Operator’s Manual of the hydraulic quickhitch together with the Operator’s Manual of the vehicle.
- For non-released quickhitch systems, there may be differences in the operating functions or the operation of the vehicle. Observe the operator's manual of the quickhitch system or the attachment.

Nevertheless, should a non-released HSWS be used, the following points must also be observed:

- If required, modifications on the vehicle (for example additional adhesive labels) or the Operator’s Manual of the vehicle (if operation is different) must be made.
- The intended purpose of the vehicle may be restricted.
- Assembling a hydraulic quick coupler system that does not fit with the vehicle or its interface (e.g. pressure settings) may void the declaration of conformity of the vehicle. Contact a Wacker Neuson service center.
- Assembling a hydraulic quick coupler system to a vehicle that does not fit with the vehicle or its interface (e.g. pressure settings) may void the declaration of conformity of the hydraulic quick coupler. Contact a Wacker Neuson service center.

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Hydraulic quickhitch system Easy Lock (option)

- Attend specific training before putting into operation. Training must be given by authorized technical personnel and must be understood by the operator.
- For safety reasons, the quickhitch must be operated with two control elements. This avoids opening the quickhitch unintentionally during work operation.
- The quick coupler system and the attachment support must be undamaged and clean.
- For more information, see **Easy Lock/Powertilt with Easy Lock** Operator's Manual.
- Store the **Easy Lock/Powertilt with Easy Lock** operator's manual together with the vehicle's operator's manual.

WARNING

Crushing hazard when picking up attachments!

If an attachment is not locked correctly, it can come off and cause serious injury or death.

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

► Only use undamaged attachments and quick coupler systems.

► Check pin **F** must be fully retracted. Otherwise repeat the lock cycle until check pin **F** is retracted.

► Before starting any work and after every locking process, press the attachment to the ground and quickly move it back and forth over just over the ground a few times to check the secure locking.

► Operate the vehicle only with a safely locked attachment.

WARNING

Danger of crushing when attachments are removed!

If an attachment is not locked correctly, it can tip over and cause serious injury or death.

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

► Lower the attachment to level and firm ground ensuring stability.

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WARNING

Danger of crushing due to incorrect operation of the hydraulic quickhitch system!

For system-specific reasons, the quickhitch can also be operated with other hydraulic functions. This can cause serious injury or death.

► Operate the hydraulic quickhitch only with the function **Raise stabilizer blade**.

Picking up an attachment

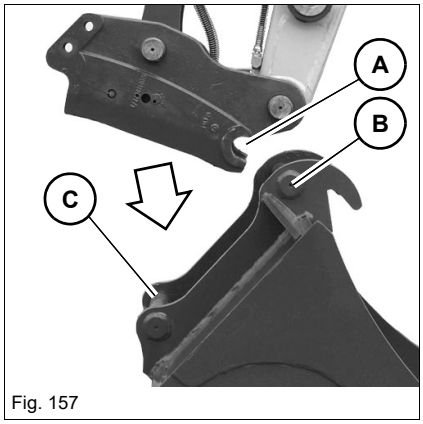


Fig. 157

1. Hook up the quick coupler system **A** in the bolts **B** of the attachment receptacle.
2. Extend the bucket cylinder so that pin **C** of the attachment touches the quickhitch.
3. Check whether the attachment touches the quick coupler system with the bolt **C**.
4. Move the attachment inward completely.

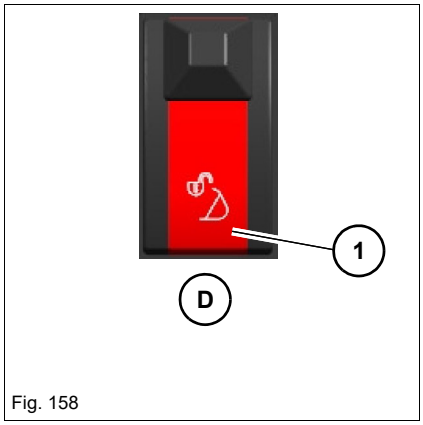


Fig. 158

5. Unlock switch **D** and press it to position **1**.
   ➥ The quickhitch is enabled and the buzzer sounds.

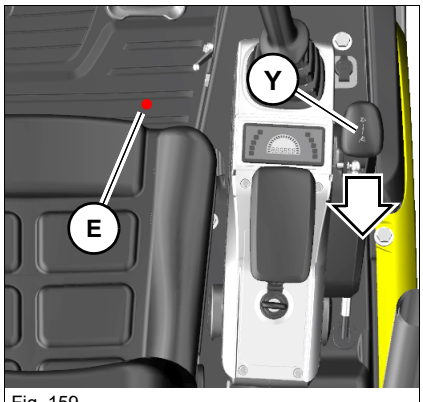


Fig. 159

6. Press and hold the foot-operated touch button **E** and at the same time pull back the **J** dozer blade lever.
   ➥ The quickhitch opens.

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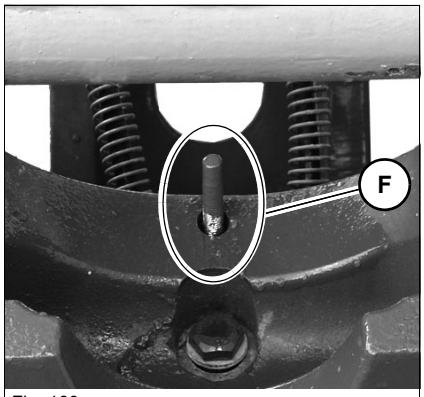


Fig. 160

➥ Check pin **F** must be fully extended.
➥ The attachment engages.

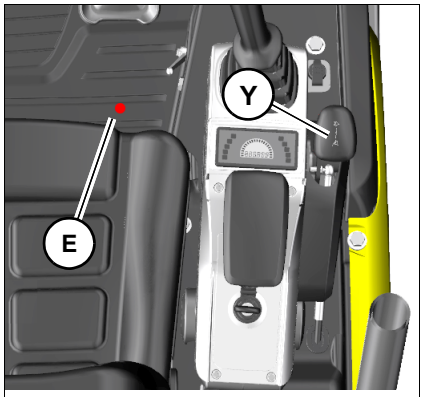


Fig. 161

7. Release the dozer blade lever **J** and foot-operated touch button **E**.
   ➥ The quickhitch closes.

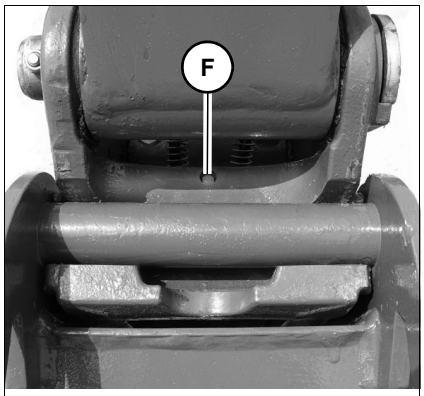


Fig. 162

➥ Check pin **F** must be fully retracted.

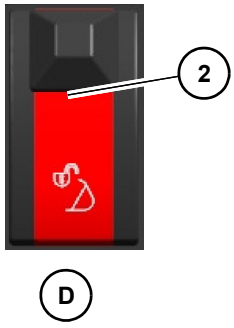


Fig. 163: Easy Lock switch

8. Press switch **D** to position **2**.
   ➥ The quickhitch is disabled and the buzzer does not sound any longer.

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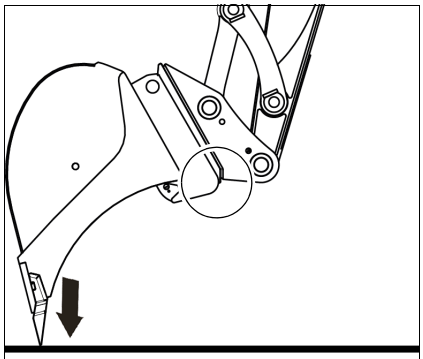


Fig. 164

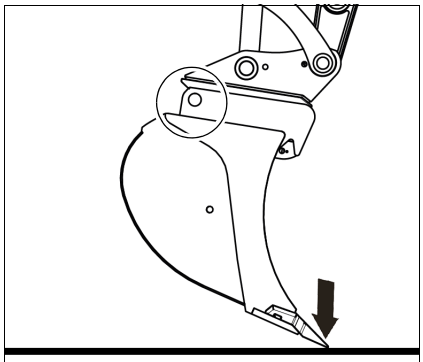


Fig. 165

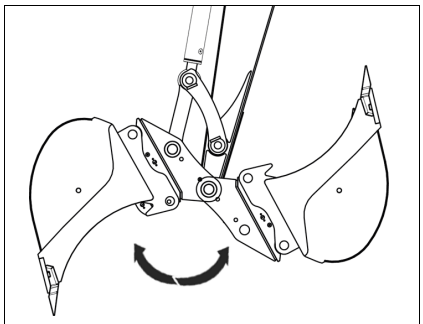


Fig. 166

9. Before starting any work and after every locking process, press the attachment to the ground and quickly move it back and forth over just over the ground a few times to check the secure locking.

➥ The attachment may not detach from the quick coupler system in the process.

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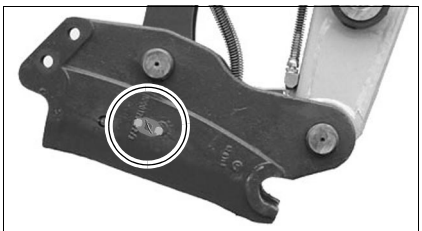


Fig. 167

Manual HSWS bolt lock

Depending on national provisions, the HSWS must also be manually locked according to the hydraulic locking process.

The locking or unlocking is located to the left on the quick coupler system.

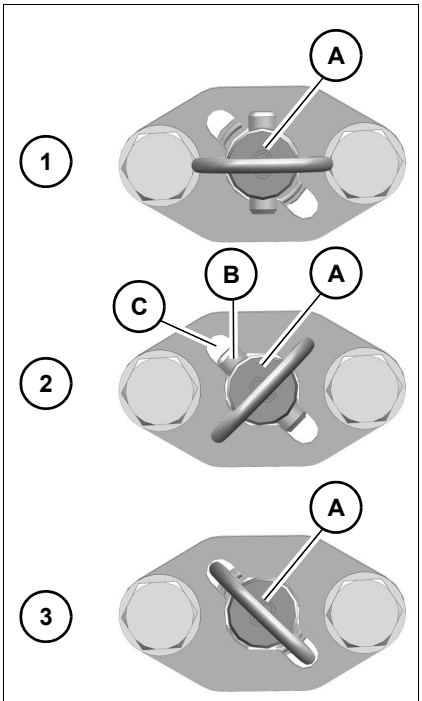


Fig. 168 (symbolic representation)

- Stop the engine and remove the starting key.
- Raise the control lever base.
- Rotate bolt **A** so that the pin **B** fits in the recess **C (2)**.
- Press in the bolt **A** and turn until it is held in its position by the spring **(3)**.
  ➥ The HSWS is also manually locked.

Information

Comply with national provisions.

Information

The bolt positions may deviate in their final position from the figures.

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Setting down an attachment

Manual HSWS bolt unlocking

Depending on national provisions, the HSWS must also be manually unlocked according to the hydraulic unlocking process.

The locking or unlocking is located to the left on the quick coupler system.

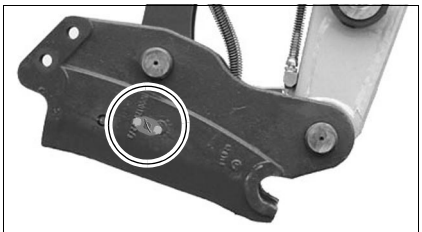


Fig. 169

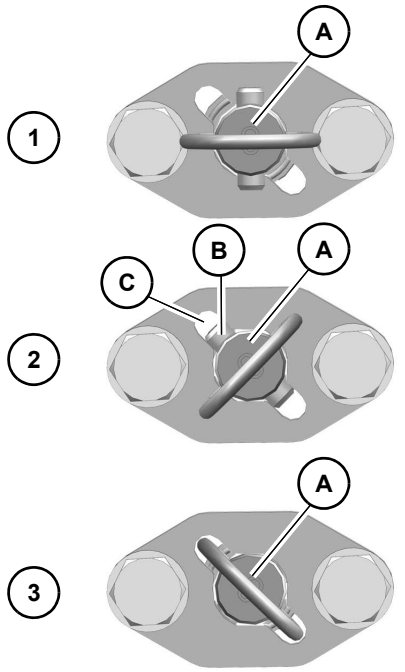


Fig. 170

- Stop the engine and remove the starting key.
- Raise the control lever base.
- Rotate bolt **A** so that the pin **B** fits in the recess **C (2)**.
- Pull out the bolt **A (1)**.
  - ➥ The HSWS is manually unlocked. The attachment is still hydraulically locked.

Information

Comply with national provisions.

Information

The bolt positions may deviate in their final position from the figures.

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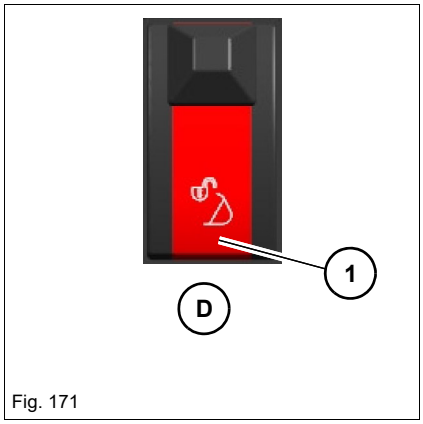


Fig. 171

1. Move the attachment inward completely and position it at 5–10 cm (2–4 in) above the ground.
2. Unlock switch **D** and press it to position **1**.
   ➥ The quickhitch is enabled and the buzzer sounds.

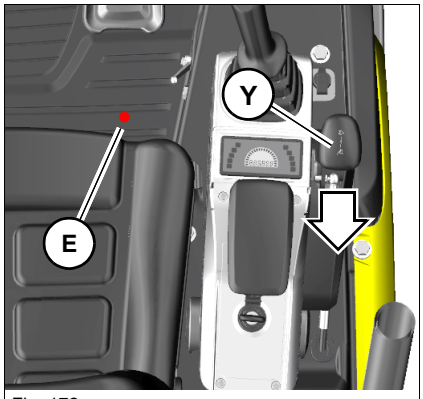


Fig. 172

3. Press and hold the foot-operated touch button **E** and at the same time pull back the **J** dozer blade lever.
   ➥ The quickhitch opens.

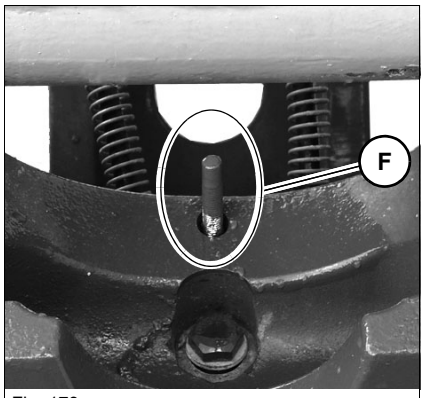


Fig. 173

   ➥ Check pin **F** must be fully extended.

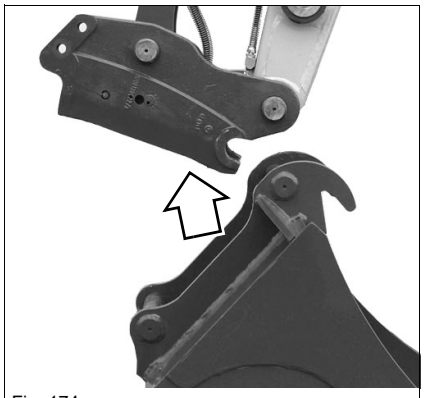


Fig. 174

4. Retract the bucket cylinder.
   ➥ The attachment is lowered to the ground.

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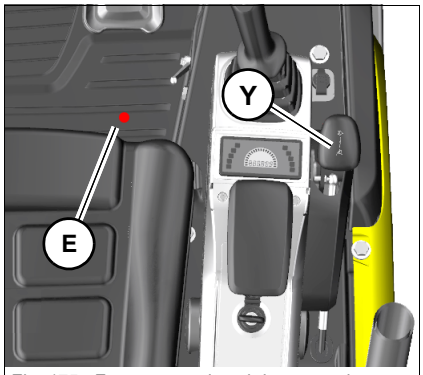


Fig. 175: Foot-operated push button and stabilizer-blade lever

5. Release the dozer blade lever **J** and foot-operated touch button **E**.
   ➥ The quickhitch closes.

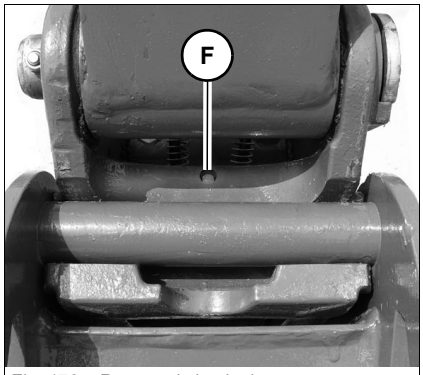


Fig. 176: Retracted check pin

➥ Check pin **F** must be fully retracted.

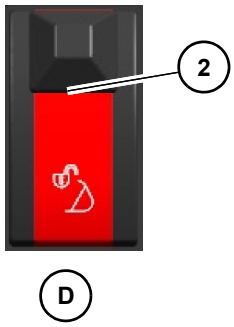


Fig. 177: Easy Lock switch

6. Press switch **D** to position **2**.
   ➥ The quickhitch is disabled and the buzzer does not sound any longer.

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AUX V (option)

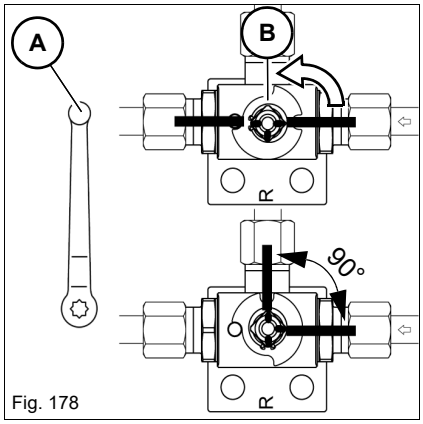


Fig. 178

Grab operation on the left:

1. Fit lever **A** onto the ball-type cock.
2. Set the ball-type cock to position **B**.
   ➥ The 90° notch indicates that grab operation is set.
3. Remove the lever after the changeover.

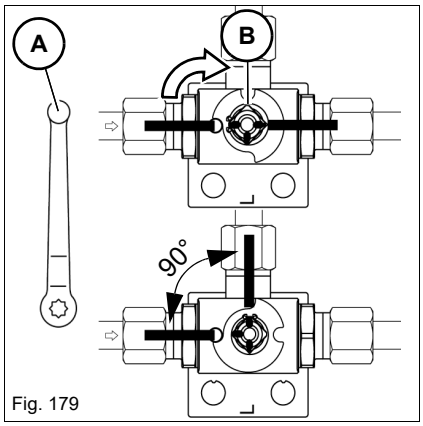


Fig. 179

Right side grab operation:

1. Fit lever **A** onto the ball-type cock.
2. Set the ball-type cock to position **B**.
   ➥ The 90° notch indicates that grab operation is set.
3. Remove the lever after the changeover.

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Connecting and disconnecting hydraulic couplings

1. Stop and park the vehicle. See “Preparing lubrication”.
2. Position the boom straight ahead at the center of the vehicle.
3. Lower the stabilizer blade to the ground.
4. Turn the ignition key to position “**1**”.
5. Move the control lever or the slide switch of the hydraulic circuit in all directions repeatedly.
6. Remove the starting key and carry it with you.

➥ The grab hose couplings can now be coupled and uncoupled.

Hydraulic connections

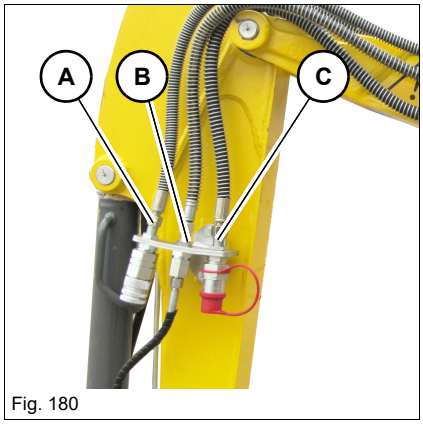


Fig. 180

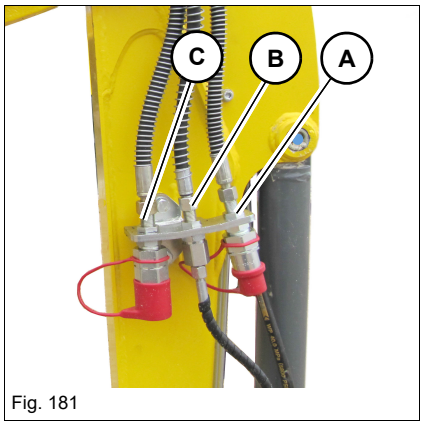


Fig. 181

Connection	Stick (left)
A	AUX V (option)
B	AUX II/AUX III (option)
C	AUX I

Information

Follow the instructions in the Operator’s Manual of the attachment manufacturer for connecting the hydraulics to the attachment.

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Load-retaining function (option)

WARNING

Injury hazard due to fluid escaping under pressure!

Hydraulic oil escaping under pressure can penetrate the skin and cause serious injury or death.

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

► If a hose bursts, move the control elements to neutral position so that as little hydraulic oil as possible escapes.

WARNING

Burn hazard due to hot hydraulic oil!

Hot hydraulic oil can cause burns to the skin.

► If a hose bursts, move the control elements to neutral position so that as little hydraulic oil as possible escapes.

► Wear protective equipment.

Information

Hose burst valves are set at the factory and secured with seals. The correct functioning is no longer ensured and warranty is void if a seal is removed or if the hose burst valve is tampered with.

If a hose bursts, move the control lever or stabilizer blade lever to neutral.

- Overload warning device **basic** (option) / **advanced** (option)

Load-retaining function	basic	advanced
Boom	Hose burst valve	Hose burst valve
Shovel arm	Hose burst valve	Hose burst valve
Stabilizer blade	Hose burst valve	Counterbalance valve

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Proceed as follows after a damage:

1. Stop the vehicle immediately.
2. Stop the engine.
3. Move the control lever or stabilizer blade lever to neutral.
4. Perform emergency lowering if possible – *see chapter “5.12 Emergency lowering” on page 5-62*.
5. Raise the control lever base.
6. Remove the starting key and lock the cabin.
7. Secure the vehicle and the attachment.
8. Contact a Wacker Neuson service center and have the malfunction rectified.

Environment

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

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5.10 Attachments

Picking up

WARNING

Injury hazard due to fluid escaping under pressure!

Hydraulic oil escaping under pressure can penetrate the skin and cause serious injury or death.

- ► Do not allow anyone to stay in the danger zone.
- ► Release the pressure in the hydraulic system before connecting and disconnecting the attachment.
- ► Wear protective clothes.
- ► Always consult a doctor immediately, even if the wound seems insignificant. Hydraulic oil causes blood poisoning.

WARNING

Accident hazard when picking up attachments!

Picking up attachments incorrectly can cause serious injury or death.

- ► Wear protective equipment during installation of the connecting pins.
- ► Do not allow anyone to stay in the danger zone.
- ► Only use attachments that are in perfect condition.
- ► Set and adjust the boom to the correct position with the control levers.
- ► Align the fastening bores in the attachment with a mandrel to make it easier to insert the pin in the bores.
- ► Ensure correct locking with a short and rapid succession of stick and bucket movements as close as possible to the ground.
- ► Operate the vehicle only with a safely locked attachment

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Setting down

WARNING

Crushing hazard when attachments are removed!

If an attachment is not removed correctly, it can tip over and cause serious injury or death.

- ► Do not allow anyone to stay in the danger zone.
- ► Lower the attachment to level and firm ground ensuring stability.
- ► Only remove the pins from the attachment if it is in a stable position.
- ► Lower the attachment to the ground without too much pressure, otherwise the resistance is too high when the pins are removed.

Re-equipping the attachments is described below for a bucket.

Follow the special information when fitting or removing attachments with their own hydraulic functions (for example an offset bucket). Observe the Operator's Manual of the attachment.

Information

The hydraulic system of the vehicle is still pressurized even when the engine is not running. Due to the residual pressure, the hydraulic quick couplers can be removed but not installed back on again.

- ► Releasing pressure in the hydraulic system.

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Releasing pressure in the hydraulic system

1. Stop the vehicle on firm, level, and horizontal ground.
2. Lower the attachment completely to the ground.
3. Lower the stabilizer blade to the ground.
4. Stop the engine.
5. Turn the starting key to position **1**.
6. The control lever base must be lowered.
7. Move the control elements of the respective hydraulic circuit several times in all directions and hold each time as far as it will go for three seconds.
   ➥ The pressure reduces. The hydraulic hoses move briefly.
8. Turn the starting key to position **0**.
9. Uncouple the attachment immediately after the pressure has been released, otherwise pressure can be created again.

Removed attachments with hydraulic connections must not be stored in sunlight to ensure pressure does not build in the lines.

Clean the hydraulic quick couplers before connecting to ensure dirt does not penetrate the hydraulic system.

Re-equipping

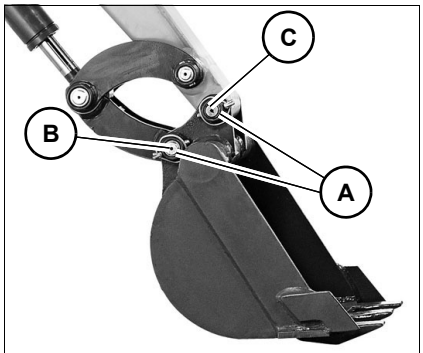


Fig. 182

Removing

1. Lower the bucket to level ground with the flat side facing downward.
2. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
3. Remove linch pins **A**.
4. 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:

1. Start the engine.
2. Slightly raise and lower the boom to take the load off the pin.
3. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
4. Raise the control lever base.
5. Remove the starting key and carry it with you.

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.

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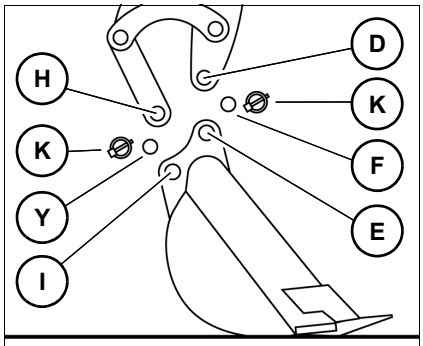


Fig. 183

Mount

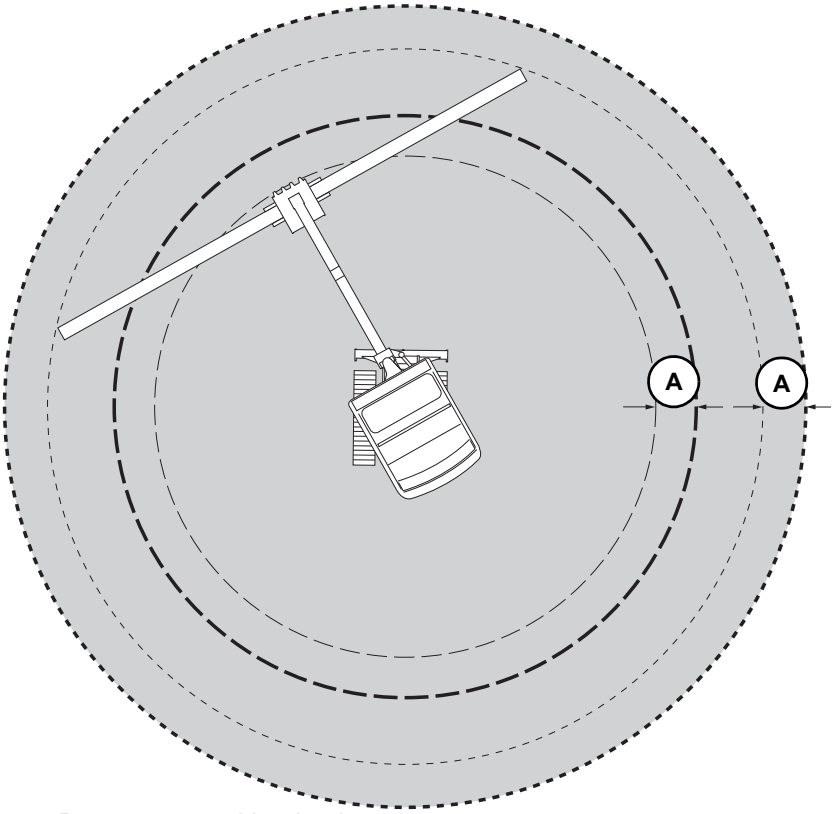
1. Install a bucket only if it is positioned on level ground with the flat side facing downward.
2. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
3. Apply grease to the pins and articulations before inserting them.
4. Start the engine.
5. Straighten the stick so that bores **D** and **E** are flush.
6. Stop the engine. Raise the control lever base.
7. Insert pin **F**.
8. Actuate the stick cylinder until bores **H** and **I** are flush.
9. Stop the engine. Raise the control lever base.
10. Insert pin **J**.
11. Install linch pins **K**.

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5.11 Work operation

Danger zone

- The danger zone is the area in which persons are in danger due to the movements of the vehicle, attachment or load.
- The danger zone also includes the area that can be affected by falling material, equipment or by parts that are thrown out.
- The danger zone on a slope is different from the one on a level surface (secure the load) See chapter **“Operation**, **driving on slopes”**.
- Stop vehicle operation immediately if persons do not stay clear of the danger zone.
- Seal off the danger zone should it not be possible to keep a sufficient safety distance.
- Extend the danger zone sufficiently in the immediate vicinity of buildings, scaffolds or other elements of construction.



Danger zone with a bucket

Danger zone with a bucket and a safety distance of 1.5 m (59 in)

Danger zone with a grab (for example for picking up a pipe)

Danger zone with a grab and a safety distance of 1.5 m (59 in)

Safety distance of 1.5 m (59 in)

A

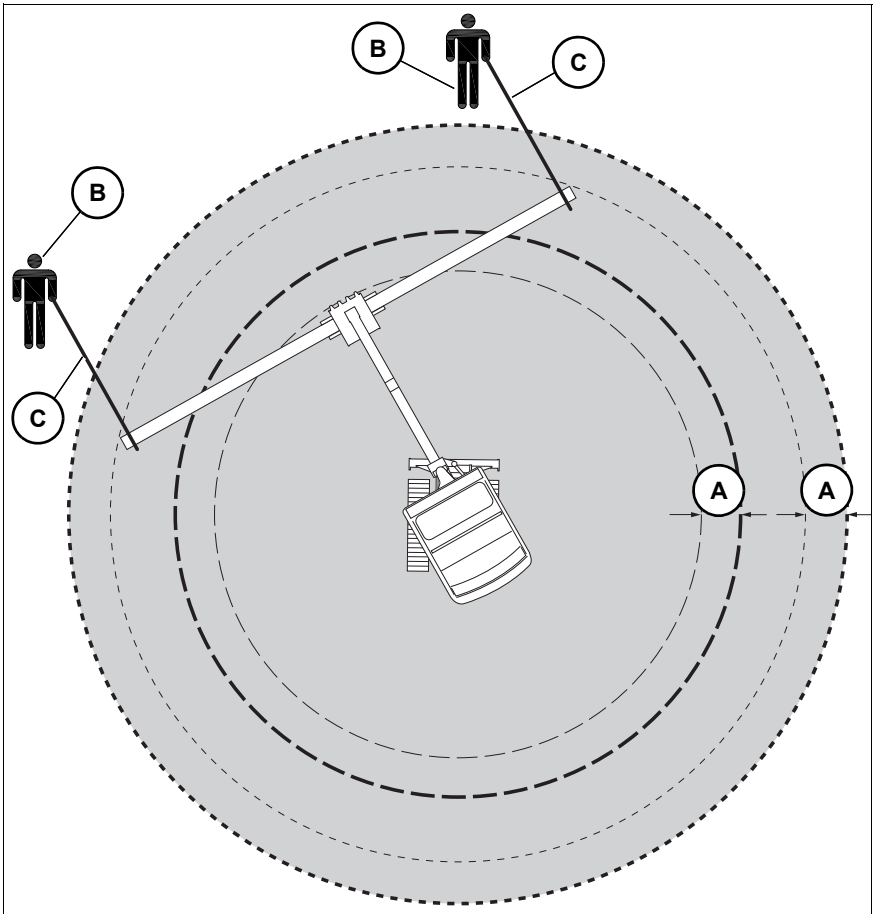
Fig. 184 (symbolic representation)

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Danger zone during lifting-gear applications

In lifting gear applications the load must be stabilized by slingers **(B)** with the help of ropes **(C)**.

Slingers must remain out of the danger zone – *see chapter " Lifting gear applications" on page 5-30*.



Danger zone with a bucket

Danger zone with a bucket and a safety distance of 1.5 m (59 in)

Danger zone with a grab (for example for picking up a pipe)

Danger zone with a grab and a safety distance of 1.5 m (59 in)

Safety distance of 1.5 m (59 in)

A

Fig. 185 (symbolic representation)

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Inadmissible work procedures

Inadmissible operation can damage the vehicle or the attachment.

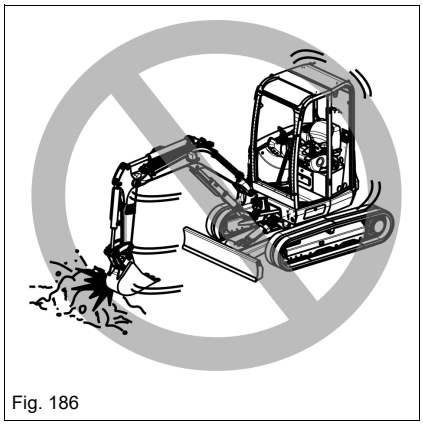


Fig. 186

Working with the swivel force

Do not use the swivel force of the upper carriage to tear down walls or to create level surfaces.

Never ram the attachment into the ground when swiveling the upper carriage.

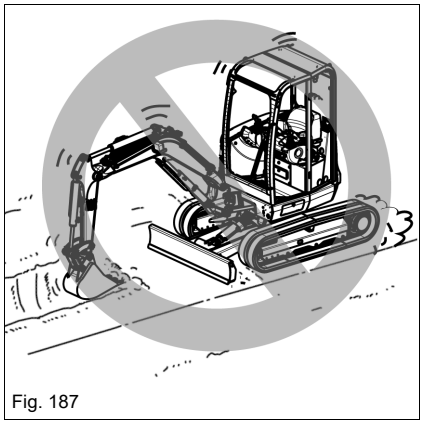


Fig. 187

Working with the drive force

Do not ram the attachment into ground or lower the boom during vehicle travel.

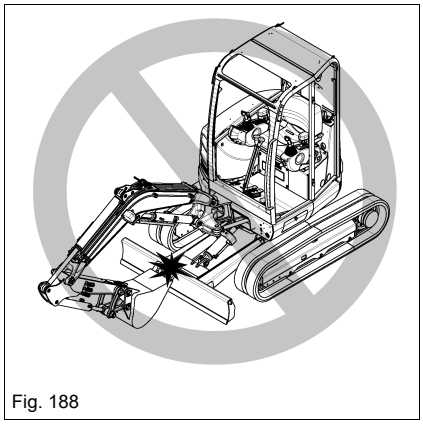


Fig. 188

Retracting the attachment

When retracting the attachment, ensure that it does not touch the stabilizer blade.

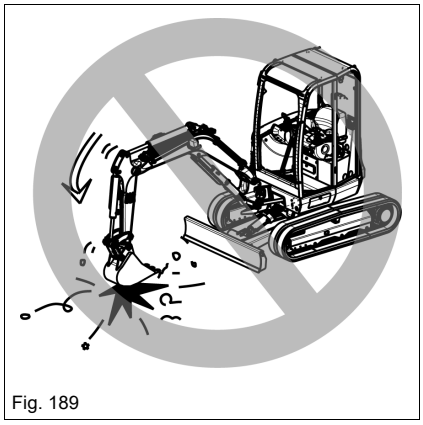


Fig. 189

Working with the falling force by lowering the attachment

Do not use the falling force of the attachment as a hoe, hammer or pile-driver.

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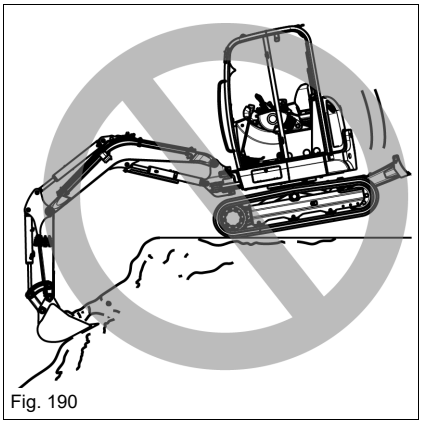


Fig. 190

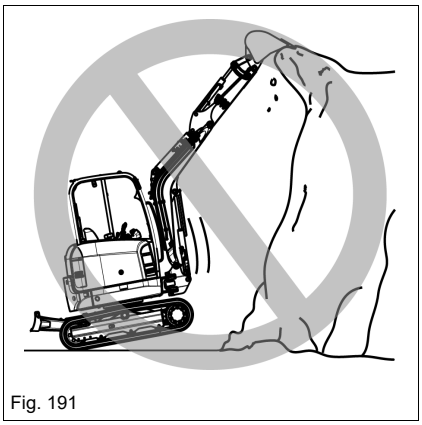


Fig. 191

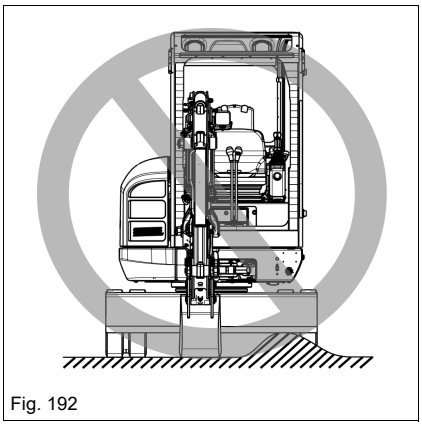


Fig. 192

Working with the falling force by lowering the vehicle

Do not use the dead weight of the vehicle for work.

Use the force of the hydraulic cylinders exclusively.

Fully lowering the stabilizer blade

Apply the full weight of the machine over the entire width of the stabilizer blade when using it for stabilization.

Protecting the stabilizer legs/blade against shocks

The dozer blade or dozer blade cylinder can be damaged if the dozer blade hits against obstacles.

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General information regarding work operation

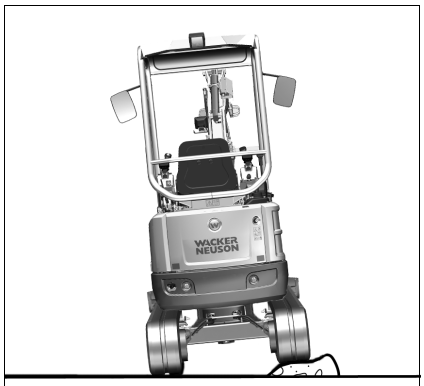


Fig. 193

Machine travel

Performing vehicle travel over obstacles can put a heavy load on the undercarriage and cause damage. Avoid performing vehicle travel over obstacles if possible.

If it cannot be avoided, lower the boom to ground level and travel over the obstacle at low speed.

Traveling in speed range 2

Avoid starting vehicle travel and stopping abruptly as well as changing direction suddenly on rough terrain.

The dozer blade must be at the front during travel speed 2.

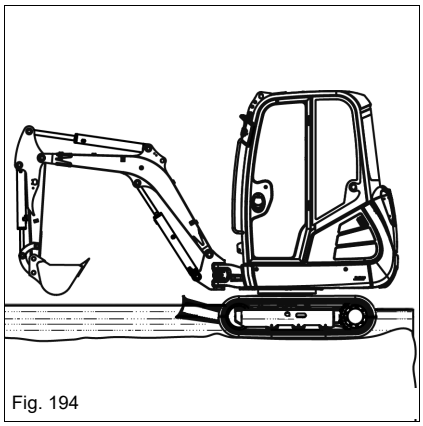


Fig. 194

Operation in water

Water must not reach any further than the upper edge of the tensioning wheel.

Lubricate lubrication points again that were immersed in water for a longer time in order to expel the old grease.

Do not immerse the live ring and upper carriage in the water.

Operation in salt water is prohibited.

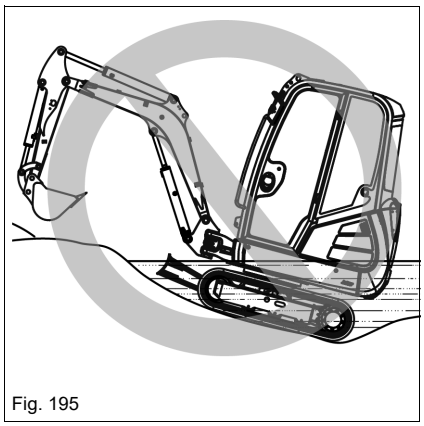


Fig. 195

Do not immerse the live ring and upper carriage in the water.

Operation near the sea

Clean the vehicle regularly when using it in a saline environment.

See chapter **Cleaning and maintenance**.

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Working with the bucket

The following section describes work operations with the vehicle equipped with a backhoe bucket. The backhoe bucket is mainly used for earth-moving applications (digging, loosening, picking up and loading loose or solid material).

Place the stabilizer blade on the side you want to dig.

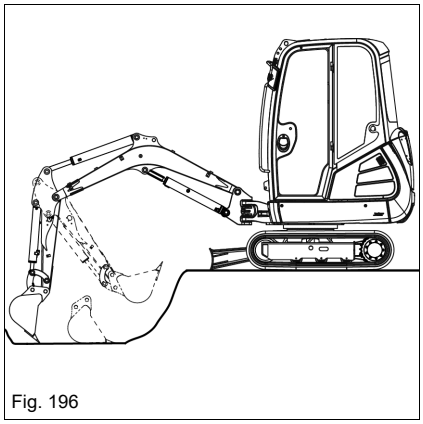


Fig. 196

Bucket position when digging

Perform long, level excavation movements with the stick and the bucket. The maximum excavation force is achieved at an angle of 80 to 120° between the boom and the stick.

1. Penetrate into the ground with the bucket.
2. Lower the stick and at the same time, position the bucket so that the flat lower side of the bucket is parallel with the ground.
3. Move the stick toward the vehicle and tilt in the bucket at the same time.

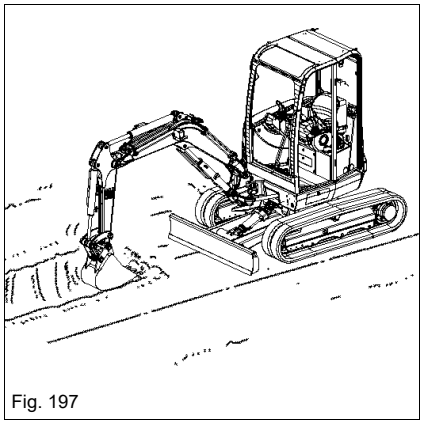


Fig. 197

Working alongside trenches

For a more efficient working method, install a suitable bucket and set the tracks parallel to the trench.

When digging wide trenches, dig the side sections first and then the middle section.

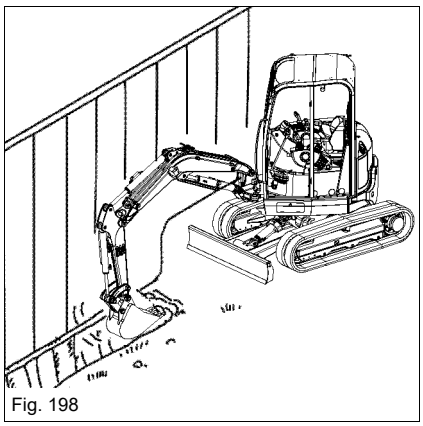


Fig. 198

For excavating laterally in tight spaces, turn the upper carriage and swivel the boom.

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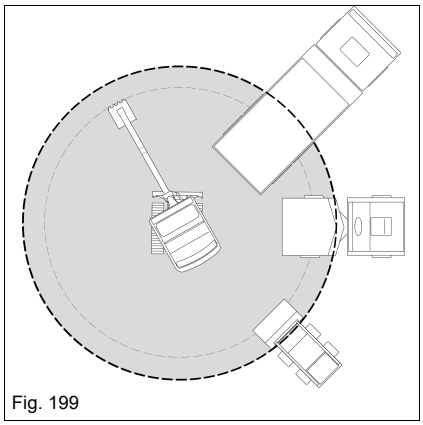


Fig. 199

Loading material

Notes on loading site dumpers:

- Position the site dumper so that its cabin is outside the danger zone of the excavator.
- The loading platform of the truck is loaded by starting at the rear end.
- Keep the swivel angle as small as possible.
- Raise the full bucket to dump height only as you rotate toward the site dumper.
- Tilt out dusty material with the wind behind you to keep the dust away from your eyes, air filters and fans.
- If possible, the site dumper and the working direction of the bucket should form an angle of 45°.

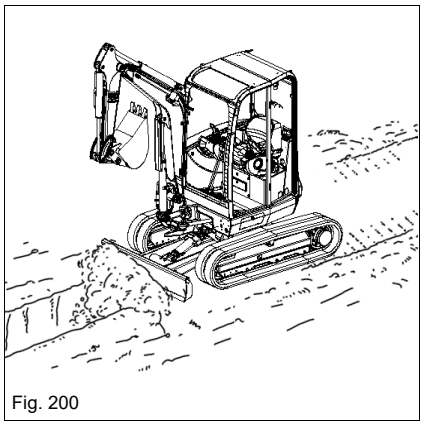


Fig. 200

Grading

The stabilizer blade is used for filling up trenches or grading the ground.

Lower the stabilizer blade to the ground for grading work.

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

➥ The vehicle must not be raised by lowering the stabilizer blade.

➥ Do not dig in the vehicle or let it sink in.

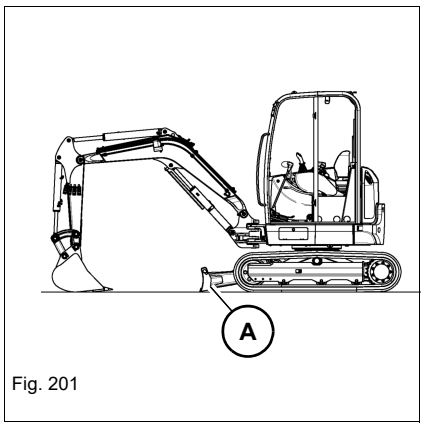


Fig. 201

Digging position

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

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Working on slopes

WARNING

Tipping hazard of machine on slopes!

A tipping vehicle can cause serious injury or death.

► Secure slopes before beginning work. Pay attention to ground conditions, vehicle weight, etc.

► Stabilize the vehicle with the stabilizer blade during excavation work.

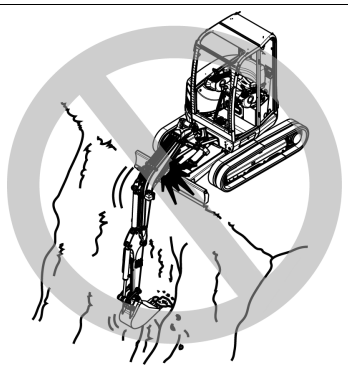


Fig. 202

NOTICE

Lifting arm cylinders can be damaged by improper operation.

► The piston rod must not touch the stabilizer blade.

Hints for digging

When planning and performing digging work, Wacker Neuson recommends 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 drive forward when driving out of the digging area with a fully loaded bucket.
- Perform transport trips downhill with loaded bucket in reverse operation.

Freeing the machine

If the vehicle gets stuck in the ground:

- Tilt out the bucket until the blade is vertical above the ground.
- Lower the boom all the way.
- Slowly tilt out the bucket.
  ➥ The vehicle is pushed backward.
- Reverse slowly.
- Repeat this procedure until the tracks reach firm ground.

Reverse the vehicle away.

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5.12 Emergency lowering

DANGER

Crushing hazard during boom lowering!

Causes serious crushing or injury resulting in death.

- ► Do not allow anyone to stay in the danger zone.
- ► Stop vehicle operation immediately as soon as someone enters the danger zone.

Observe the following during emergency lowering:

1. Turn the ignition key to position “**1**”.
2. Lower the control lever base.
3. Lower the boom completely.
4. Return the joystick to neutral.

Information

Lower the boom immediately after stopping the engine.

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5.13 Options

Drive interlock

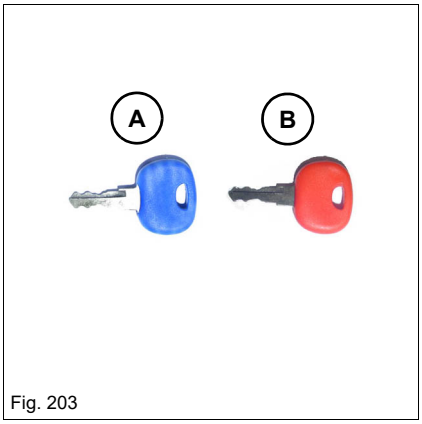


Fig. 203

A = starting key (blue)

For starting the vehicle. Scope of delivery includes 2 keys.

B = master key (red)

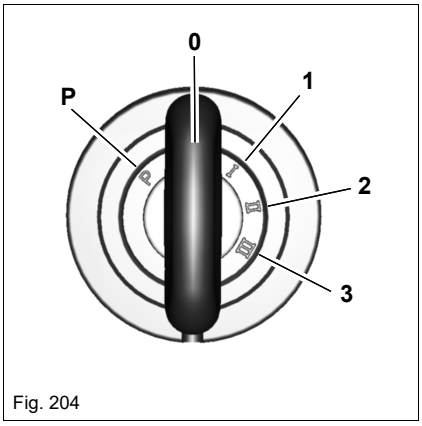


Fig. 204

Coding new starting keys

1. Insert master key **B** in the starter and turn it to position **1** for a maximum five seconds.
2. Remove master key **B**.
3. Keep master key **B** at least 50 cm (20 in) away from the starter.
4. Within 15 seconds, turn starting keys requiring coding to position **1** for at least one second.
5. Repeat step 4 if more starting keys require coding.
   ➥ With this, the coding of the starting keys is completed.

Coding can be performed for a maximum of 10 starting keys.

Information

The procedure is automatically canceled if no key requiring coding is detected by the system within 15 seconds.

Deleting coded keys

Deleting all coded keys is necessary whenever a coded key is lost.

The master key code is not deleted during deletion.

1. Insert master key **B** in the starter and turn it to position **1** for at least 20 seconds.
2. Code the starting keys.

Information

Store the master key in a safe place. It can only be used for coding new starting keys.

A new immobilizer must be installed if the master key is lost.

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Face shovel operation

Wacker Neuson backhoe buckets can also be used for shovel bucket operation.



Fig. 205

NOTICE

The stick can be damaged if it is hit by the bucket base.

► Do not tilt out the bucket completely if it is used as a shovel bucket.

Traileroperation

The machine is not certified for trailer operation.

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5.14 Putting out of operation/back into operation

The specified measures refer to putting the vehicle out of operation and back into operation after more than 30 days.

Putting out of operation temporarily

Store the vehicle indoors if possible.

If the machine has to be stored outdoors, place it on firm ground if possible (for example on concrete), and cover it with a watertight tarp to protect it against humidity.

1. Park the vehicle – *see "Parking the vehicle" on page 5-8*.
2. Clean the engine with a high-pressure cleaner in a suitable place – *see chapter "7.5 Cleaning and maintenance" on page 7-24*.
3. Check the vehicle for leaks and loose nuts, screws and connections.
4. Carefully clean and dry the entire vehicle.
5. Spray an anticorrosion agent onto bare metal parts of the machine (piston rods of hydraulic cylinders, for example).
6. Apply grease to all lubrication points.
7. Fill the fuel tank completely.
8. Check the hydraulic oil and coolant levels, and add hydraulic oil and coolant if necessary.
9. Change engine oil.
10. Remove the battery and store it in a safe place. Charge the battery and perform battery maintenance at regular intervals.
11. Set the fuel cock to **OFF**.
12. Close the air-intake openings of the air filter system and exhaust pipe.

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Putting back into operation

Information

If the vehicle was out of operation over a longer period of time without performing the specified steps, contact a Wacker Neuson service center before putting back into operation.

1. Remove anticorrosion agents from bare metal parts.
2. Install and connect the battery.
3. Open the air-intake openings of the air filter system and exhaust pipe.
4. Check the condition of the air filter elements and replace the elements if necessary.
5. Check the dust valve.
6. Set the fuel cock to **ON**.
7. Turn the starting key to position **1** for 2 minutes to supply the engine with fuel.
8. Check the vehicle for leaks.
9. Lubricate the vehicle according to the lubrication plan.
10. Check all engine/vehicle fluids in the units or reservoirs, and add fluids if necessary.
11. If the machine was out of operation for over 6 months, change the oil in the gearbox, engine, hydraulic oil reservoir and other units.
12. Replace the hydraulic oil filters (return and breather filters) if the machine was out of service for over 6 months.
13. Remove and keep the starting key and fuse **F1** in a safe place.
14. Insert the starting key and make the engine turn 15 seconds.
15. Wait 15 seconds.
16. Make the engine turn another 15 seconds.
17. Remove the starting key and put fuse **F1** back in.
18. Start the engine.
19. Let the engine run at idling speed at least 15 minutes without load.
20. Check the oil levels in all units and add oil if necessary.
21. Check the vehicle for leaks.
22. Avoid operation at maximum engine speed or load for an hour.

Start the machine and ensure that all functions and warning systems work correctly before putting the machine back into operation.

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5.15 Permanently putting out of operation

Disposal

All fluids, lubricants, material, etc., used on the machine are subject to specific regulations. Dispose of different materials and consumables separately and in an environmentally friendly manner.

Disposal may only be performed by a Wacker Neuson service center. Observe the corresponding national guidelines regarding disposal.

Environment

Do not allow environmentally damaging wastes to get into the ground or stretches of water and dispose of them in an environmentally friendly manner.

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

- Machine disposal must be performed in accordance with state-of-the-art standards that apply at the time of disposal.

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Notes:

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6 Transportation

6.1 Towing the vehicle

WARNING

Accident hazard due to incorrect towing!

Incorrect towing can cause accidents and serious injury or death.

- ► Tow the machine away only from the immediate danger zone until it can be loaded.
- ► Only tow the vehicle using suitable towing equipment in connection with suitable towing facilities, such as towing hooks, eyes, etc.
- ► There must be nobody between the vehicles during towing. The lateral safety distance is equal to 1.5 times the length of the towing equipment.
- ► Do not tow the vehicle if it is stuck or on a slope. Load the vehicle.
- ► Wear protective equipment.
- ► Start vehicle travel and tow away slowly.

NOTICE

The vehicle can be damaged during towing.

- ► Tow the machine away only from the immediate danger zone until it can be loaded.
- ► Tow away the vehicle only if the engine is running and if the drive is functional.
- ► Do not tow the vehicle if it is stuck or on a slope. Load the vehicle.
- ► Only tow the vehicle using suitable towing equipment in connection with suitable towing facilities, such as towing hooks, eyes, etc.
- ► 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 braking system and sufficient tractive power.

Information

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

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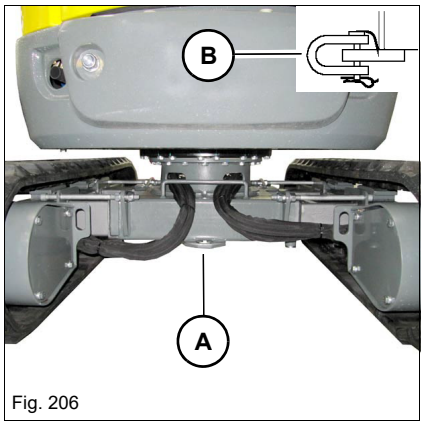


Fig. 206

1. *– see chapter “ Towing” on page 2-11*
2. Ensure that the vehicle can be towed safely.
3. Only use towing eye **A**.
4. Secure shackle **B** with the shackle pin and a lock pin.
5. Install towing equipment of appropriate size on the shackle.
6. Start vehicle travel and tow away slowly.
7. Tow away the machine only until it can travel on its own.

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6.2 Loading the vehicle

WARNING

Accident hazard due to incorrect loading!

Incorrect loading can cause accidents and serious injury or death.

- ► Do not allow anyone to stay in the danger zone.
- ► Bear in mind the transport weight on the vehicle's type label.
- ► Tie down the vehicle only at the indicated tie-down points.
- ► Observe the loading weight. Add the weight of subsequently installed accessories to the weight of the vehicle.

Tie-down points

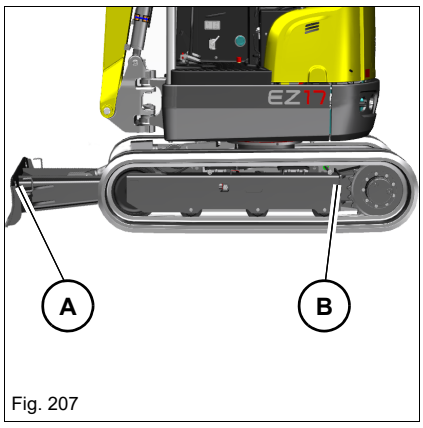


Fig. 207

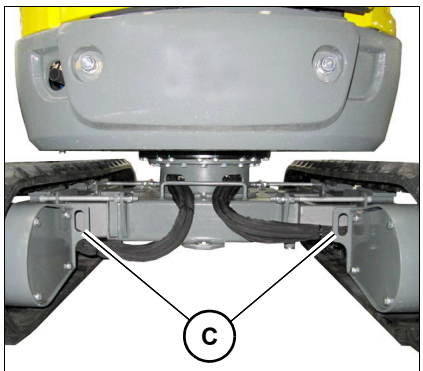


Fig. 208

Position		Quantity
A	Stabilizer blade	2
B	Rear of travel gear	2
C	Inside of travel gear	2

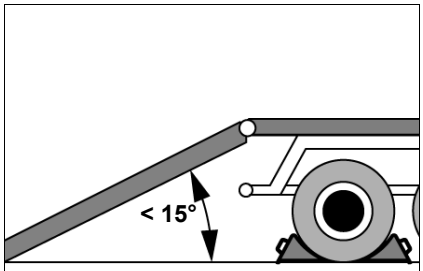


Fig. 209

1. Observe chapter *Transportation on page 2-13*.
2. Secure the transport vehicle with chocks to prevent it from rolling.
3. Position the ramps at the smallest possible angle. Ensure that the grade does not exceed 15° (27%).
4. Use access ramps and transport surfaces with an anti-skid surface only.
5. Ensure that the loading area is clear and access to it is not obstructed (superstructures, for example).

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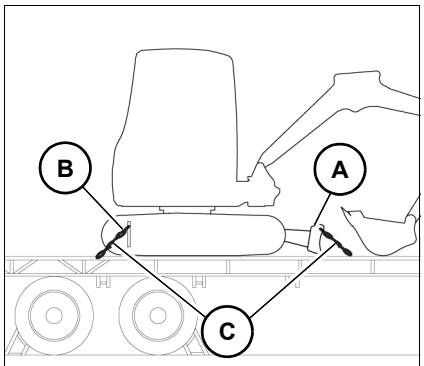


Fig. 210

6. Start the engine.
7. Raise the boom and the stabilizer blade to avoid touching the access ramps.
8. Carefully drive the vehicle onto the middle of the transport vehicle.
9. Move the machine to transport position.
   - Position the boom straight ahead at the center of the vehicle.
   - Lower the boom and the stabilizer blade.
10. Stop the engine.
11. Raise the control lever base.
12. Remove the starting key and carry it with you.
13. Leave the vehicle and close and lock all covers.
14. Firmly fasten the vehicle on the loading area with tie-downs **A** and **B** with slings **C** of appropriate size. Observe legal rules and regulations.

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Crane-lifting

WARNING

Accident hazard due to incorrect loading!

Incorrect loading can cause accidents and serious injury or death.

- ► Do not allow anyone to stay in the danger zone.
- ► Bear in mind the transport weight on the vehicle's type label.
- ► Observe the loading weight. Add the weight of subsequently installed accessories to the weight of the vehicle.
- ► The vehicle may only be raised with suitable lifting gear.

NOTICE

Possible damage to the vehicle due to incorrect loading.

- ► Bear in mind the transport weight on the vehicle's type label.
- ► Observe the loading weight. Add the weight of subsequently installed accessories to the weight of the vehicle.
- ► The vehicle may only be raised with suitable lifting gear.

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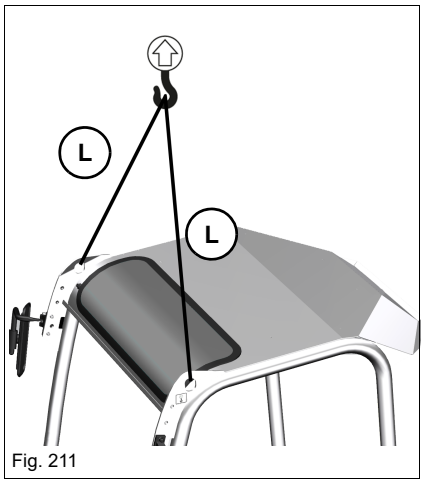


Fig. 211

1. *– see chapter " Crane-lifting" on page 2-12*
2. Fit an empty bucket and lock it safely.
3. Remove all dirt from the vehicle.
4. Park the vehicle on firm, level, and horizontal ground.
5. Tilt in bucket.
6. Raise the loader unit completely.
7. Pull the stick toward the vehicle.
8. Raise the stabilizer blade completely.
9. Position the boom straight ahead at the center of the vehicle.
10. Lock the revolving superstructure- see *Revolving superstructure lock*.
11. Stop the engine.
12. Raise the control lever base.
13. Remove the starting key and carry it with you.
14. Safely store all loose objects.
15. Leave the vehicle and close and lock all covers.
16. Attach slings on the lifting eyes.
17. Slowly raise the vehicle until there is no more contact with the ground.
18. Let the vehicle swing until it comes to rest.
19. If the vehicle balance, and the condition and position of the slings is correct, slowly raise the vehicle to the required height and load it.

Mandatory lengths **L** of the lifting gear:

Length	Dimension
L	Minimum 1300 mm (51 in)

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6.3 Transporting the vehicle

Revolving superstructure lock

NOTICE

Possible serious machine damage.

► Do not rotate the locked revolving superstructure.

The revolving superstructure lock locks the revolving superstructure during transport.

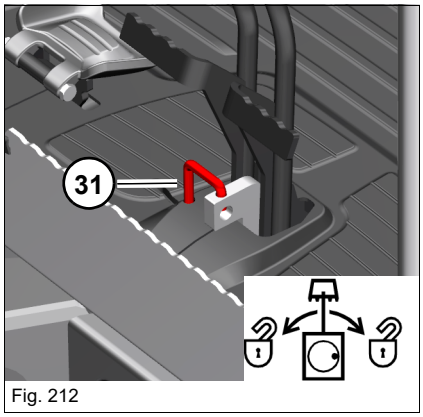


Fig. 212

Unlocking the upper carriage

- Align the upper carriage with the travel gear.
- Raise pin **31** and hitch it in the lock.

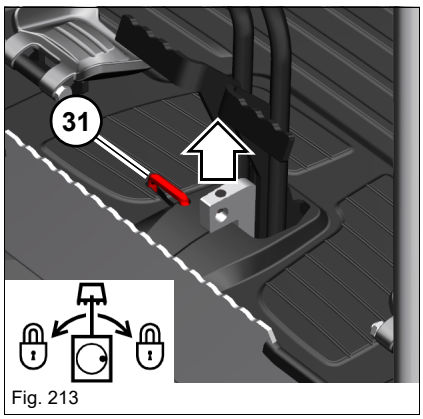


Fig. 213

Locking the upper carriage

- Align the upper carriage and the travel gear correctly.
- Raise pin **31** and put it in the required position.

The upper carriage and the travel gear are connected by means of pin **31**.

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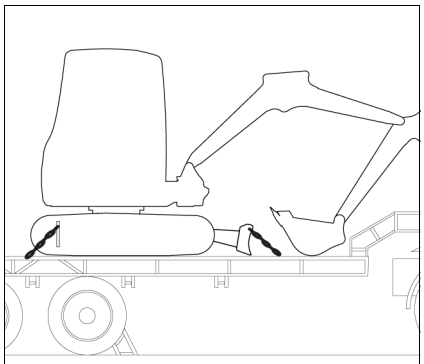


Fig. 214

1. The driver of the transport vehicle must observe the following before departure:
   - Permitted overall height, width and weight of the transport vehicle including the excavator.
   - The legal regulations of the countries where transport is to take place.
2. Close the exhaust pipe before transporting the vehicle through wet weather.

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7 Maintenance

7.1 Information on maintenance

Responsibilities and prerequisites

The working order and the service life of machines are heavily dependent on maintenance.

Daily and weekly servicing and maintenance must be performed by specifically trained personnel.

Have the maintenance, delivery inspection and the entries in the service booklet performed by a Wacker Neuson service center, otherwise warranty claims will not be acknowledged.

It is therefore in the interest of the machine owner to ensure optimal machine operation.

Repair or replace defective parts immediately, even if they are not yet due for replacement.

Repair or replacement of safety-relevant parts may be performed only by a Wacker Neuson service center.

Use only original spare parts for repairs.

Wacker Neuson shall not be liable for damage to the machine or personal injury caused by failure to observe the specific information and descriptions.

Important safety instructions on maintenance

- Follow all safety instructions given in this Operator's Manual.
- Follow the instructions given in chapter **Safety, safety instructions on maintenance** and **qualification of the operating and maintenance personnel** in this Operator's Manual.
- Follow the maintenance and safety instructions given in the Operator's Manuals of the attachments.
- Wear protective equipment (for example hard hat, safety glasses, protective gloves, safety boots).
- Observe the danger indications and safety instructions during maintenance.
- In order to avoid injury hazard, do not perform work on a hot or running engine.
- Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.
- Attach a warning label to the control elements (for example **"Machine being serviced, do not start"**).
- Stop the vehicle (see **Preparing lubrication**).
- Do not re-use self-locking fasteners.

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Maintenance label

Some maintenance work may only be performed by a Wacker Neuson service center (see maintenance schedule).

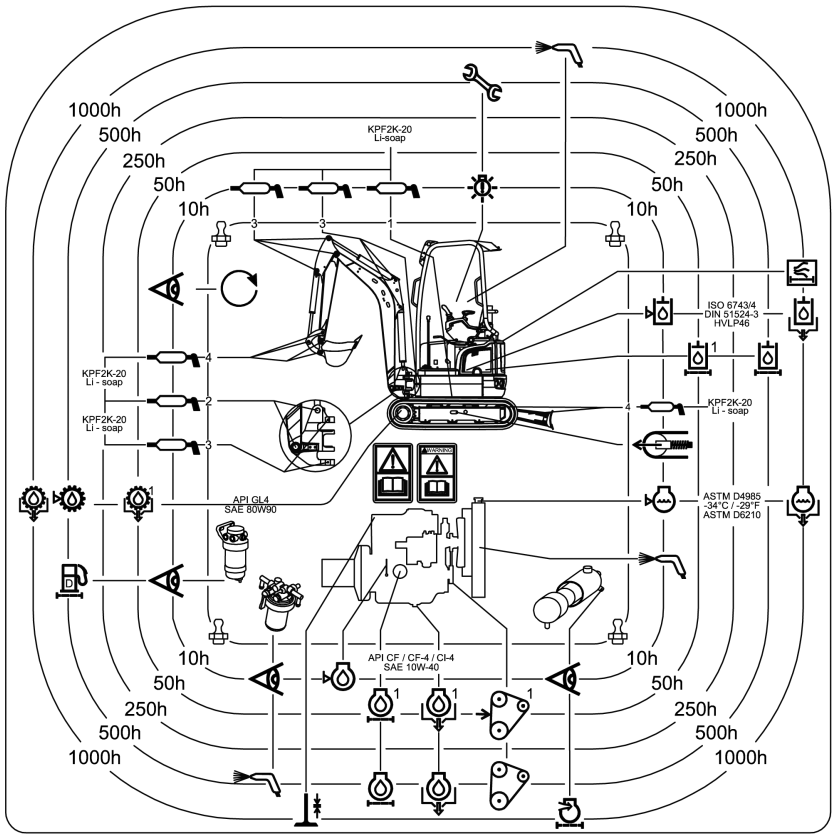
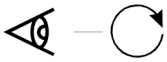
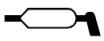


Fig. 215

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Explanation of symbols on the maintenance label

Symbol	Assembly	Explanation
	General	Visual check
	General	Visual check of machine (walk-around)
	General	Lubrication points
	General	Clean the radiator fins and the water separator
	Fuel system	Replace the fuel filter
	Radiator	Check the coolant
	Radiator	Draining coolant
	Engine	Check the engine oil level
	Engine	Change the engine oil
	Engine	Replacing the engine oil filter
	Engine	Replacing the V-belt
	Engine	Checking V-belt tension
	Engine	Replace the air filter element
	Engine	Checking valve clearance
	Travel drive	Check the gearbox oil of the drive
	Travel drive	Replace the gearbox oil of the drive
	Chassis	Checking track tension
	Hydraulic system	Check the oil level of the hydraulic system
	Hydraulic system	Replace the hydraulic oil
	Hydraulic system	Replace the hydraulic oil filter insert
	Hydraulic system	Replace the breather filter of the hydraulic oil reservoir
	Canopy	Indicator lights are being checked
	Canopy	Resetting the maintenance meter

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7.2 Maintenance overview

Maintenance plan

Daily maintenance (user)	
Inspection work (Check the following fluids and lubricants, check the oil levels after a test run and add oil if necessary)	Page
Check the fluids and lubricants (engine oil, engine coolant, hydraulic oil)	*7-34*, *7-36*, *7-41*
Check the radiator and hydraulic oil cooler for dirt, clean them if necessary	*7-37*
Lubricate the vehicle according to the lubrication schedule	*7-8*
Check the dirt indicator on the air filter[1]	*7-38*, *7-38*
Check the water separator and fuel filter: drain water if necessary (see sight glass)	*7-30*, *7-31*
Check the track tension and retension the tracks if necessary	*7-47*, *7-48*
Check the engine air intake	*7-39*
Check pin lock	--
Check line fixtures	--
Check indicator lights for correct function	*4-22*
Check the hydraulic couplings for dirt	--
Check the threaded fittings of the protective structures (canopy, for example) for tightness	--
Option	
Adjust the mirrors correctly, clean them and check them for damage, check the fastening screws and tighten them if necessary	*4-8*
Leakage check	
Check for tightness, leaks and chafing: pipes, flexible lines and screw connections of the following assemblies and components. Repair if necessary	Page
Engine and hydraulic system	--
Travel drive	--
Cooling systems, heating, and hoses (visual check)	--
Option	
Hydraulic quickhitch (Easy Lock) and Powertilt (hoses, valve)	--
Visual check	
Correct function; deformations, damage, surface cracks, wear and corrosion	Page
Check the exhaust system for damage	--
Check the insulating mats in the engine compartment for damage	--
Check the canopy and protective structures for damage (FOPS, for example)	--
Check the tracks for damage	--
Check the travel gear for damage (for example the track rollers, insert rolling bearings)	--
Check the piston rods of the cylinders for damage	--
Check the seat belt for damage	--

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Daily maintenance (user)	
Option	
Check the load hook, joint rod, lifting eyes	*7-50*
Check the hydraulic quickhitch (Easy Lock) for damage	--
Check the Powertilt for damage	--
Weekly maintenance (every 50 operating hours) (user)	Page
Lubricate the vehicle according to the lubrication schedule	*7-8*
Clean the lights/light system, signaling system, acoustic warning system	--
Check V-belt condition and tension	*7-39*
Option	
Actuate Powertilt swivel device in final position for 1 minute[2]	--
All steps for previous maintenance intervals	--

1. Air filter replacement 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, independently of the dirt indicator)
2. Rinse the system to remove dirt. Repeat the procedure in the opposite flow direction.

Information

Check the antifreeze at temperatures below 4°C (39°F).

Only once after the first 50 operating hours (Wacker Neuson service center)	
Engine oil replacement	--
Engine oil filter replacement	--
Hydraulic oil filter insert replacement	--
Drive gearbox oil replacement	--
Check V-belt condition and tension	--
Check the threaded fittings for tightness	--
Check labels and Operator’s Manual for completeness and condition	--
Pressure check of primary pressure limiting valves	--
All steps for maintenance once a day and once a week	*7-4*

Other maintenance intervals (Wacker Neuson service center):

- Every 500 operating hours or annually
- Every 1000 operating hours
- Every 1500 operating hours
- Every 2000 hours of operation or every two years

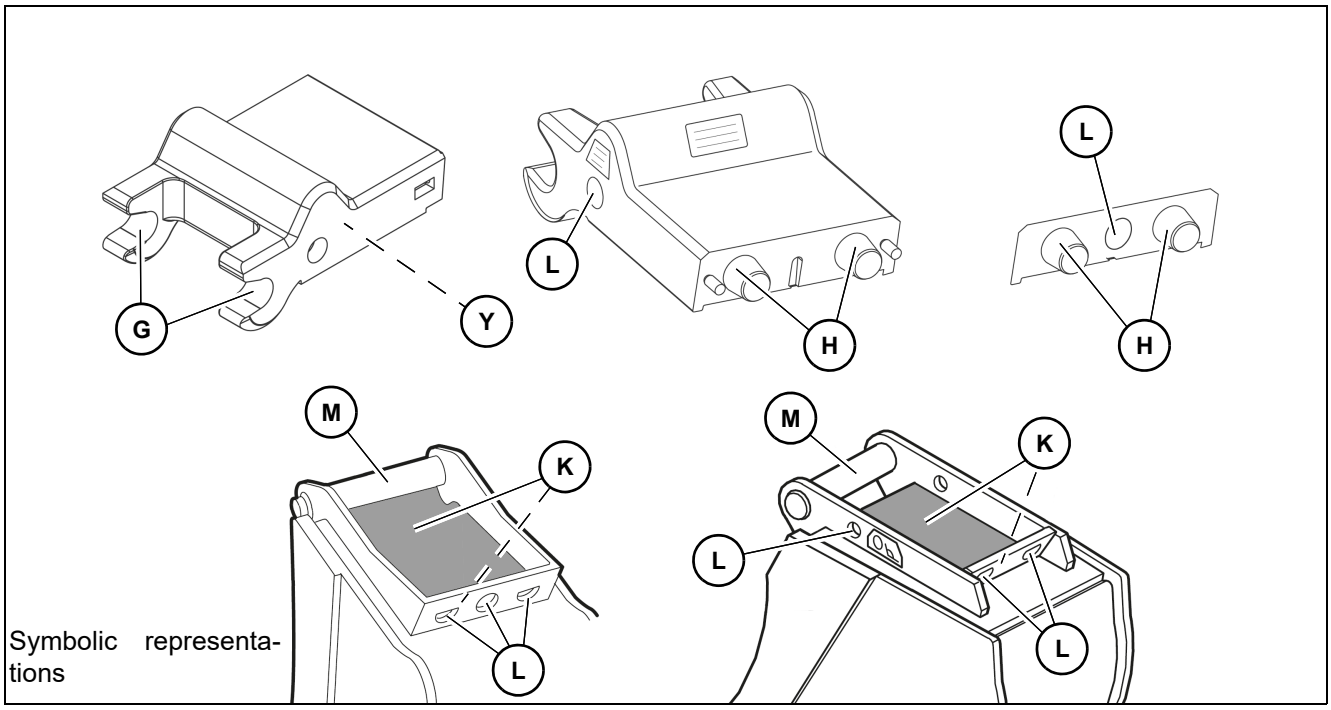
For additional details, contact a Wacker Neuson service center.

Information

Maintenance with the note **Wacker Neuson service center** must only be performed by the trained and qualified personnel of a Wacker Neuson service center.

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Maintenance schedule of Lehnhoff mechanical quickhitch system



Symbolic representations

Quick coupler system MS01 maintenance (operator)		Interval[1]
Perform visual inspection of the quickhitch system	--	10 hours of operation/ daily
Clean bolt guide	G	50 hours of operation/ weekly
Clean the bolt contact surface	H	50 hours of operation/ weekly
Clean bottom side of the quick coupler system	Y	50 hours of operation/ weekly
Clean contact surfaces of the attachment	K	50 hours of operation/ weekly
Clean the opening for the socket wrench and bores of the attachment support	L	50 hours of operation/ weekly
Clean bolt attachment support	M	50 hours of operation/ weekly

1. For time specifications: the first achieved time specification is decisive. If the situation requires it, perform maintenance if necessary, even if the maintenance interval has not yet been reached.

Other maintenance intervals (Wacker Neuson service center):

- Every 250 hours of operation or half-yearly
- Every 500 operating hours or annually

For additional details, contact a Wacker Neuson service center.

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Preparing lubrication

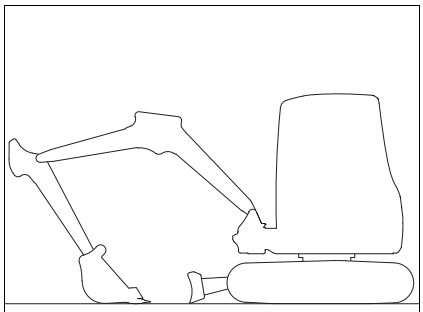


Fig. 216

1. Stop the vehicle on firm, level, and horizontal ground.
2. Position the boom straight ahead at the center of the vehicle.
3. Lower the boom and the stabilizer legs to the ground.
4. Stop the engine.
5. Releasing pressure in the hydraulic system.
6. Raise the control lever base.
7. Remove the starting key and carry it with you.
8. Safely store all loose objects.
9. Close the windows and doors.
10. Close and lock all covers.
11. Attach a warning label to the control elements (for example **“Machine being serviced, do not start”**).

Wait at least 10 minutes after stopping the engine.

Information

Keep all lubrication points clean and remove any escaping grease.

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Lubrication plan



Fig. 217 Shown with Powertilt and hydraulic Easy Lock quickhitch (option)

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Position	Lubrication point[1]	Interval	Quantity
1.	Boom	Daily	2
2.	Stick cylinder	Daily	2
3.	Bucket cylinder	Daily	3
4.	Boom cylinder	Daily	2
5.	Joint rod	Daily	1
6.	Bucket pin	Daily	2
7.	Shovel arm	Daily	1
8.	Swiveling console	Daily	2
9.	Stabilizer blade	Every week	4
10.	Ball bearing race (version 1)	Every week	1
11.	Ball bearing race (version 2)	Every week	1
12.	Swiveling cylinder	Every week	2
13.	Control lever base	Every week	3
14.	Hydraulic quickhitch (option)	Daily	2
15.	Powertilt[2] (Option)	Daily	4

1. Lubrication on the pins or directly on the cylinders
2. The number and position of the lubrication points could vary depending on the Powertilt model.

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Live ring (ball bearing)

DANGER

Danger of crushing when lubricating the ball bearing race!

Serious crushing danger causing death or serious injury!

- ► Park the machine as shown in *Fig. 216*.
- ► Do not rotate the upper carriage.

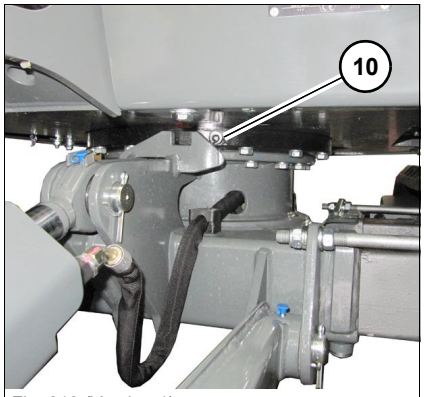


Fig. 218 (Version 1)



Fig. 219 (Version 2)

1. Park the vehicle 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. Apply grease to lubrication point **10/11** with two strokes of the grease gun.

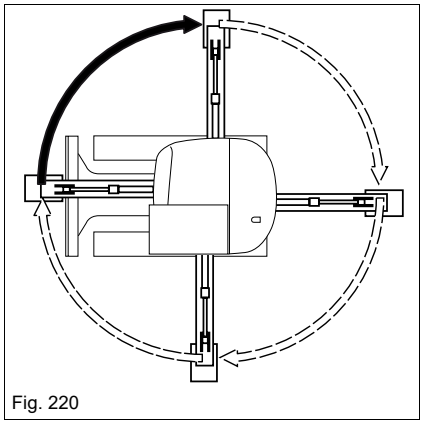


Fig. 220

5. Start the engine, raise the boom and the stabilizer blade.
6. Rotate the upper carriage by 90°.
7. Repeat steps 2–6 three times until the revolving upper carriage is back in its initial position.
8. Rotate the upper carriage several times by 360°.

Information

Keep the lubrication points clean and remove any escaping grease.

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Control lever base

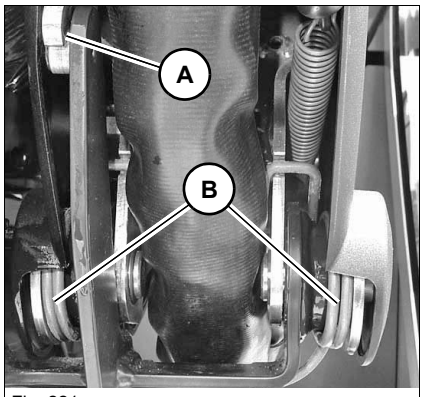


Fig. 221

CAUTION

Crushing hazard in the area of the moving parts of the control lever base!

There is a risk of injury in the area of the moving parts.

► Stay clear (extremities, clothing) of the moving parts.

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Raise the control lever base.
3. Spray the guide lever **A** and springs **B** with semi-fluid grease.
4. Raise and lower the control lever base several times.

Information

Keep the lubrication points clean and remove any escaping grease.

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7.3 Engine/vehicle fluids

Application	Fluid/lubricant	Specification	Season/temperature	Capacities [1]
Engine[2]	Diesel fuel[3]	ASTM D975-94: 1D, 2D (USA)	Year-round	22 liters (5.8 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		
	Coolant[4]	Distilled water and antifreeze SF D12 Plus/ ASTM D4985 (reddish)[5]		3.5 liters (0.9 gal)
		Distilled water and antifreeze D40 Super/ ASTM 6210 (violet)[6]		
Engine	Engine oil[7]	SAE 10W-40	-15°C (-5°F) +45°C (+104°F)	About 3.5 l (0.9 gal)
Hydraulic oil reservoir	Hydraulic oil	Eurolub HVLP 46[8]	Year-round[9]	11 liters (2.9 gal)
	Biodegradable hydraulic oil[10]	Panolin HLP Synth 46		
		BP BIOHYD SE-S 46		
Grease nipples	Roller and friction bearings	KPF 2 K-20[11] ISO-L-X-BCEB 2[12]	Year-round	As required
	Open transmissions live ring: ball bearing			
	Live ring gears			
	Grease nipples			
Battery terminals	Acid-proof grease[13]	FINA Marson L2	Year-round	As required
Control lever base	Adhesive fluid grease	Förch S401	Year-round	As required

1. The capacities indicated are approximate values; the sight glass or the dipstick alone is relevant for the correct level. Capacities indicated are no system fills
2. Sulfur content below 0.05%, cetane number over 45
3. In countries where EU stage IIIA (or higher) or Tier 4 interim (or higher) exhaust emission regulations apply, use diesel fuels with a maximum sulfur content of 0.0015% (= 15 mg/kg).
4. Factory filling; Do not mix coolant - observe the coolant compound table; Contact an authorized service center
5. Up to serial number WNCE1301CPAL00399
6. From serial number WNCE1301APAL00400
7. According to DIN 51511 (API CF, CF-4, CI-4; ACEA E3, E4, E5; JASO DH-1)
8. According to DIN 51524 section 3, ISO-VG 46.
9. Depending on local conditions – *see "Engine oil types" on page 7-14*.
10. Biodegradable hydraulic oil based on saturated synthetic esters with an iodine value of <10, according to DIN 51524, section 3, HVLP, HEES.
11. KPF 2 K-20 according to DIN 51502 lithium-saponified grease.
12. ISO-L-X-BCEB 2 according to DIN ISO 6743-9, lithium-saponified grease.
13. Standard acid-proof grease NGLI category 2.

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Hydraulic oil types

Viscosity class	Ambient temperature			
	min. °C	min. °F	max. °C	max. °F
ISO VG32	-20	-4	30	86
ISO VG46	-5	23	40	104
ISO VG68	5	41	50	122

Replacement intervals

Replace the hydraulic oil and hydraulic oil filter depending on the percentage of hammer operation.

Percentage of hammer work	Hydraulic oil	Hydraulic oil filter
20%	800 o/h	300 o/h
40%	400 o/h	
60%	300 o/h	100 o/h
Over 80%	200 o/h	

Important information regarding operation with biodegradable hydraulic oil

- Use only the biodegradable oils that have been tested and released by Wacker Neuson.
- Add only biodegradable oil of the same type. In order to avoid misunderstandings, attach a clear label to the hydraulic oil filler neck providing clear information regarding the type of oil currently used. The joint use of two different biodegradable oils can affect the quality of one of the oil types. Therefore ensure that the remaining amount of biodegradable oil complies with the national and regional regulations as you replace it. Observe the manufacturer's indications.
- Do not add mineral oil – the content of mineral oil should not exceed 2% of the system fill in order to avoid foaming problems and to ensure biological degradability.
- When running the vehicle with biodegradable oil, the same oil and filter replacement intervals are valid as for mineral oil.
- 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.
- Subsequent change from mineral oil to biodegradable oil may only be performed by a Wacker Neuson service center.

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Engine oil types

Viscosity grade (SAE)	Ambient temperature			
	min. °C	min. °F	max. °C	max. °F
10W	-20	-4	10	50
20W	-10	14	10	50
10W40	-20	-4	40	104
15W40	-15	5	40	104
20	0	32	20	68
30	10	50	30	86
40	20	68	40	104

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7.4 Maintenance accesses

WARNING

Injury hazard due to rotating parts!

Rotating parts can cause serious injury or death.

- ► Open the engine cover only at engine standstill.
- ► Raise the operator seat only at engine standstill.

CAUTION

Burn hazard due to hot surfaces!

Can cause serious burns.

- ► Stop the engine and let hot surfaces cool down.
- ► Wear protective equipment.

CAUTION

Injury hazard due to open maintenance access!

Can cause injury.

Take care to avoid injuries when the maintenance access door is open.

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Opening the engine cover

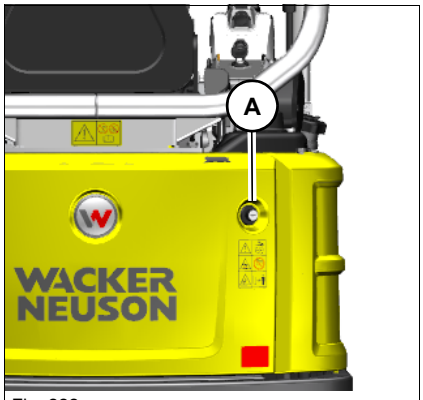


Fig. 222

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Turn the starting key in lock **A** anticlockwise.
3. Press lock **A** and open the engine hood.

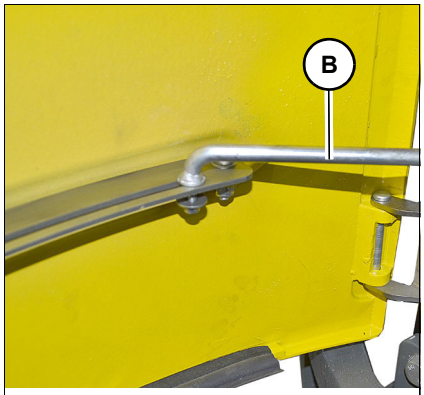


Fig. 223

4. Make rod **B** engage in the lock.

Closing the engine cover

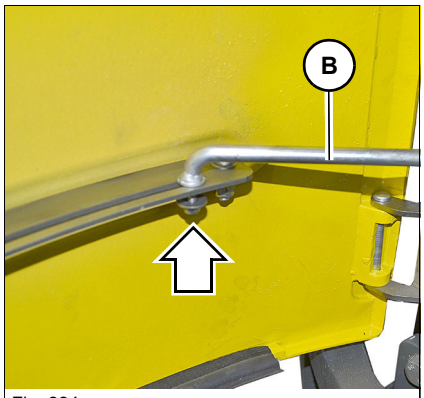


Fig. 224

1. Press rod **B** upward and hold it in the raised position briefly.
2. Close the engine cover.
3. Turn the starting key in lock **A** clockwise.

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Cover on the right

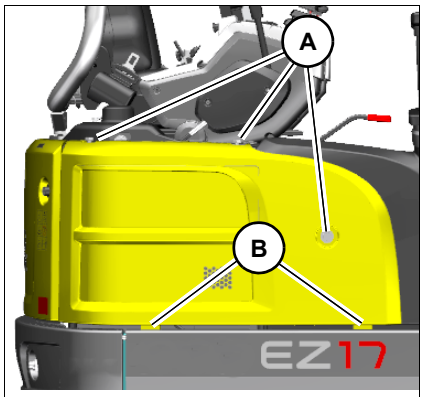


Fig. 225

Opening:

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Unscrew screws **A**.
3. Unhitch straps **B** and remove the side cover.

Closing:

Lock in the reverse order.

Cover on the left

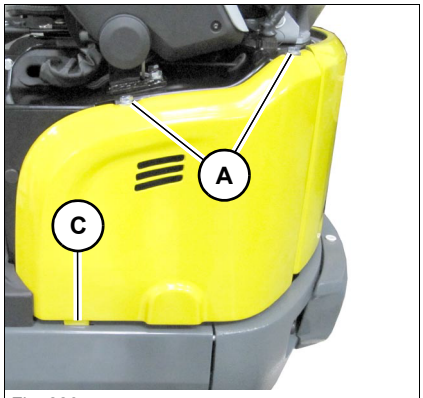


Fig. 226

Opening:

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Unscrew screws **A**.

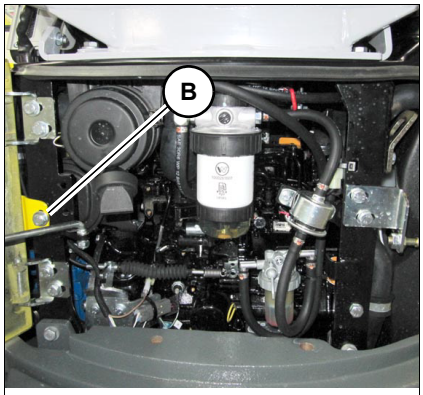


Fig. 227

3. Open the engine cover.
4. Slacken screw **B**.
5. Unhitch shackle **C** and remove the side cover.

Closing:

Lock in the reverse order.

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Raising the operator seat

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Open the engine cover.
3. Pull out and hold lock **A**, and raise the operator seat.
   ➥ The operator's seat is unlocked.

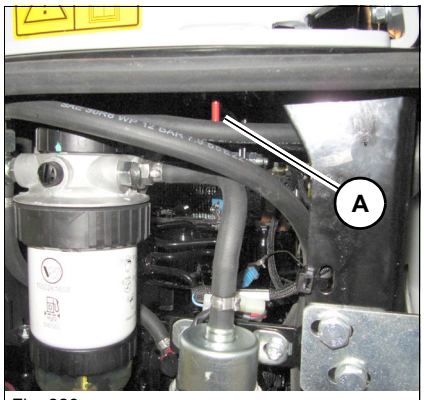


Fig. 228

Locking the operator seat

1. Press and hold seat belt buckle **A** outward.
2. Fold the operator's seat back until it locks into place.
   ➥ The operator's seat is locked if it cannot be raised any more at the backrest.
3. Close and lock the engine cover.



Fig. 229

Battery cover

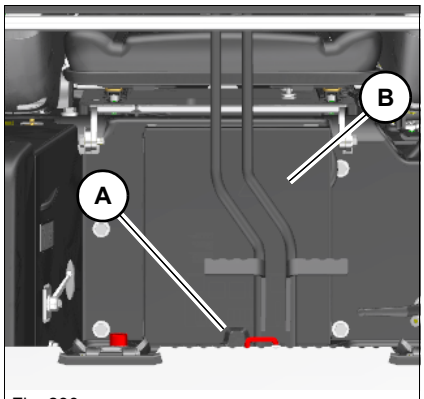


Fig. 230

Opening:

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Remove the screw **A** and remove the battery cover.

Closing:

1. Install the cover and tighten screw **A**.

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Removing/installing the canopy

It is possible to remove the canopy while going through a short passage. There are two different canopy versions depending on the country of intended use:

Version 1 (one-piece)

Version 2 (two-piece)

DANGER

Accident hazard during machine travel without canopy!

Serious crushing hazard causing death or serious injury.

- ► Do not fasten the seat belt in order to be able to leave the machine immediately in an emergency.
- ► Do not perform any work without a canopy.
- ► Obtain the approval of the appropriate national authority.
- ► Machine travel is only allowed on absolutely level ground.
- ► Avoid tipping movements of the machine under all circumstances.
- ► Machine travel in areas involving a risk of falling objects is prohibited.

WARNING

Accident hazard due to incorrect loading!

Incorrect loading can cause accidents and serious injury or death.

- ► Do not allow anyone to stay in the danger zone.
- ► Only remove or attach the canopy with a crane or at least three people.

Information

Do not reuse screws, washers and securing elements.

Removing

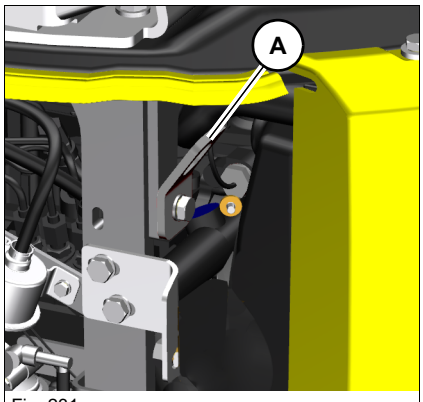


Fig. 231

1. Stop and park the vehicle.
2. Rotate the superstructure 10° to the right (only in version 1).
3. Stop the engine. See “Preparing lubrication”.
4. Open the engine cover.
5. Remove shackle **A** in the engine compartment.

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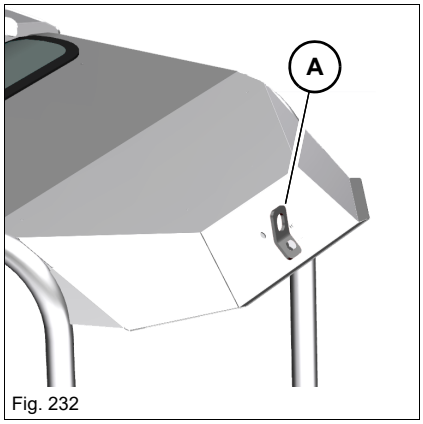


Fig. 232

6. Remove the roof lights.
7. Attach the strap **A** and tighten the screw to 45 Nm (33 ft.lbs.) (use a schnorr lock and washer).

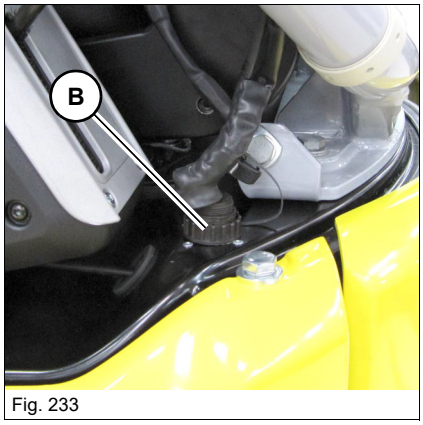


Fig. 233

8. Remove the connector **B**.

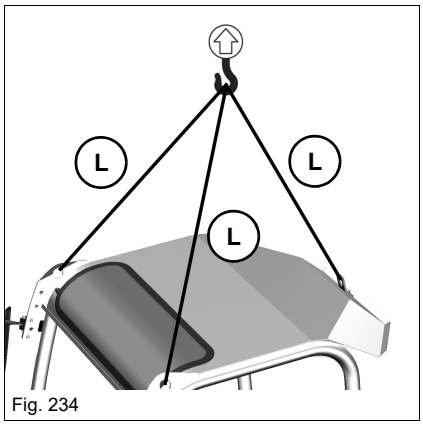


Fig. 234

9. Install the lifting gear at the points provided for lifting the machine. The mandatory length **L** is a minimum 1300 mm (51 in).
10. Apply tension to the canopy with the lifting gear.

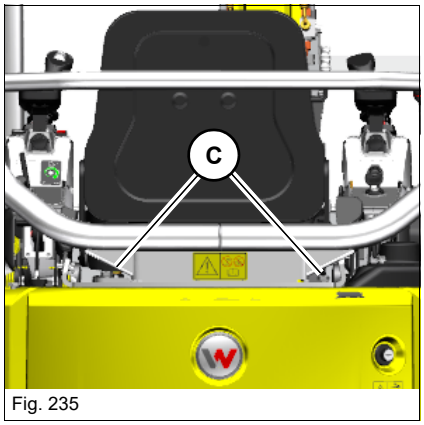


Fig. 235

CAUTION

Danger of crushing due to pre-tensioned canopy!

The pre-tensioned canopy can cause serious injuries.

► Pay attention to the movements of the pre-tensioned canopy as you remove the screws.

11. Raise the operator seat.
12. Remove the screws **C**.

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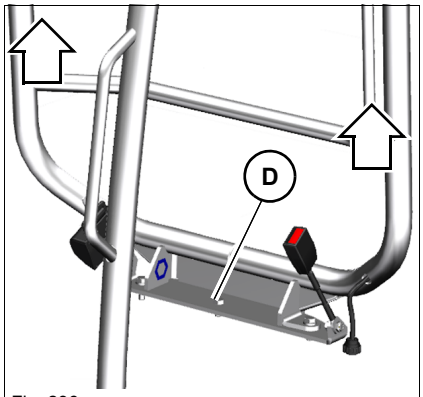


Fig. 236

NOTICE

Possible damage to surface due to centering **D** on lower side.

► Raise the canopy sufficiently as you remove it.

13. Raise the canopy from the anchoring.

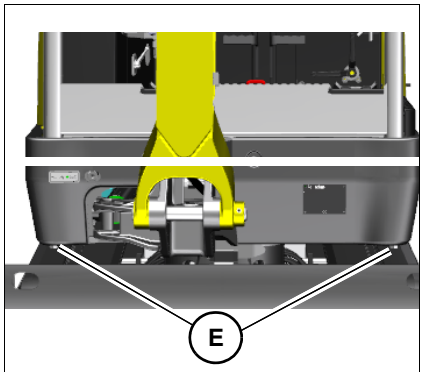


Fig. 237

14. Version 1: remove the screws **E** on the left and right.

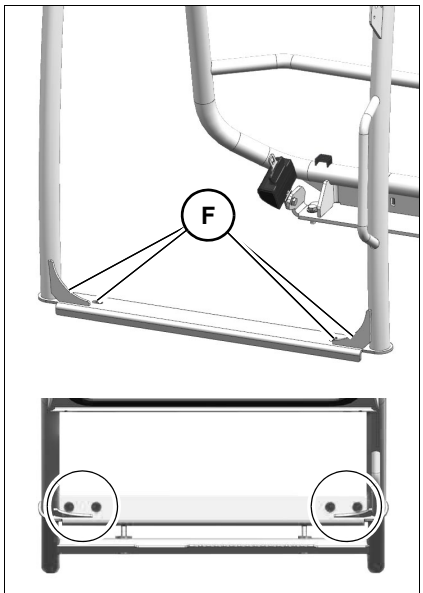


Fig. 238

15. Version 2: remove the screws **F** on the left and right.
16. Raise the canopy.
17. Stop and secure the canopy.

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Assembly

1. Rotate the superstructure 10° to the right (only in version 1).
2. Tighten the screws **E** slightly.

CAUTION

Danger of crushing due to pre-tensioned canopy!

The pre-tensioned canopy can cause serious injuries.

► Pay attention to the movements of the pre-tensioned canopy as you install the screws.

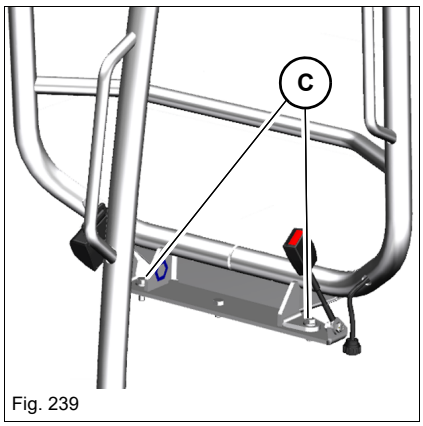


Fig. 239

3. Lift the canopy to the left and right and press in the fastening.
4. Raise the operator seat.
5. Tighten screws **C** with 110 Nm (81 ft.lbs.).

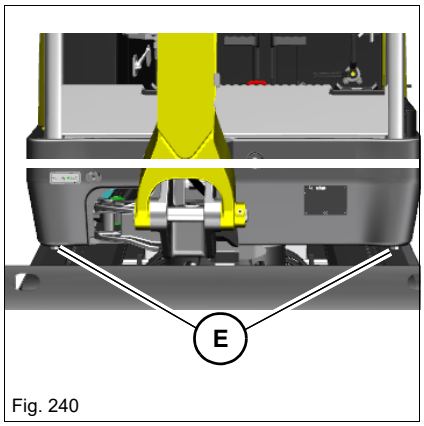


Fig. 240

6. Version 1: tighten screws **E** on the left and right to 110 Nm (81 ft.lbs.).

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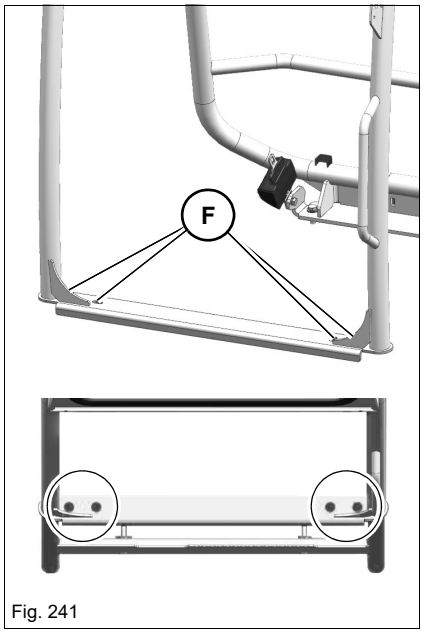


Fig. 241

7. Version 2: tighten screws **F** to the left and right with 110 Nm (81 ft.lbs.).
8. Install the connector **B**.
9. Remove shackle **A** from the roof and install it in the engine compartment.
10. Install the roof light.
11. Close the engine cover.

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7.5 Cleaning and maintenance

WARNING

Injury hazard due to rotating parts!

Rotating parts can cause serious injury or death.

► Open the engine cover only at engine standstill.

WARNING

Burn hazard due to hot surfaces!

Hot surfaces can cause serious burns or death.

► Stop the engine and let it cool down.

► Wear protective equipment.

CAUTION

Health hazard due to cleaning agents!

Cleaning agents can be harmful to health.

► Use only suitable cleaning agents.

► Ensure sufficient ventilation.

NOTICE

Damage to rubber and electrical parts when cleaning with solvents.

Do not use solvents, benzine, or other aggressive chemicals.

NOTICE

Damage to electronics due to water jet.

► Do not point the water jet directly at electric components, and protect the electric components against humidity.

► If water contacts electrical components, dry them with compressed air and apply contact spray to them.

Environment

In order to avoid damage to the environment, clean the vehicle only in wash bays and places authorized by the authorities.

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Cleaning the vehicle is divided into three separate areas:

- Inside the cabin
- Exterior of the vehicle
- Engine compartment

Washing solvents

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

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.

High-pressure cleaner

- Cover electric parts.
- Do not point the water jet directly at electric parts and damping material.
- Cover the vent filter on the hydraulic oil reservoir and the filler caps for fuel, hydraulic oil, etc.
- Protect the following components from moisture:
  - Electrical components (for example alternator, control valves).
  - Control devices and seals.
  - Air intake filter, exhaust etc.

Volatile and easily flammable anti-corrosion agents and sprays:

- Ensure sufficient room ventilation.
- Fire, open flames and smoking is prohibited.

Inside the cabin

Recommended aids:

- Vacuum cleaner
- Moist cloths
- Brush
- Water with mild soap solution

On the outside of the vehicle

Recommended aids:

- High-pressure cleaner
- Steam jet

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Engine compartment

1. Park the vehicle in a wash bay or place suitable for washing.
2. Stop the engine. See “**Preparing lubrication**”.
3. Clean the vehicle.

Seat belt

Always keep the seat belt clean, as coarse dirt can impair the proper functioning of the seat belt buckle.

Clean the seat belt (while it remains fitted in the vehicle) with a mild soap solution only. Do not use chemical agents as they can destroy the fabric.

Cleaning in a saline environment

1. Park the vehicle in a wash bay or place.
2. See “**Preparing lubrication**”.
3. Check the vehicle for salt deposits or corrosion. Have corrosion removed by a Wacker Neuson service center.
4. Clean the vehicle with a high-pressure cleaner. Clean the vehicle ensuring that there are no salt deposits in places that are difficult to access.
   Bear in mind the information on cleaning and maintenance.
5. Lubricate the vehicle according to the lubrication plan.
6. Allow the vehicle to dry and check it again for salt deposits.

Loose threaded fittings and attachments

Contact a Wacker Neuson service center.

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7.6 Lubrication work

– see chapter “ Preparing lubrication” on page 7-7

7.7 Fuel system

Important information regarding the fuel system

Information

In order to prevent the formation of condensation water, fill up the fuel tank nearly completely at the end of each working day.

Information

Do not run the fuel tank completely dry. Otherwise, air is drawn into the fuel system. This requires bleeding the fuel system.

Diesel fuel specification

NOTICE

Engine damage due to incorrect or dirty diesel fuel.

- ► Only use clean diesel fuel according to the **fluids and lubricants** list.
- ► Do not use any diesel fuel with additives.

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Refueling

WARNING

Explosion hazard due to flammable fuel/air mixtures!

Fuels develop explosive and flammable mixtures with air that can cause serious burns or death.

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

CAUTION

Health hazard due to diesel fuel!

Diesel fuel and fuel vapors are harmful to health!

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

CAUTION

Fire hazard due to diesel fuel!

Diesel fuel gives off flammable vapors. This can cause injury.

- ► Fire, open flames and smoking is prohibited.
- ► Do not add gasoline to diesel fuel.

NOTICE

Do not refuel with cans in order to avoid dirt in the fuel.

Environment

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

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Refueling

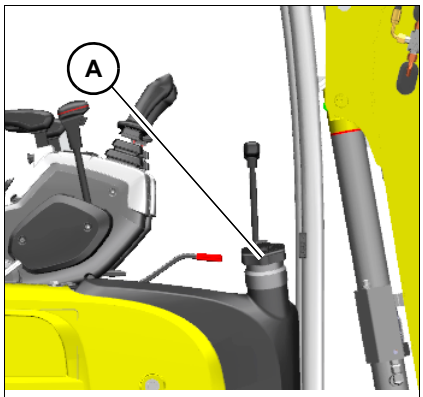


Fig. 242

Filler inlet **A** of the fuel tank is located on the right in travel direction.

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Unlock the lock on filler inlet **A** with the starting key.
3. Remove the filler cap.
4. Refuel the vehicle.
5. Close the filler cap.

Stationary fuel pumps

Even the smallest particles of dirt can cause increased engine wear, malfunctions in the fuel system and reduced effectiveness of the fuel filters.

Refueling from barrels

If refueling from barrels cannot be avoided, note the following points:

- 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 an integral microfilmer.
- Keep all refueling containers clean.

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Checking the water separator

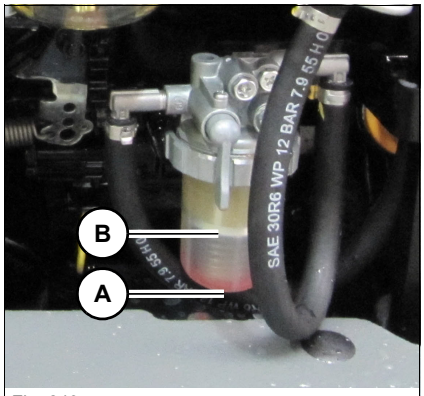


Fig. 243

Water separator

Empty the water separator if the red indicator ring **A** rises to position **B**.

Emptying the water separator

Information

The fuel system can be bled automatically even if the engine is at operating temperature

– see chapter “ Bleeding the fuel system” on page 7-32.

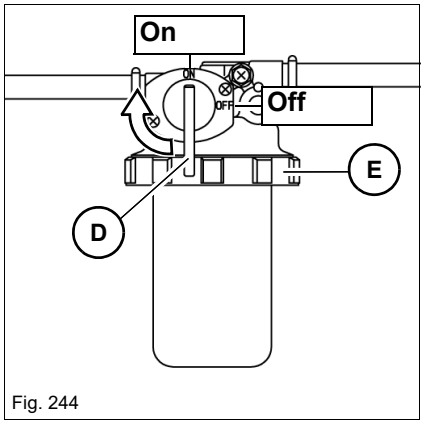


Fig. 244

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Prepare a suitable container for collecting the fuel/water mixture.
3. Open the engine cover.
4. Turn the ball valve **D** to **Off**.
   ➥ Fuel supply is interrupted.
5. Unscrew threaded ring **E**.
6. Collect the fuel/water mixture in a suitable container.
7. Screw on the thread ring **E**.
   ➥ The indicator ring is at the base of the water separator.
8. Turn ball valve **D** to **On**.
   ➥ Fuel supply is open.
9. Close and lock the engine cover.

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Checking the fuel filter

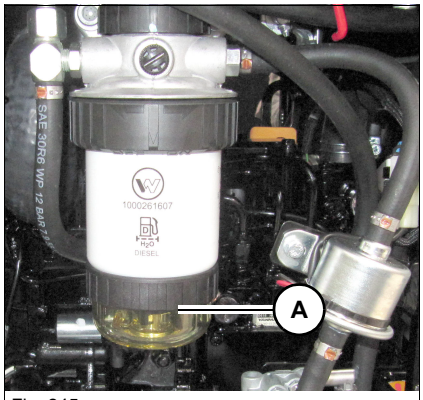


Fig. 245

Fuel filter

Empty the fuel filter if the fuel/water mixture reaches position **A**.

Emptying the fuel filter

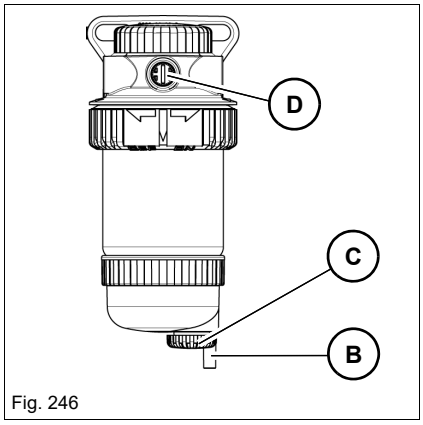


Fig. 246

Information

The fuel system can be bled automatically even if the engine is at operating temperature

– see chapter “ Bleeding the fuel system” on page 7-32

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Prepare a suitable container for collecting the fuel/water mixture.
3. Open the engine cover.
4. Connect a suitable hose to the drain device **C**.
5. Open drain valve **C**.
6. Remove the vent screw **D**.
7. Drain the fuel/water mixture into a receptacle.
8. Tighten the vent screw **D**.
9. Close the drain valve **C** if nothing but fuel is flowing into the bin.
10. Remove the hose.
11. Close and lock the engine cover.

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Bleeding the fuel system

Bleed the fuel system in the following cases:

- After removing and fitting the fuel filter, prefilter or the fuel lines back on again.
- If the fuel tank is run empty.
- If the vehicle is put into operation after having been out of operation for more than 30 days.

Bleed:

1. Raise the control lever base.
2. Remove the starting key and carry it with you.
3. Fill up and close the fuel tank.
4. Turn the starting key to the first position.
5. Wait about 5 minutes while the fuel system bleeds itself automatically.
6. Start the engine.

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

1. Stop the engine.
2. Raise the control lever base.
3. Remove the starting key and carry it with you.
4. Bleed the fuel system again as described above.
5. Check for leaks after starting the engine.
6. Have a Wacker Neuson service center perform a check if necessary.

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7.8 Engine lubrication system

Important information regarding the engine lubrication system

NOTICE

Possible engine damage due to incorrect engine oil level.

► The oil level must be between the MIN and MAX marks.

NOTICE

Damage due to wrong engine oil.

► Use engine oil according to the **engine/vehicle fluids** list.

► Have the oil changed only by a Wacker Neuson service center.

NOTICE

Damage due to adding engine oil too quickly.

► Add the engine oil slowly so it can go down without entering the intake system.

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Checking the engine oil level

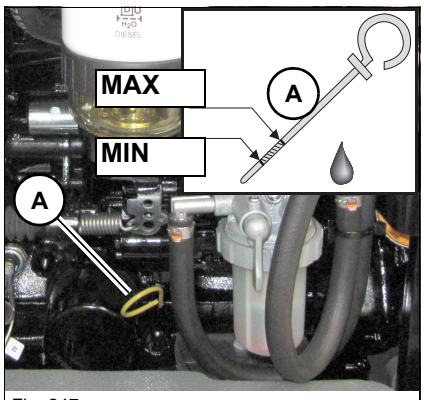


Fig. 247

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Wait for at least 10 minutes, until the oil has run into the oil sump completely.
3. Open the engine cover.
4. Wipe the area around oil-level dipstick with a lint-free cloth.
5. Pull out oil-level dipstick **A** and wipe it with a lint-free cloth.
6. Slide in oil dipstick **A** completely.
7. Withdraw it and read off the oil level.
   - ➥ The oil level must be between the MIN and MAX marks.
   - ➥ Add engine oil if necessary.
8. Slide in oil dipstick **A** completely.
9. Close and lock the engine cover.

Adding engine oil

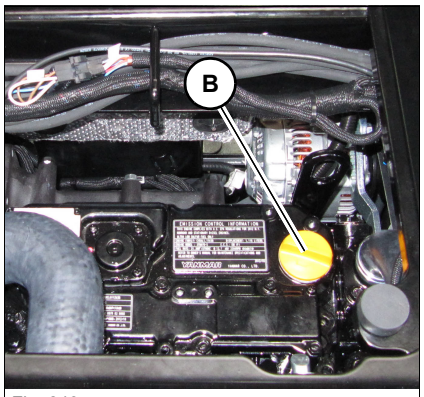


Fig. 248

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Raise the operator seat.
3. Wipe the area around the sealing push-in cap with a lint-free cloth.
4. Open filler cap **B**.
5. Raise oil dipstick **A** slightly to allow any trapped air to escape.
6. Add engine oil.
7. Wait for at least 10 minutes, until the oil has run into the oil sump completely.
8. Check the oil level.
9. Add oil if necessary and check the oil level again.
10. Close filler cap **B**.
11. Slide in oil dipstick **A** completely.
12. Lock the operator seat.

Environment

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

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7.9 Cooling system

WARNING

Poisoning hazard due to hazardous substances!

Contact with 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!

The coolant and antifreeze are easily flammable fluids that can cause serious burns or death if they are brought into contact with fire or open flames.

- ► Wear protective equipment.
- ► Only perform maintenance on an engine that has cooled down.
- ► Fire, open flames and smoking is prohibited.

WARNING

Burn hazard due to hot coolant!

At high temperatures, the cooling system is under pressure and can cause burning of the skin.

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

NOTICE

Possible engine damage due to wrong coolant.

- ► Observe the engine/vehicle fluid table or coolant compound table.

NOTICE

Possible engine damage due to low coolant level.

- ► Check the coolant level once a day.

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Checking the coolant level

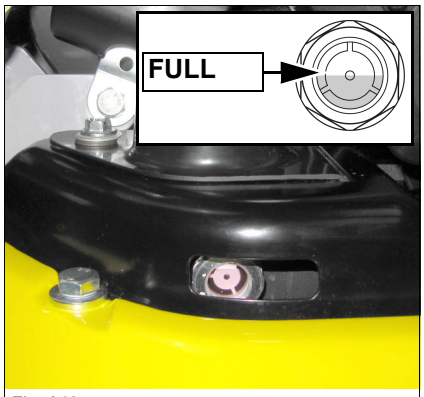


Fig. 249

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Check the coolant level on the sight glass.
3. If the coolant level is below the **FULL** mark:
   ➥ Add coolant.

Information

Check the coolant level once a day before starting the engine.
Observe the coolant compound table

Adding coolant

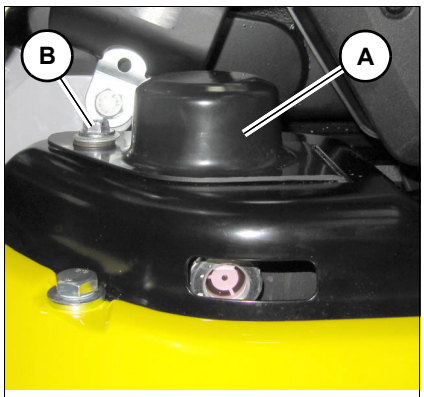


Fig. 250

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Slacken screw **B**.
3. Remove cover **A**.

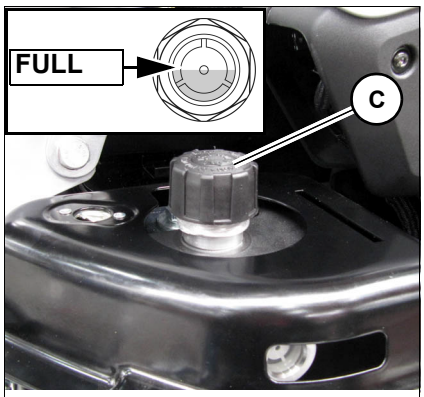


Fig. 251

4. Carefully unscrew filler cap **C** and release the pressure.
5. Open filler cap **C**.
6. Top off the coolant up to the middle (FULL).
7. Close filler cap **C**.
8. Start the engine and let it warm up for about 5 – 10 minutes.
9. Stop the engine.
10. Remove the starting key and carry it with you.
11. Let the engine cool down.
12. Check the coolant level again.
13. If necessary, add coolant and repeat the procedure until the coolant level remains constant.
14. Close and lock the engine cover.

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Cleaning the radiator

CAUTION

Burn hazard due to hot surfaces!

Hot radiators can cause burns.

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

NOTICE

Damage to diesel engine and hydraulic system due to dirt on the radiator.

- ► 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.

NOTICE

Damage to radiator fins during cleaning.

- ► Keep a safe distance from the radiator during cleaning.
- ► Use oil-free compressed air (2 bar/29 psi max.) to clean.

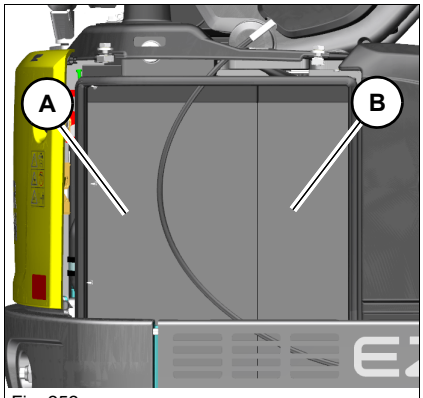


Fig. 252

Radiator **A** and the hydraulic oil cooler **B** are located in the engine compartment.

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Remove the cover on the right.
3. Remove dust and other foreign bodies from the fins with compressed air.
4. Install the cover on the right.

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7.10 Air filter

Important information regarding the air filter

- The air filter is composed of an interior and exterior filter.
- Store the air filter in its original packaging and dry.
- Check air filter, air filter attachments and air intake hoses for damage, and immediately repair or replace if necessary.
- Check the screws at the induction manifold and the clamps for tightness.

Dirt indicator

NOTICE

Damage to diesel engine due to dirty air filter.

► Do not clean the air filter, but rather have them replaced.

► Do not use damaged lifting gear.

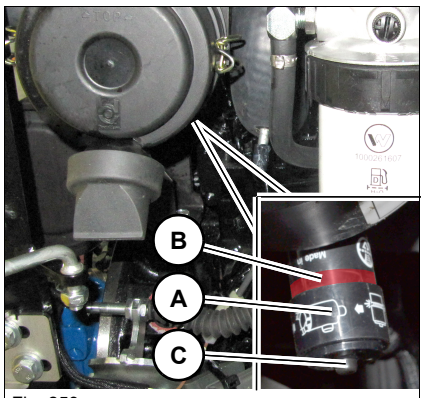


Fig. 253

The air filter must be replaced if the red mark **B** is shown on the soiling display **A**.

- After replacing an air filter, press the knob **C** to reset the red mark **B**.

Replacing the air filter

Have maintenance only performed by an authorized service center.

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Checking the air intake

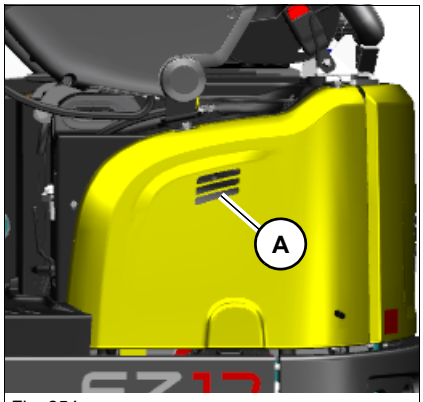


Fig. 254

NOTICE

Possible engine damage due to intake of dirty air.

► Check once a day for cleanliness before putting the machine into operation.

1. Stop and park the vehicle. Stop the engine. See “Preparing lubrication”.
2. Remove the starting key and carry it with you.
3. Check and if necessary clean ventilation grill **A**.

7.11 V-belt

V-belt tension may be checked and the V-belt re-tensioned only by a Wacker Neuson service center.

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7.12 Hydraulic system

WARNING

Burn hazard due to hot hydraulic oil!

Hot hydraulic oil can cause burning to the skin, serious injury or death.

- ► Releasing pressure in the hydraulic system.
- ► Let the engine cool down.
- ► Wear protective equipment.

WARNING

Injury hazard due to fluid escaping under pressure!

Hydraulic oil escaping under pressure can penetrate the skin and cause serious injury or death.

- ► Do not operate the vehicle with leaking or damaged hydraulic system components.
- ► Open the breather filter carefully to slowly release the pressure inside the reservoir.
- ► Wear protective equipment. If hydraulic oil contacts the eye, flush immediately with clean water and seek medical treatment.
- ► Malfunctioning or leaking screw connections, hose connections and pressure lines must be immediately repaired by a Wacker Neuson service center. Search for hydraulic leaks with a piece of cardboard.
- ► Always consult a doctor immediately, even if the wound seems insignificant. Hydraulic oil causes blood poisoning.

NOTICE

Damage due to wrong hydraulic oil.

- ► Only use hydraulic oil according to the **fluids and lubricants** list.
- ► Have the hydraulic oil only changed by an authorized service center.

NOTICE

Damage to hydraulic system due to incorrect hydraulic oil level.

- ► With a warm engine, the hydraulic oil must be about at the middle of the sight glass.
- ► Check the hydraulic oil level once a day.

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NOTICE

Damage to hydraulic system due to dirty hydraulic oil.

- ► Always add hydraulic oil using the filling screen.
- ► 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.
- ► Contact a Wacker Neuson service center if the filter of the hydraulic system is dirty.

Checking the hydraulic oil level

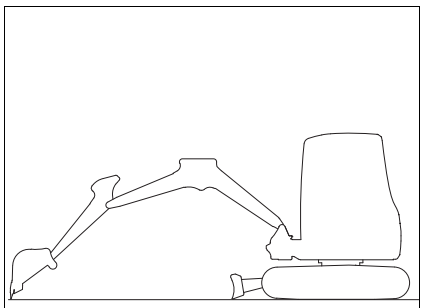


Fig. 255

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

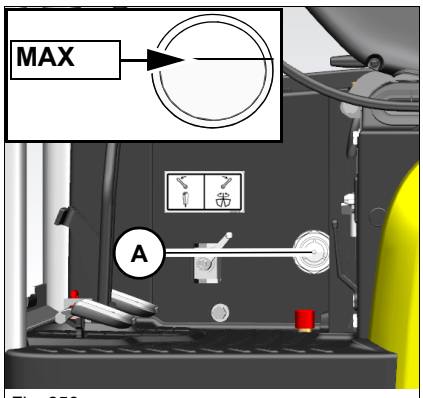


Fig. 256

7. The inspection glass **A** is located to the right in the vehicle.
8. Check the oil level on sight glass **A**.
   - ➥ 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 this mark.

Adding hydraulic oil

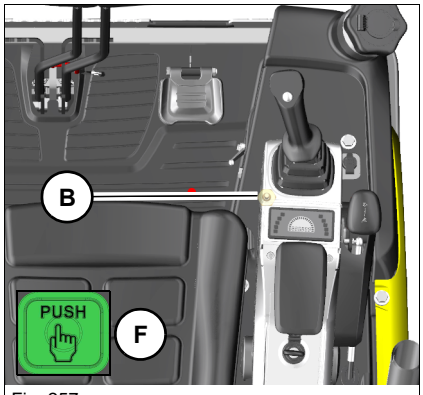


Fig. 257

1. Press tank ventilation **B** to release the pressure.

Possible designs:

- Up to serial number WNCE1301PPAL00518: circuit breaker
- From serial number WNCE1301KPAL00519: circuit breaker with cover **F**

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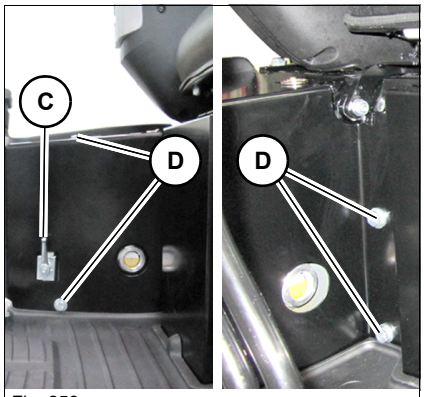


Fig. 258

2. Remove lever **C**.
3. Remove screws **D**.
4. Remove the cover.

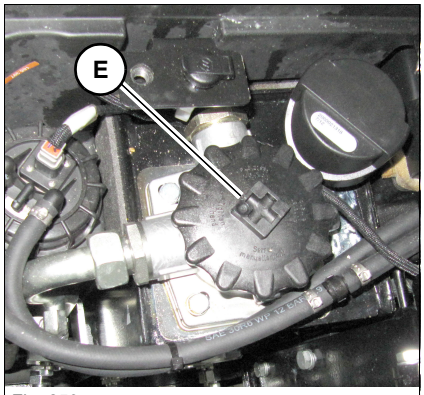


Fig. 259

5. Open filler plug **E** slowly.
6. Add hydraulic oil up to the corresponding mark.
7. Check the hydraulic oil level on sight glass **A**.
8. Add if necessary and check again.
9. Screw in filler plug **E** tightly.

Environment

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

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Checking the hydraulic system and hoses

Check the hydraulic system and hydraulic lines daily for leaks and general condition.

NOTICE

Damage to the hydraulic system due to leaks and damaged hydraulic lines.

- ► Leaks and damaged hydraulic lines must be immediately repaired at an authorized service center. This increases the operating safety of the vehicle and contributes to environmental protection.
- ► Do not operate the vehicle with leaking or damaged hydraulic lines.

Hydraulic hoses are subject to natural aging. Therefore, they must be checked regularly, even when there is no visible damage, which prevents safe operation.

Wacker Neuson recommends following schedule for checks:

Normal wear	12 months
Increased wear (longer operation duration, multi-shift operation, high outside temperatures, aggressive environmental conditions etc.)	6 months

Responsibility of checking hydraulic hose

The vehicle operator must decide the intervals at which the hydraulic hose has to be checked and the decision will be based on the actual work situation.

To do this, the vehicle operator must appoint a qualified person, who will check the hydraulic hoses. If there is noticeable damage, the hydraulic hose must be replaced immediately. Do not start the vehicle. The findings from this check must be retained in writing by the vehicle operator till the next scheduled check.

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Wacker Neuson recommends replacing the hydraulic hoses every six years from the manufacturing date.

Manufacturing date can be found on the hydraulic hose.

- Re-tighten leaking screw connections and hose connections only when the system is not under pressure. Release the pressure in the hydraulic system before working on lines under pressure.
- Do not weld or solder damaged or leaking pressure lines and screw connections, but have them replaced.
- Wear protective equipment.

Have a line replaced immediately if one of the following problems is detected:

- Damaged or leaky hydraulic seals.
- Worn or torn shells or uncovered reinforcement branches.
- Expanded shells in several positions.
- Entangled or crushed movable parts.
- Foreign bodies jammed or stuck in protective layers.

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7.13 Electrical system

Important information regarding the electrical system

Maintenance and repair work on the electrical system may be performed only by a Wacker Neuson service center!

- Malfunctioning parts of the electrical system must be replaced by an authorized service center.
- Light bulbs and fuses may be replaced by the operator.

Alternator

- Contact a Wacker Neuson service center if the alternator charge indicator light is malfunctioning.

WARNING

Injury hazard due to malfunctioning batteries!

Batteries give off explosive gases that can cause deflagrations if ignited.

► Wear protective equipment.

► Fire, open flames and smoking is prohibited.

► Do not jump start the engine if the battery is malfunctioning or frozen, or if the acid level is too low.

► Do not place conductive articles on the battery – risk of short circuit.

NOTICE

Possible damage to electrical components or engine electronics.

► Do not place tools or other conductive articles on the battery – risk of short circuit.

► Do not interrupt voltage-carrying circuits at the battery terminals because of the sparking hazard.

► Do not disconnect the battery while the engine is running.

Environment

Dispose of old batteries in an environmentally friendly manner.

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Fuses and relays

- Blown fuses indicate overloading or short circuits. Have the electrical system checked by a Wacker Neuson service center.
- Only use fuses with the specified amperage.

– *see chapter “ Relays” on page 9-4*

– *see chapter “ Fuses” on page 9-4*

Battery

The battery may be checked, disconnected, charged and replaced only by a Wacker Neuson service center.

7.14 Heating, ventilation and air conditioning system

Not available.

7.15 Washer system

Not available.

7.16 Axles/travelling drive

Have maintenance performed only by a Wacker Neuson service center.

7.17 Braking system

Have maintenance performed only by a Wacker Neuson service center.

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7.18 Tracks

Checking track tension

WARNING

Crushing hazard during work under the vehicle!

Working under the tracks can cause serious injury or death.

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

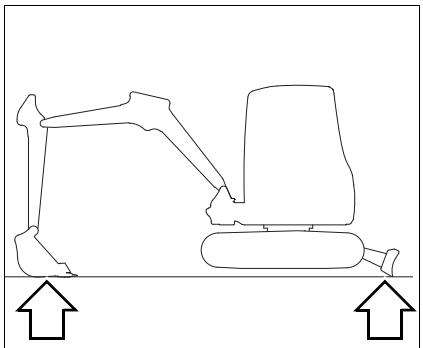


Fig. 260

1. Park the vehicle on firm, level, and horizontal ground.
2. Raise the vehicle evenly and horizontally by means of the boom and stabilizer blade.

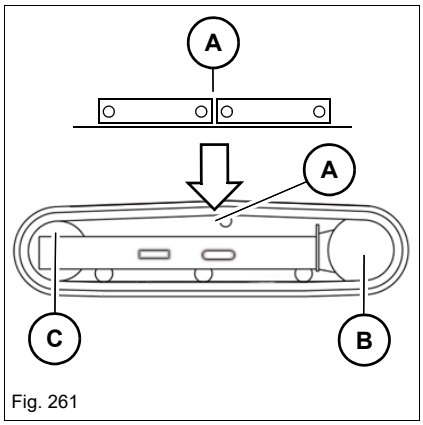


Fig. 261

3. Place the tracks so that mark **A** is in the middle between drive pinion **B** and track tension roller **C**.
4. Stop the engine.
5. Raise the control lever base.

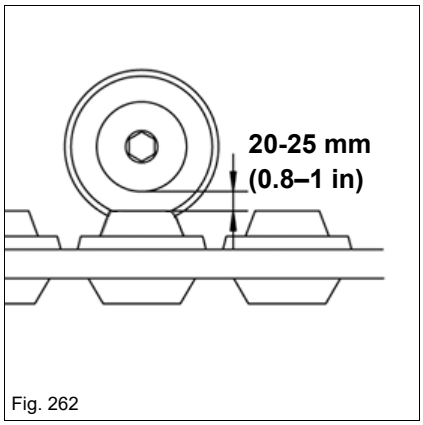


Fig. 262

6. Remove the starting key and carry it with you.
7. Adjust the correct track tension if the play between the track roller and the track is not 20 – 25 mm (0.8 – 1 in).

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Correcting track tension

WARNING

Injury hazard due to grease escaping under pressure!

Grease escaping under pressure can penetrate the skin and cause serious injury or death.

- ► Open the lubricating valve only very carefully and do not unscrew it more than one revolution.
- ► Wear protective equipment.
- ► Contact a Wacker Neuson service center if you are unable to reduce the track tension.

NOTICE

Possible damage to cylinders and tracks due to over-tightening.

- ► Tighten the tracks only up to the mandatory measuring distance.

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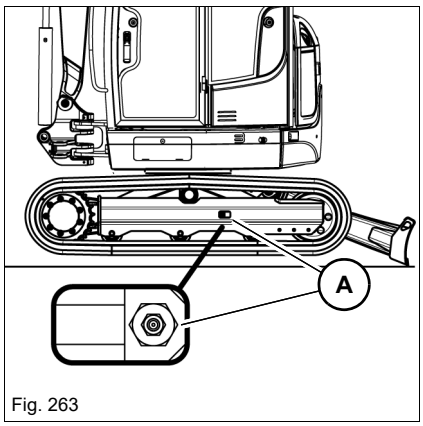


Fig. 263

Tightening the tracks

1. Park the vehicle on firm, level, and horizontal ground.
2. Raise the vehicle evenly and horizontally by means of the boom and stabilizer blade.
3. Stop the engine.
4. Pump grease with a grease gun through lubricating valve **A**.
5. Start the engine.
6. Lower the vehicle to the ground.
7. In order to check that the tension is correct:
   - Let it run at idling speed without any load
   - Slowly move the vehicle forward and reverse and switch it off again.
8. Check the track tension again.
   ➥ If it is not correct:
9. Repeat steps 2–9. Contact a Wacker Neuson service center if track tension still is too low after pumping in more grease.

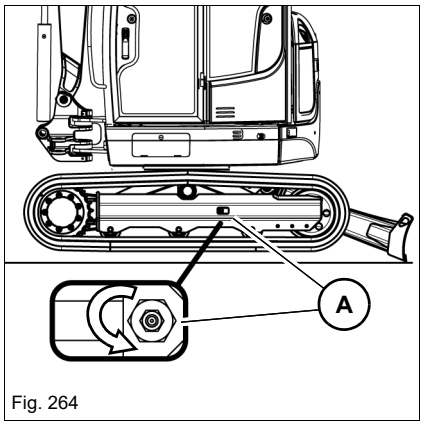


Fig. 264

Reducing tension

1. Place a suitable container underneath to collect the grease.
2. Slowly turn the lubricating valve **A** a maximum of one revolution counterclockwise to release the grease.
   ➥ The grease flows out of the groove of the lubricating valve.
3. Retighten lubricating valve **A**.
4. In order to check that the tension is correct:
   - Lower the vehicle to the ground.
   - Start the engine.
   - Let it run at idling speed without any load, then slowly move the vehicle forward and reverse, then turn it off again. Raise the vehicle again by means of the boom and stabilizer blade.
5. Check the track tension again.
   ➥ If it is not correct:
6. Adjust again.

Environment

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

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7.19 Maintenance and care of attachments

Important information regarding maintenance of attachments

Correct maintenance and service is absolutely necessary for smooth and continuous operation, and for an increased service life of the attachments. Please observe the lubrication and maintenance instructions in the Operator's Manuals of the attachments.

7.20 Maintenance of options

Joint rod (lifting eye) and load hook

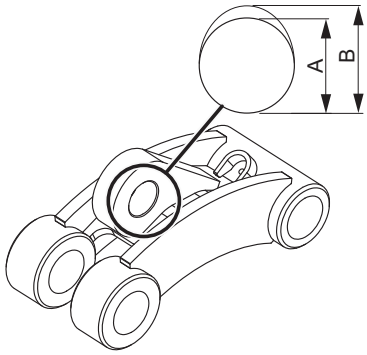


Fig. 265

Wear of joint rod (lifting eye)

Immediately replace lifting eyes with inadmissible wear (for example if they are beyond the max. tolerance), damage, deformations, surface cracks and corrosion.

The nominal size must not be worn more than 5% (max. tolerance). Measurement can be performed with the accuracy of a slide gage.

Welding is prohibited!

Joint rod (lifting eye)	Nominal size A	Max. tolerance B
EZ17	32 mm (1 1/4 in)	33.6 mm (1 3/8 in)

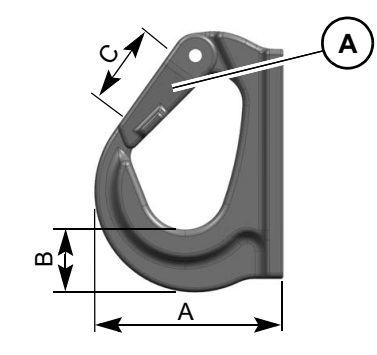


Fig. 266 (symbolic representation)

Load hook wear

Have load hooks (Powertilt, Powertilt for Easylock) with inadmissible wear (for example beyond the tolerance), damage, deformations, surface cracks and corrosion immediately replaced by a Wacker Neuson service center.

The nominal size must not be worn more than 10% (max. tolerance). Measurement can be performed with the accuracy of a slide gage.

Welding is prohibited!

If the spring mechanism of snap link **C** does not automatically close any more, stop machine operation with the load hook and have the error repaired by a Wacker Neuson service center.

Load hook	Nominal size A	Max. tolerance A	Nominal size B	Max. tolerance B	Nominal size C	Max. tolerance C
EZ17 (PTS-4.5)	86 mm (3 3/8 in)	94.6 mm (3 3/4 in)	30 mm (1 1/8 in)	27 mm (1 in)	33 mm (1 1/4 in)	36.3 mm (1 3/8 in)

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7.21 Exhaust gas treatment

Not available

7.22 Machine preservation

Machines are partly preserved at the factory (for example in the engine compartment). Operation in an aggressive environment (for example salt deposits) is prohibited.

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Notes:

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8 Malfunctions

Information

Contact a Wacker Neuson service center in case of malfunctions or signs that are not listed in the following tables or that cannot be rectified with specified measures.

8.1 Diesel engine malfunctions

Malfunction/sign	Possible cause	Remedy	Page
Engine does not start or is not easy to start	Empty fuel tank	Refueling	*7-29*
	Malfunctioning or empty battery	Have the battery replaced by an authorized workshop	--
	Malfunctioning fuse	Check the fuse	*9-4*
	Control lever base not raised	Raise the control lever base	*4-29*
Engine starts, but does not run smoothly or faultless	Air in fuel system	Let the engine run	*7-32*
	Water in fuel system	Empty the water separator.	*7-30*
Engine overheats	Engine oil level too low	Adding engine oil	*7-34*
	Dirty air filter	Replacing the air filter	*7-38*
	Dirty radiator fins	Cleaning the radiator	*7-37*
	Coolant level too low	Adding coolant	*7-36*
	Malfunctioning or insufficiently tightened V-belt	Contact a service center	--
Engine does not have enough output	Dirty air filter	Replacing the air filter	*7-38*
Insufficient or no engine oil pressure	Engine oil level too low	Adding engine oil	*7-34*
Black engine smoke	Dirty air filter	Replacing the air filter	*7-38*
Blue engine smoke	Oil level too high	Contact a service center	--
The indicator light for the coolant temperature illuminates (red) and the buzzer sounds	Coolant temperature is too high	Let the engine run at idling speed without any load Wait until the temperature drops and the indicator light goes out Stop the engine. Checking the coolant level	*4-23*, See also page *8-3*

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8.2 Malfunctions of the travelling drive

Malfunction/sign	Possible cause	Remedy	See
Machine does not stay on track, machine pulls to the right or left	Wrong track tension	Tighten tracks correctly	*7-48*
	Foreign bodies (stones, for example) stuck in tracks	Remove foreign bodies	--
	Uneven wear of tracks	Contact a service center	--

8.3 Malfunctions of the hydraulic system

Malfunction/sign	Possible cause	Remedy	See
Hydraulic system overheats	Dirty hydraulic oil radiator	Clean the hydraulic oil radiator	*7-37*
	Hydraulic oil level too low	Adding hydraulic oil	*7-41*
	Malfunctioning or insufficiently tightened V-belt	Contact a service center	--
The display element emits a continuous buzzing sound	Malfunctioning pressure switch of safe load indicator	Stop machine operation immediately, have the error repaired by a Wacker Neuson service center	--
Controls have no function	Control lever base raised	Lower the control lever base.	*4-29*
	Malfunctioning fuse	Check the fuse	*9-4*
Upper carriage cannot be swiveled	Upper carriage locked	Remove the pin	*6-7*

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8.4 Disorders of the electrical system

Malfunction/sign	Indicator light	Possible cause	Remedy	See
The switch-over of the speeds is not working.		Malfunctioning fuse	Check the fuse	*9-4*
Working light or horn does not work.	--	Malfunctioning fuse	Check the fuse	*9-4*
Charge indicator light (red) does not go out when the engine runs		Malfunctioning battery Malfunctioning alternator	Stop machine operation immediately Have the error repaired by a Wacker Neuson service center	--
Preheating indicator light (yellow) remains illuminated when the engine runs		Malfunctioning starter Malfunctioning display element		--
Indicator light for engine oil pressure (red) illuminates and the buzzer sounds when the engine runs		Pressure drop in engine oil circuit		
The indicator light for the coolant temperature (red) illuminates and the buzzer sounds		Coolant temperature is too high	Let the engine run at idling speed without any load Wait until the temperature drops and the indicator light goes out Stop the engine. Checking the coolant level	*4-23*
The indicator light for the engine oil pressure (red) and/or the charge indicator light (red) do not illuminate when the engine stops and the starter is switched on (position 1).		Malfunctioning indicator light	Stop machine operation immediately Have the indicator light replaced by a Wacker Neuson service center	

8.5 Malfunctions in the air conditioning system

No malfunctions specified.

8.6 Disorders of attachments

No malfunctions specified.

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Notes:

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9 Technical data

9.1 Models and trade names

– see chapter " Overview of models and trade name" on page 3-2

9.2 Engine

Engine	EZ17	
Product	Yanmar	
Type	3TNV76-SNSE12	3TNV80F-SSNS1
	3TNV76-SNSE12V[1]	
Design	Water-cooled 3-cylinder diesel engine	
Intake system	Naturally aspirated engine	
Fuel injection system	Indirect	
Engine management	Mechanical	
Displacement	1116 cm^3 (68.1 in^3)	1266 cm^3 (77.3 in^3)
Nominal bore and stroke	76 x 82 mm (2.9 x 3.2 in)	80 x 84 mm (3.2 x 3.3 in)
Power	13.8 kW at 2200 min^{-1} (18.5 hp at 2200 rpm)	13.4 kW at 2200 min^{-1} (17.9 hp at 2200 rpm)
Max. torque	65.6 Nm at 1600 rpm (48.4 ft.lbs./1600 rpm)	65.8 Nm at 1600 rpm (48.5 ft.lbs./1600 rpm)
Max. engine speed without load	2200 +/− 25 rpm (2200 +/− 25 rpm)	2200 +/− 25 rpm (2200 +/− 25 rpm)
Idling speed	1300 +/− 25 rpm (1300 +/− 25 rpm)	1300 +/− 25 rpm (1300 +/− 25 rpm)
Starting aid	Glow plugs	
Fuel tank	22 liter (5.8 gal)	
Exhaust values according to:		
Up to 2012	EPA Tier 4 final[2]	--
Starting from 2012	--[2]	EPA Tier 4 final
From 2019[1]	EU Stage V	

1. Valid for diesel engines with production date starting 2019
2. No EU emissions guideline for diesel engines under 19 kW (25.5 hp)

Information

The vehicle has a little less output at altitudes over 800 m (2625 ft) above sea level. However, this does not affect excavator operation (Yanmar 3TNV80F-SSNS1).

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9.3 Drive/axles

	EZ17
Travel drive	Axial piston motor

9.4 Brake

See drive lever

9.5 Tracks

Type	Width mm (in)	Ground pressure kg/cm^2 (lbs/in^2)	Ground clearance mm (in)
Rubber	230 (9)	0,28 (4)	156 (6)
Steel	230 (9)	0,3 (4.3)	156 (6)

9.6 Steering system

See drive lever

9.7 Work hydraulics

Work hydraulics	EZ17
Type of control	Load-pressure independent flow distribution (LIFD)
Number/type of pumps	1
Flow rate	39.6 l/min (10.5 gal/min)
Operating pressure for operating and travel hydraulics	240 bar (3481 psi)
Hydraulic reservoir capacity	14.8 liter (3.9 gal)
Hydraulic oil quantity (system fill)	21 liter (5.5 gal)
Swivel range of upper carriage	360°
Rotation speed of upper carriage	9.4 rpm

Maximum speed

	EZ17
Speed range 1	2.6 km/h (1.6 mph)
Speed range 2	4.8 kph (3 mph)

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9.8 Electrics department

WARNING

Fire hazard in case of incorrect handling of electric components!

Can cause serious injury or death.

- ► Use only specified fuses.
- ► Do not repair or bypass fuses.
- ► If a replaced fuse is blown again directly, do not put the vehicle into operation and contact a Wacker Neuson service center.

NOTICE

Explosion hazard in case of incorrect handling of fuses.

- ► Use only specified fuses.
- ► Do not repair or bypass fuses.
- ► If a replaced fuse is blown again directly, do not put the vehicle into operation and contact a Wacker Neuson service center.

Electrical components

	EZ17
Alternator	12 V 55 A
Starter	12 V 1.1 kW (1.5 hp)
Battery	12 V 30 Ah

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Fuses

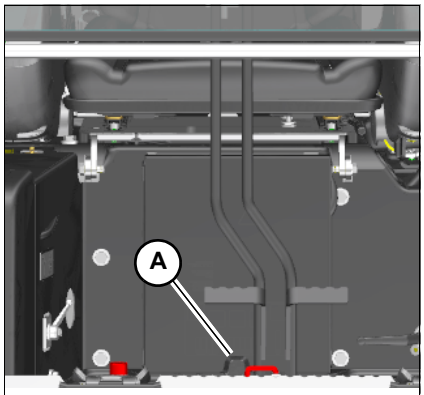


Fig. 267

The fuses and relay are located behind the battery cover, under the operator's seat.

Remove the screw **A** and remove the battery cover.

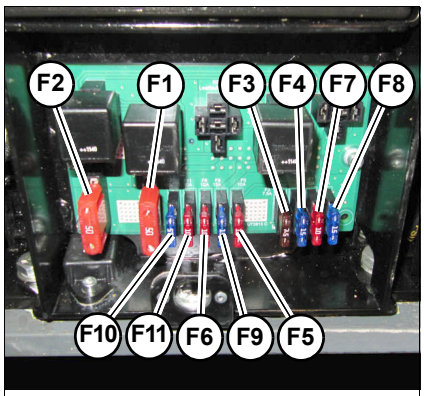


Fig. 268

Fuses	Rated current (A)	EZ17
F1	50 A	Master fuse
F2	50 A	Main fuse, air-pressure sensor/performance adaptation (Yanmar 3TNV80F-SSNS1)
F3	7.5 A	Display, cutoff solenoid
F4	15 A	Valves, horn
F5	10 A	Proportional controls
F6	10 A	Travel signal, overload
F7	10 A	Boom, cab working lights
F8	15 A	Cabin working lights
F9	15 A	No function
F10	15 A	Power outlet
F11	10 A	No function

Relays

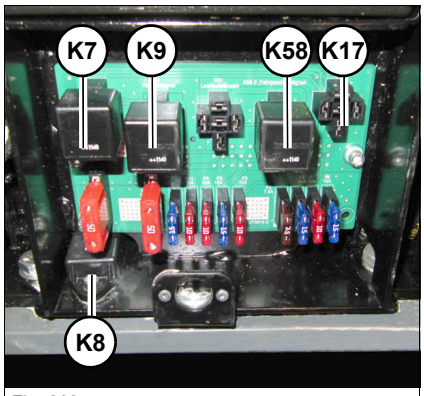


Fig. 269

Relays	EZ17
K7	Starting relay
K8	Cutoff solenoid time lag relay
K9	Cutoff solenoid (pull relay)
K17	Hydraulic quickhitch
K58	Speed range 2

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Bulbs

	EZ17
Working lights	Halogen lamp 12V-55W H3
LED working light	--
Rotating beacon	Halogen lamp 12V-55W H1
Rotating LED beacon	--

Powertilt (option)

	EZ17
Swiveling range	about 180°

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9.9 Tightening torques

General tightening torques

Property class	8.8	10.9	12.9	8.8	10.9
Screw dimensions	Screws according to DIN 912, DIN 931, DIN 933, etc.			Screws according to DIN 7984	
	Nm (ft.lbs.)	Nm (ft.lbs.)	Nm (ft.lbs.)	Nm (ft.lbs.)	Nm (ft.lbs.)
M5	5,5 (4)	8 (6)	10 (7)	5 (4)	7 (5)
M6	10 (7)	14 (10)	17 (13)	8,5 (6)	12 (9)
M8	25 (18)	35 (26)	42 (31)	20 (15)	30 (22)
M10	45 (33)	65 (48)	80 (59)	40 (30)	59 (44)
M12	87 (64)	110 (81)	147 (108)	69 (51)	100 (74)
M14	135 (100)	180 (133)	230 (170)	110 (81)	160 (118)
M16	210 (155)	275 (203)	350 (258)	170 (125)	250 (184)
M18	280 (207)	410 (302)	480 (354)	245 (181)	345 (254)
M20	410 (302)	570 (420)	690 (509)	340 (251)	490 (361)
M22	550 (406)	780 (575)	930 (686)	460 (339)	660 (487)
M24	710 (524)	1000 (738)	1190 (878)	590 (435)	840 (620)
M27	1040 (767)	1480 (1092)	1770 (1305)	870 (642)	1250 (922)
M30	1420 (1047)	2010 (1482)	2400 (1770)	1200 (885)	1700 (1254)

Tightening torques/fine-pitch thread					
Property class	8.8	10.9	12.9	8.8	10.9
Screw dimensions	Screws according to DIN 912, DIN 931, DIN 933, etc.			Screws according to DIN 7984	
	Nm (ft.lbs.)	Nm (ft.lbs.)	Nm (ft.lbs.)	Nm (ft.lbs.)	Nm (ft.lbs.)
M8X1.0	25 (18)	37 (28)	43 (32)	22 (16)	32 (24)
M10X1.0	50 (37)	75 (55)	88 (65)	43 (32)	65 (48)
M10X1.25	49 (36)	71 (52)	83 (61)	42 (31)	62 (46)
M12X1.25	87 (64)	130 (96)	150 (111)	75 (55)	110 (81)
M12X1.5	83 (61)	125 (92)	145 (107)	72 (53)	105 (77)
M14X1.5	135 (100)	200 (148)	235 (173)	120 (89)	175 (129)
M16X1.5	210 (155)	310 (229)	360 (266)	180 (133)	265 (195)
M18X1.5	315 (232)	450 (332)	530 (391)	270 (199)	385 (284)
M20X1.5	440 (325)	630 (465)	730 (538)	375 (277)	530 (391)
M22X1.5	590 (435)	840 (620)	980 (723)	500 (369)	710 (524)
M24X2.0	740 (546)	1070 (789)	1250 (922)	630 (465)	900 (664)
M27X2.0	1100 (811)	1550 (1143)	1800 (1328)	920 (679)	1300 (959)
M30X2.0	1500 (1106)	2150 (1586)	2500 (1844)	1300 (959)	1850 (1364)

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9.10 Coolant

Compound table

Outside temperature[1]	Distilled 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.

9.11 Noise emissions

	EZ17 (Yanmar 3TNV76-SNSE12)
Measured sound power level LwA[1]	93.0 dB(A)
Guaranteed sound power level LwA[1]	93.0 dB(A)
Uncertainty factor K_{A2}[2]	0,8
Operator-perceived sound pressure level LpA (without cabin)[3]	79.0 dB(A)

1. According to ISO 6395 (EC Directives 2000/14/EC and 2005/88/EC)
2. According to EN ISO 4871 (EC Directives 2000/14/EC and 2005/88/EC)
3. According to ISO 6394 (EC Directives 84/532/EEC, 89/514/EEC, 95/27/EEC)

Information

Measurements performed on asphalted surface.

9.12 Vibrations

Vibrations[1]	
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

1. Uncertainty of measurement as per DIN EN 474-1:2014-03

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9.13 Weight

Machine weight

EZ17 (short shovel arm, rubber track)	Weight kg (lbs)
Transport weight[1]	1594 (3514)
Operating weight[2]	1724 (3801)

1. Transport weight: basic machine + 10% fuel capacity.
2. Operating weight: basic machine + full fuel tank + backhoe bucket (400 mm/16 in) + user (75 kg/165 lbs).

Information

Weight indications can vary by +/- 2%.

Determining the loading weight

The basis for calculating the loading weight is the shipping weight indicated on the vehicle nameplate. Add subsequently installed options and attachments (e.g. bucket, Easy Lock, breaker console) to the shipping weight. Add fuel depending on the tank capacity.

Option	Weight[1] kg (lbs)
Steel track	110 (243)
Rear weight	50 (110)
Advanced overload warning device	16 (35)
Basic overload warning device	15 (33)
Quickhitch-ready	11 (24)
FOPS screen	9 (20)
3rd control circuit / proportional control	8 (18)
Shatter protection	7 (15)
Long stick	6 (13)
Attachments – *see chapter " Technical data of attachments" on page 9-10*	
Full fuel tank	19 (42)

1. The weight indications for options exclusively refer to Wacker Neuson original accessories.

Information

The given weights are exemplary. In order to determine the exact weight, the vehicle must be weighed before transportation.

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Fields of application and use of attachments

WARNING

Accident hazard due to unauthorized attachments!

If unauthorized attachments are used, the vehicle can tip over, which can lead to serious injury or death.

► Only use attachments released by Wacker Neuson.

NOTICE

Machine can be damaged due to unreleased attachments.

► Only use the attachments specified in the table.

Compare the weight of the attachment and its maximum payload with the indications in the relevant lift capacity table or load diagram. Never exceed the maximum payload stated in the lift capacity table or load diagram.

Information

Please refer to the Operator's Manual and maintenance manual of the attachment manufacturer for operating and maintenance instructions for attachments such as hammers, grabs, hydraulic quickhitches, etc.

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Technical data of attachments

The specified weights are exemplary and only serve as a guide. The actual weight may be lower or higher. In order to determine the actual weight, the attachment must be weighed.

Not all attachments are available for every vehicle.

There may be additional bucket widths that are not specified in this operator's manual.

Only use attachments released by Wacker Neuson. For more information, contact a Wacker Neuson sales partner.

Observe the national and regional regulations.

Vehicle class up to 2 tons		
Bucket	**Width mm (in)**	**Weight kg (lbs)**
Bucket	250 (10)	35-50 (80-110)
	300 (12)	35-55 (80-125)
	400 (16)	40-65 (90-145)
	500 (20)	50-75 (110-170)
	600 (24)	65-80 (145-180
	700 (28)	75-85 (170-190)
Ditch cleaning bucket	850 (33)	65-75 (145-170)
	1000 (39)	75-110 (170-245)
	1200 (47)	85-95 (190-210)
Offset bucket	850 (33)	115-125 (255-280)
	1000 (39)	140-165 (310-365)
	1200 (47)	125-175 (280-390)

Accessories of the vehicle class up to 2 tons	**Weight kg (lbs)**
Consoles (Easy Lock, Lehnhoff system, etc.)	20-30 (45-70)
Hydraulic hammer	65-135 (145-300)
Powertilt (consoles, Easy Lock etc.)	30-75 (70-170)

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Excavation power

EZ17e	Easy Lock and bucket 400 mm	Bucket 400 mm, bolted
Max. tearout force (short stick)	8.4 kN (2046 lbf)	9.1 kN (2046 lbf)
Max. tearout force (long stick)	7.7 kN (1731 lbf)	8.1 kN (1821 lbf)
Max. breakout force (at bucket tooth)[1]	14.8 kN (3327 lbf)	17 kN (3828 lbf)
Max. breakout force (at bucket edge)[2]	16.2 kN (3642 lbf)	20.5 kN (4609 lbf)

1. According to DIN 24086
2. According to ISO 6015

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9.14 Lift capacity/load

Safety instructions lift capacity tables

Observe the values of the lift capacity tables in normal operation (for example excavating).

Observe the values of the load diagrams in lifting gear applications.

DANGER

Crushing hazard due to tipping over of vehicle!

The vehicle causes serious injury or death when it tips over.

- ► The weight of the attachment and load must be subtracted from the weight specified in the corresponding column in the table.
- ► Pay attention to the density of the load.
- ► Do not exceed the weights indicated in the lift capacity tables.
- ► Only perform work with an extended telescopic travel gear.

NOTICE

If the weight is exceeded, there is a risk of damage to property if the machine tips over.

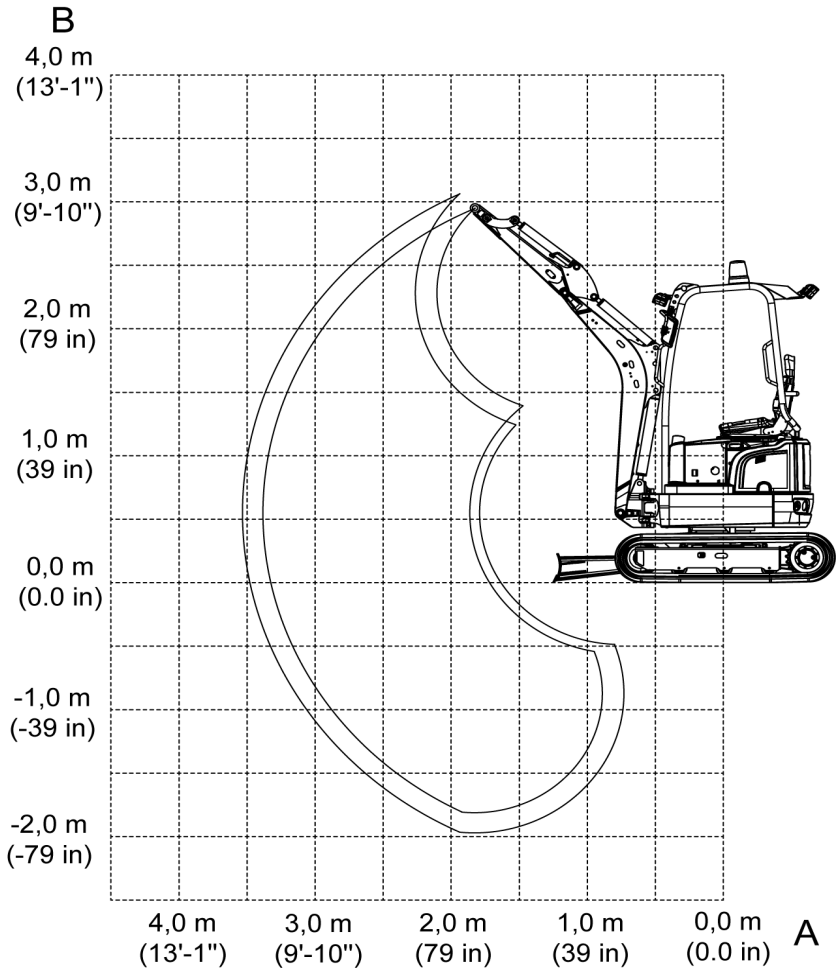
- ► Do not exceed the weights indicated in the load diagrams.

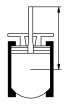
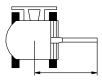
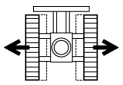
Information

The indications are only approximate values. Uneven ground or poor ground conditions affect vehicle stability. The operator must take these influences into account.

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Legend



Description	Explanation
A	Reach from live ring center
B	Load hook height
max	Admissible weight or mass value with boom in horizontal position
	With or without the stabilizer blade in travelling direction
	With or without the stabilizer blade, 90° to travel direction
	Lowered stabilizer blade
	Raised stabilizer blade
	Telescopic travel gear extended

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All table values are specified in kg (lbs), in horizontal position on firm and level ground without bucket or attachment (for example a breaker).

The vehicle’s lift capacity is restricted by the settings of the pressure limiting valves, 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.

Calculation basis: according to ISO 10567.

Setting pressure on boom cylinder: 22,500 kPa (3263 psi)

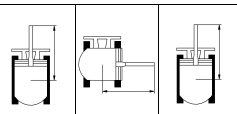
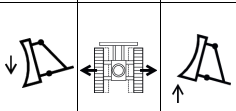
The lift capacity applies to vehicles under the following conditions:

- Fuel, lubricants and coolants at the prescribed levels
- Full fuel tank
- Canopy
- Machine at operating temperature
- Operator weight 75 kg (165 lbs.)
- Telescopic travel gear extended

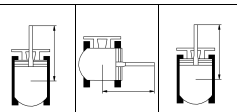
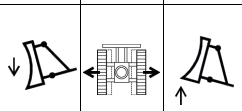
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Lift capacity table EZ17

Lift capacity table EZ17 (short stick)

A / B				3.0 m (9'-10")			2.5 m (98 in)			2.0 m (79 in)			1.5 m (59 in)		
															
															
2.5 m (98 in)	474 (1045)	302 (666)	274 (603)	- -	- -	- -	469 (1034)	306 (674)	277 (611)	- -	- -	- -	- -	- -	- -
2.0 m (79 in)	468 (1032)	231 (510)	207 (456)	- -	- -	- -	431 (950)	308 (678)	279 (615)	- -	- -	- -	- -	- -	- -
1.0 m (39 in)	435 (959)	182 (402)	161 (355)	491 (1083)	218 (481)	194 (428)	591 (1303)	291 (641)	262 (577)	781 (1722)	410 (903)	374 (824)	- -	- -	- -
0.0 m (0.0 in)	404 (891)	179 (394)	157 (346)	493 (1087)	208 (459)	184 (405)	653 (1440)	271 (598)	242 (534)	916 (2020)	376 (828)	339 (747)	- -	- -	- -
−1.0 m (−39 in)	384 (847)	221 (487)	195 (431)	- -	- -	- -	511 (1127)	269 (593)	239 (528)	705 (1555)	375 (827)	338 (746)	1034 (2280)	602 (1328)	555 (1224)
−1.5 m (−59 in)	386 (851)	293 (646)	262 (579)	- -	- -	- -	- -	- -	- -	540 (1191)	383 (845)	346 (764)	811 (1788)	614 (1353)	567 (1250)

Lift capacity table EZ17 (long stick)

A / B				3.0 m (9'-10")			2.5 m (98 in)			2.0 m (79 in)			1.5 m (59 in)		
															
															
2.5 m (98 in)	434 (957)	264 (582)	238 (524)	- -	- -	- -	375 (827)	310 (684)	282 (621)	- -	- -	- -	- -	- -	- -
2.0 m (79 in)	431 (950)	209 (462)	186 (411)	423 (933)	226 (498)	202 (446)	362 (798)	310 (683)	281 (620)	- -	- -	- -	- -	- -	- -
1.0 m (39 in)	405 (893)	168 (371)	148 (326)	471 (1039)	218 (481)	194 (428)	549 (1211)	291 (643)	263 (579)	686 (1513)	414 (913)	378 (834)	- -	- -	- -
0.0 m (0.0 in)	380 (838)	165 (363)	144 (317)	497 (1096)	206 (454)	182 (400)	655 (1444)	269 (594)	240 (529)	929 (2048)	373 (823)	336 (742)	- -	- -	- -
−1.0 m (−39 in)	364 (803)	198 (437)	174 (384)	385 (849)	204 (449)	179 (395)	540 (1191)	264 (581)	234 (517)	745 (1643)	368 (812)	331 (731)	1119 (2467)	591 (1304)	543 (1198)
−1.5 m (−59 in)	365 (805)	251 (553)	223 (491)	- -	- -	- -	413 (911)	269 (593)	240 (529)	596 (1314)	375 (826)	338 (745)	903 (1991)	602 (1327)	554 (1222)

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Lift capacity table EZ17 with extra weight (short stick)

A / B	max	3.0 m (9'-10")			2.5 m (98 in)			2.0 m (79 in)			1.5 m (59 in)		
2.5 m (98 in)	474 (1045)	326 (719)	299 (659)	- -	- -	- -	469 (1034)	330 (728)	303 (668)	- -	- -	- -	- -	- -	- -
2.0 m (79 in)	468 (1032)	251 (553)	228 (502)	- -	- -	- -	431 (950)	332 (732)	305 (672)	- -	- -	- -	- -	- -	- -
1.0 m (39 in)	435 (959)	199 (440)	179 (394)	491 (1083)	238 (524)	215 (473)	591 (1303)	315 (694)	287 (633)	781 (1722)	442 (975)	408 (901)	- -	- -	- -
0.0 m (0.0 in)	404 (891)	196 (432)	175 (386)	493 (1087)	227 (501)	204 (450)	653 (1440)	296 (652)	268 (590)	916 (2020)	408 (901)	374 (824)	- -	- -	- -
−1.0 m (−39 in)	384 (847)	241 (532)	217 (478)	- -	- -	- -	511 (1127)	293 (646)	265 (584)	705 (1555)	408 (899)	373 (822)	1034 (2280)	653 (1439)	609 (1343)
−1.5 m (−59 in)	386 (851)	318 (702)	289 (638)	- -	- -	- -	- -	- -	- -	540 (1191)	416 (917)	381 (841)	811 (1788)	664 (1465)	621 (1370)

Lift capacity table EZ17 with extra weight (long stick)

A / B	max	3.0 m (9'-10")			2.5 m (98 in)			2.0 m (79 in)			1.5 m (59 in)		
2.5 m (98 in)	434 (957)	285 (629)	260 (574)	- -	- -	- -	375 (827)	334 (737)	307 (677)	- -	- -	- -	- -	- -	- -
2.0 m (79 in)	431 (950)	228 (502)	206 (453)	423 (933)	245 (541)	222 (490)	362 (798)	334 (737)	307 (677)	- -	- -	- -	- -	- -	- -
1.0 m (39 in)	405 (893)	184 (406)	165 (363)	471 (1039)	237 (523)	214 (472)	549 (1211)	316 (696)	288 (636)	686 (1513)	447 (985)	413 (911)	- -	- -	- -
0.0 m (0.0 in)	380 (838)	181 (398)	161 (354)	497 (1096)	225 (496)	202 (445)	655 (1444)	293 (647)	265 (585)	929 (2048)	406 (895)	371 (818)	- -	- -	- -
−1.0 m (−39 in)	364 (803)	217 (478)	194 (428)	385 (849)	223 (491)	200 (440)	540 (1191)	288 (635)	260 (573)	745 (1643)	401 (885)	366 (808)	1119 (2467)	642 (1415)	598 (1318)
−1.5 m (−59 in)	365 (805)	273 (603)	247 (544)	- -	- -	- -	413 (911)	293 (647)	265 (585)	596 (1314)	408 (899)	373 (822)	903 (1991)	652 (1438)	609 (1342)

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Safety instructions load diagrams

The values of the stability table (load diagram) apply to lifting gear applications.

DANGER

Crushing hazard due to tipping over of vehicle!

The vehicle causes serious injury or death when it tips over.

- ► Do not exceed the weights indicated in the load diagrams.
- ► Subtract the weight of the attachment from the weight specified in the relevant load diagram.
- ► Use the vehicle for lifting gear applications only if the mandatory lifting gear and safety equipment is installed, functional and enabled.
- ► Telescopic travel gear extended.
- ► The boom must be straight towards the cab - see *Fig. 270*

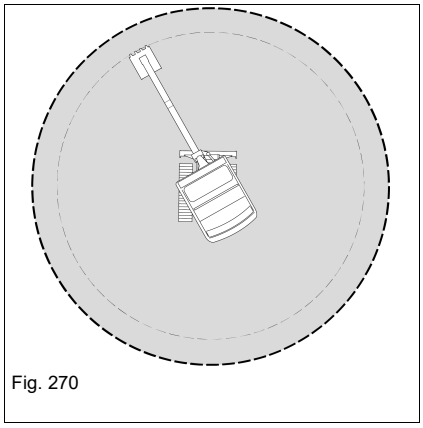


Fig. 270

NOTICE

If the weight is exceeded, there is a risk of damage to property if the machine tips over.

- ► Do not exceed the weights indicated in the load diagrams.

Information

The indications are only approximate values. Attachments, uneven ground and soft or bad ground conditions affect stability and therefore the weight to be manipulated. The operator must take these influences into account.

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Legend

Description	Explanation
X	Reach from live ring center
Z	Load hook height in the respective range
max	Authorized lift capacity with horizontal boom
L	Stick short/long

Authorized lift capacity applies to entire swiveling range of 360°.

All table indications in kg (lbs.) and horizontal position on firm and level ground without bucket or exchangeable attachment.

The vehicle’s lift capacity is restricted by the settings of the pressure limiting valves, 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.

Calculation basis: according to ISO 10567.

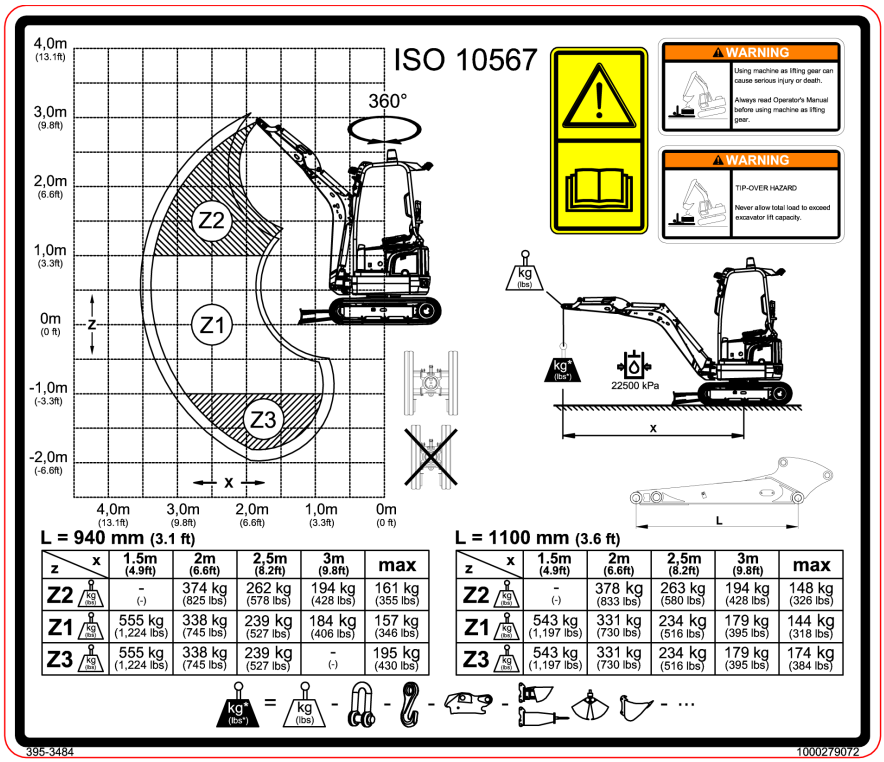
Setting pressure on boom ram 22,500 kPa (3263 psi).

Lift capacities apply to vehicles under the following conditions:

- Fuel, lubricants and coolants at the prescribed levels
- Full fuel tank
- Canopy
- Machine at operating temperature
- Operator weight 75 kg (165 lbs.)

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Canopy, without extra weight



L = 940 mm (3.1 ft)

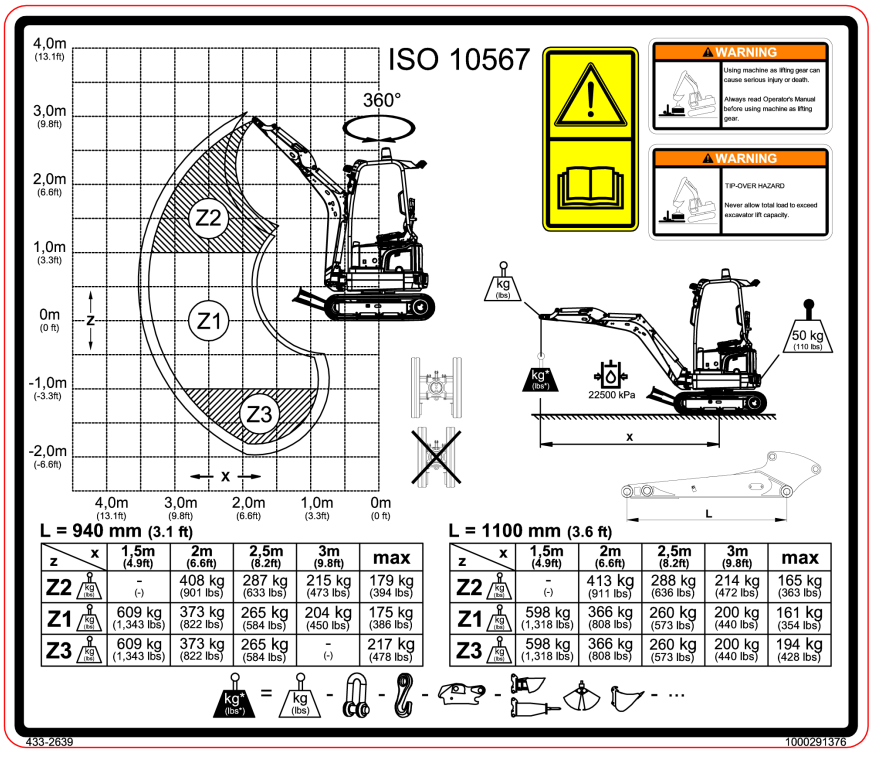
z \ x	1.5m (4.9ft)	2m (6.6ft)	2,5m (8.2ft)	3m (9.8ft)	max
Z2	- (-)	374 kg (825 lbs)	262 kg (578 lbs)	194 kg (428 lbs)	161 kg (355 lbs)
Z1	555 kg (1,224 lbs)	338 kg (745 lbs)	239 kg (527 lbs)	184 kg (406 lbs)	157 kg (346 lbs)
Z3	555 kg (1,224 lbs)	338 kg (745 lbs)	239 kg (527 lbs)	- (-)	195 kg (430 lbs)

L = 1100 mm (3.6 ft)

z \ x	1.5m (4.9ft)	2m (6.6ft)	2,5m (8.2ft)	3m (9.8ft)	max
Z2	- (-)	378 kg (833 lbs)	263 kg (580 lbs)	194 kg (428 lbs)	148 kg (326 lbs)
Z1	543 kg (1,197 lbs)	331 kg (730 lbs)	234 kg (516 lbs)	179 kg (395 lbs)	144 kg (318 lbs)
Z3	543 kg (1,197 lbs)	331 kg (730 lbs)	234 kg (516 lbs)	179 kg (395 lbs)	174 kg (384 lbs)

Fig. 271

Canopy, with extra weight



L = 940 mm (3.1 ft)

z \ x	1,5m (4.9ft)	2m (6.6ft)	2,5m (8.2ft)	3m (9.8ft)	max
Z2	- (-)	408 kg (901 lbs)	287 kg (633 lbs)	215 kg (473 lbs)	179 kg (394 lbs)
Z1	609 kg (1,343 lbs)	373 kg (822 lbs)	265 kg (584 lbs)	204 kg (450 lbs)	175 kg (386 lbs)
Z3	609 kg (1,343 lbs)	373 kg (822 lbs)	265 kg (584 lbs)	- (-)	217 kg (478 lbs)

L = 1100 mm (3.6 ft)

z \ x	1,5m (4.9ft)	2m (6.6ft)	2,5m (8.2ft)	3m (9.8ft)	max
Z2	- (-)	413 kg (911 lbs)	288 kg (636 lbs)	214 kg (472 lbs)	165 kg (363 lbs)
Z1	598 kg (1,318 lbs)	366 kg (808 lbs)	260 kg (573 lbs)	200 kg (440 lbs)	161 kg (354 lbs)
Z3	598 kg (1,318 lbs)	366 kg (808 lbs)	260 kg (573 lbs)	200 kg (440 lbs)	194 kg (428 lbs)

Fig. 272

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Dimensions

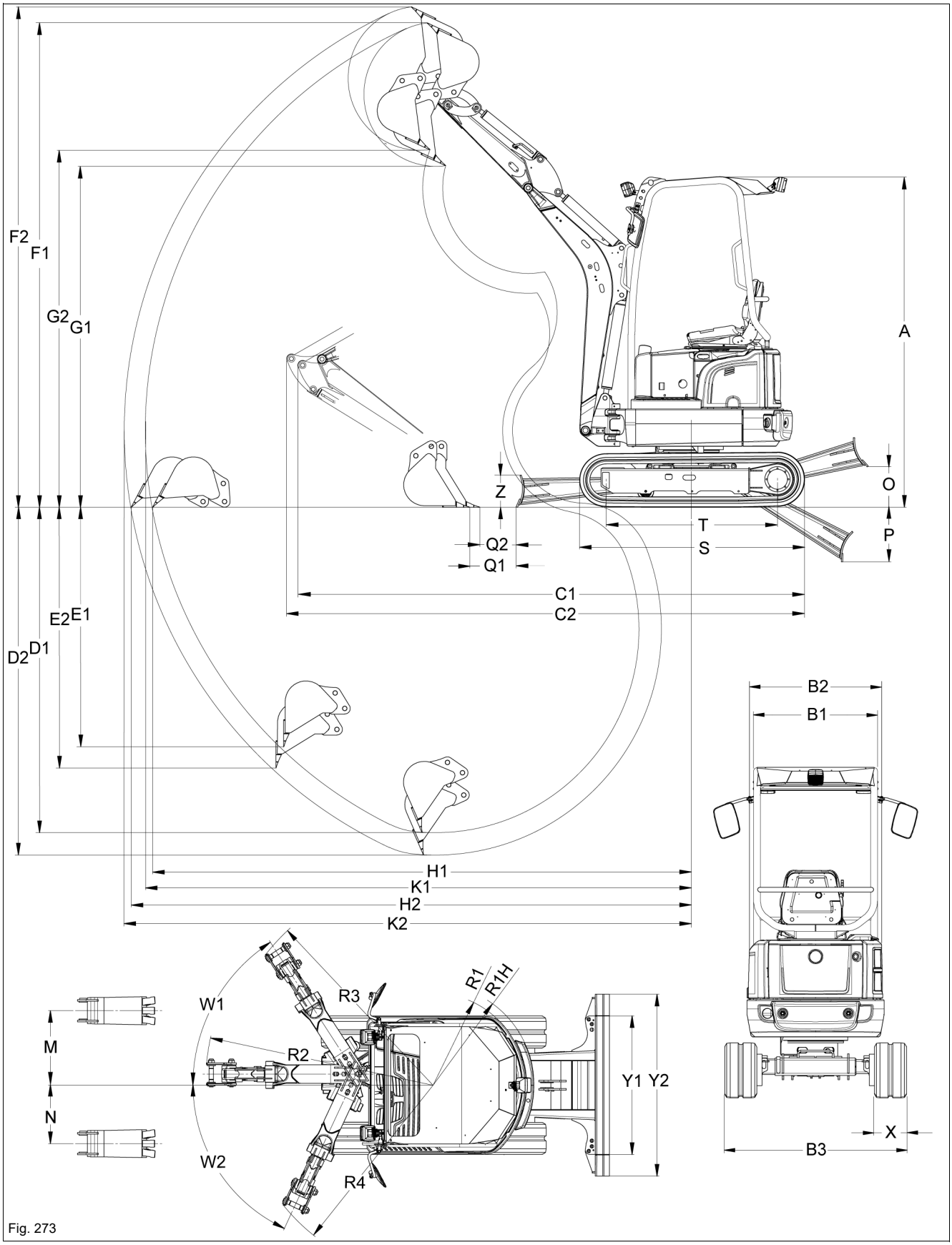


Fig. 273

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	EZ17	
A	Height	2360 mm (93 in)
B1	Canopy width	885 mm (35 in)
B2	Upper carriage width	980 mm (39 in)
B3	Width with retracted travel gear	990 mm (39 in)
B3	Width with extended travel gear	1300 mm (51 in)
C1	Transport length (short stick)	3585 mm (11'-9")
C2	Transport length (long stick)	3550 mm (11'-8")
D1	Max. digging depth (short stick)	2330 mm (92 in)
D2	Max. digging depth (long stick)	2490 mm (8'-2")
E1	Max. vertical digging depth (short stick)	1715 mm (68 in)
E2	Max. vertical digging depth (long stick)	1865 mm (73 in)
F1	Max. digging height (short stick)	3465 mm (11'-4")
F2	Max. digging height (long stick)	3580 mm (11'-9")
G1	Max. tilt-out height (short stick)	2440 mm (96 in)
G2	Max. tilt-out height (long stick)	2550 mm (8'-4")
H1	Max. reach at ground level (short stick)	3850 mm (12'-8")
H2	Max. reach at ground level (long stick)	4000 mm (13'-2")
K1	Max. digging radius (short stick)	3900 mm (12'-10")
K2	Max. digging radius (long stick)	4050 mm (13'-3")
M	Max. boom displacement to bucket center (right side)	535 mm (21 in)
N	Max. boom displacement to bucket center (left side)	425 mm (17 in)
O	Max. lift height of stabilizer blade over ground	271 mm (11 in)
P	Max. scraping depth of stabilizer blade below ground surface	390 mm (15 in)
Q1	Distance between bucket and stabilizer blade (short stick)	332 mm (13 in)
Q2	Distance between bucket and stabilizer blade (long stick)	260 mm (10 in)
R1	Min. tail end swiveling radius	650 mm (26 in)
R1H	Min. tail end swiveling radius (with extra weight)	725 mm (29 in)
R2	Boom swivel radius (center)	1625 mm (64 in)
R3	Boom swivel radius (right)	1515 mm (60 in)
R4	Boom swivel radius (left)	1370 mm (54 in)
S	Total running gear length	1605 mm (63 in)
T	Running gear length (Turas front idler)	1225 mm (48 in)
W1	Max. tilting angle of boom to the right	57°
W2	Max. tilting angle of boom to the left	65°
X	Track width	230 mm (9 in)
Y1	Stabilizer blade width	990 mm (39 in)
Y2	Stabilizer blade width with extension	1300 mm (51 in)
Z	Stabilizer blade height	230 mm (9 in)

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Notes:

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COMPACT EXCAVATOR

www.aem.org

SAFETY MANUAL

FOR OPERATING AND MAINTENANCE PERSONNEL



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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.

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Revised 05/03, 09/10

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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.



Read And Understand Manuals Before Operating

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.

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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!

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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

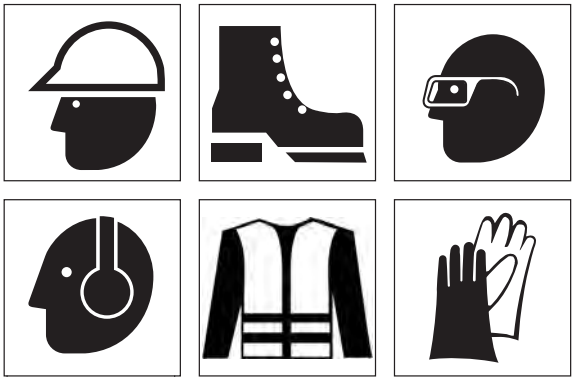
Protect Yourself

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.

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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.

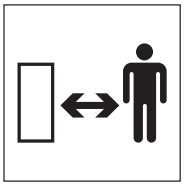


Know Machine Limitations And Operating Characteristics



Inspect The Machine Before Each Workday





Be Aware Of Worksite Hazards, Keep Bystanders Away

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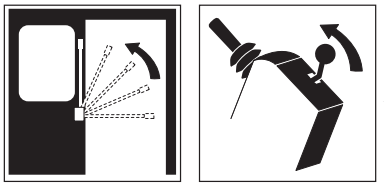
Follow A Safety Program

— 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.







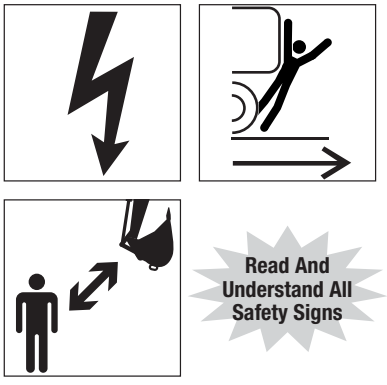


Follow A Safety Program

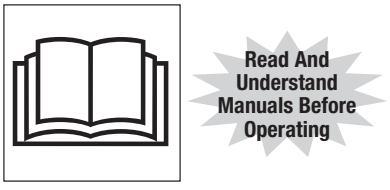
Know The Equipment

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



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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**.)



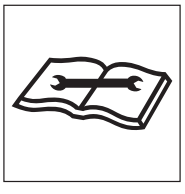
Follow A Checklist

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

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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**.)

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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.



Read And Understand Manuals Before Operating

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

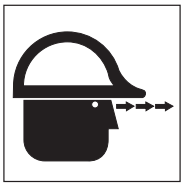
Clean windshields, mirrors and all lights. Use water and a clean cloth. Know and follow the manufacturer's recommendations for using cleaning agents other than clean water on polycarbonate glazing.

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.



Maintain Vision – Clean Up



Avoid Falls – Clean Slippery Surfaces



Avoid Fire – Clean Out Debris



Put Away Tools And Loose Items

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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

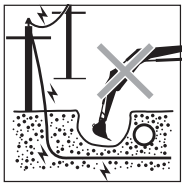
Check The Work Area (continued)

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.

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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.







Start Safely

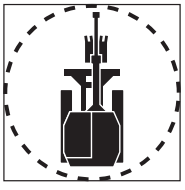
Look Out For Others

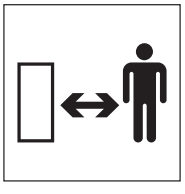
Before starting, walk completely around the machine operating area. Make sure no one is under it, on it or close to it. Do not start the engine until everyone is clear of the operating area.

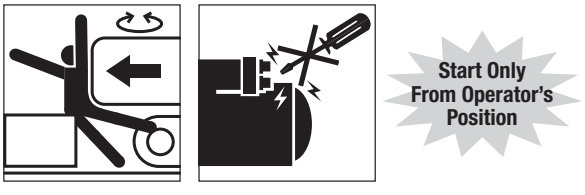
Starting The Engine

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.







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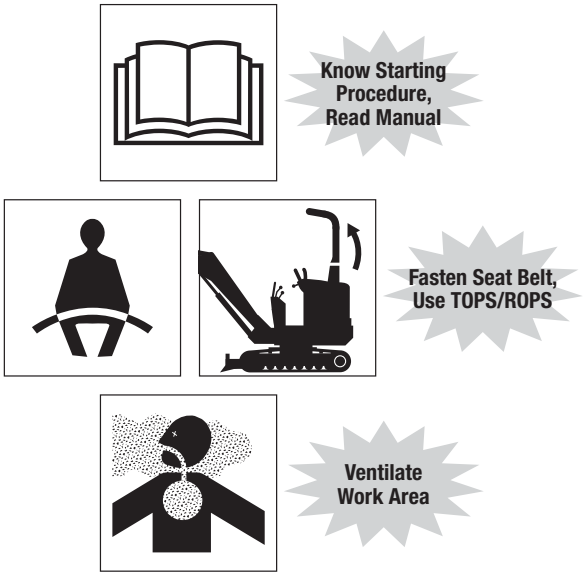
Start Safely

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.



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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.

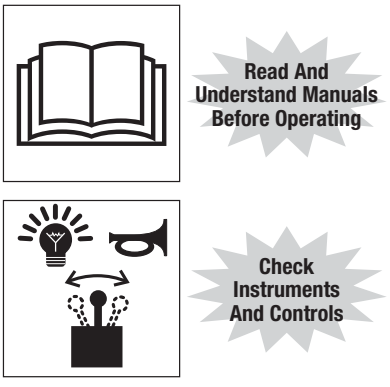
Make sure the attachment quick-coupling device (if equipped) is operating properly, fully engaged and visibly locked. (See page 17, **Quick-coupling Device Safety**.)

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.**



Operate Safely

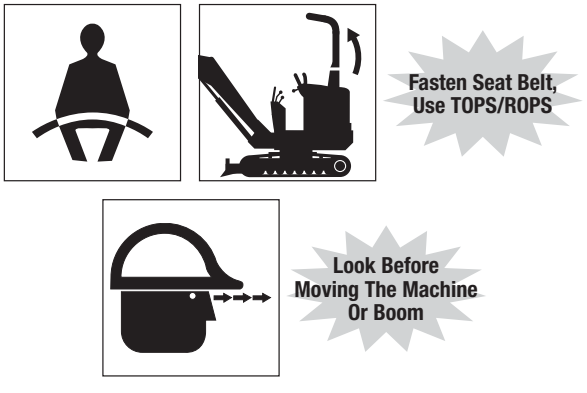
Remember

— 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.



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.

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Operate Safely

Traveling On The Worksite

Know and understand the worksite traffic flow patterns and obey signalmen, road signs and flagmen.

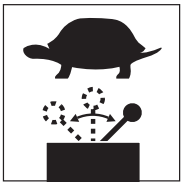
Check blade location before traveling. When blade is positioned to the rear, operate the steering levers in the opposite direction as when the blade is in the front.

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.

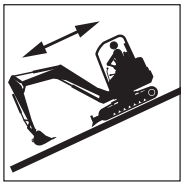
If you encounter a blind corner, stop and then proceed with caution.

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.

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Operate Safely

Safety Precautions

Never reach into the compact excavator and attempt to operate the controls from outside the cab.

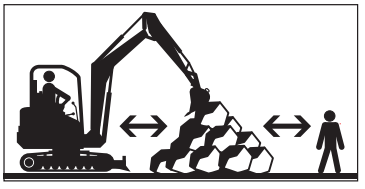
Before starting to excavate, set up safety barriers to the sides and rear area of the swing pattern to prevent anyone from walking into the working area.

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.**





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.



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.**)

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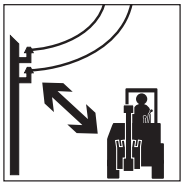
Operate Safely

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.

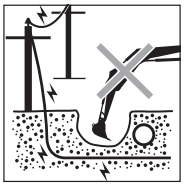
Any inconsistencies with line locations or any inaccurate locates must be resolved.

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

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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.



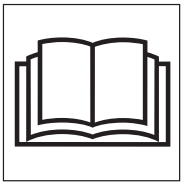
Keep Personnel Away From Equipment And Attachments

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:

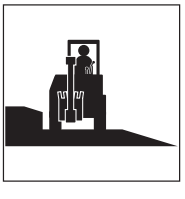
- Use machines equipped with TOPS/ROPS and a seat belt. Make sure folding TOPS/ROPS is raised and locked in place—always use the seat belt.
- The retractable track frame, if equipped, should be extended for operating on slopes or uneven terrain. Read and know manufacturer's instructions before operation.
- 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

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Operate Safely

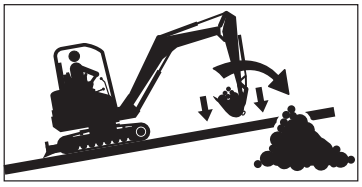
— Travel straight up and down the slope with the attachment low and close to the machine. Do not move the boom while travelling.
— Avoid swinging to the downhill side of a slope. Always keep the boom and attachment as low and close to the machine as possible.

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.

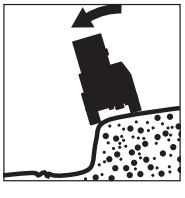
Extreme caution is required when working near the edge of an excavation. Keep the machine a safe distance away from the edge. Avoid undercutting.

WARNING! Never undercut a high bank. The edges could collapse or a slide could occur, resulting in death or serious injury.

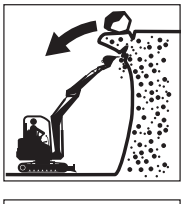
Work the jobsite in a manner that avoids creating overhangs or the need to be on top of banks or slopes. Never operate the machine close to the edge of an overhang or stockpile.

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

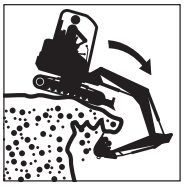


Operate Perpendicular To Banks – Stay Back From The Edge

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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

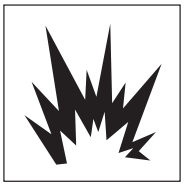
Cutting or drilling concrete or rock containing quartz may result in exposure to silica dust. **Do not exceed Permissible Exposure Limits (PEL) to silica dust as determined by OSHA or other worksite rules and regulations.** Use a respirator, water spray or other means to control dust. Silica dust can 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

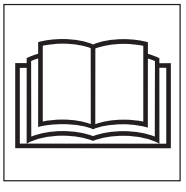
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Operate Safely

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.

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Shut Down Safely

Machine Shutdown

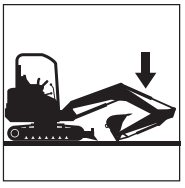
Properly shutting down a compact excavator can help prevent accidents when the machine is left unattended. Shut down the excavator following the specific procedures in the manufacturer's operator manual.

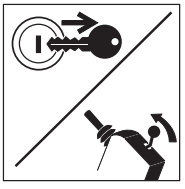
A typical list includes:
— Stop the machine.
— Make sure the area around the machine is clear of personnel.
— Slew the machine to align the upperstructure with the undercarriage, if possible.
— Return controls to neutral, including the auxiliary hydraulic controls.
— Lower the attachment and blade to 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**.)





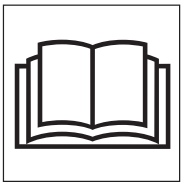
Load And Unload The Machine Safely

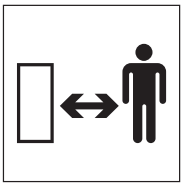
Loading And Unloading For Transport

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.

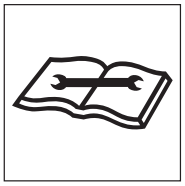




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Perform Maintenance Safely

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.

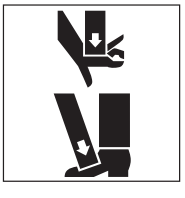
Wear a face shield when you disassemble spring-loaded components or work with battery acids. Wear a welding helmet or goggles with a shaded filter when you weld or cut with a torch.

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.





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Perform Maintenance Safely

Prepare The Work Area

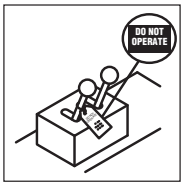
— Position the compact excavator in a level area out of the way of other working equipment.
— Make sure there is adequate light, ventilation and clearance.
— Remove oil, grease, ice and snow or water to eliminate any slippery surfaces.
— Clean around the machine and work area to minimize contamination. Clean up oil or fuel spills promptly and dispose of the material properly.

Prepare The Machine

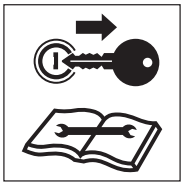
— Attach a “DO NOT OPERATE” warning tag to the control levers and remove the ignition key if the machine should not be started.
— Block the tracks.
— Release all hydraulic, water and air pressure. Lower, lock or block all hydraulically supported components.

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.

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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.

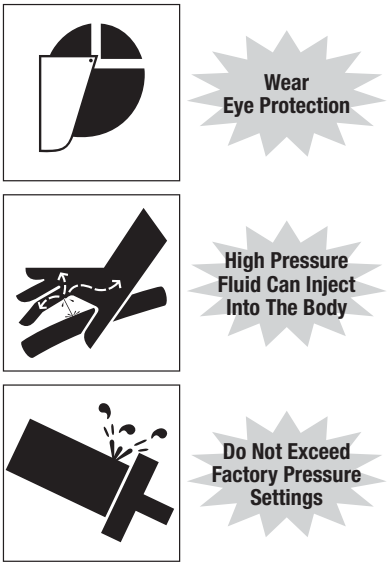
WARNING! Diesel fuel and hydraulic fluid under pressure can penetrate the skin or eyes and cause serious injury, blindness or death. Fluid leaks under pressure may not be visible. **Use a piece of cardboard or wood to find leaks, not your hand. Wear a face shield or safety goggles for eye protection.** 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.



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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.**

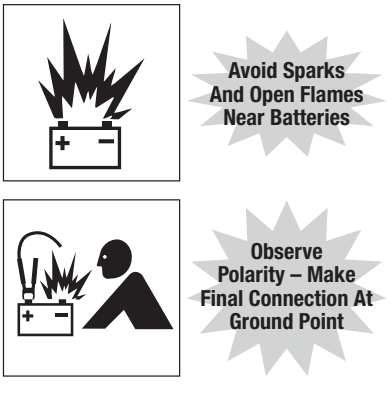
— **Do not** smoke near batteries.
— Check battery cables for worn or damaged insulation.
— Keep arcs, sparks and open flames away from batteries.
— Provide adequate ventilation.

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).



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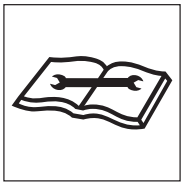
Perform Maintenance Safely

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.





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).



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.

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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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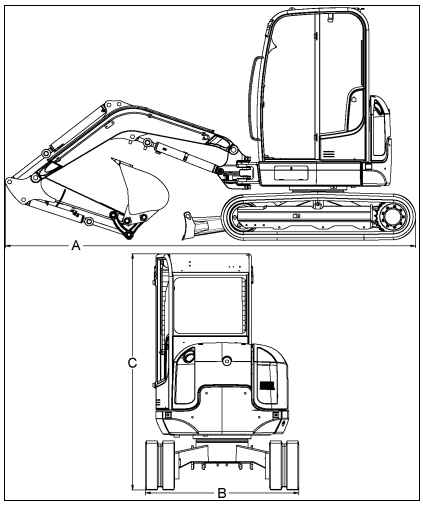
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www.aem.org

FORM CE-1009
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Information

The shipping document describes several basic settings and functions of the vehicle. The vehicle operator's manual contains further important safety instructions. The operator must familiarize themselves with all instructions and notices before commissioning the vehicle and adhere to them. The vehicle operator's manual must be completely read before commissioning the vehicle.

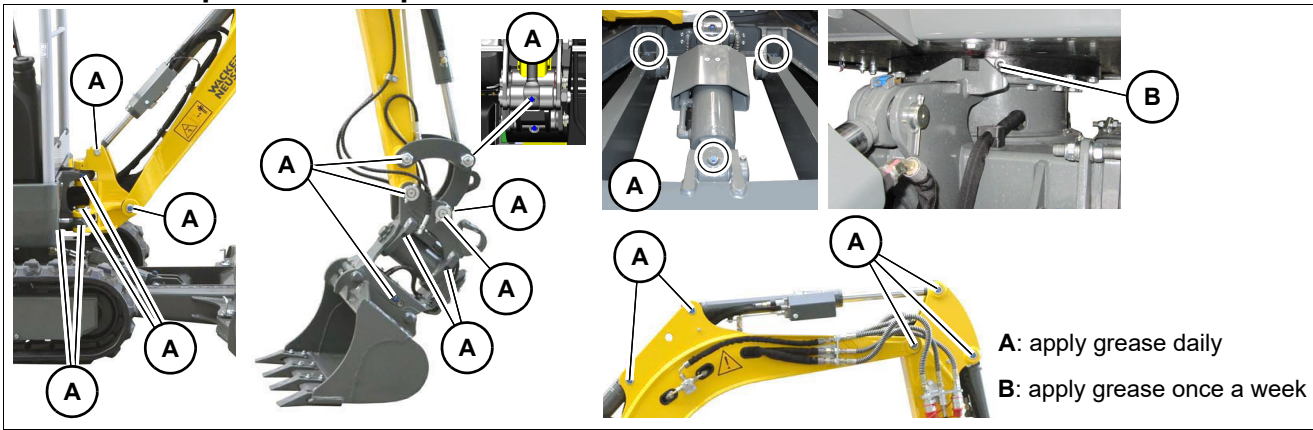


Dimensions		
A	Length with short stick	3585 mm (11'-9")
B	Width	980 mm (39 in)
	Width with retracted telescopic travel gear	990 mm (39 in)
	Width with extended telescopic travel gear	1300 mm (51 in)
C	Height	2360 mm (93 in)

Weight	
Transport weight[1]	1594 kg (3514 lbs)
Operating weight[2]	1724 kg (3801 lbs)
Full fuel tank	+ 19 kg (42 lbs)

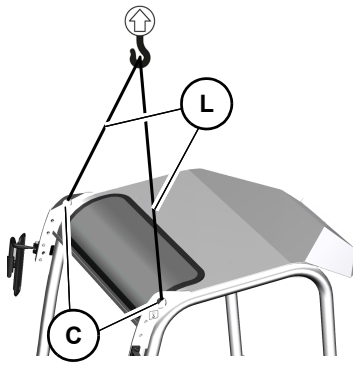
1. Transport weight: basic vehicle + 10% fuel tank capacity
2. Operating weight: basic machine + full fuel tank + bucket (400 mm/16 in) + operator (75 kg/165 lbs)

Lubrication points/transport

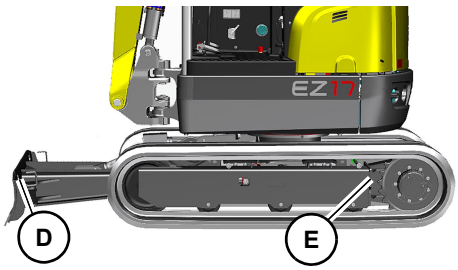


A: apply grease daily

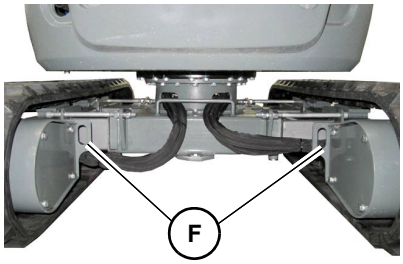
B: apply grease once a week

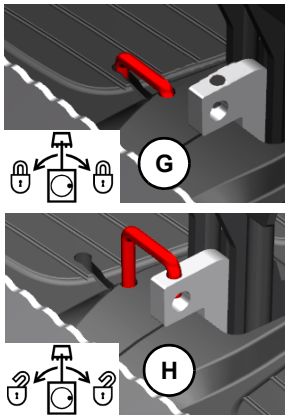


L: minimum 1300 mm (51 in)
C: cab lifting lugs (2)



D: dozer blade lashing eyes (2)
E: rear travel gear lashing eyes (2)
F: interior travel gear lashing eyes (2)

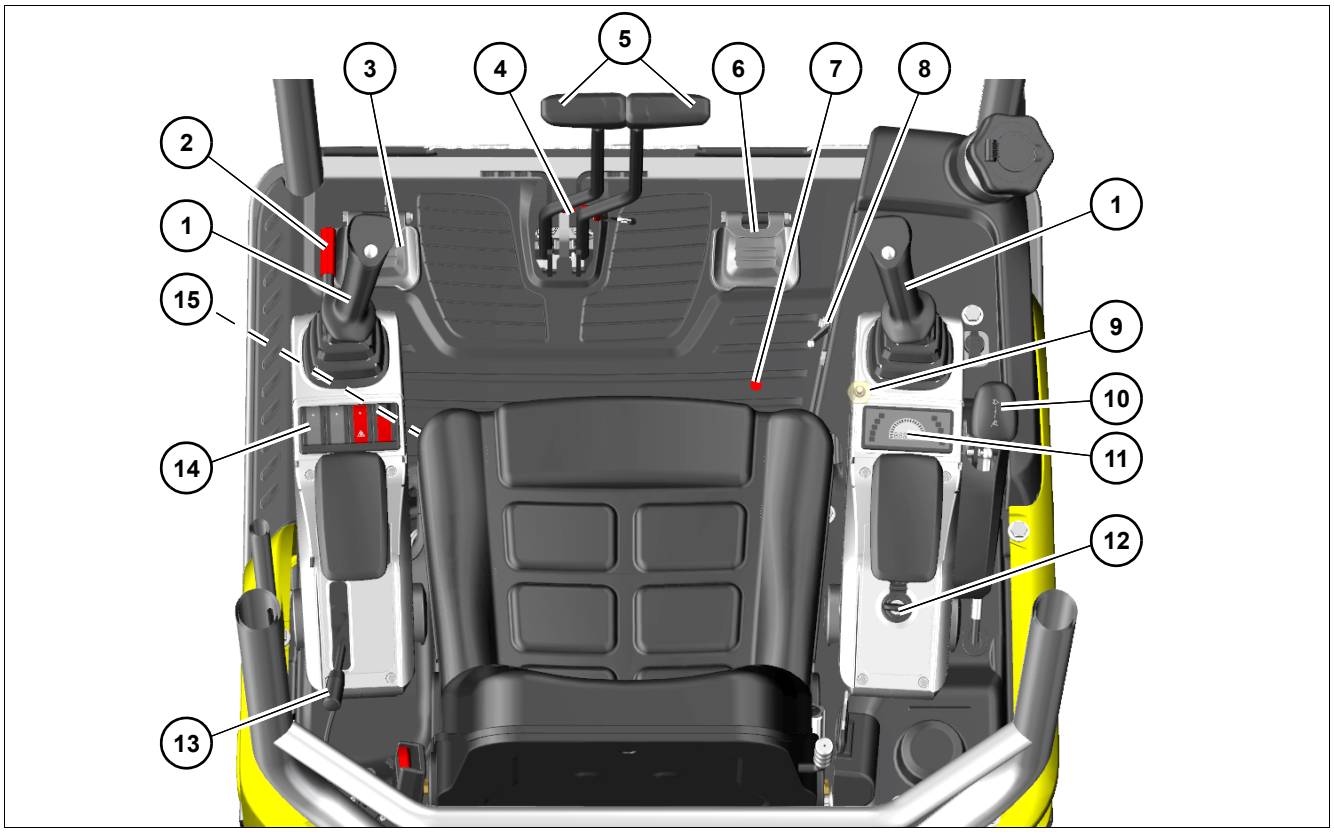




G: lock the superstructure
H: unlock the superstructure

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Brief overview of operation



Control elements	
1	Control lever base
2	Control lever left/right
3	Boom swivel pedal
4	Upper carriage lock
5	Drive levers
6	Auxiliary hydraulics pedal
7	Foot-operated push button for hydraulic quickhitch (option)
8	Changeover for hammer/auxiliary hydraulics operation
9	Pressure relief of hydraulic oil tank
10	Stabilizer-blade lever
11	Display element
12	Ignition lock
13	Manual throttle
14	Switch panel/button panel
15	Changeover for stabilizer blade/travel gear extension/retraction

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

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