



MINI EXCAVATOR

HE18 · HE18-C

USER MANUAL



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GENERAL

1. Foreword

These operating instructions apply only to Eurotrac HE18 excavators that fall under the following EC declaration of conformity ([page 8](#)).

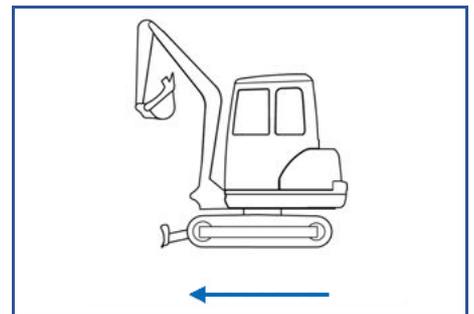
The safety instructions given in these operating instructions as well as the rules and regulations for the use of the excavators apply to the excavators listed in this documentation.

Operators must at their own risk:

- Make sure local, regional and national regulations are followed;
- The rules listed in these operating instructions (laws, regulations, guidelines, etc.) for safe use are observed;
- Make sure the operating instructions are available to the personnel of the operator and that the data listed, such as instructions, warnings as well as the safety provisions, is followed down to the last detail.

The data listed in these operating instructions applies to all models. Data about a specific model or extra equipment is stressed.

The indication “forwards” or “direction of travel” is seen from the viewpoint of the user if the user is on the driver’s seat. The direction of travel forwards means that the dozer blade, as shown in the diagram, is located in the direction of travel.



2. EC Declaration of Conformity



EC DECLARATION OF CONFORMITY



MANUFACTURER

Name: Eurotrac Construction Machinery (Europe)
Address: Stougesdijk 153, 3271KB Mijnsheerenland, Holland

HEREBY DECLARES THAT THE PRODUCT DESCRIBED BELOW:

Model	HE18/HE18-C
Serial number	xxxx
Engine model	Kubota D1105
Engine power and emission	14.2Kw - Euro 5
Manufacturing year	xxxx

2006/42/EC Machinery Directive
2014/30/EU (Electromagnetic compatibility)
(EU)2016/1628 Engine Pollutant Emission Directive

2000/14/EC & 2005/88/EC NOISE DIRECTIVE

Equipment according to the definition given by: Annex I, item 37 of Noise Directive
Conformity assessment procedure followed: Annex VI of Noise Directive

Notified body : *European Certifying Organization S.p.A.,
No.0714, Via Mengolina 33,
Faenza(RA), Italy.*

Measured sound power level: **93dB LWA** Guaranteed sound power level: **95dB LWA**
Holder of the technical documentation: Manufacturer

COMPLIES WITH THE PROVISIONS OF THE FOLLOWING HARMONIZED STANDARDS:

EN 474-1:2006+A1:2009 Earth-moving machinery — Safety — Part 1: General requirements
EN 474-3:2006+A1:2009 Earth-moving machinery — Safety — Part 3: Requirements for loaders

THE TECHNICAL DOCUMENTATION WAS COMPILED BY THE EUROPEAN BODY:

Name : P.de Heus en Zonen Greup BV
Address : P.O. box 1529 – 3260BA Oud Beijerland, Holland

PERSON RESPONSIBLE FOR MAKING THIS DECLARATION:

Name: **B. de Heus** Title: **Quality and Production Manager**

Mijnsheerenland (NL)

Done at (place)

On (date)

Signature and stamp

Eurotrac Construction Machinery
Member of de Heus Tractors Group

P.o.Box 1529 – 3260BA Oud Beijerland – Holland
Tel +31 186 612 333 Fax +31 186 610 442
info@eurotrac.nl www.eurotrac.nl

3. Operating Personnel

The authority of the personnel with respect to the operation, maintenance, repair of the machine as well as the safety technical inspection must be clearly recorded by the operator. The personnel to be instructed may only work on or with the excavator under the supervision of an experienced person.

User

Pursuant to the regulations of the accident insurance, independent operation of the excavator may only be performed by persons older than 18 years of age, who have been instructed in the operation of the excavator, have proved their skills to the operator (company) and of whom it may be expected that they perform the entrusted tasks reliably.

Only trained and instructed personnel may work on or with the excavator.

Only instructed personnel are permitted to start the excavator and to operate the control elements.

Qualified Personnel

Qualified personnel is understood to mean persons with a technical skilled worker training who is capable of ascertaining damage to the excavator and carrying out repair work in his/her field of specialization (e.g. hydraulics, electricity).

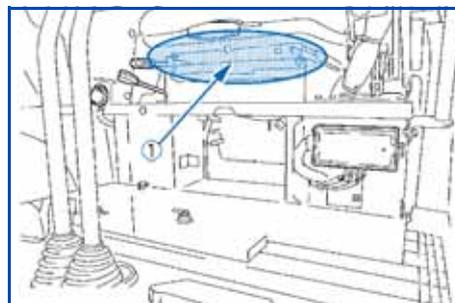
Authorized Personnel

On the basis of his/her vocational training and experience, the authorized personnel must have adequate knowledge in the area of excavating and with the applicable national work protection standards, safety regulations and the generally recognized rules of technique that he/she can assess the work safety condition of the excavator.

4. Storage of the operating instructions

The operating instructions must always be stored with the excavator. If the operating instructions have become illegible due to continuous use, the operator must make sure a replacement copy is obtained from the manufacturer.

There is a storage area (1) for the operating instructions on the front of the seat console under the protective plate.



5. Parts

When ordering parts, always provide the following data:

- Serial number of the machine and the year of manufacture (see the model plate)
- Name/type of the part
- Article number of the part
- Quantity of items
- Customer number

For orders, please contact your Eurotrac dealer.

SAFETY PROVISIONS

1. General safety instructions

- For the use of the listed excavators, the EC work equipment directive (2009/104/EC, dated 09-16-2009) applies.
- For maintenance and repairs, the data in these operating instructions apply.
- If necessary, national regulations must be applied.

2. Obligation, Liability and Warranty

A basic condition for the safe use and fault-free operation of the excavator is the knowledge of the safety instructions and the safety regulations.

These operating instructions, the safety instructions in particular, must be observed by all persons who work on or with the excavator. Furthermore, the safety rules and regulations that apply to the work location must be observed.

Dangers with the use of the excavator

The excavators have been constructed in accordance with current technology and accepted technical safety rules. Nevertheless, danger to life and limb of the user or third parties or defects to the excavator or other valuable objects can arise during its use. The excavators may only be used in accordance with their authorized use and in a technical safety trouble-free condition. Failures that could adversely affect safety must be resolved immediately.

Warranty and Liability

The scope, duration and form of the warranty are listed in the manufacturer's terms and conditions of sale and delivery. For warranty claims that arise from inadequate documentation, the operating instructions valid at the time of delivery are always normative; see the Issue Date of the operating instructions. Except for the terms and conditions of sale and delivery, no warranty is assumed for injuries and damage that have arisen for one or several of the following reasons:

- Unauthorized use of the excavator;
- Improper commissioning, operation and maintenance of the excavator;
- Use of the excavator with defective safety facilities or incorrectly applied or inoperative safety precautions and protection facilities;
- Not knowing about or observing these operating instructions;
- Inadequately qualified or instructed personnel of the operator;
- Repairs not carried out in a professional manner;
- Modifications made to the structure of the excavator without authorization;
- Poor inspection of machine parts that are subject to wear and tear;
- Accidents due to the effect of foreign objects and force majeure.

Under its own authorization, the operator must make sure:

- That the safety provisions ([page 10](#)) are observed;
- That unauthorized use ([page 11](#)) as well as unacceptable operation is impossible;
- That authorized use ([page 11](#)) is insured and that the excavator is used in accordance with the contractually agreed conditions of use.

3. Authorized Use

The excavators listed in these operating instructions may be used for loosening, excavating, lifting, transporting and depositing of soil, stones and other materials as well as for leveling work and the use of a hydraulic hammer. The transport of the load may take place mainly without relocating the excavator. However, the maximum lift capacity of the bucket may not be exceeded.

Also included in the authorized use is:

- Following all instructions in these operating instructions;
- Carrying out maintenance work (on time);
- Adhering to the inspection intervals for the technical safety inspection.

4. Unauthorized Use

Improper use – thus a deviation from the data stated in the section "Authorized Use" on the excavators described in these operating instructions – is unauthorized use. This also applies for not following the standards and guidelines given in these operating instructions.

Improper use could result in danger. An example of unauthorized use is:

- Using the excavator for lifting loads without suitable equipment for the lifting operation;
- Using the excavator in a contaminate environment;
- Using the excavator in enclosed areas without adequate ventilation;
- Using the excavator under extreme temperatures (extreme heat or cold);
- Using the excavator for underground work;
- Using the excavator to transport persons in the bucket;
- Using the excavator to demolish with a danger of falling objects (e.g. due to cracks in walls)

5. Particular Obligations on the Part of the Operator

In these operating instructions, the operator of the excavator is any natural person or legal entity that uses the excavator himself or herself or gives another person the order to use the excavator. In special cases (e.g. with leasing or renting), the operator is the person who, according to the existing contractual agreements between the owner and user of the excavator, must take care of the specified operating obligations.

The operator must make sure the excavator is used only in the authorized manner and that all danger of any nature for the life and health of the user or third parties is prevented. In addition, care must be taken to make sure the safety regulations, other technical safety rules as well as the guidelines for use, maintenance and repairs are followed. The operator must make sure all users have read and understood these operating instructions.

Persons who work on or with the excavator must wear suitable personal protective equipment (PPE). Suitable work clothes, safety shoes, safety helmets, safety goggles, hearing protective and dust masks must be made available by the operator and, if necessary, used. In principle, the business is responsible for the PPE and has been laid down in the work safety regulations for its effectiveness.

Waste, such as discarded oil, fuel, hydraulic liquid and batteries are hazardous waste and can contaminate the environment and harm humans and animals.

Waste products must be disposed of according to the current environmental protection and safety provisions.

If there are questions about the expert disposal or storage of waste products and hazardous waste materials, contact your EUROTRAC dealer or your local disposal company.

6. Noise Emissions and Vibrations

The values given in these operating instructions were calculated in a test cycle of an identical machine and apply for standard models of the machine. The values calculated are listed below "[Technical data](#)" (page 32).

6.1 Noise Emissions

The noise values were determined in accordance with the procedure for determining the guaranteed sound pressure level ISO 4871, based on Directive 2000/14/EC, Annex VI.

However, the sound values given cannot be used to determine the noise emissions occurring at the work place. These actual noise emissions must, if necessary, be determined at the work places under the influences actually present (other sources of noise, special operating conditions, noise reflection).

Depending on the actual noise emissions, the operator must make the required personal protective equipment available for the user (hearing protection).



WARNING

- Noises with a noise level above 85 dB LpA (A) could result in hearing damage.
 - Hearing protection is recommended above a noise level of 85 dB LpA (A).
 - The user must wear hearing protection above a noise level of 85 dB LpA (A).
-

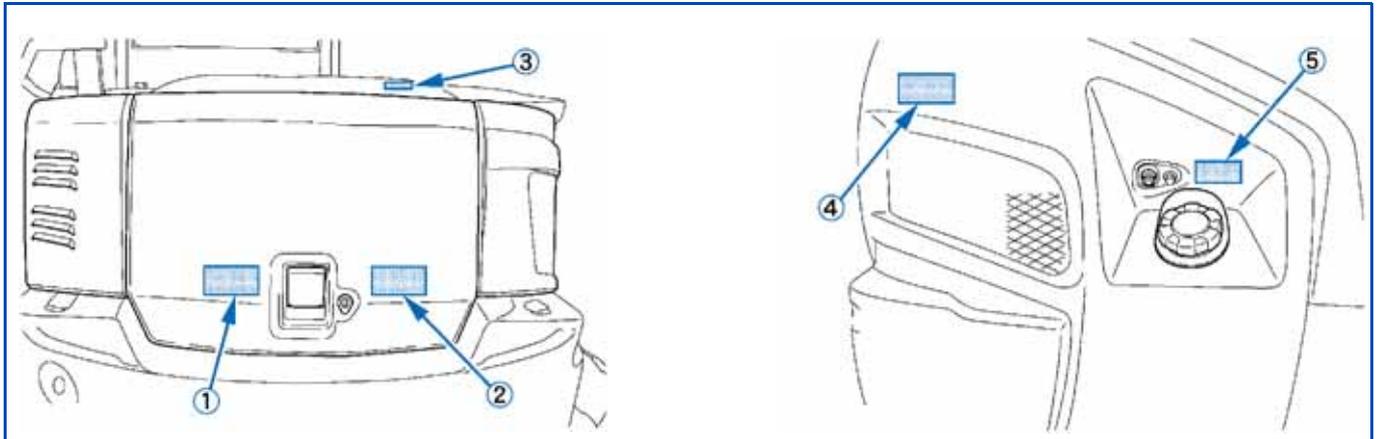
6.2 Vibrations

The vibrations of the machine are determined on an identical machine.

The operator must determine the vibration load of the user at the work location in accordance with Directive 2002/44/EC, so as to take individual influences into account.

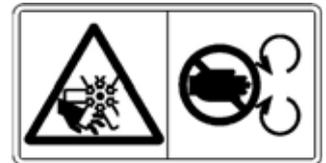
7. Safety Symbols on the Excavator

All safety symbols (stickers) that have been applied to the excavator must be kept in good condition and, if necessary, replaced. The application location of the safety symbols are indicated in the following images.



1. Danger: rotating parts can cut!

- The rotating fan can cause cuts to fingers or even cut them off.
- Never grab rotating parts.



2. Danger: hot parts can burn!

- Surfaces can be hot and inflict burns.
- Do not touch hot parts such as the exhaust, etc.



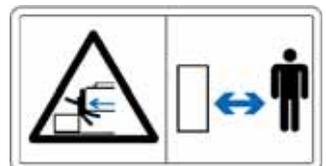
3. Mortal danger: moving excavator!

- A delay in the danger zone and an excavator that drives away unexpectedly involves a risk of being run over by the excavator.
- Only start the machine when in the driver's seat.
- Do not start the machine by bypassing the starter motor poles.



4. Danger of death: possible entrapment!

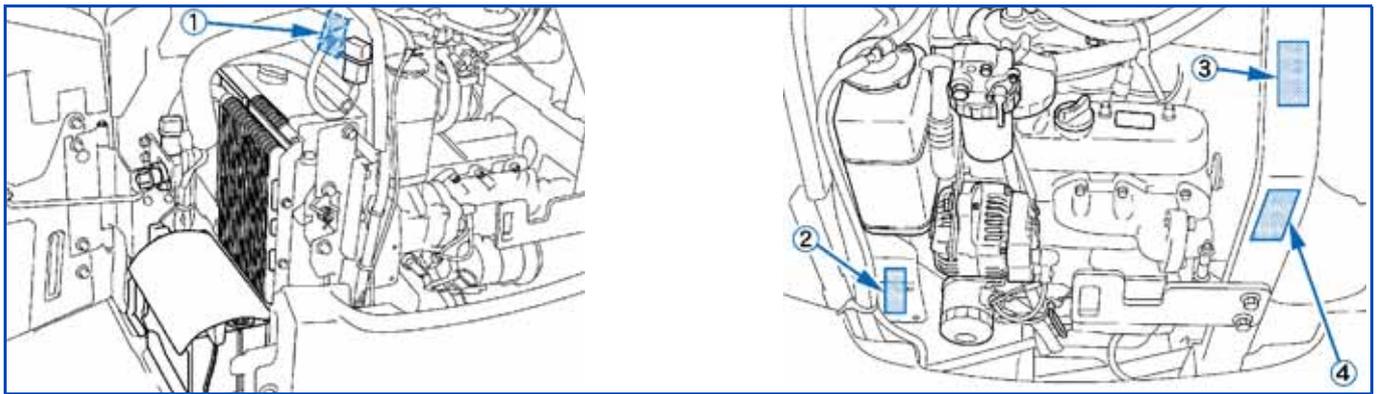
- A small safety distance with respect to the excavator and obstacles could block the escape route out of the danger zone. Becoming trapped by the excavator could result in serious injury or death.
- Do not come within the shunting zone.
- Make sure there is an adequate safety distance with respect to obstacles and that there is an adequate freedom of movement.



5. Fire hazard: flammable diesel fuel!

- Flammable vapors may arise in the fuel tank that could combust due to an ignition source.
- Do not have an open flame in the area of the fuel tanks.





1. Risk of injury: liquids under pressure!

- Leaking hydraulic oil can penetrate the skin. Danger: hot parts can burn!
- Surfaces can be hot and inflict burns.
- Do not cover openings, e.g. vents, and hot parts with your hands.



2. Danger: rotating parts can cut!

- The rotating fan can inflict cuts to body parts. Danger of becoming trapped by rotating parts!
- The rotating belt drive can pull in body parts and trap them.
- Never grab rotating parts.



3. Fire hazard: hot parts!

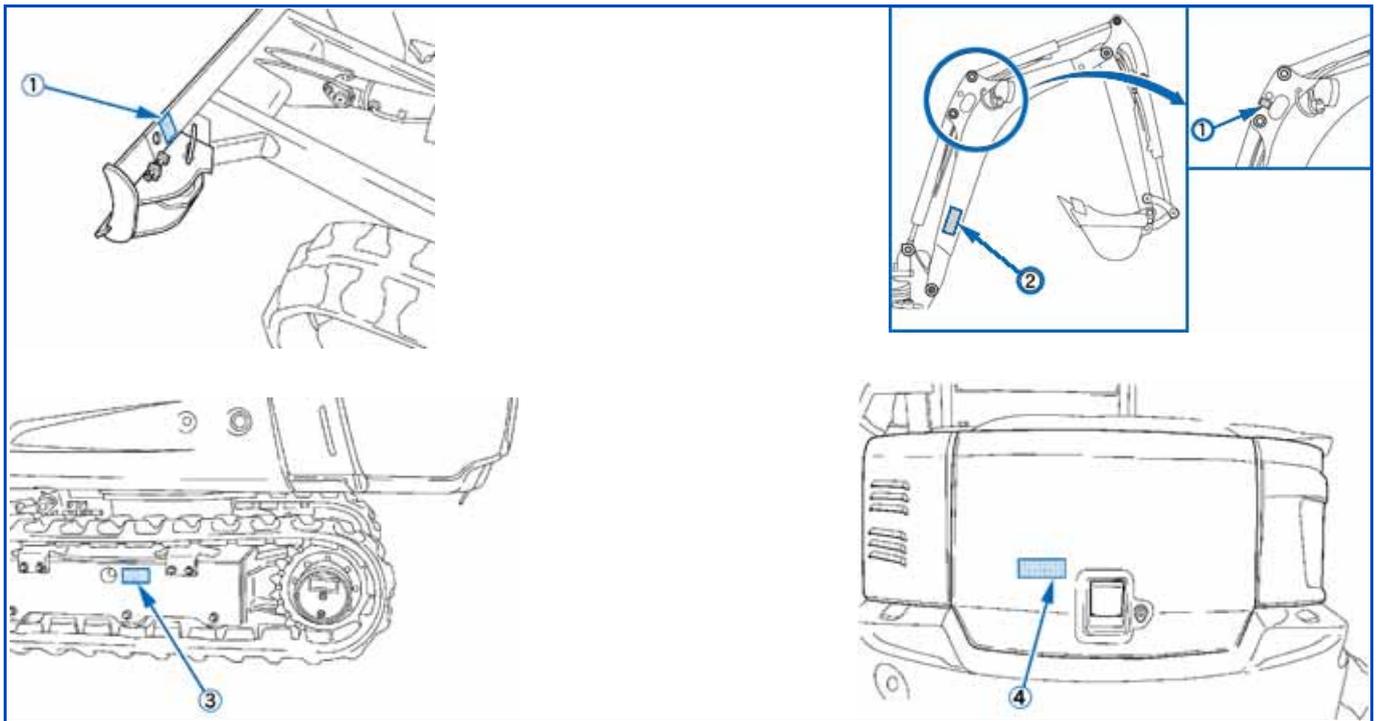
- Leaking liquids can land on hot parts and ignite.
- Read the operating instructions BEFORE working on the engine.



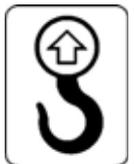
4. Danger: hot parts can burn!

- Surfaces can be hot and inflict burns.
- Do not touch hot parts such as the exhaust, etc.



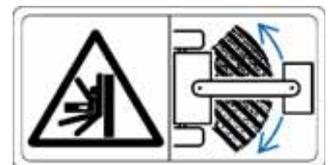


1. Attachment Point for Lifting Accessories



2. Danger of death: possible entrapment!

- A small safety distance with respect to the boom can block the escape route from the danger zone. Becoming trapped by the boom could result in serious injury or death.
- Do not come within the swivel range of the boom.
- Make sure there is an adequate safety distance with respect to obstacles and that there is an adequate freedom of movement.



3. Risk of injury: parts under pressure!

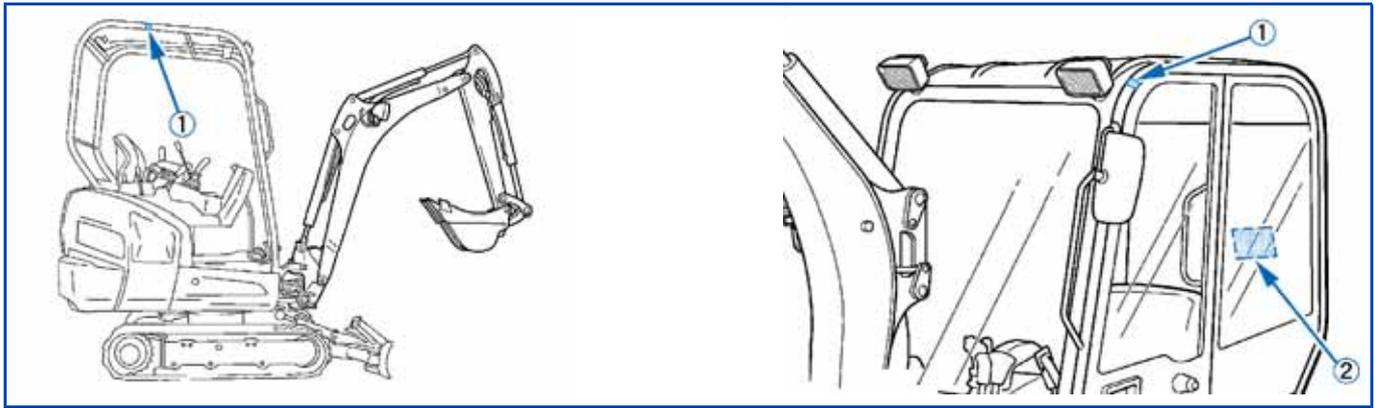
- Improper operation of the track tensioning device may cause grease or a pressure valve under high pressure to fly off and cause injury.
- Read the operating instructions BEFORE working on the track tensioning device!



4. Danger: entrapment or cuts due to rotating parts!

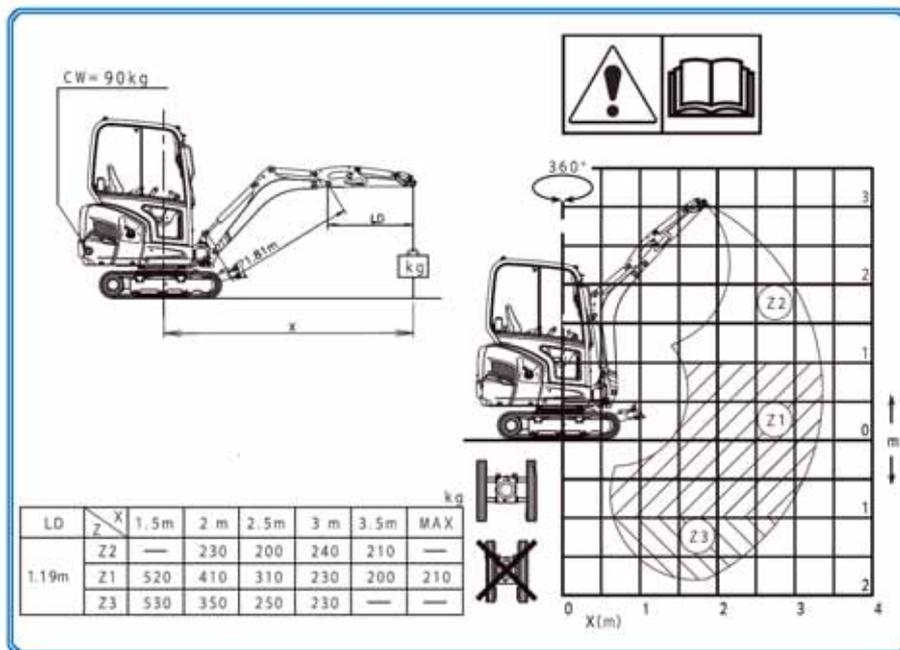
- The rotating fan can cause cuts to body parts and the rotating belt drive can pull in body parts and entrap them.
- Turn the engine off BEFORE working on the engine area.
- Check whether the engine and all engine mounting parts have stopped moving.
- Never grab rotating parts.

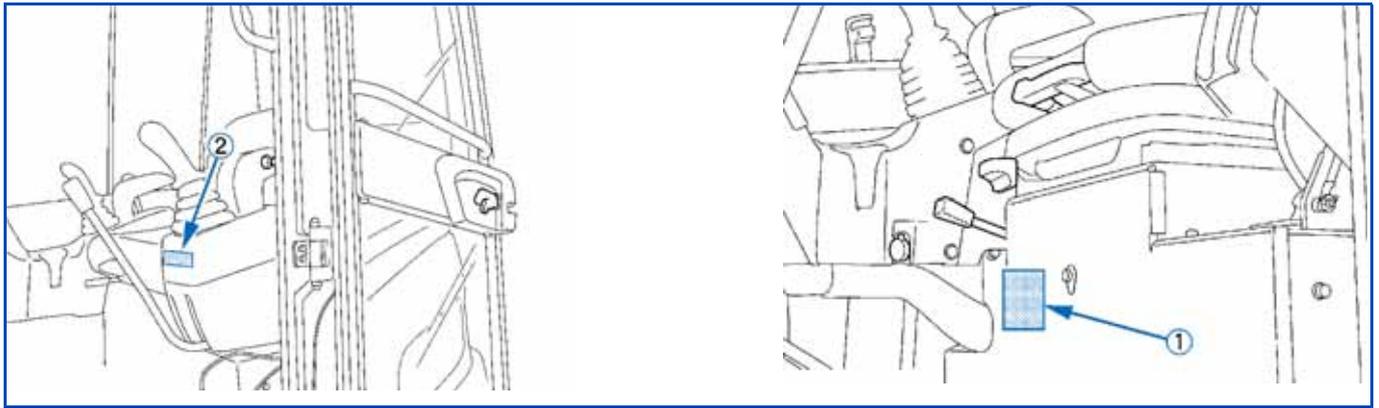




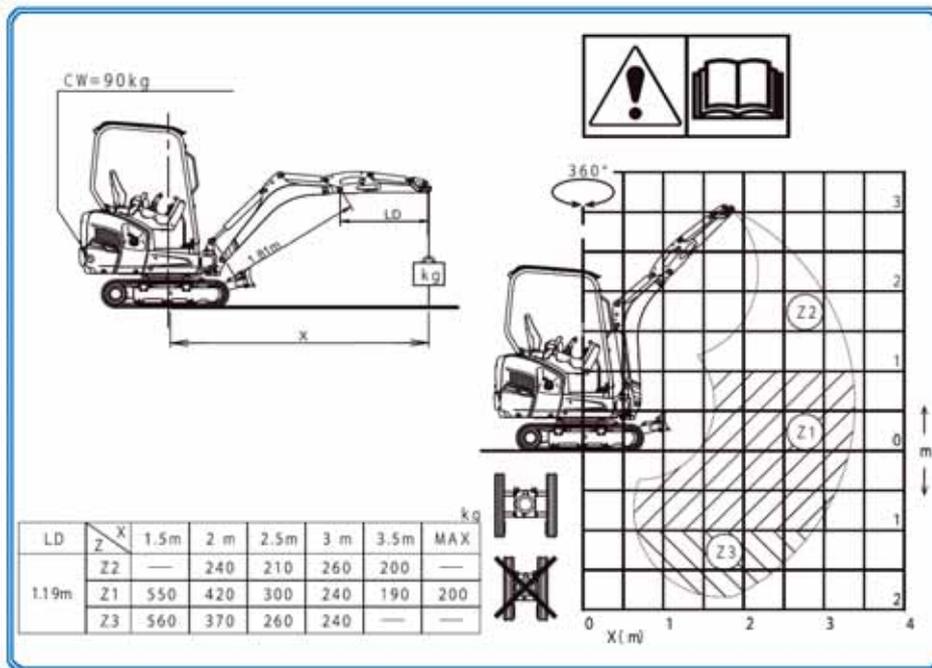
1. No Attachment Point for Item of Lifting Gear

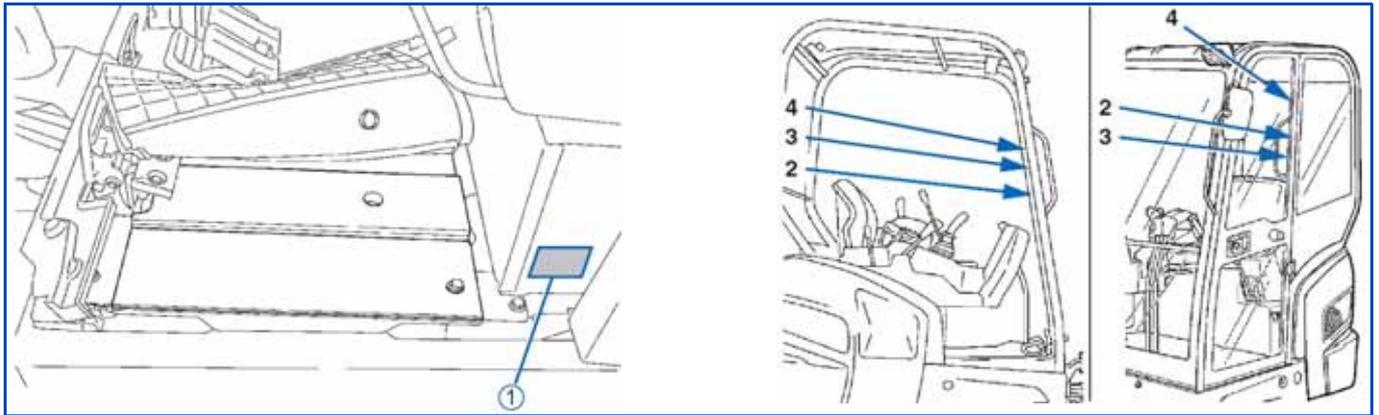
2. Maximum lift capacity when rotating 360° HE18 (cab)





1. Maximum lift capacity when rotating 360° HE18 (protective roof)





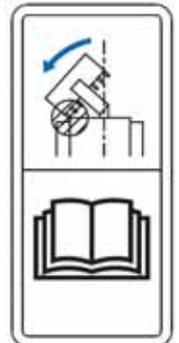
1. Danger: hot parts can burn!

- Surfaces can be hot and inflict burns.
- Do not cover openings, e.g. vents, and hot parts with your hands.



2. Attention: damage to parts is possible!

- If using a wide or deep bucket, care must be taken when swiveling or retracting attachments that the bucket does not bump into the cab.
- Read the operating instructions for the attachment.



3. Danger of death: possible entrapment!

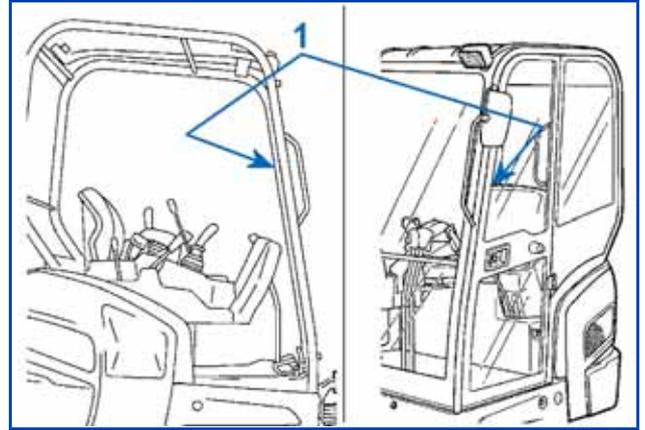
- A small safety distance with respect to the excavator and obstacles could block the escape route out of the danger zone. Becoming trapped by the excavator could result in serious injury or death.
- Before you exit the machine, lower the bucket to the ground.
- Activate the control lever, put the starter switch in the STOP position and remove the key.



4. Mortal danger: electricity!

- When working in the area of electrical cables without maintaining an adequately safe distance, the machine could become electrified.
- Keep a safe distance from electrical cables.





1. Risk of injury when getting in and out!

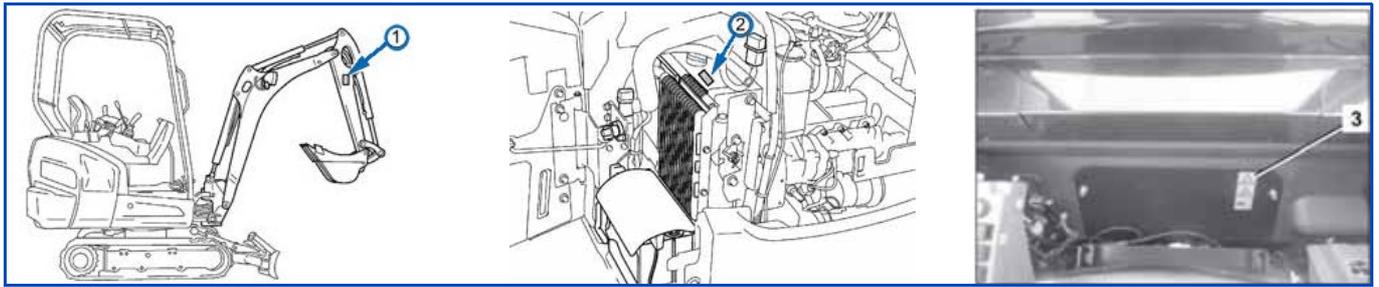
- When getting in and out, you may slip and fall if you do not have a secure hold.
- Do not jump onto or off of the excavator.
- Always grip the hold with one hand.
- Get in safely.



2. Danger of injury if the windshield falls down!

- If the windshield has been pushed upwards and not secured properly, there is the danger that the windshield will close and hit the user's head.
- The windshield must always be secured.





1. Danger of death: possible entrapment!

- A small safety distance with respect to the excavator and obstacles could block the escape route out of the danger zone. Becoming trapped by the excavator could result in serious injury or death.
- Do not enter the danger zone of the attachment.



2. Danger: electricity!

- When working on the electrical system, there is a danger of injury as a result of electric shock.
- The electrical installation must be switched off BEFORE working on it!
- Wear personal protective equipment.
- Read the operating instructions BEFORE working on the electrical installation!



3. Danger: rotating parts can cut!

- The rotating fan can inflict cuts to body parts.
- Danger of becoming trapped by rotating parts!
- The rotating belt drive can pull in body parts and trap them.
- Never grab rotating parts.



8. Safety Facilities

Each time the machine is operated, all safety facilities must have been installed expertly and must operate. Manipulation of the safety facilities is prohibited.

Protection facilities may only be removed after:

1. Stopping and switching the excavator off;
2. Securing the machine against being switched on (put the starter switch in the STOP position and remove the key).

8.1 Securing the Control Elements

The right and left control lever, the drive levers, the boom swing pedal as well as the dozer blade lever are put out of operation when the console is raised. This guarantees safe entry and exit. Disengaging and raising the console is done with the locking mechanism of the control levers.



8.2 Protective Structure of the Protective Roof and Cab



NOTE

The excavator is equipped with a protective structure that protects the user from serious injury or death when tipping over or rolling over and objects falling down.

The protective roof and the cab are manufacture in accordance with current safety standards and tested as:

- Rollover protective structure: ROPS (Roll Over Protective Structure)
- Protection when tipping: TOPS (Tipping Over Protective Structure)
- Operator protection: OPG (Operator Protective Guard)

In order to make sure maximum safety by means of this protective structure:

- The safety belt must be put on when using the excavator.
- Not structural modifications must be made to the protective structure.
- If damage has occurred, go to your EUROTRAC dealer. (Do not repair yourself!)
- Do not use the excavator without a protective structure.

The use of stone damage protection is recommended as protection against danger when using a hydraulic hammer or another attachment for demolition work where the material (e.g. asphalt) is removed and may fly off uncontrolled.

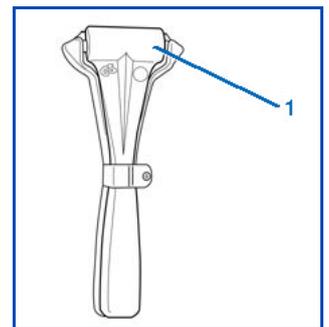


NOTE

If front protection is required, a EUROTRAC stone damage protection (accessory) can be mounted.

8.3 Emergency Hammer

If there is an accident with the excavator and the cab door or the windshield or side window cannot be opened, the user can break the windows with the emergency hammer (1).



CAUTION

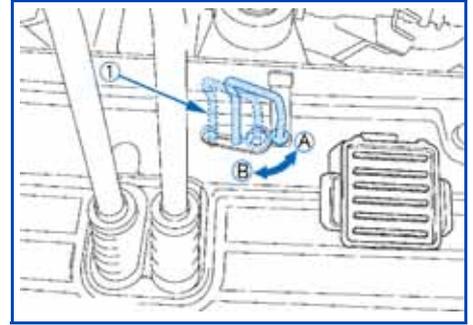
When breaking the window, make sure to close your eyes and protect them with your arm.

8.4 Locking the superstructure

Locking the superstructure (1) is meant to protect the superstructure against unintentional rotating movements, e.g. during transport.

If the superstructure lock is in the unlocked position (A), it is possible to rotate the superstructure.

The superstructure lock must be in position to lock.



NOTE

Before locking, the superstructure and the undercarriage must be aligned parallel with regard to one another.

9. Danger: hydraulic system

- If hydraulic oil should get into eyes, rinse with clear water immediately. Then consult a physician.
- Skin or clothing may not come into contact with hydraulic oil. Wash skin parts that come into contact with hydraulic oil thoroughly with soap and water as soon as possible to prevent the danger of skin injuries.
- Clothing contaminated or soaked with hydraulic oil must be removed immediately.
- Bring persons who have inhaled hydraulic oil vapors (mist) to a physician immediately.
- If a hydraulic system leak has occurred, the excavator may not be operated or operation must stop immediately.
- Do not look for leaks with your bare hands; always use a piece of wood or cardboard. When looking for leak locations, use protective clothing (safety goggles and gloves).
- Hydraulic oil that has leaked must be absorbed with an oil binding agent immediately. The contaminated oil binding agent may only be stored in suitable containers and must be disposed of in accordance with current regulations.

10. Fire Safety



CAUTION

Parts and attachments of the excavator reach high temperatures under normal operating conditions, particularly the engine and the exhaust. Damaged electrical installations or electrical installations that have not been maintained can be the cause of a spark discharge or arc. The following fire safety guidelines help you to maintain your equipment efficient and to minimize the risk of fire.

- Remove dirt in the area of hot parts such as the engine, exhaust, exhaust manifold and exhaust pipes, etc. The machine should be cleaned more often with working with a heavy load.
- Accumulations such as leave, straw, pine needles, branches, bark and other flammable materials must be removed from the machine. This must be done especially in the vicinity of the exhaust system but also in the superstructure and undercarriage and on the boom.
- Check that all fuel lines and hydraulic lines are in good condition and for wear. If there are any defects, they must be replaced immediately to prevent leaks.
- Electrical cables and connections must be inspected regularly for damage. Damaged parts and lines must be replaced or repaired BEFORE commissioning the machine. All electrical connections must be kept clean and secure.
- Exhaust pipes and the exhaust muffler must be inspected daily for leaks, damage and loose or missing screw couplers. Leaking or damaged parts of the exhaust system must be replaced or repaired BEFORE operating the machine.
- Always keep a multifunctional fire extinguisher on near the machine. Become familiar with the operation of the fire extinguisher. A fire in the electrical installation or the hydraulic system must be extinguished with a CO₂ fire extinguisher.
- Two threads have been installed to the left of the driver's seat to fasten a fire extinguisher.



NOTE

The fire extinguisher bottle is not part of the basic equipment of the machine.

STORAGE, LOADING AND TRANSPORT

1. Safety Provisions for Storage

- A towing vehicle that is at least of the same weight class as the excavator must be used when storing the excavator.
- A towing bar must be used for the storage. A brake vehicle must be used if using a tow rope. With regard to the towing load, the towing bar or the tow cable must be suitable for towing the excavator. Only undamaged containers may be used.
- When putting into storage, entering the danger zone, e.g. between the vehicles, is prohibited. When using a tow rope, a distance that is one and a half times the length of the cable must be maintained.
- When putting into storage, the drawbar eye installed on the undercarriage must be used.
- The abovementioned safety provisions also apply when using the excavator as a tow truck.
- When putting into storage, the admissible values for the traction load and tow bar load must be observed; see section "**Technical data**" (page 32).

2. Safety Provisions for Loading and Unloading with a Crane

- The crane and the lifting equipment must be suitable and approved for the load that must be lifted.
- Before using the crane and the lifting equipment, care must be taken that the recommended periodic technical safety inspections have been done and the crane and the lifting equipment are in faultless condition.
- When lifting the excavator, only the attachment points intended for this must be used. Attaching to the can roof is prohibited and may cause serious damage.
- Never attach the crane hook to the underside of the dozer blade! The crane hook could slide sideways while lifting and the excavator could come crashing down.
- In any case, the current safety regulations for lifting loads must be followed.
- When lifting the excavator, this must be secured with a safety cable.
- The crane operator is responsible for observing this safety provision.

3. Safety Provisions with Transport

- The loading platforms used must have an adequate load capacity to be able to hold the weight of the excavator. They must be placed and attached to the transport vehicle safely.
- Support the loading area at the back of the transport vehicle with adequately large supports.
- The loading platforms must be wider than the rubber track of the excavator and be provided with cross-connections on the sides.
- The transport vehicle must be equipped for the weight of the excavator.
- Position the left and right loading platform in such a way that the center line of the transport vehicle is lined up with the center line of the excavator that is to be loaded.
- Driving the excavator onto the transport vehicle without a ramp using the boom is prohibited.
- Apply the parking brake of the transport vehicle and secure all wheels of the transport vehicle at the back and front with wedges.
- The excavator must be secured against sliding using wedges, chains or suitable straps on the transport vehicle. The wedges must be secured to the rubber track of the excavator and to the transport vehicle with suitable materials. The driver of the transport vehicle is responsible for the safe fastening of the excavator on the vehicle.
- An assistant must be assigned to drive on and off the transport vehicle. This assistant is responsible for safe loading and unloading. The excavator may only be moved with directions from the assistant; the driver and assistant must have eye contact continuously. If eye contact is lost, the driver of the excavator must stop immediately.
- When driving a loaded excavator, a distance of 1.0 meters from overhead cables must be maintained at all times. The applicable traffic rules must be followed.

4. Storing



CAUTION

Observe this chapter "[SAFETY PROVISIONS](#)" (page 10) and section "[Safety Provisions for Storage](#)" (page 25).



CAUTION

Storing may only take place over a short distance and slowly (0.5 m/s ~ 1.0 m/s).

- Fasten the towing bar or tow rope to the attachment point of the excavator and of the towing vehicle.
- If the attachment point of the excavator is not accessible, the center of the dozer blade may also be used for fastening using a tow rope.
- When storing, the user must be located in the driving position.
- Drive off slowly in order to avoid a sudden load.



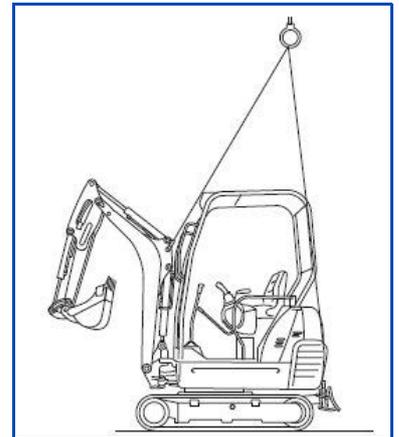
5. Loading/Unloading the Excavator with a Crane



CAUTION

Observe this chapter "**SAFETY PROVISIONS**" (page 10) and section "**Safety Provisions for Loading and Unloading with a Crane**" (page 25).

- Position the excavator on a level surface in the lifting position (see diagram).
- Raise the dozer blade to the stop of the dozer blade cylinder; see also section "**Excavation (using the control elements)**" (page 69).
- Align the boom with the longitudinal axis of the superstructure.
- Extend the bucket cylinder and the arm cylinder to the stop.
- Extend the bucket cylinder and the boom cylinder to the stop.
- Turn the superstructure in such a way that the dozer blade is located at the back.
- Close and lock the door and the covers.



CAUTION

When lifting the excavator, only the attachment points intended for this must be used. Fastening using other fastening eyes or points is prohibited and can result in serious damage.

- Fasten lifting equipment at the fastening eyes (1) with shackles on both sides of the dozer blade.



- Fasten lifting equipment at the fastening eyes (1) with shackles on both sides of the boom.
- If the lifting equipment touches the excavator, blankets must be inserted between the lifting equipment and the excavator to protect the excavator.
- Always keep the machine horizontal. Make sure the center line of the crane hook is aligned as accurately as possible with the rotation center of the excavator and that the lifting hook corresponds with the conditions. Lift the excavator.



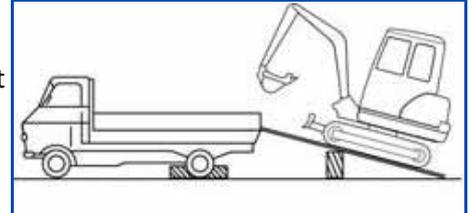
6. Transport by Flatbed Trailer



CAUTION

Observe this chapter "**SAFETY PROVISIONS**" (page 10) and section "**Safety Provisions with Transport**" (page 26).

- Position the drive-on ramps on the transport vehicle at an angle of 10° tot 15°. Pay attention to the width of the rubber track. Fasten the loading platforms to the transport vehicle in such a way that they cannot slide off while driving up them.



CAUTION

Turning or steering while driving up is prohibited. If necessary, the excavator must be reversed and, after realignment, driving up the ramps must be tried again.

- Align the excavator carefully on the loading platforms, drive straight up and lower the dozer blade on the loading area.



WARNING

When swerving, make sure no persons are in the loading area, due to the danger of entrapment.



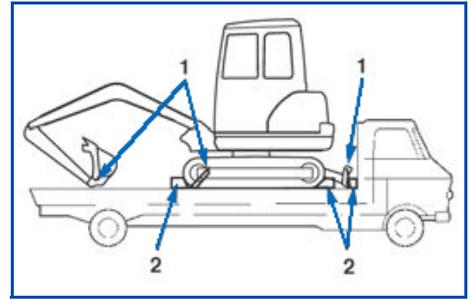
NOTE

Be careful when turning, since the attachment could bump into the transport vehicle. This could damage the transport vehicle and the excavator.

- Rotate the superstructure 180° so that the attachment points to the rear deck of the transport vehicle.
- The attachment points shown in the diagram must be used to fasten the excavator safely for transport. Suitable eyebolts (2 pieces, not included in the delivery) must be screwed into the rear weight.



- To fasten safely, fully retract the arm and the bucket and lower the boom until the bucket connections touch the loading area.
- Secure the rubber tracks and the dozer blade with wooden beams (2).
- Fasten the excavator to the transport vehicle with suitable straps or chains (1; while taking the weight of the vehicle into account).
- After loading, close the excavator.



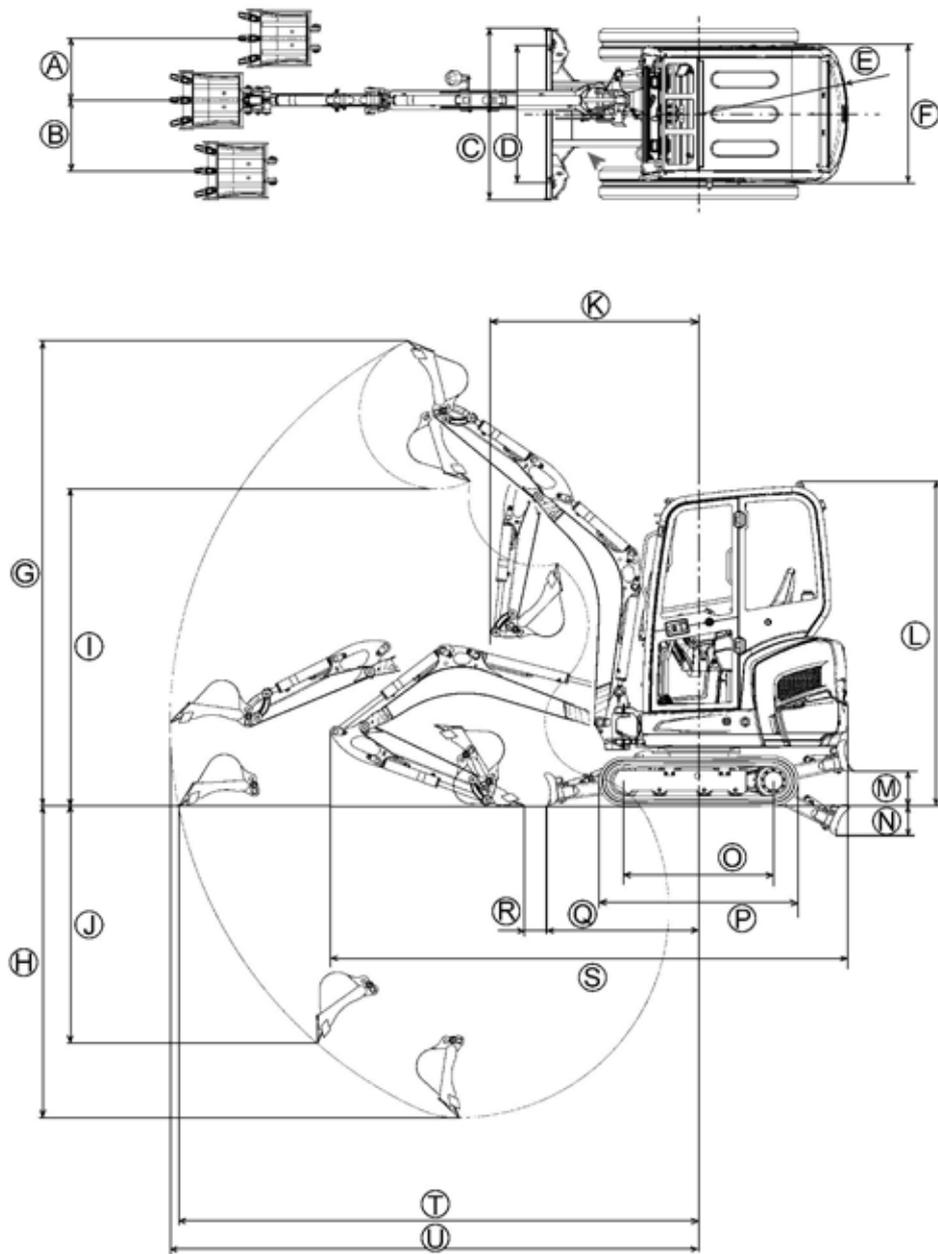
DESCRIPTION OF THE MACHINE

1. Overview of the models

The diagrams show the models with a protective roof and dab.

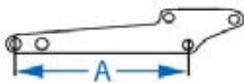


2. Dimensions



	A	B	C	D	E	F	G	H	I	J	K	L
HE18	450	510	1300	990	1100	990	3620	2580	2560	2140	1520	2350
	M	N	O	P	Q	R	S	T	U			
HE18	230	230	1230	1590	1080	100	3860	4070	4120			

Arm model

HE18	Arm 1190 mm		A = 1190 mm
------	-------------	--	-------------

3. Technical data

Model		HE18		
Type (rubber track)				
Machine weight*		kg	1760 kg	
Bucket	Volume (CECE)	m ³	0.040	
	Width without side teeth	mm	452	
	Width with side teeth	mm	472	
Engine	Type	Water-cooled three-cylinder diesel		
	Model	Kubota D1105		
	Cylinder capacity	cm ³	1123 cm	
	Engine capacity (ISO 9249)	kW	14 kW	
	Nominal rpm	Min ⁻¹	2200	
Power	Superstructure rotation speed	Min ⁻¹	11	
	Driving speed	Speed mode km/h	3.6 km/h	
		Normal driving mode km/h	2 km/h	
	Ground pressure (without driver)	kPa (kgf/cm ²)	28.9 (0.27)	
	Climb power	% (degrees)	27 (15)	
Max. inclination transversely	% (degrees)	18 (10)		
Dozer blade	Width x height	mm	990/1300 x 230	
Boom tilt angle	Left	Degrees	75	
	Right	Degrees	60	
Extra-circuit connection	Max. flow volume (theoretic)	l/min	27.7	
	Max. pressure	MPa (bar)	20.7 (220)	
Volume of the fuel tank		l	21	
Noise level	LpA	dB (A)	77	
	LWA (2000/14/EC)	dB (A)	93	
Vibrations***	Hand-arm system (ISO 5349-2:2001)	Excavating	m/s ² RMS	< 2.5
		Level	m/s ² RMS	< 2.5
		Driving	m/s ² RMS	< 2.5
		Stationary	m/s ² RMS	< 2.5
	Complete (ISO 2631-1:1997)	Excavating	m/s ² RMS	< 0.5
		Level	m/s ² RMS	< 0.5
		Driving	m/s ² RMS	< 0.5
		Stationary	m/s ² RMS	< 0.5

* With a standard bucket if 33.5 kg, operational readiness accomplished

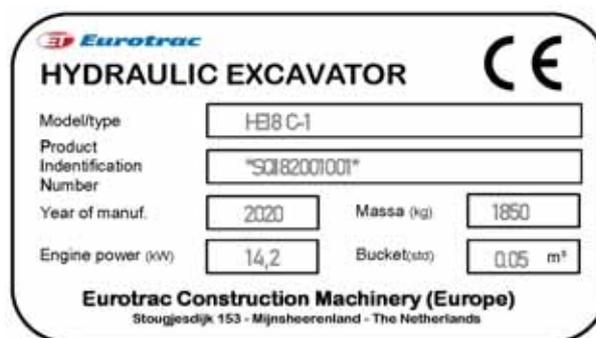
** Machine weight incl. driver 75 kg.

*** These values were measured under certain circumstances at maximum engine speed and may deviate depending on the operating conditions.

4. Identification of the Excavator

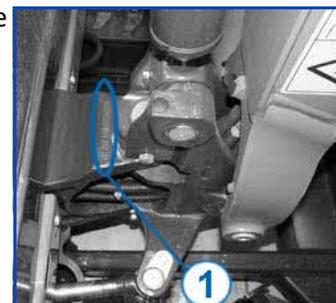
The rating plate (i.e. nameplate) for the excavator can be found on the front of the superstructure. The engraved data must be noted by the operator in the area on the back of the title page.

1. CE identification
2. Serial number
3. Max. towing capacity of the towing eyes
4. Max. support load of the towing eyes
5. Identification number
6. Year of manufacture
7. Engine capacity
8. Working weight
9. Model
10. Manufacturer



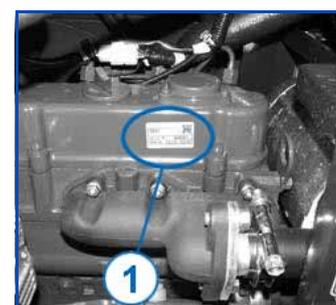
4.1 Serial Number on the Machine

The serial number (1) of the excavator has been imprinted on the undercarriage on the swivel block attachment.



4.2 Engine number

The engine number (1) has been placed on the valve cover of the engine.

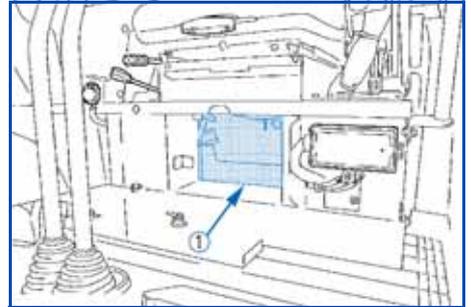


5. Basic Equipment

The basic equipment of the models includes the following parts:

- Parts manual
- Grease gun
- Spare fuse (50 A)
- Certificate of guarantee

There is a tool compartment under the seat where the grease gun and other tools can be stored.



STRUCTURE AND OPERATION

1. Overview of Parts

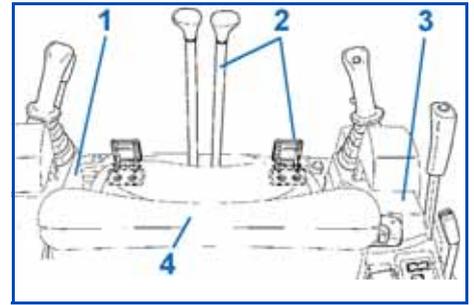


1.	Superstructure	13.	Swivel block
2.	Undercarriage	14.	Boom cylinder
3.	Cab	15.	Bucket
4.	Driving position	16.	Bucket connection
5.	Cab door	17.	Bucket cylinder
6.	Side cover	18.	Extra circuit connections
7.	Drive wheel	19.	Arm
8.	Rubber track	20.	Arm cylinder
9.	Impeller	21.	Boom
10.	Dozer blade widening part	22.	Working lights (cab)
11.	Dozer blade	23.	Exterior mirrors
12.	Dozer blade cylinder		

2. Driving position

The driving position has been placed in the center of the cab. It has the following operating facilities:

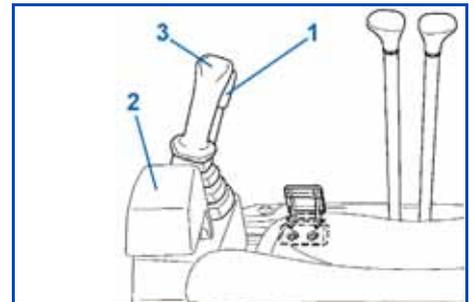
1. Left control console
2. Drive Levers and Pedal Mechanism
3. Right control console
4. Driver's seat



2.1 Left control console

The left control console has the following parts:

1. Securing the control levers
2. Wrist support
3. Left control lever



2.1.1 Description of the parts of the left control console

1. Securing the control levers

To facilitate getting in and out of the cab, the console is raised by pulling the locking mechanism of the control lever up. The engine can only be started if the console is raised. The control levers, the drive levers, the boom swing pedal and the dozer blade lever only work if the console is lowered and with the locking mechanism of the control lever in the "down" position.

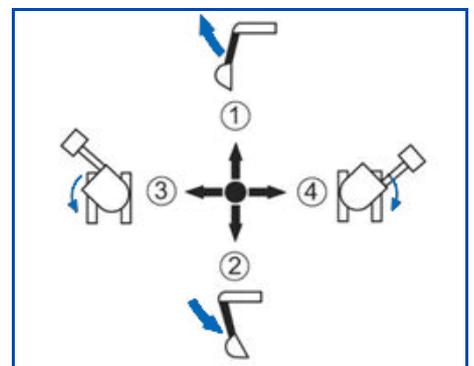
2. Wrist support

The wrist support guarantees that the user can use the control lever without becoming tired quickly.

3. Left control lever

The left control lever moves the superstructure and the arm.

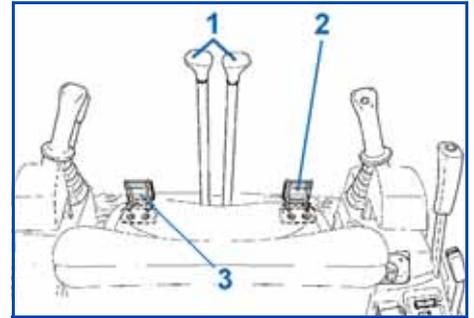
1	Swing out the arm
2	Retracting the arm
3	Turn the superstructure to the left
4	Turn the superstructure to the



2.2 Drive Levers and Pedal Mechanism

The drive levers and pedal mechanism include the following parts:

1. Left drive lever and right rubber track
2. Boom swing pedal
3. Extra circuit pedal



2.2.1 Description of the parts of the drive lever and the pedal mechanism

1. Left drive lever and right rubber track

These drive levers allow the excavator to move forward, reverse and take corners. The left drive lever controls the left rubber track and the right drive lever controls the right rubber track.

2. Boom swing pedal

This pedal swings the boom to the right and to the left.

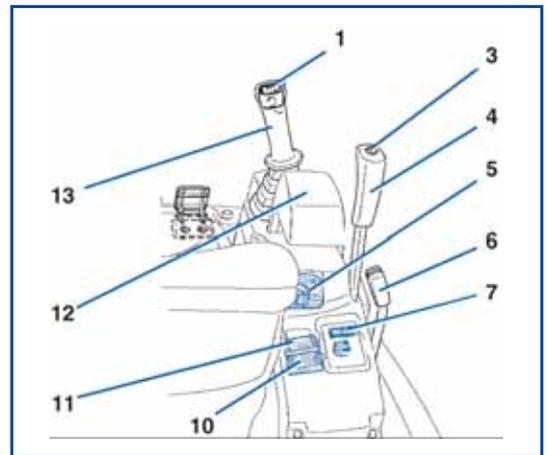
3. Extra circuit pedal

The extra pedal circuit allows the operation of extra equipment.

2.3 Right control console

The right control console has the following parts:

1. Extra circuit rocker switch
3. Fast driving position push-button
4. Dozer blade lever
5. Starter switch
6. Engine speed lever
7. Windshield wiper/spray switch (cab model)
10. Flashing light switch
11. Working lights switch
12. Wrist support
13. Right control lever



2.3.1 Description of the parts of the right control console

1. Extra circuit rocker switch (can be supplied as an option)

The extra circuit rocker switch sends the oil to the extra circuit. If the rocker switch is moved to the left, an oil flow is sent to the connection with the left side of the excavating arm. If the rocker switch is moved to the right, an oil flow is sent to the connection with the right side of the excavating arm. The extra circuit can be controlled proportionately (infinitely).

2. Fast driving position push-button

This push button switches the “fast” driving position on and off.

3. Dozer blade lever

The dozer blade lever raises the dozer blade by pulling the lever back and lowers it by pushing the lever forward.

4. Starter switch

The starter switch serves as a main switch of the entire excavator as well as a switch for pre-heating and starting the engine.

5. Throttle

The engine speed lever allows the user to set the engine speed proportionately.

6. Windshield wiper/spray switch (cab model)

The windshield wiper/spray switch

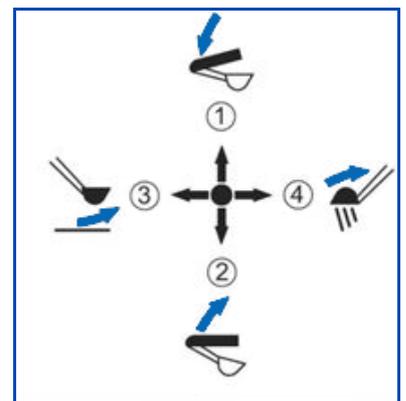
7. Fan switch (cab model)

The fan switch switches the fan on. The air flow can be set at HI or LO.

8. Right control lever

The right control console moves the boom and the bucket.

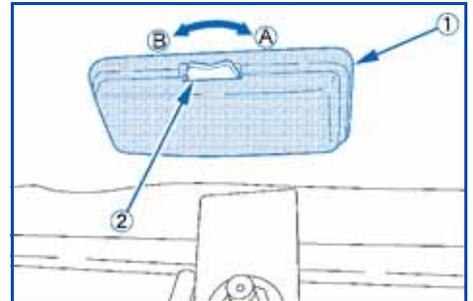
1	Boom up
2	Boom down
3	Retracting the bucket
4	Swing bucket out



2.4 Other Equipment in the Driving Position

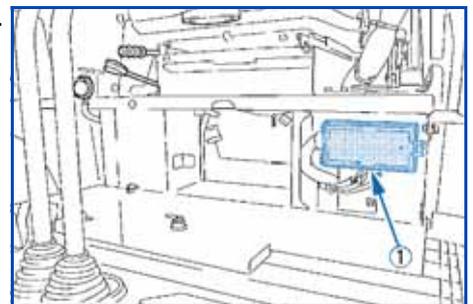
2.4.1 Interior lighting

The driver's cab has an interior light (1) on the cab roof on the left that can be turned on and off with a switch (2).



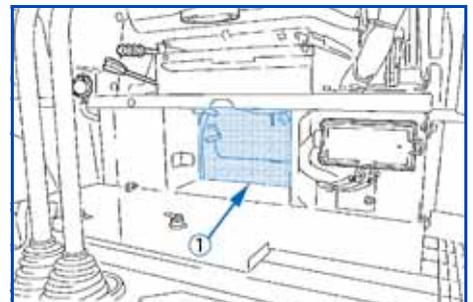
2.4.2 Fuse box

The fuse box (1) is located under the driver's seat behind a protective plate.



2.4.3 Tool compartment

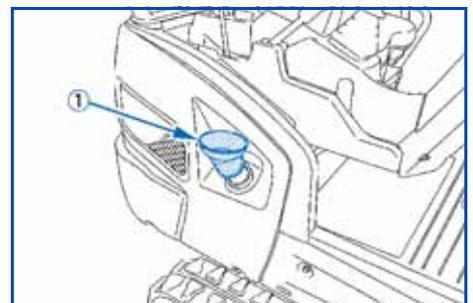
The tool compartment (1) is located under the driver's seat behind a protective plate.



2.4.4 Funnel for diesel

It is best to use a funnel (1) when filling with diesel.

The storage place for the funnel is the tool compartment under the driver's seat.



2.5 Setting the Width of the Undercarriage

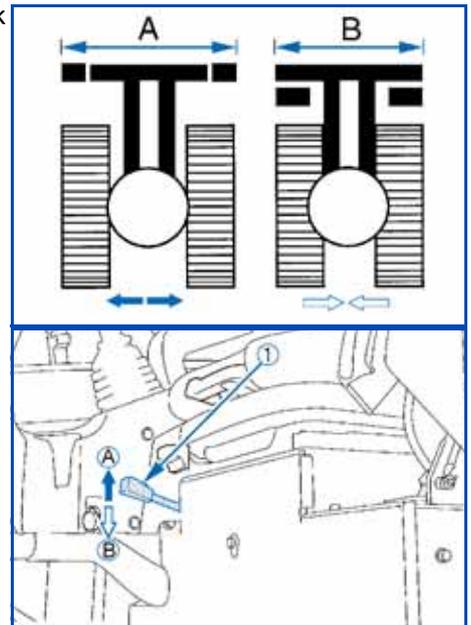
If the excavator is equipped with an adjustable undercarriage width, the track width of the excavator can be set from the standard track width (A) to the narrow track width (B) to drive through narrow places.

The track widths are:

(A) Standard track width: 1300 mm

(B) Narrow track width: 990 mm

The track width is set with the control lever for the undercarriage (1).



CAUTION

There is a danger of tipping! If excavating with the narrow track width, stability is reduced. The narrow track width should only be used to drive through narrow places.

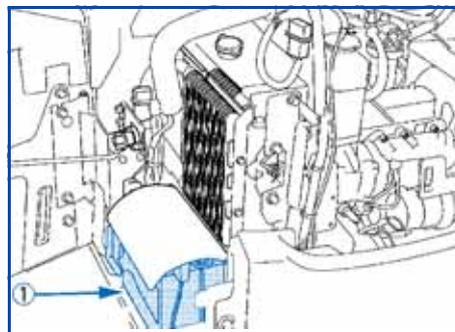
In principle, excavating is always done with the standard track width (A).

The excavator may not be used with the narrow track width (B).

3. Other Equipment on the Machine

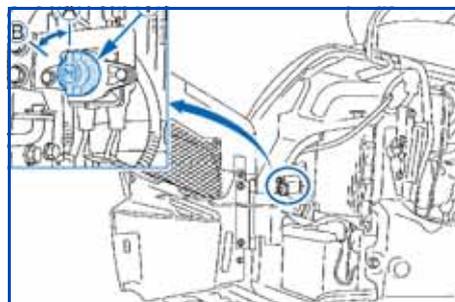
3.1 Vehicle battery

The battery (1) is located on the right, behind the lower beam.



3.2 Battery separation switch

The battery separation switch (1) can be used to separate the main circuit. The battery separation switch is located at the rear under the engine cover.

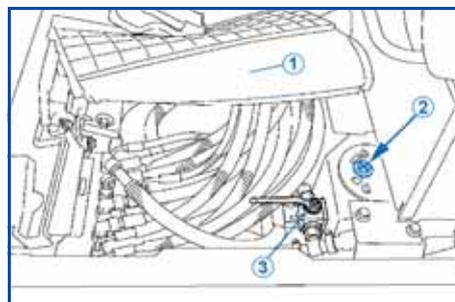


3.3 Direct return changeover valve

Depending on the operation of a front attachment, the hydraulic oil is returned via the valve block (indirect return) or directly to the hydraulic oil tank (direct return).

Using the direct return changeover valve (3), it is possible to switch between "indirect return" and "direct return".

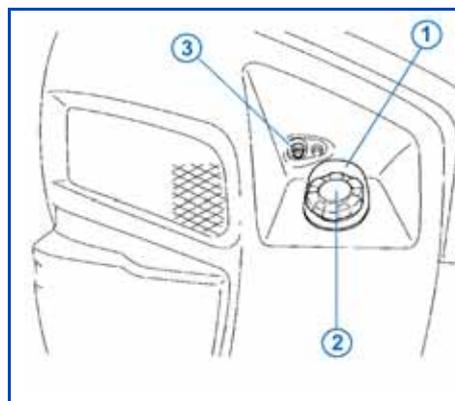
The direct return changeover valve (3) is located in the foot space under the floor plate (1) directly on the hydraulic oil tank (2).



3.4 The fuel tank filler opening and level check

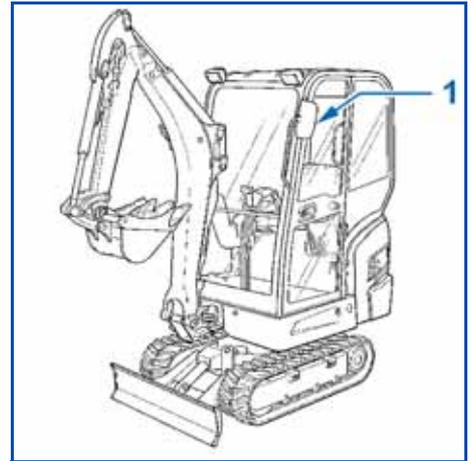
The fuel tank filler opening (1) is located at the rear to the right and is closed with a sealable tank cap (2).

The level check (3) is located above the fuel tank filler opening and serves to determine the level when filling with fuel.



3.5 Exterior mirrors

The exterior mirrors (1) make it possible to see backwards. The exterior mirrors can be set to view the desired zones optimally.



4. Heating

The cab is equipped with adjustable heating. The lever for setting the heating is located on the right of the driver's seat. The fan must be switched on.

To heat, the right switch must be set at a minimum of "1".

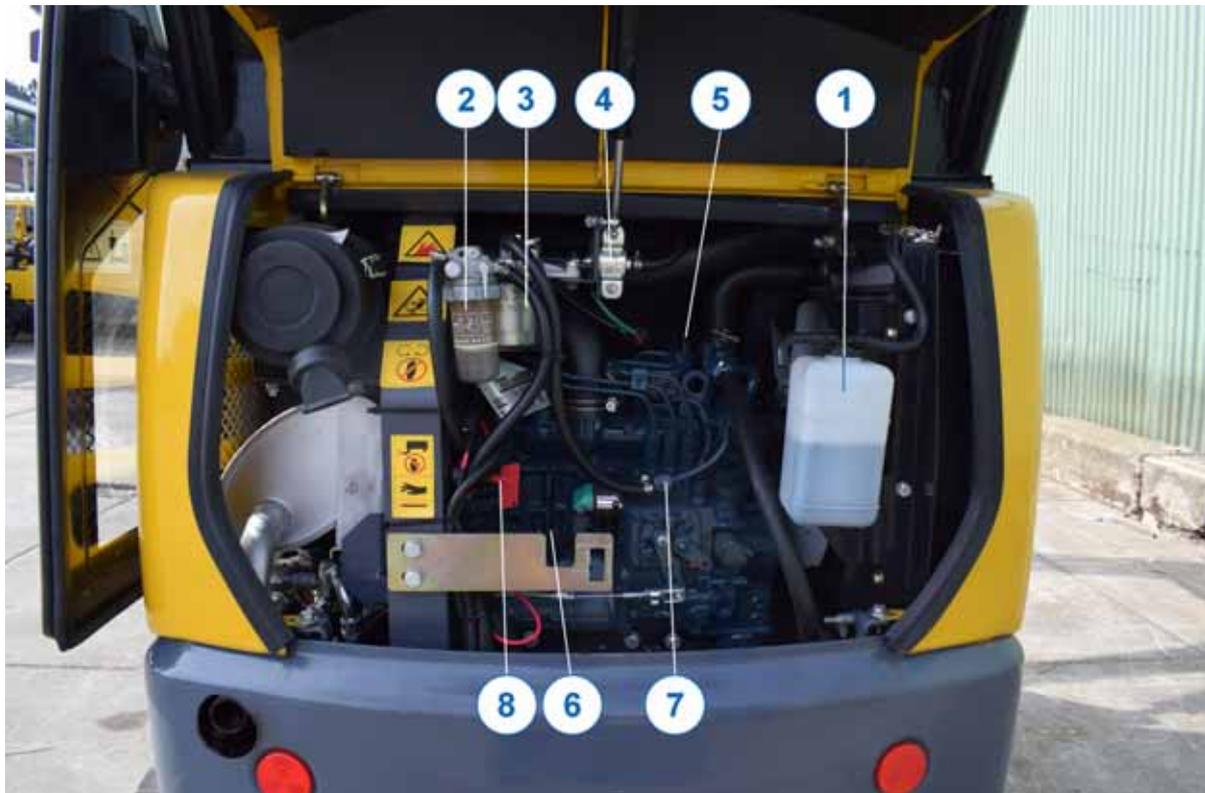
Switch A: Fan setting

Switch B: Air flow



5. Engine Area

The engine area is located at the back of the superstructure and is closed off by a lockable cover.



1.	Coolant reservoir	5.	Oil fill opening
2.	Water separator	6.	Oil dipstick
3.	Fuel filter	7.	Diesel vent nipple
4.	Fuel pump	8.	Ground switch

6. Hydraulic System

The control elements, with the exception of the dozer blade lever, the boom swing pedal, the extra circuit pedal and the drive levers, activate a hydraulic oil pilot circuit.

The dozer blade lever controls the valve via a Bowden cable.

The accumulator (4) allows the boom and arm to be lowered if the engine has stalled.

The hydraulic oil reservoir contains the intake filter and the return filter.

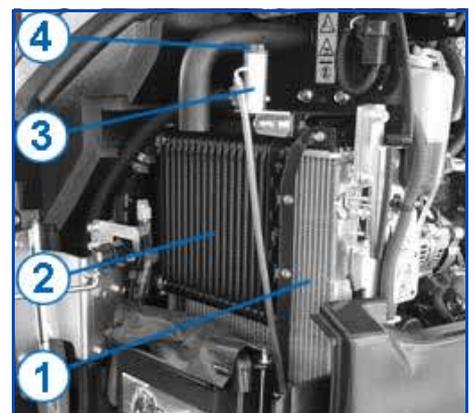


1.	Gauge glass for the level of the hydraulic oil	4.	Accumulator
2.	Oil fill opening for hydraulic oil	5.	Valve block
3.	Reservoir for hydraulic oil	6.	Hydraulic oil pump

7. Radiator and Oil Cooler

The radiator and the oil cooler are located under the side cover.

1. Radiator
2. Oil cooler
3. Tank vent filter



NOTE

Do not open the closing plug (4) on the tank vent filter. No maintenance of the tank vent filter is necessary.

OPERATION

1. Safety Instructions for Use

- The **"SAFETY PROVISIONS"** (page 10) must be observed.
- The excavator may only be used in accordance with **"Authorized Use"** (page 11).
- The excavator may only be operated by trained personnel (page 9).
- Operating the excavator while under the influence of drugs, medicine or alcohol is prohibited. If the user is overtired, operation must be stopped. The user must be physically able to operate the excavator safely.
- The excavator may only be used if all safety facilities are fully operational.
- Before starting the excavator or work on the excavator, make sure no one can be placed in danger by these actions.
- Before commissioning the excavator, it must be checked for external damage and for proper operation; the activities to be carried out before commissioning must be performed. If there are defects, the excavator may only be put into operation after the defects have been resolved.
- Close-fitting clothes must be worn pursuant to the regulations of the accident insurance.
- During operation, no persons, with the exception of the user, may be in or enter the cab.
- To get in and out, the superstructure must be positioned in such a way that the user can use the rubber track or the step (present) as a climbing aid.
- The engine must always be switched off when leaving the cab. In exceptional cases, e.g. when troubleshooting, the cab may be exited while the engine is running. The user must always make sure the left control console remains raised. The control elements may only be moved when the user is seated on the driver's seat.
- While operating, the user may not lean his arms, legs or upper body out of the window or the cab door.
- When the user leaves the excavator (for example, to take a break or at the end of the work), the engine must be switched off and the excavator must be protected against switching on again by taking the ignition key away. The cab door must be locked. Before leaving the excavator, it must be parked in such a way that it cannot roll away.
- The bucket must always be lowered to the ground during work interruptions.
- Leaving the engine running in an enclosed area is not permitted unless it has a good exhaust extractor system or the area is properly ventilated. Exhaust fumes contain carbon monoxide, which is colorless and odorless and is fatal.
- Never crawl under the excavator before the engine has been switched off, the ignition key removed and the excavator has been protected against rolling away.
- Never crawl under the excavator if it has been raised using only the bucket or the dozer blade. Always use proper support materials.
- To increase the stability of the machine, it is recommended that the dozer blade be lowered to the ground. The dozer blade may only be used as support if the dozer blade cylinder is equipped with a dry rupture protection valve.

1.1 Safety and children



WARNING

As a rule, children are naturally drawn to machines and are curious as to how they work. If there are children in the area of the machine who do not stay at an adequate distance and are in the sight of the operator, this could result in serious accidents or even the death of the child.

The following rules of conduct must always be observed:

- Never simply assume that children will stay where they were last seen.
- Keep children far away from the working area of the machine and always in the view of another responsible adult.
- Be alert and switch the machine off if children enter the working area.
- Never allow children to ride in the machine; there is not a safe place for a passenger. Children could fall off the machine and get run over, or take over control of the machine.
- Children may never operate the machine, not even under the supervision of an adult.
- Never let children play with the machine or the attachments.
- Be very careful when shunting. Look behind and under the machine and be sure that there are no children in the shunting area.
- Before leaving the machine, park it in such a way that it cannot roll away. When leaving the machine (for example, during a break or at the end of the workday), switch off the engine, remove the ignition key and, if present, close the cab door.

1.2 Assisting the user

- If the view of the user of the work and driving area is obstructed, the user must be supported by an assistant.
- The companion must be suited for this type of work.
- The assistant and the user must agree on the necessary signal prior to beginning work.
- The location of the assistant must be clearly recognizable by the user and be located in the field of vision of the user.
- The user must stop the excavator immediately if eye contact with the assistant is lost. The rule is that only one party may move: the excavator or the assistant!

1.3 Conduct when working in the area of electrical overhead cables

When working with the excavator in the area of electrical overhead cables and contact cables (e.g. tram cables), the excavator and its attachments must maintain a minimum distance from the cable as given in the following table.

Nominal voltage	Safety distance
up to 1 kV	1.0 m
> 1 to 110 kV	3.0 m
> 110 kV to 220 kV	4.0 m
> 220 kV to 380 kV or nominal voltage is not known	5.0 m

If the safety distance cannot be maintained, the overhead cables must be disconnected from the power supply after consultation with their owners or operators and protected against being switched on again.

When approaching overhead cables, all possible work movements of the excavator must be taken into account.

In addition, bumps in the ground or tilting the excavator could decrease the distance. Wind could cause the overhead cables to sway and thereby decrease the distance.

If there is a spark discharge, if necessary, use suitable measures to leave the danger zone with the excavator. If this is not possible, do not leave the driving position, warn approaching persons of the danger and arrange to have the power switched off.

1.4 Conduct when Working in the area of ground cables

Before excavation is begun, the contractor or the person responsible for the work must check whether ground cables are present in the planned work area.

If ground cables are present, the position and the route of the cables must be established with the owners or operators and the necessary safety measures must be determined.

If ground cables are discovered unexpectedly, the user must interrupt the work immediately and inform the person responsible.

2. Putting into Service the First Time

Before the excavator is commissioned for the first time, it must undergo a visual check for external damage because of the transport and the completeness of the equipment provided must be checked.

- Check the fluid levels in accordance with chapter "**MAINTENANCE**" (page 88).
- Execute all operating functions; see "**Use of the Excavator**" (page 50) and the sections that follow.

If there are defects, please inform the authorized dealer a.s.a.p.



NOTE

If the battery is separated from the power circuit, the clock data is erased. After putting it into operation again, the indicator light will flash "Set clock" and you will be asked to reset the clock.

2.1 Breaking in the excavator

For the first 50 operating hours, at least the following points must be observed:

- The excavator must be warmed up at medium-high rpm and with small loads; do not warm it up by allowing it to run stationary.
- Do not load the excavator more than necessary.

2.2 Special maintenance instructions

- Replace the oil in the travel drives after the first 50 operating hours.
- The return filter of the hydraulic system must be replaced after the first 250 operating hours.

3. Use of the Excavator

3.1 Activities before daily commissioning



NOTE

Before performing the activities, the excavator must be on a level surface; the ignition key must have been removed.

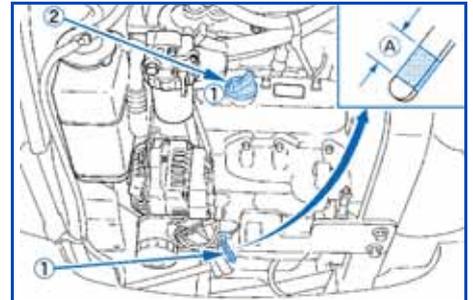
- Open the engine cover ([page 87](#)). Close the engine cover after completing the tasks.
- Open the side cover. Close the side cover after completing the tasks.

Visual check

Check the excavator for visible damage, loose bolt connections and leaks.

Checking the engine oil level

- Remove the oil dipstick (1) and wipe it off with a clean cloth.
- Reinsert the oil dipstick all the way and remove it again. The oil level must be in the range "A". If the engine oil level is too low, add via the oil filler opening ([page 97](#)).

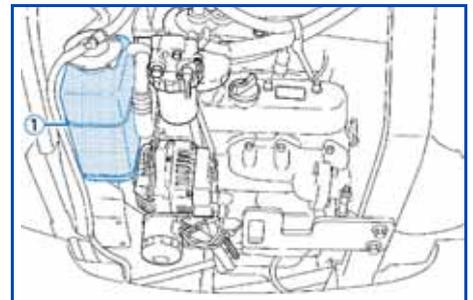


CAUTION

Operating with an oil level that is too low or too high can result in engine damage.

Checking the level of the coolant

Check the level of the coolant in the coolant expansion tank (1); the fluid level must be between FULL and LOW.



WARNING

Do not open the radiator cap.



NOTE

If the coolant level is below LOW, more coolant must be added ([page 93](#)).

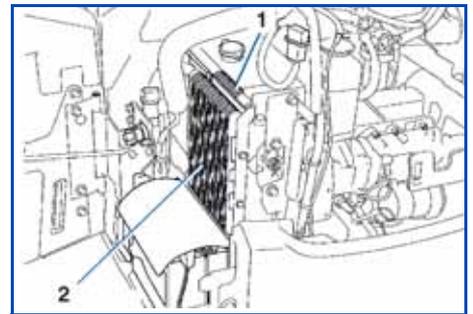


CAUTION

If the level of the coolant is below LOW again within a short period of time, there is a leak in the cooling system. The excavator may only be put into operation after the fault has been resolved.

Checking the radiator and oil cooler

- Visual check of the radiator (1) and oil cooler (2) for thickness and contamination.
- If there is dirt or such on the radiator and the oil cooler, it must be cleaned off ([page 94](#)).



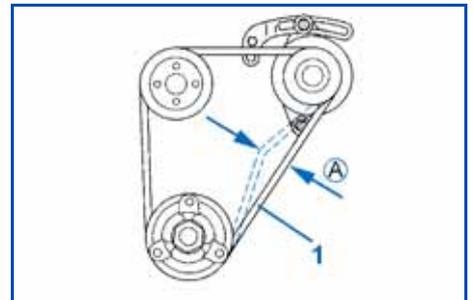
Checking the V-belt



WARNING

The engine must be turned off and the ignition key removed! Do not reach for rotating or moving parts.

- Press the V-belt (1) at the "A" spot, and the V-belt must be able to be pressed in approximately 8 mm (pressure: 10 kg). If necessary, adjust the V-belt ([page 94](#)).
- Check the condition of the V-belt. The V-belt may not have any cracks or damage. If necessary, replace the V-belt ([page 94](#)).



Checking the exhaust system for leak

- Check the exhaust system for leak and that it is fastened properly.
-

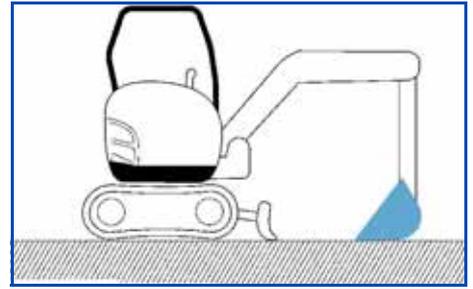


WARNING

If this check is done with a hot engine, the exhaust system may cause a burn.

- If the exhaust system leaks or is loose, the excavator may only be put into operation after this has been resolved.
-

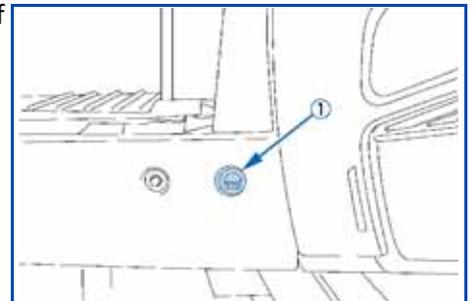
Checking the oil level of the hydraulic system



NOTE

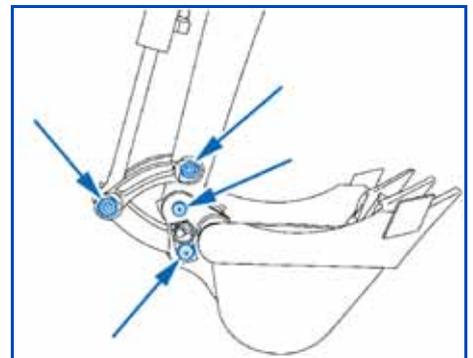
If necessary, move the boom, arm, bucket and boom swivel facility in such a way that all hydraulic cylinders are pushed out completely, lowering the dozer blade to the ground. Set the undercarriage width to the standard width. See ["Putting out of operation" \(page 77\)](#).

Check the oil level in the gauge glass (1). The oil level must be in the center of the gauge glass. Before adding, check the exact position of the hydraulic cylinders; see ["Filling up/changing the hydraulic oil" \(page 103\)](#).



Greasing the bucket pins and bucket connecting pins

- Start the engine ([page 58](#)).
- Position the arm and bucket as shown in the diagram.
- Switch the engine off ([page 59](#)).
- Apply grease to all lubrication points (adjacent diagram; see section ["Maintenance products" \(page 117\)](#)) until new grease is discharged.

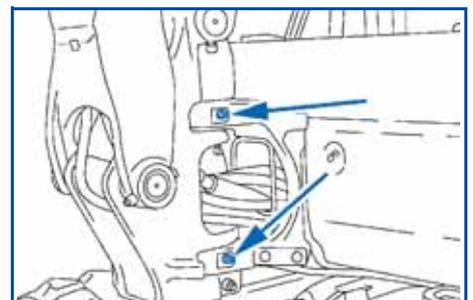


ENVIRONMENTAL INFORMATION

Wipe off the grease that is discharged immediately, storing the contaminated cleaning cloths in the appropriate crates until they are disposed of.

Greasing the swivel block attachment

- Apply grease to both lubrication points (see diagram; see section ["Maintenance products" \(page 117\)](#)) until new grease is discharged.



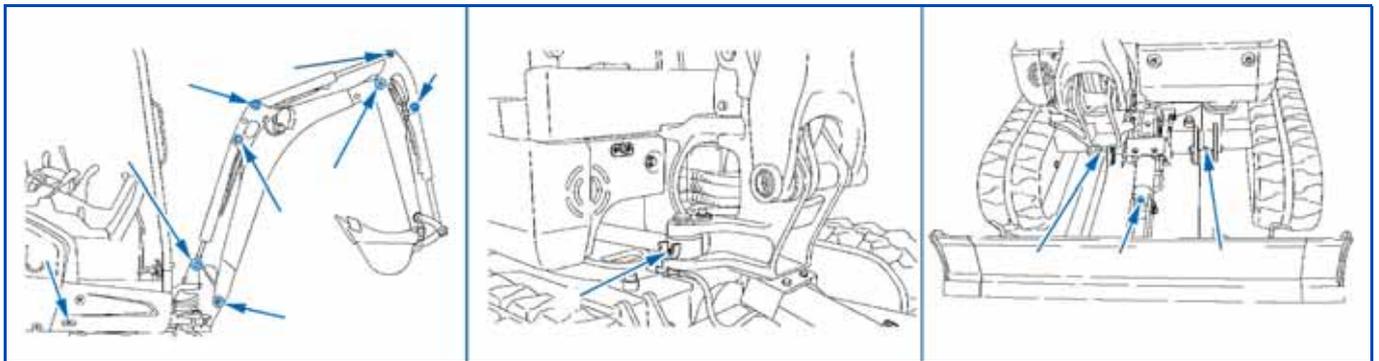


ENVIRONMENTAL INFORMATION

Wipe off the grease that is discharged immediately, storing the contaminated cleaning cloths in the appropriate crates until they are disposed of.

Other lubrication points

- Start the engine ([page 58](#)).
- Position the boom, arm and dozer blade as shown in the diagram. Switch the engine off and remove the ignition key. See section "[Excavation \(using the control elements\)](#)" ([page 69](#)).
- Apply grease to all lubrication points (see section "[Maintenance products](#)" ([page 117](#))) until new grease is discharged.



ENVIRONMENTAL INFORMATION

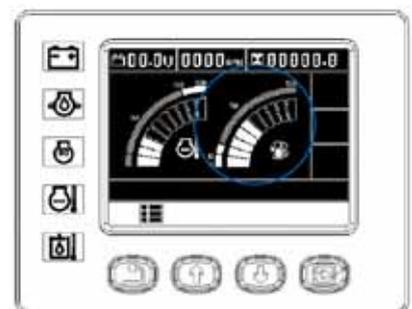
Wipe off the grease that is discharged immediately, storing the contaminated cleaning cloths in the appropriate crates until they are disposed of.

Checking the electrical cables and connections

- Check the condition of all accessible electrical cables, plug connections and if they have been attached properly.
- Damaged parts must be repaired or replaced.
- Check fuse boxes or fuse holders for oxidation and contamination, cleaning if necessary.

Checking the fuel level

- Put the starter switch in the RUN position.
- Read the fuel level on the fuel gauge of the display and control unit.
- If the excavator's fuel level is too low, full up ([page 86](#)).





NOTE

The fuel gauge (1) indicates the relative quantity of fuel in the tank. The lower the indicator needle is, the less fuel there is in the fuel tank.

Check the fluid level of the windshield washer system (cab model).



NOTE

If the windshield washer reservoir (1) is empty, do not operate the windshield washer system because the pump could run dry and be damaged. If the fill quantity is too low, fill the windshield washer reservoir ([page 86](#)).

- Check whether the fluid reservoir is full enough.



3.2 Getting in

Observe section "[Opening/closing the cab door \(cab model\)](#)" ([page 81](#)) with excavators with a cab.

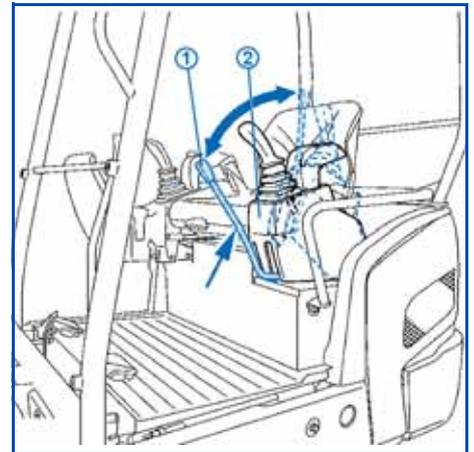


WARNING

Risk of injury when getting in and out!

- When getting in and out, you may slip and fall if you do not have a secure hold.
 - Do not jump on or from the excavator
 - Always grip the hold with one hand
 - Be sure to get in safely.
-

- Bring the left control console (2) into its final position by pulling the locking mechanism of control lever (1) up.



NOTE

The control console must remain in this position after starting the engine because otherwise the engine cannot be started.

- Get into the excavator, using the rubber track as a step.
- Sit down on the driver's seat.

3.3 Adjusting the driver's seat

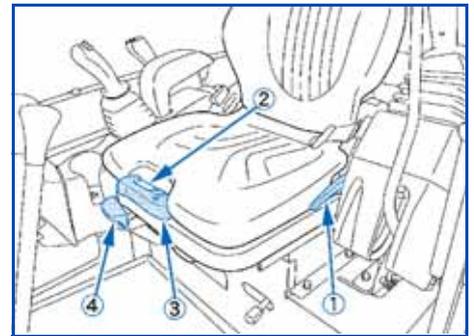


NOTE

The driver's seat must be adjusted so that working is without any effort and pleasant. All control elements must be able to be used safely.

Adjusting the length of the seat (sitting distance)

- Pull the length adjustment lever (4) up and adjust the seat by pushing it back and forth until the sitting position is right; then release the lever.



CAUTION

Make sure the seat is locked into position.

Adjusting the spring preload (weight of driver)

- The seat can be adjusted for the weight of the driver using the lever (previous diagram/ 3). A weight indicator (previous diagram/2) has been installed as an adjustment aid.
 - Sit down on the driver's seat.
 - Swing the clamp out 90°.
 - Change the spring tension with pumping movements up or down in such a way that your own weight is indicated on the weight indicator.
-



NOTE

Adjust the seat so that the marking arrow is in the center of the weight indicator.

Adjusting the backrest

Relieve the backrest somewhat and pull the lever (previous diagram/1) up, set the desired sitting position by leaning forward or backward, and release the lever. The backrest must be set in such a way that the control levers can be safely operated while the entire back of the user is leaning against the backrest.

Seatbelt

- Put on the seatbelt.
 - Make sure the seatbelt is secured.
-



CAUTION

If is prohibited to operate the excavator without the seatbelt being secured.

3.4 Adjusting the exterior mirrors

Check the exterior mirrors and, if necessary, adjust them for an optimum view.

3.5 Safety instruction before starting the engine



NOTE

Before the excavator is started for the first time on a workday, the activities must be carried out that must be performed before the daily putting into operation ([page 50](#)).



CAUTION

The "[Safety Instructions for Use](#)" ([page 46](#)) must definitely be observed.



CAUTION

Make sure no persons are within the reach of the excavator. If it is not possible to prevent this, they must be warned by tapping the horn.



CAUTION

Make sure all control elements are in neutral.



CAUTION

Starting the excavator is only permitted if the user is on the driver's seat.



NOTE

Before the engine is started, the work place must be set up for the relevant user.



CAUTION

Stop attempts to start if the engine does not start immediately. After a short waiting period, try to start it again. If the engine does not start after several attempts, specialist personnel must be informed. If the battery is dead, a starting aid must be used to start the excavator ([page 85](#)).

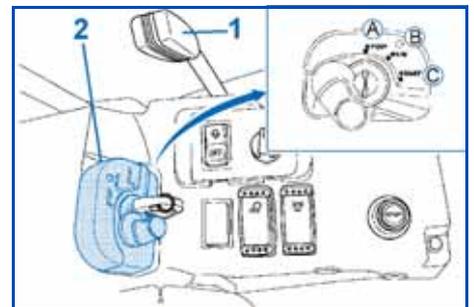


CAUTION

Do not use start pilot or something similar as a starting aid.

3.5.1 Starting the engine

- Push the engine speed lever (1) towards .
- Put the ignition key in the starter switch (2) and put it in the RUN position.



NOTE

The excavator is equipped with theft protection. If the excavator is started with the wrong key, the indicator light remove key will light up (next diagram/6) on the display and control unit.



NOTE

Metal parts such as, for example, a key ring or other keys hanging from the key chain could cause starting problems.

If the lock of the control lever is not raised, the warning light (5) will light up yellow and the engine cannot be started.

The indicator light will light up briefly. After the indicator light has gone out, the engine can be started.

The engine oil pressure indicator light will light up and go out after the engine has started.

The load indicator light will light up and go out after the engine has started.

If the indicator lights do not light up in the RUN starter switch position, remove the key and inform the competent personnel.

If the fuel supply indicator light flashes yellow, there is only a little fuel in the tank and the excavator must be filled up ([page 86](#)).

- Turn the starter switch to the START position and hold it there until the engine starts; then release the starter switch.
- Lower the control console until the locking mechanism of the control console engages.
- Allow the engine to warm up at a medium-high rpm until operating temperature is reached.

After the engine has reached operating temperature, set the rpm required for the work:

- Pull the engine speed lever in the  direction until the required rpm is reached. The display selector switch allows the display to switch between time, rpm and operating hours.

3.6 Switching the engine off



NOTE

If the engine must be switched off to turn off the excavator, the activities for putting out of operation must be performed ([page 77](#)).

Put the starter switch in the STOP position and remove the ignition key.

3.7 Checking the indications after starting and while operating

Checking indications after starting and while operating



CAUTION

The warning light will flash red if there is a system error or a technical failure, and the engine must be turned off immediately. If the system gives a warning, the warning light will flash yellow. In addition, an error code will be shown on the display, as shown in the diagram on the right.

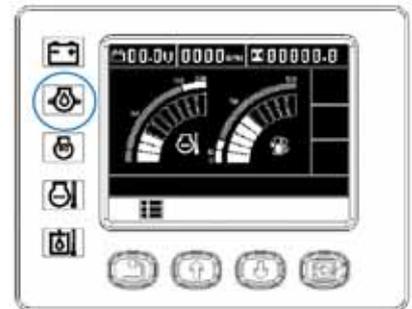


NOTE

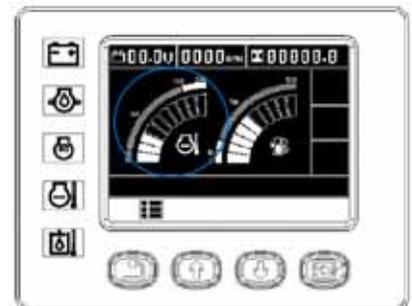
Turn off the warning by taking appropriate measures; see "[MAINTENANCE](#)" (page 88). If necessary, inform the competent personnel.

If there is not enough engine oil pressure during use, the engine must be turned off immediately. The engine oil pressure indicator light will light up.

If a failure occurs in the loading system during use, the engine must be turned off immediately. The load indicator light will light up, and the warning light will flash red.



The needle of the coolant temperature meter must remain between "C" (cold) and "H" (hot). If the needle goes into the red "H" area during use, switch the machine into idle to cool off.



NOTE

Only turn the engine off after allowing the machine to idle for five minutes!



WARNING

Do not open the radiator cap. Danger of being burnt!

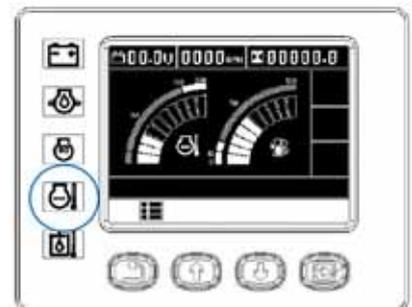
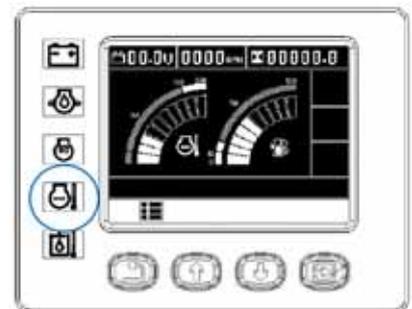
- Check the coolant position in the expansion tank.
- Check the cooling system for leak, informing the competent personnel if necessary.
- Check whether the V-belt is very loose or is cracked. If necessary, inform the competent personnel.
- Check whether the cool air intakes in the side cover, the radiators and the oil cooler are clogged. If necessary, clean the radiators ([page 94](#)).

With heavy loads on the machine, the coolant temperature may rise somewhat higher than normal. The “coolant temperature” indicator light will flash and a notification will show in the display as shown in the diagram.

The notification will disappear after a short period of time, but the “coolant temperature” indicator light will continue to flash as long as the temperature is elevated.

Only use the machine for lighter loads until the operating temperature is normal again.

If the coolant temperature is too high, allow the machine to idle to cool off. A notification will show in the display as shown in the diagram.



NOTE

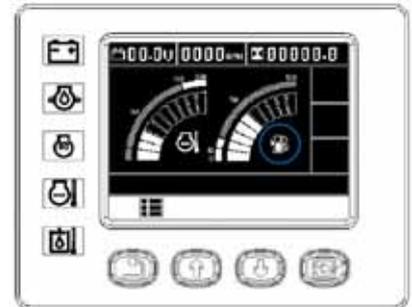
Only turn the engine off after allowing the machine to idle for five minutes!



WARNING

Do not open the radiator cap. Danger of being burnt!

- Check the coolant position in the expansion tank.
- If the water level is under LOW, allows the engine to cool off completely and add coolant ([page 93](#)).
- Check the cooling system for leak. If necessary, inform the competent personnel.
- Check whether the V-belt is very loose or is cracked. If necessary, inform the competent personnel.
- Check whether the cool air intakes in the side cover, the radiators and the oil cooler are clogged. If necessary, clean the radiators ([page 94](#)).
- Keep an eye on the fuel supply meter.



When the fuel tank is full, the needle will point up. When the fuel tank is empty, the needle will point down.

If the “Fuel Supply” indicator light is lit up, there is only a little fuel in the tank; fill up the excavator ([page 86](#)).



NOTE

The needle will indicate the relative quantity of fuel in the tank. During the operation of the machine, the needle will go down because fuel is being used.



NOTE

When the excavator is used on a slope, the quantity of fuel in the tank will be lower on one side. With a small quantity of fuel in the tank, the fuel pump may not be able to supply enough fuel and the engine will stop. The machine must be filled up and the fuel system must be vented.



NOTE

If the fuel tank is empty, the machine cannot be used. The machine must be filled up and the fuel system must be vented.

Moreover, the engine must be turned off immediately if:

- The rpm suddenly increases or decreases;
- Abnormal engine noises are heard;
- The excavation technical facilities do not respond to the control levers as expected;
- The exhaust fumes are black or white. When the engine is cold, white smoke is normal for a short period of time.

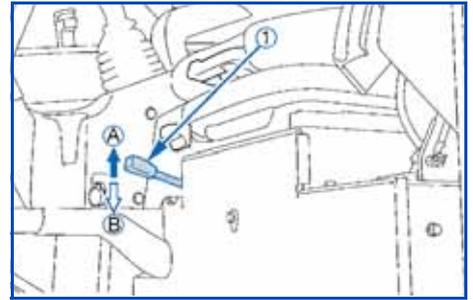
Setting the track width

Set the desired track width on excavators with adjustable undercarriage width before driving.

The track widths are:

Standard track width (A): 1300 mm

Narrow track width (B): 990 mm



WARNING

There is a danger of tipping!

If excavating with the narrow track width, stability is reduced. The narrow track width should only be used to drive through narrow places.

In principle, always excavate with the standard track width (A).

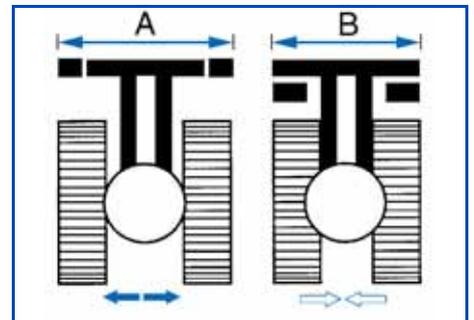
The excavator may not be used with the narrow track width (B).



NOTE

To adjust the relevant track width, both track width cylinders must either be pushed out completely (standard track width, A) or pushed in narrow track width, B).

- Pull the lever of the undercarriage width (1) up. The track width will go from the narrow track width (B) to the standard track width (A).
- Push the lever of the undercarriage width (1) downwards.
- The track width will go from the standard track width (A) to the narrow track width (B).

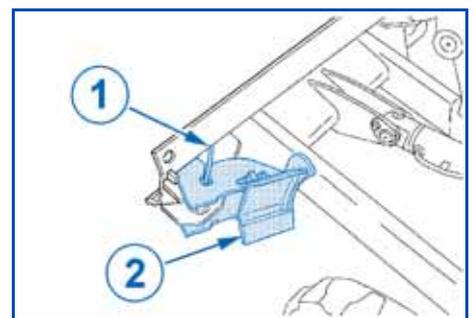


NOTE

When driving with the narrow track width, the dozer blade widening part must be collapsed.

Setting the dozer blade to the narrow track width

- Pull out the locking pin (1).
- Collapse the dozer blade widening part (2) behind the dozer blade.
- Replace the locking pin (1).



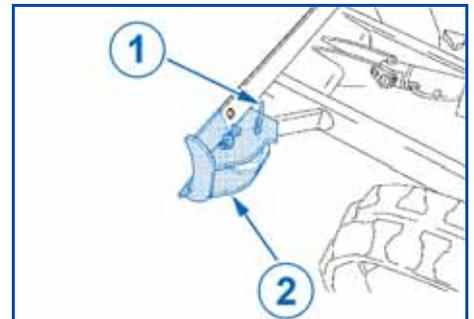


NOTE

Do this for both sides of the dozer blade.

Setting the dozer blade width to the standard track width

- Pull out the locking pin (1).
- Pull out the dozer blade widening part (2) to the front.
- Replace the locking pin (1).



NOTE

Do this for both sides of the dozer blade.

3.8 Driving the excavator



NOTE

The machine is equipped with a speed-controlled automated transmission, which automatically shifts the final drives from a fast speed to the normal speed when, for example, driving at a low speed with a load or when taking corners. For safety reasons, shifting up again to the fast speed must be done manually via the push button fast speed.

- "General safety instructions" (page 10) and "Safety Instructions for Use" (page 46) must be observed.
- Carry out the activities before daily putting into operation (page 50).
- Start the engine (page 58).
- Check the indicators and indicator lights (page 60).

Make sure the boom and the dozer blade are positioned in the direction of travel (as shown in the diagram).



CAUTION

Before driving the excavator, at least the following safety instructions must be observed.

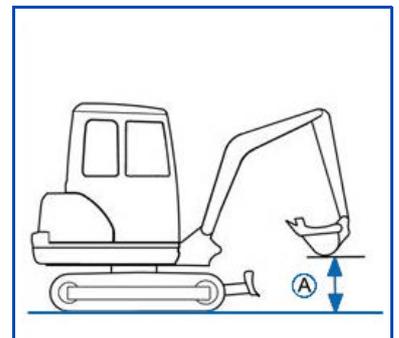
When working on a slope, take the excavator's angle of inclination into account (see diagram).

Climb power: 27% or 15°

Max. inclination transversely: 18% or 10°



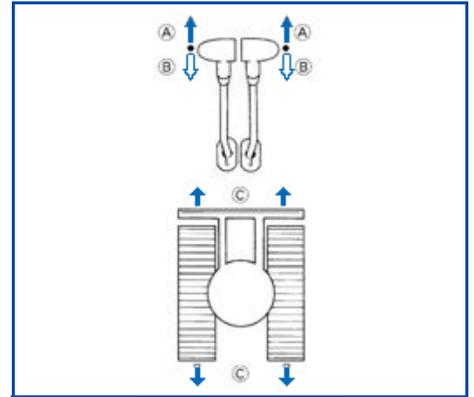
- Keep the excavator bucket as low as possible while driving.
- Check the surface for load capacity, any holes or other obstacles.
- Be careful when approaching shoulders, banks and excavations, which could collapse.
- Drive downwards slowly, so that the driving speed does not increase uncontrollably.
- Close the cab door (cab model).
- While driving, the bucket should be about 200 to 400 mm (A) above the ground (see diagram).
- Lift the dozer blade to its highest position.
- Set the engine speed at the desired value.



Driving

- Push both drive levers forwards evenly: the excavator will move forward. If the drive levers are released, the excavator will stop immediately. When both drive levers are pulled back evenly, the excavator will reverse.

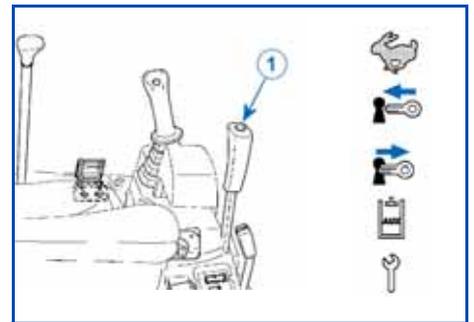
- (A) Forward
- (B) Reverse
- (C) Straight ahead



CAUTION

If the dozer blade is not at the front, as shown in the diagram, but at the back, the operation of the drive levers is exactly the opposite. Pushing the drive levers forward will cause the excavator to reverse.

-
- To drive faster, operate the fast driving position push button (1).



CAUTION

Driving at a fast speed on muddy or uneven ground is prohibited. Nor is it permitted to operate another control element (for example, turning the superstructure) at the same time.

Taking turns



CAUTION

Taking turns is described for the direction of travel forward with the dozer blade at the front. If the dozer blade is located at the back, the opposite steering movements must take place.



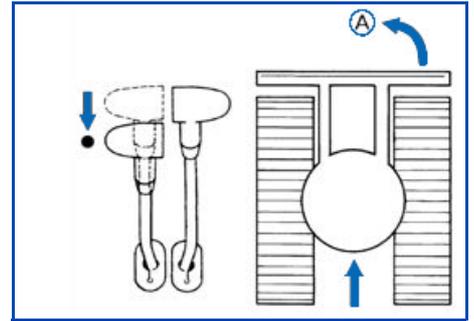
CAUTION

While taking a turn, make sure there are no persons in the swivel range of the excavator.

While driving

- Pull the left drive lever toward the neutral position; leave the right drive lever pushed forward.

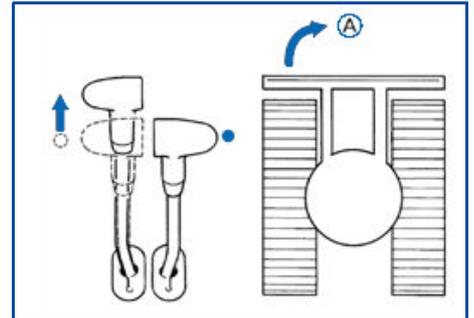
(A) The excavator will take a left turn.



From a standstill

- Leave the right drive lever in the neutral position; push the left drive lever forward. In this case, the turning circle is determined by the right rubber track.

(A) The excavator will take a right turn.



Turning on the spot

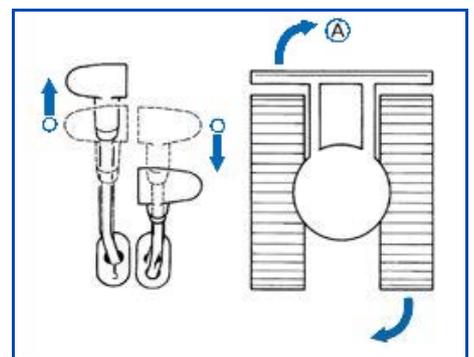


CAUTION

Turning on the spot may not be performed quickly with an operated push-button for the driving mode.

- Turn both drive levers in opposite directions. The rubber tracks will turn in opposite directions. The turning axis is the center of the vehicle.

(A) Turning right on the spot



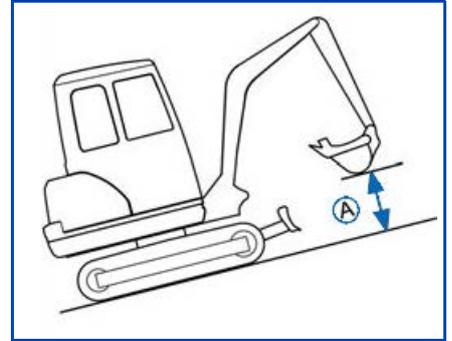
Driving on slopes



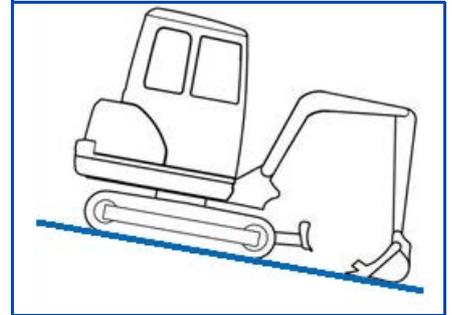
WARNING

Driving on slopes must be done with the utmost of care. Operating the fast driving position push button is prohibited.

- When going up a slope, raise the bucket about 200 to 400 mm (A) above the ground (see diagram).

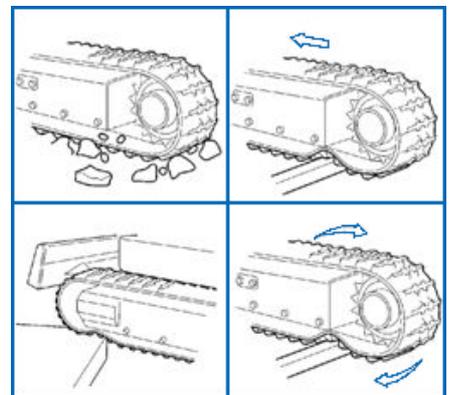


- When going down a slope, if the surface allows, let the bucket slide over the ground.



Instructions for operating with rubber tracks

- Driving or turning on objects with sharp edges or over bumps causes a strain on the rubber tracks and will cause the rubber tracks to tear or will cut into the tread of the rubber track as well as the steel frame.
- Make sure no foreign objects get stuck in the rubber track. Foreign objects strain the rubber track and it may tear.
- Do not allow oil products near the rubber track.
- If fuel or hydraulic oil is spilled on the rubber track, it must be cleaned off.



Taking tight turns

- Do not take tight turns on roads with a high-friction topcoat such as, for example, concrete roads.

Protecting the rubber track from salt

- Do not work with the machine on a sea beach. (The salt will corrode the steel frame.)

3.9 Excavation (using the control elements)

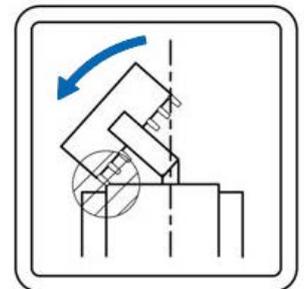


CAUTION

To work with the excavator, at least the following safety instructions must be observed.

- It is not permitted to break concrete or boulders with the excavating arm.
- When excavating, do not allow the bucket to fall freely.
- Do not fully extend the cylinder. Always allow some safety clearance, especially when operating the hydraulic hammer (accessories).
- Do not use the bucket as a hammer to drive poles into the ground.
- Do not drive or excavate with the bucket teeth in the ground.
- Do not drive the bucket too deeply into the ground to excavate earth. Instead, scrape the bucket relatively flat over the ground at a large distance from the vehicle body. This puts less stress on the bucket.
- The excavator may only be used in water up to the bottom of the superstructure.
- After the machine has been used in water, always grease the pin of the bucket and arm with lubricant until the old grease discharges.
- When excavating in a reverse direction, make sure the boom does not come into contact with the dozer blade.
- Excavated material that sticks can be shaken off by swiveling the bucket to the stroke end of the cylinder. If there is still excavated substance in the bucket, fully extend the arm and retract and extend the bucket.
- To increase the stability of the machine, it is recommended that the dozer blade be lowered to the ground. The dozer blade may only be used as support if the dozer blade cylinder is equipped with a dry rupture protection valve.

3.9.1 Operating instructions for wide and deep buckets



CAUTION

If using a wide or deep bucket, care must be taken when swiveling or retracting attachments that the bucket does not bump into the cab.

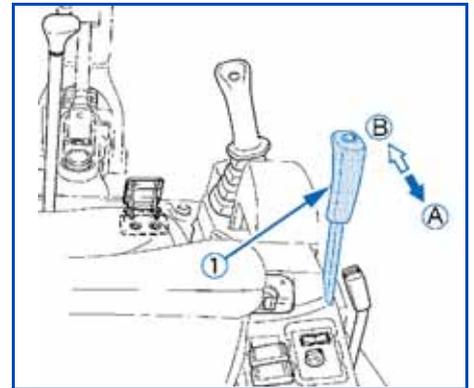
3.9.2 Operating the dozer blade



NOTE

When leveling, both drive levers must be operated with the left hand and the dozer blade lever with the right hand.

- Retract the dozer blade lever (1) to raise the dozer blade.
- To lower the dozer blade, push the dozer blade lever forward.



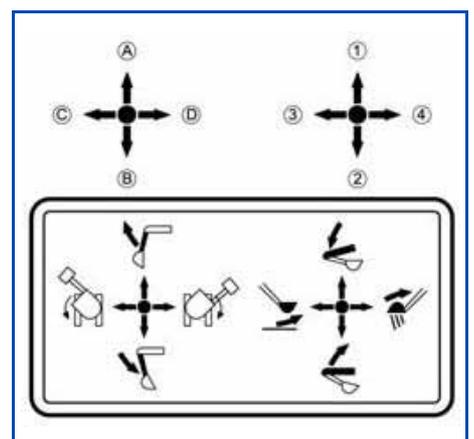
- (A) The dozer blade goes up.
- (B) The dozer blade goes down.



3.9.3 Overview of the functions of the control levers

The diagram, in combination with the following table, shows the functions for the left and right control levers.

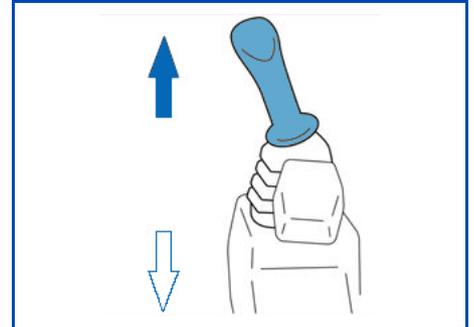
Control lever		Movement
Right control lever	1	Boom up
	2	Boom down
	3	Retracting the bucket
	4	Swing bucket out
Left control lever	A	Swing out the arm
	B	Retracting the arm
	C	Turn the superstructure to the left
	D	Turn the superstructure to the right



3.9.4 Operating the boom

When the warning system is activated due to overload, the boom must be lowered until the load is on the ground and the load is lightened. To prevent bodily injuries, in the event of overload, no other functions (e.g. turning the superstructure) must be executed.

- Pull the right control lever back to raise the boom (diagram: arrow down).
- Push the right control lever forward to lower the boom (diagram: arrow up).



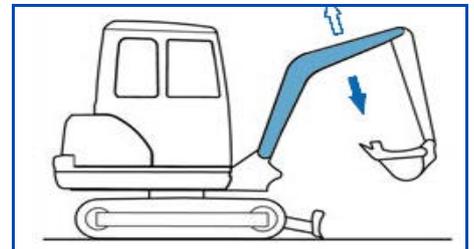
NOTE

The boom has a hydraulic cylinder with damping that prevent the bucket contents from falling out of the bucket. If the operating temperature of the hydraulic oil has not yet been reached, the damping effect only takes place after a deceleration of about 3 to 5 seconds. This is due to the viscosity of the hydraulic oil and is not a malfunction.



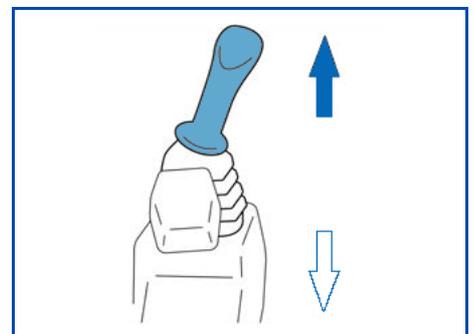
CAUTION

When lowering the boom, make sure the boom or the teeth of the bucket do not bump against the dozer blade. The boom moves as shown on the diagram.

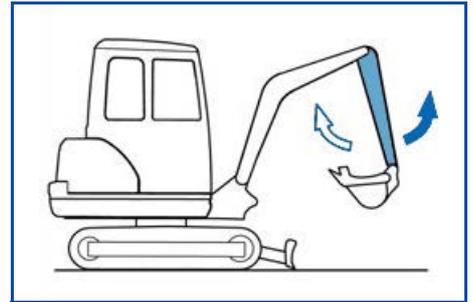


3.9.5 Operating the arm

- Push the left control lever forward to swing the arm out (diagram: arrow up).
- Pull the left control lever back to retract the arm (diagram: arrow down).

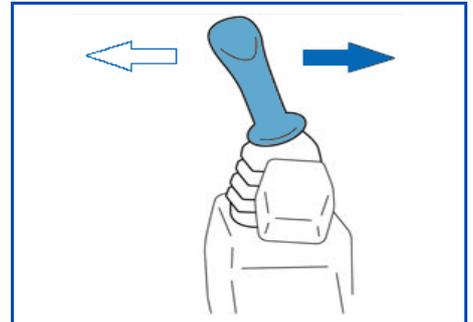


The arm moves as shown on the diagram.



3.9.6 Operating the bucket

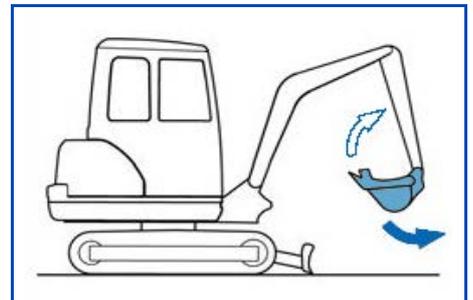
- Push the right control lever to the left to retract the bucket (to excavate).
- Push the right control lever to the right to swing the bucket out (to empty it).



CAUTION

While retracting the bucket, make sure the teeth do not bump against the dozer blade.

The bucket moves as shown on the diagram.



3.9.7 Swiveling the superstructure



CAUTION

When swiveling, make sure there are no persons in the swivel range.



CAUTION

Be careful when swiveling so that the attachment does not bump against adjacent objects.

- Push the left control lever to the left, to turn counterclockwise (Diagram/ ←).
- Push the left control lever to the right, to turn clockwise (Diagram/ →).



Turning takes place as shown on the diagram.

3.9.8 Swiveling the boom



CAUTION

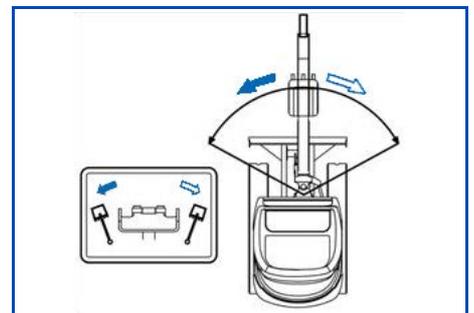
When swiveling, make sure there are no persons in the swivel range.



CAUTION

Be careful when swiveling so that the attachment does not bump against adjacent objects.

- Press the boom swing pedal on the left, to turn counterclockwise (Diagram/ ←).
- Press the boom swing pedal on the right, to turn clockwise (Diagram/ →).



Swiveling takes place as shown on the diagram.



NOTE

By flipping the locking flap, the boom swing pedal can be secured against unintentional operation. Flip the locking flap when the boom swing pedal is not being used.

3.9.9 Operating the extra circuit (option)

The extra circuit is for operating attachments.



CAUTION

Only attachments approved by EUROTRAC may be used. The attachments must be installed and used in accordance with their operating instructions.



CAUTION

When using a hydraulic hammer or another attachment for demolition work where the material (e.g. asphalt) is removed and may fly off uncontrolled, personal protective equipment is required (safety shoes, safety helmet, safety goggles, hearing protection and possibly a dust mask). Using stone damage protection is recommended (protector). The windshield of excavators with a cab must be closed.



NOTE

The capacity data of the extra circuits can be found in section "[Technical data](#)" ([page 32](#)).



CAUTION

Before working on the extra circuit connections, make sure the pressure in the hydraulic system ([page 76](#)) and the extra circuit connections ([page 75](#)) has been released. Depending on the operating settings, the direct return changeover valve must be in the corresponding position ([page 76](#)).



CAUTION

If no attachments have been installed, the extra circuit pressure switch may not be operated.



NOTE

If the extra circuit has not been used for some time, dirt particles may have gathered on the pipe connections. Before attachments are installed, about 0.1 liters of hydraulic oil must be drained from each connection.



ENVIRONMENTAL INFORMATION

The drained hydraulic oil must be caught and disposed of in accordance with the current environment protection provisions.

- Start the engine ([page 58](#)) and let it warm up until operating temperature is reached.

Switching on the extra circuit function

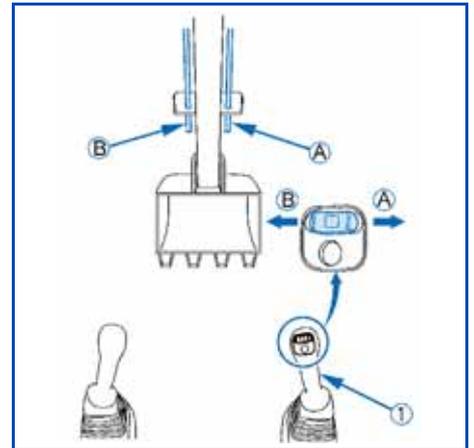
The extra circuit has been designed for the use of hydraulic attachments such as, for example, a hydraulic hammer. The flow volume may be set prior to using the extra circuit.

Switching the extra circuit on is done with the extra circuit switch. The switch is active is the left control console is lowered and the starter switch is in the RUN position. If the extra circuit is switched on, the extra circuit indicator light will be lit up or flash.

The operating setting can also be execute with the switch.

The proportional steering makes the proportionate speed regulation of an attachment possible. For example: if the rocker switch is moved halfway to the left, the attachment will move at about half speed.

- If you move the extra circuit rocker switch (1) in direction (A), the oil will flow to the connection (A) on the right side of the arm.
- If you move the extra circuit rocker switch (1) in direction (B), the oil will flow to the connection (B) on the left side of the arm.

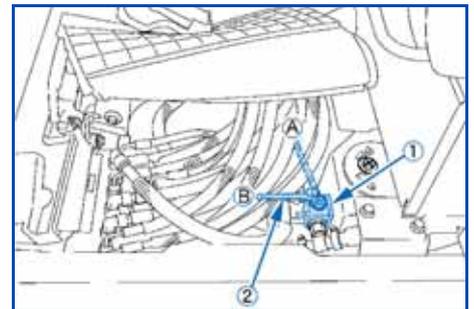


Direct return changeover valve

The changeover valve (1) has two switch positions.

In the “direct return” position, there is a return from the attachment directly via the return filter to the reservoir for hydraulic oil. The return only takes place via the right extra circuit connection on the left side of the arm.

In the “in direct return” position, the return is from the attachment via the valve block to the return filter and then to the to the reservoir for hydraulic oil. In this case, the return can take place via the left or right connection (according to the position of the extra circuit pedal or the extra circuit rocker switch) on the arm.



Depending on the operation of the installed attachment (rotating or hammering), turn the changeover valve into the required position in accordance with the diagram.



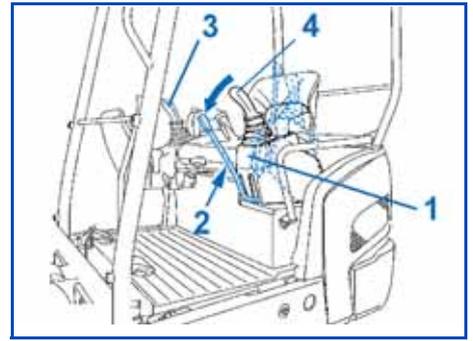
CAUTION

If the changeover valve is in the “direct return” position even though an attachment with indirect return has been installed, the return to the hydraulic oil tank will remain open! This could lead to sudden movements or falling down of the attachment even if the machine has been switched off.

Make sure the changeover valve has been set consistent with the attachment.

3.9.10 Decrease the pressure in the hydraulic system

- Lower the attachment and dozer blade completely.
- Put the starter switch in the STOP position.
- Wait until the engine has come to a standstill.
- Put the starter switch in the RUN position.



NOTE

Do not start the engine!

3.10 Putting out of operation



CAUTION

The excavator must be parked in such a way that the excavator cannot roll away and is protected against unauthorized use.

- Drive the excavator onto a level surface.
- Extend the hydraulic cylinder as follows:
 - Boom: extended halfway
 - Arm: extended halfway
 - Bucket: extended halfway
 - Dozer blade: lowered to the ground
 - Swivel setting: lower attachments in the center and onto the ground
- Switch the engine off ([page 59](#)).
- Remove the ignition key.
- Remove the seatbelt and raise the left control console.
- The excavator may need to be filled up ([page 86](#)).
- Close all valves and lock them.
- Check the excavator for external damage and leaks. Defects must be repaired before the next putting into operation.
- If there is a great deal of contamination within reach of the rubber tracks and joints of the attachment, the excavator must be cleaned ([page 92](#)).

Cab model

- Close all windows and lock them.
- Close the cab door and lock it.

3.11 Heating

The cab is equipped with adjustable heating. The lever for setting the heating is located on the right of the driver's seat. The fan must be switched on.



To heat, the right switch must be set at a minimum of "1".

Switch A: Fan setting

Switch B: Air flow



NOTE

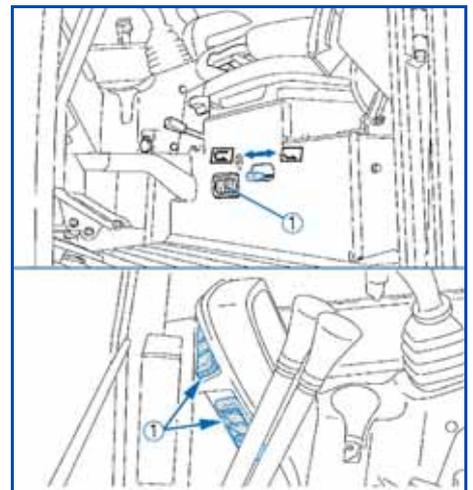
Under dusty conditions, the supply of fresh air must be switched to increase the air pressure in the cab. This helps to prevent the dust from penetrating the cab.



WARNING

Continuously circulating air operation contributes to the exhaustion of the user! Circulating-air operation for a longer period of time could result in a lack of oxygen and overheating in the cab. No fresh air is coming in from outside. This tires the user out quickly.

Once the engine is warm, heated air will flow from the air atomizers (1).



3.12 Operating the windshield cleaning system (cab model)

All models with a cab have a windshield cleaning system.

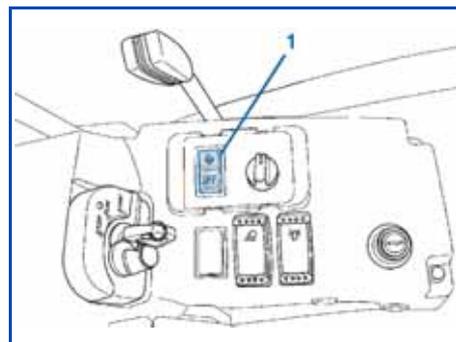


WARNING

Risk of injury! If the windshield wiper is operated with the windshield open, it will slide out of the holder on the cab frame and may hit the inside of the cab. Do not switch the windshield wiper on if the windshield is open.

Switching the windshield wiper on

- The starter switch is in the RUN position.
- Press the switch (1) into the WIPE/SPRAY WINDOW position. The windshield wiper will run as long as the switch remains in this position.
- To switch it off, press the switch (1) into the OFF position.



NOTE

In the winter, before using the windshield wiper, check whether the windshield wiper blade has frozen to the window. If so, the windshield wiper blade or the windshield wiper motor could become damaged.



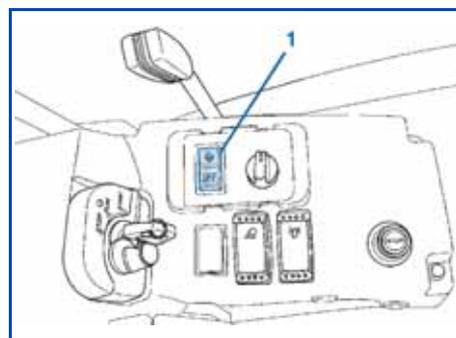
NOTE

Only operate the windshield wiper if the window is wet enough. If necessary, switch the windshield washer system on beforehand.

Switching the windshield washer system on

The windshield washer system can be operated if the windshield wiper has been switched on or off.

- If the windshield wiper has been switched on: push the switch (1) back to the WIPE/SPRAY WINDOW position and hold.
- If the windshield wiper has been switched off: push the switch (1) in the OFF position and hold.



The windshield washer system will work as long as the switch is pressed in.

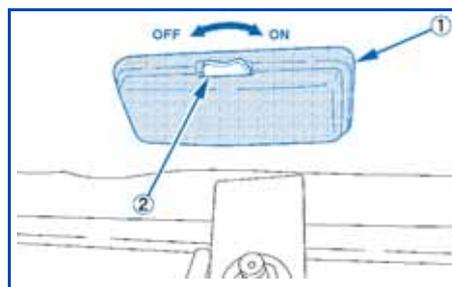


NOTE

If the windshield washer reservoir is empty, do not operate the windshield washer system because the pump could run dry and be damaged.

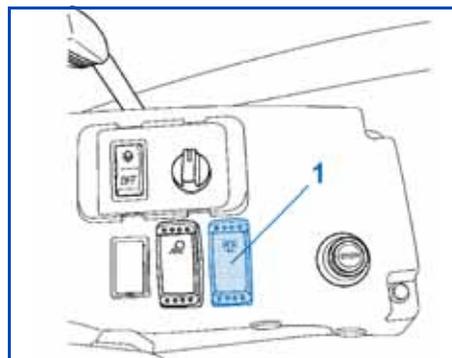
3.13 Operating the interior lighting (cab model)

- Press the switch (2) into the ON position. The interior lighting (1) will stay on as long as the switch remains in this position.
- To switch it off, press the switch (2) into the OFF position.



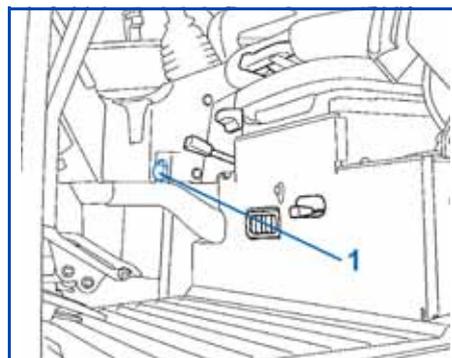
3.14 Operating the flashing light (accessories)

- The starter switch is in the RUN position.
- Press the flashing light switch (1) into the ON position. The flashing light will stay on as long as the switch remains in this position.
- To switch it off, press the flashing light switch into the OFF position.



3.15 Operating the 12-V power strip

- Open the cover (1) and plug an electrical device in the 12-V power strip.



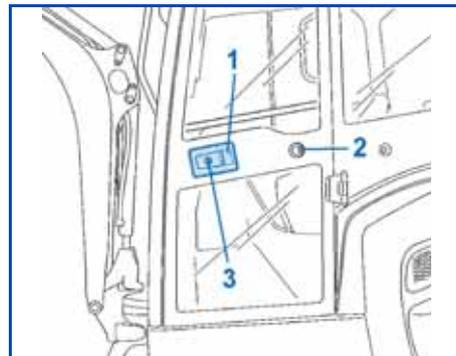
CAUTION

The nominal voltage of the user connected may not exceed 10 A.

3.16 Opening/closing the cab door (cab model)

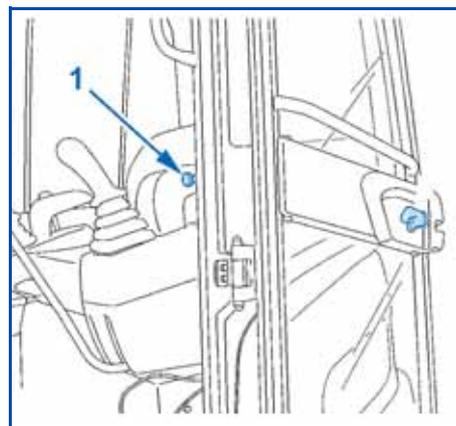
Opening the cab door from the outside

- Unlock the door lock of the cab door (3).
- Open the cab door by pulling on the door handle (1) and secure the door in the holder on the cab wall with the hook (2).



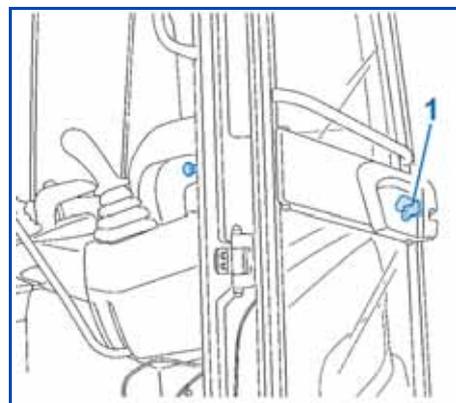
Closing the cab door

- Pull out the lock release handle (1) and pull the cab door into the locking mechanism.



Opening the cab door from the inside

- Pull out the lock release handle (1) and open the door. If the cab door will not be locked immediately after, the door must be secured to the cab wall.



3.17 Opening/closing the windows (cab model)

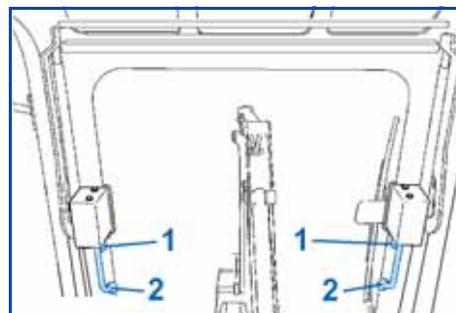
Opening the windshield



CAUTION

The windshield must always be secured. Being in the cab and operating the excavator with an unsecured windshield is prohibited. When opening, always have both hands on the handle (2) to prevent injuries.

Opening and closing the windshield is done from the driver's seat.



- Press both the right and left locking lever (previous diagram/1) at the same time, using the handles (previous diagram/2) and push the windshield up in the guide rails to the end. At the end, secure the windshield.



CAUTION

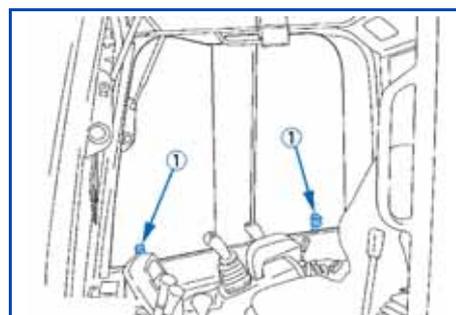
Do not release the handles while moving up. The windshield could shoot up uncontrollably and bump against the head of the user. Observe the safety instructions on the side window.

Closing the windshield

- Press both the right and left locking lever (previous diagram/1) at the same time, using the handles (previous diagram/2) and push the windshield forward in the guide rails to the end. Secure the windshield at the end by release the locking levers.

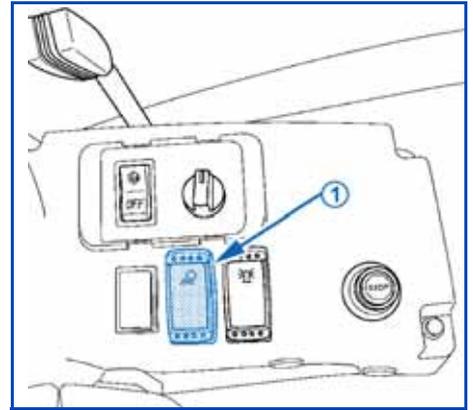
Side window

- Unlock the lock by pulling the handle (1). Unlock the side window by sliding it open to the back or to the front.
- To close it, slide the side window to the front or to the back until the lock of the window frame latches.



3.18 Operating the work lights

- The starter switch is in the RUN position.
- Press the work lights switch (1) into the ON position. The work lights will light up on the cab.
- To switch them off, press the work lights switch into the OFF position.



NOTE

When working on or next to a public road, other road users may not be blinded.

3.19 Using in the winter

Using in the winter mean operating the excavator at an outside temperature of less than 5 °C.

Tasks before winter

- If necessary, replace the engine oil and hydraulic oil with a viscosity specific for winter use.
- Only use diesel oil with winter additives customary in the trade. Adding gas is prohibited.
- Check the charge status of the battery. With extreme temperatures, the battery may need to be removed after being put out of operation and stored in a heated area.
- Check the antifreeze level in the cooling system ([page 93](#)); if necessary, top up the antifreeze concentration, which must be between -25 °C and -40 °C.
- Smear all rubber gaskets of the windows, the cab door and the guide rail of the side window with talcum powder or silicon oil.
- Grease all locks, except for the starter switch, with graphite grease.
- Lubricate the hinges of the cab door.
- Fill the windshield washer system with frost-free windshield washer fluid ([page 86](#)).

Using in the winter

- After completing work, the excavator must be cleaned ([page 92](#)); special attention must be given to the rubber tracks, the attachments and the piston rods of the hydraulic cylinders. If the excavator is cleaned with a jet of water, it must be parked in a dry, frost-free and well ventilated area afterwards.
- If necessary, the excavator must be parked on planks or mats to prevent it from freezing to the ground.
- Before putting into operation, check whether there is ice on the piston rods of the hydraulic cylinders. Ice may damage the gaskets. Also check whether or not the rubber tracks have frozen to the ground. If so, the excavator may not be put into operation.



CAUTION

The rubber track could be slippery. Be careful when getting in or out.

- Start the engine ([page 58](#)) and, according to the outside temperature, allow it to warm up longer. Before starting to work with the attachment, the excavator must be warmed up.

3.20 Starting the excavator with a starting aid



CAUTION

Only use a vehicle or starting device as a starting aid if it has a 12-V power supply.



CAUTION

The user is located in the driving position, while connecting the starting aid battery is done by a second person.

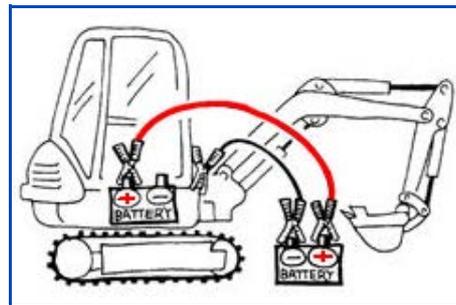
- Make the battery accessible and remove the cover from the positive terminal.
 - Position the starting aid vehicle or the starting device next to the excavator.
-



NOTE

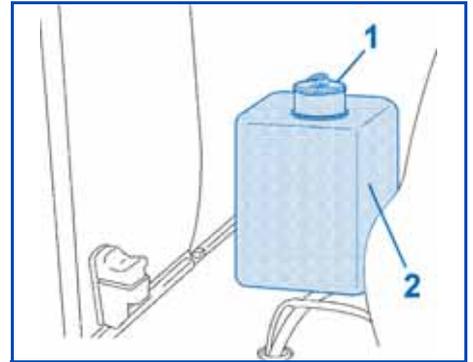
The diameter of the starting aid cables must be adequate.

- Connect the positive terminal of the battery of the excavator with the positive terminal of the starting aid vehicle (see diagram).
- Connect the negative terminal of the starting aid vehicle with the chassis of the excavator. Do not use the negative terminal of the battery of the excavator. The connection location of the chassis must be clear and clean.
- Start the starting aid vehicle and let it run at an increased stationary speed.
- Start the engine ([page 58](#)) and keep it running. Check whether the charging current indicator light has gone out.
- Disconnect the starting aid cable from the chassis of the excavator first and then from the negative terminal of the starting aid vehicle.
- Remove the second starting aid cable from the positive terminal of the excavator's battery first and then the positive terminal of the starting aid vehicle.
- Put the positive terminal cover on the battery of the excavator.
- If the excavator can only be started with a starting aid again the next time, the battery and the charging circuit of the alternator must be checked. Inform the competent personnel of this.



3.21 Filling the windshield washer system

- Open the cap (1) of the windshield washer reservoir (2) and fill the reservoir with water and a cleansing agent.



NOTE

In the winter, windshield washer fluid with antifreeze added must be used.

3.22 Filling up the excavator



WARNING

When filling the excavator up, smoking, open flame and the use of other ignition sources are prohibited. The danger zone must be indicated with signs. The danger zone must have a fire extinguisher.



ENVIRONMENTAL INFORMATION

Spilled fuel must be absorbed by an oil absorbing fabric immediately. The contaminated oil binding agent must be disposed of in accordance with current environment protection regulations.



CAUTION

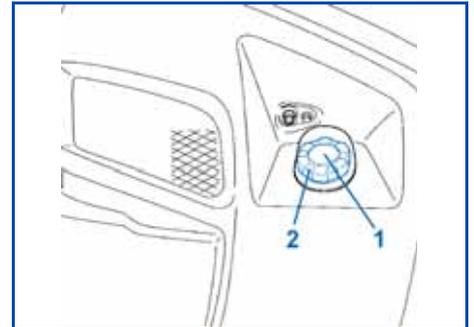
Only if there is no gas pump present may diesel oil be stored in approved jerry cans.



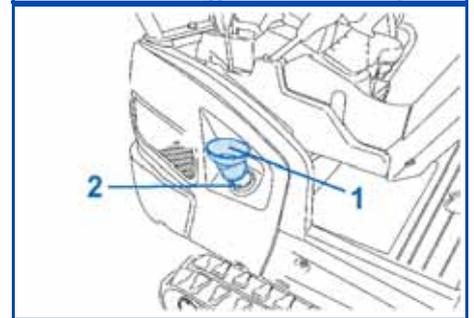
CAUTION

The excavator must be filled up on time so that the tank is not run dry. Air in the fuel system could damage the injection pump.

- Switch the engine off.
- Place the ignition key in the lock (1) of the tank cap (2) and turn it counterclockwise.
- Open the tank cap by turning it counterclockwise.



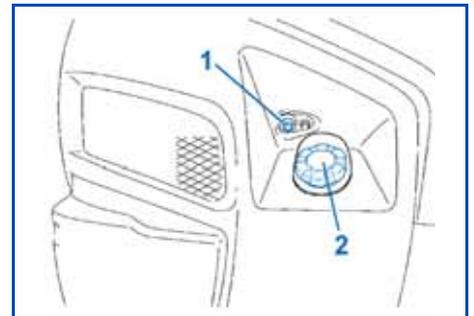
- Place the funnel (1) in the fill opening (2) and turn it clockwise until the funnel latches.
- Fill with diesel oil up to the bottom of the fill opening.
- Replace the tank cap and turn the ignition key clockwise to close the tank cap.



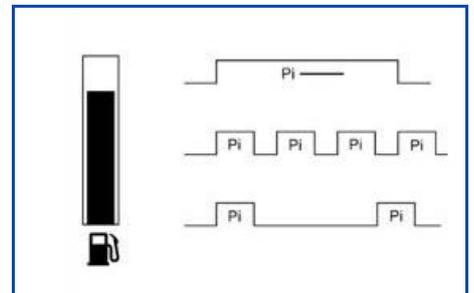
Level check when filling up

When filling up, the actual fuel level can be determined by an acoustic signal.

- Press the switch (1) and the level check is switched on (the switch for the level check (1) is located above the fuel tank fill opening (2)).



Interrupted signal: the tank is empty
 Periodic signal: the tank is being filled
 Continuous signal: the tank is full



NOTE

If the fuel flow is too little, the signal will stop permanently. As soon as the fuel flow is adequate, the signal will begin again.

After finishing filling up, press the switch (1) and the level check has been switched off.

MAINTENANCE

The Maintenance chapter contains all maintenance work that must be carried out on the excavator.

Careful maintenance of the excavator will make sure exceptional reliability and increase the service life.

If the maintenance work is not carried out (properly), all warranty claims and liability against EUROTRAC expire.

Only spare parts recommended by the manufacturer may be used. There is an increased risk of accident due to insufficient quality or incorrect installation of spare parts that have not been released. Those who use non-authorized spare parts shall assume full responsibility if damage ensues.

1. Safety Provisions for Maintenance

- Persons who work on or with the excavator must wear suitable personal protective equipment (PPE), e.g. suitable work clothes, safety shoes, safety helmets, safety goggles, hearing protective and dust masks made available by the operator and, if necessary, used. In principle, the business is responsible for the PPE and has been laid down in the work safety regulations for its effectiveness.
- Maintenance and cleaning work may only be carried out if the excavator has been switched off completely. The excavator must be protected against starting up again by removing the ignition key.
- The bucket must always be located on the ground during the maintenance work.
- If damage is observed during maintenance work, the excavator may only be put into operation again after the defects have been resolved. Repair work may only be carried out by qualified personnel.
- When carrying out maintenance work, the stability of the excavator must always be monitored.
- When working on the fuel system, smoking, open flame and the use of ignition sources are prohibited. The danger zone must be indicated with signs. The danger zone must have a fire extinguisher.
- All resulting waste substances must be disposed of in accordance with current environment protection regulations.
- The materials listed in section "**Maintenance products**" (page 117) must be used as maintenance means for maintenance work.
- For work on the electrical installation, it must be switched off before beginning with the work. This work may only be carried out by electrically qualified professionals.
- For working at a height that you cannot reach, ladders or platforms must be used.
- The control elements may only be operated if the user is located on the driver's seat.

2. Requirements for Executive Personnel

- The user may only carry out cleaning and light maintenance work.
- Major maintenance work may only be carried out by qualified personnel.

3. Maintenance schedule

STANDARD MAINTENANCE SCHEDULE								
Inspection item	Action	Tool	Daily (8 hours)	Monthly (200 hours)	3 months (600 hours)	6 months (1200 hours)	Annually (2400 hours)	
Engine	Visually check the operating status of the engine.		○	○	○	○	○	
	Check the sound of the engine		○	○	○	○	○	
	Check the color of the exhaust		○	○	○	○	○	
	Clean or replace the air filter element			○	○	●	●	
	Check and adjust the valve clearance	Rear plug gauge				○	○	
	Tighten the cylinder head bolts	Torque wrench			○ Just this one time		○	○
	Check the compression pressure of the cylinder	Pressure gauge					○	
Regulator or jet pump	Check the maximum speed in an idle state	Tachometer					○	
Lubrication system	Check whether the engine leaks oil		○	○	○	○	○	
	Check the quantity of oil and its clarity		○	○	○	○	○	
	Change the engine oil			● The first 50 hours	●	●	●	
	Replace the engine oil filter			● The first 200 hours	●	●	●	
Fuel system	Check the oil line, the oil pump and the oil reservoir visually for leaks		○	○	○	○	○	
	Check whether the fuel filter is clogged				○	○	○	

● = "replace".

ENGINE							
Inspection item	Action	Tool	Daily (8 hours)	Monthly (200 hours)	3 months (600 hours)	6 months (1200 hours)	Annually (2400 hours)
Cooling system	Check the coolant volume		○	○	○	○	○
	Check for leak		○	○	○	○	○
	Check the ageing of the hose		○	○	○	○	○
	Check the operation and installation of the cap of the water tank			○	○	○	○
	Clean and replace the coolant				●	●	●
	Check the fan			○	○	○	○

● = "replace".

HYDRAULIC SYSTEM							
Inspection item	Action	Tool	Daily (8 hours)	Monthly (200 hours)	3 months (600 hours)	6 months (1200 hours)	Annually (2400 hours)
Hydraulic tank	Check the quantity of oil and its clarity		○	○	○	○	○
	Clean the intake filter					○	○
	Eliminate any foreign objects					○	○
Oil return	Replace the oil return					●	●
Line connection	Check for leak, loose parts, cracks, distortion, damage			○	○	○	○
	Replace the line			○	○	○	● 1-2 years

● = "replace".

ELECTRICITY							
Inspection item	Action	Tool	Daily (8 hours)	Monthly (200 hours)	3 months (600 hours)	6 months (1200 hours)	Annually (2400 hours)
Starter motor	Check the gears				○	○	○
Electrical wiring	Check for damage or loose mounting			○	○	○	○
	Check for loose connections				○	○	○

SAFETY FACILITIES AND ACCESSORIES

Inspection item	Action	Tool	Daily (8 hours)	Monthly (200 hours)	3 months (600 hours)	6 months (1200 hours)	Annually (2400 hours)
Cab and protective fence	Check the mounting	Detection hammer					
	Check for distortion, cracks and damage		○	○	○	○	○
Horn	Check the operation and attachment		○	○	○	○	○
Lamp and light bulb	Check the operation and attachment		○	○	○	○	○
Rearview mirror	Check for dirt and damage		○	○	○	○	○
Instrument	Check the operation of the instrument		○	○	○	○	○
Chair	Check the bolts for damage or looseness					○	○
Body	Check for damage or cracks						○
	Check for loose rivets and bolts						○
	Check repaired parts		○	○	○	○	○
	Detailed inspection						○
Add grease or change the oil	Check the lubrication of the chassis after cleaning			○	○	○	○
	Check the oil in the tank						○



CAUTION

If the use of oil, coolant or antifreeze deviates from the specifications of this machine, the replacement cycle may deviate from that which is given in this book. As a result, the replacement time is halved or reduced by a quarter in comparison to the time that is given in this manual. Although oil with a high viscosity has a large working range, it must be changed regularly. This is because the additives can deteriorate over time, decreasing the viscosity of the oil and the hydraulic system could suffer serious damage at high temperatures.

4. Cleaning the Excavator



CAUTION

- Before starting to clean: switch off the engine and make sure it cannot be switched on again.
 - When using a steaming device to clean the electrical, the steam may not be used on the electrical parts.
 - Do not place the water jet on the intake opening of the air filter.
 - Starting the excavator with flammable fluids is prohibited.
-



ENVIRONMENTAL INFORMATION

Washing the excavator is only permitted at located intended for this purpose (with oil and grease separators).

Cleaning the excavator may be done with water with a commercially available cleaning agent. Make sure no water gets into the electrical installation.

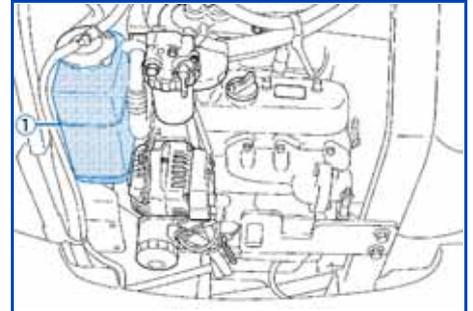
Plastic parts must be treated with a plastic cleaning agent.

5. Maintenance Work

Preventative maintenance work must be performed as recommended to care for and maintain the excavator.

5.1 Adding coolant

- Open the engine cover ([page 87](#)).
- Check the antifreeze concentration with an antifreeze tester; it must be $-25\text{ }^{\circ}\text{C}$.



NOTE

The antifreeze concentration may not be more than 50%.

-
- Open the cap of the coolant expansion tank when the engine is cold and add mixed coolant until the FULL mark (1).
 - Close the cap of the expansion tank.

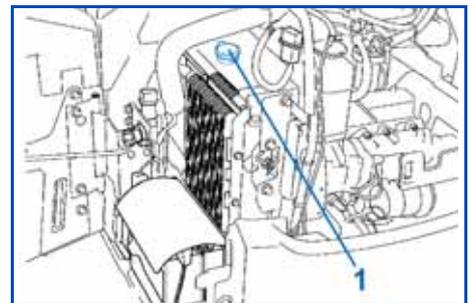
If the coolant expansion tank has been drained completely, check the fluid level in the radiator.



WARNING

Do not open the radiator cap if the engine is hot; there is a danger of being burnt.

-
- Open the side cover.
 - Open the radiator cap (1) by turning it counterclockwise.
 - The fluid level must be at the bottom edge of the fill opening. If necessary as coolant.
 - Close the radiator cap.
 - Close the side cover.
 - Close the engine cover.



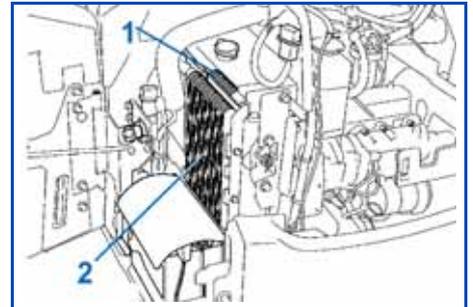
5.2 Cleaning the radiator and the oil cooler



WARNING

Do not touch the hot radiator or the hot oil cooler; there is a danger of being burnt!

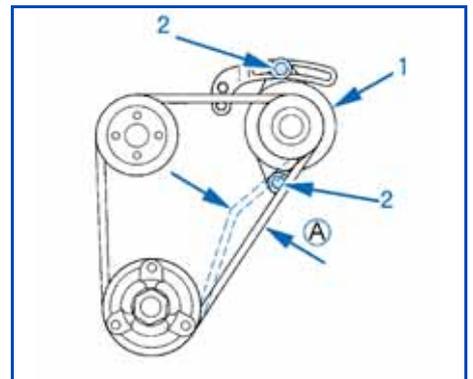
- Open the engine cover ([page 87](#)).
- Open the side cover.
- Clean the radiator (1) and oil cooler (2) from the position of the engine with a stream of water or a compressed air gun. Do not use a high pressure cleaner!
- Check the area between the radiators in particular, since this is the area where leaves often gather.
- After cleaning the radiator and the oil cooler, check for any damage.
- Close the side cover.
- Close the engine cover.



5.3 Checking, setting and replacing the V-belt

Setting the V-belt

- Open the engine cover ([page 87](#)).
- Check the V-belt.
- Loosen the fixing bolts (2).
- Tighten the V-belt by turning the tension pulley (1).
- Press the V-belt at the "A" spot, and the V-belt must be able to be pressed in approximately 8 mm (pressure:10 kg).
- Tighten the fixing bolts.
- Check the V-belt after adjusting it.
- Close the engine cover.



5.4 Checking the coolant hoses



WARNING

Only check when the engine is cold; there is a danger of being burnt!

- Open the engine cover ([page 87](#)).
- Check all hose connections to the engine and to the radiator (or the heating fan in the cab model), checking their condition (tears, bulges or hardened spots), for leaks and proper attachment of the clamps. If necessary, the hoses must be replaced by qualified personnel.
- Close the engine cover.

5.5 Replacing the coolant



WARNING

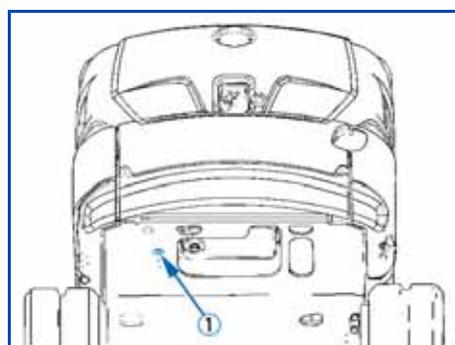
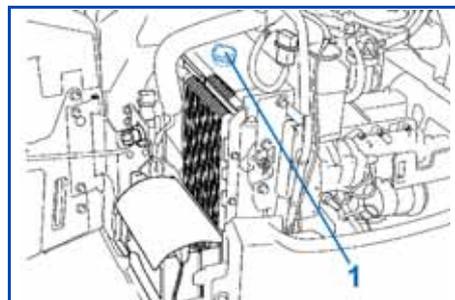
Only drain when the engine is cold; there is a danger of being burnt!

Total contents of cooling system

With protective roof: 2.7 l

With cab: 2.9 l

- Open the engine cover and the side cover.
- Open the radiator cap (1) by turning it counterclockwise.
- Open the main coolant drain (1) and drain all the coolant.

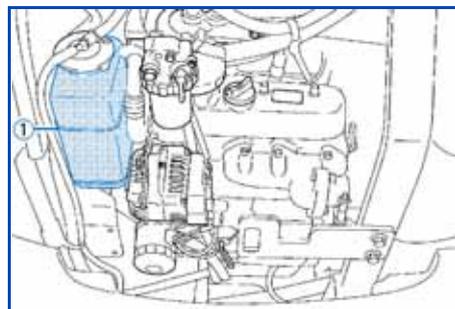


ENVIRONMENTAL INFORMATION

The coolant must be caught and disposed of in accordance with the current environment protection provisions.

If heavily contaminated, rinse the cooling system. Using a hose through the opening of the radiator cap, spray water without additives into the cooling system until clear water comes out of the drain.

- Close the main coolant drain.
- Remove and drain the coolant expansion tank (1); clean if necessary. Replace the tank.
- Fill the radiator and expansion tank with mixed coolant.



CAUTION

Do not operate the cooling system with just water in the summer as well. The antifreeze also contains an anticorrosive agent.

-
- Start the engine ([page 58](#)) and allow it to warm up.
 - Switch the engine off ([page 59](#)).
 - Check the coolant level ([page 50](#)) adding coolant if necessary ([page 93](#)).
 - Close the engine cover and the side cover.

5.6 Replacing engine oil and oil filter

- Open the engine cover ([page 87](#)).



NOTE

Changing the engine oil must be done with a warm engine.



WARNING

Be careful, since the engine oil and the oil filter are hot; there is a danger of being burnt.

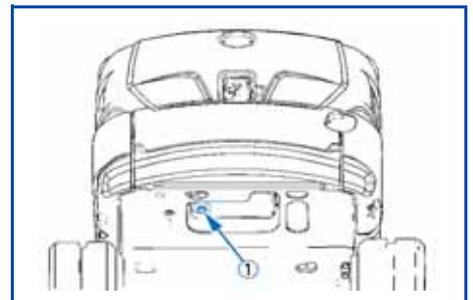


ENVIRONMENTAL INFORMATION

Place the oil drain pan with a capacity of about 15 l under the engine oil drain. The engine oil must not get on the ground; like the oil filter, the oil must be disposed of in accordance with current environment protection regulations.

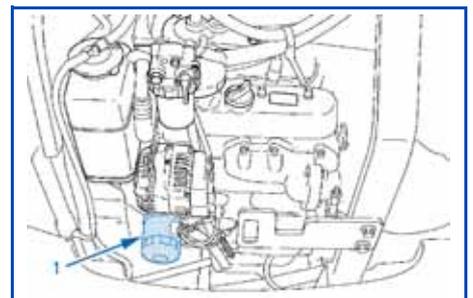
5.6.1 Draining the engine oil

- Remove the oil drain plug (**1**) and drain the engine oil into the drain pan.
- Put a new gasket on the oil drain plug and replace it.



5.6.2 Replacing the oil filter

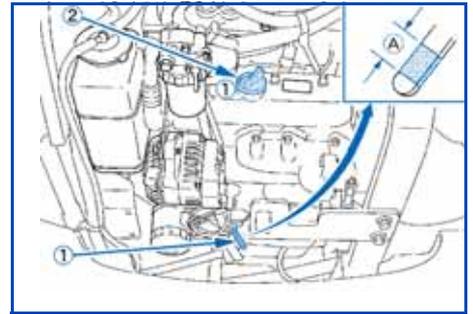
- Put the oil drain pan under the oil filter (**1**), removing the oil filter with an oil filter wrench by turning it counterclockwise.
- Lubricate the gasket ring of the new oil filter with engine oil.
- Position the oil filter and tighten it by hand; do not use the oil filter wrench.



5.6.3 Adding engine oil

Fill quantity: 3.6 l

- Open the oil filler cap (2) and add engine oil in accordance with section "Maintenance products" (page 117).
- Tighten the oil filler cap.
- Start the engine (page 58); the engine oil indicator light must go out immediately after the engine starts. If not, switch the engine off immediately and inform qualified personnel.
- Allow the engine to warm up and then switch it off (page 59). After waiting 5 minutes, check the oil level.
- Remove the oil dipstick (1) and wipe it off with a clean cloth.
- Reinsert the oil dipstick all the way and remove it again. The oil level must be in the range "A". If the oil level is too low, add engine oil.



WARNING

Operating with an oil level that is too low or too high can result in engine damage.

-
- When changing the oil, the engine oil must be filled to the "MAX" mark.
 - Close the engine cover.

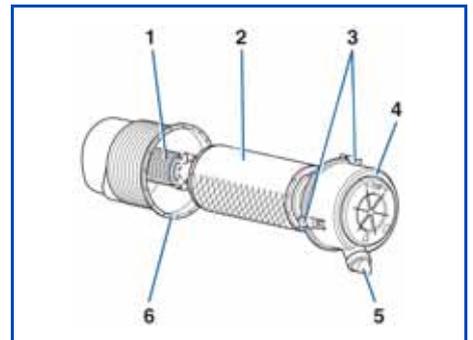
5.7 Checking, cleaning and replacing the air filter



WARNING

There is a danger of damaging the engine!

The innermost filter element (1) must remain in position while cleaning the air filter housing (6). Otherwise dirt particles could get into the air intake while cleaning and damage parts of the injection system and the engine.



-
- Open the engine cover (page 87).
 - Open the clamps (3) and remove the cover (4).
 - Pull the outer filter element (2) out the air filter box (6) and check for dirt.
 - Clean the air filter box and cover; do not remove the innermost filter element (1) when doing so. Only remove the innermost filter element to replace it.
 - Clean the dust valve (5).
 - If the outer filter element is damaged or too dirty, it must be replaced.
 - To replace the innermost filter element, it must be removed and replaced immediately with a new filter element. Replacing the innermost filter element may only be done by qualified personnel within the relevant maintenance interval.



WARNING

Do not clean the filter element with fluids. Do not operate the engine without air filter elements.



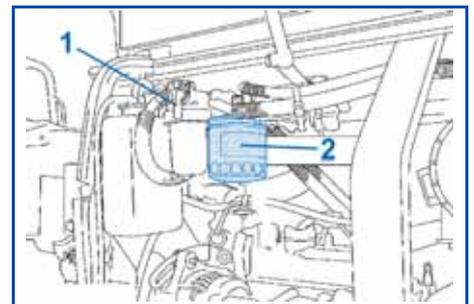
WARNING

Safety goggles must be used when working with compressed air.

- Blow the outer filter element clean from the inside with compressed air (max. 5 bar); do not damage the filter element when doing so. Wear safety goggles.
- Position the outer air filter element and replace the cover with the TOP mark at the top and close the clamps.
- Close the engine cover.

5.8 Replacing the fuel filter

- Open the engine cover ([page 87](#)).
- Set the change-over valve (1) on the water separator to the OFF position.
- Unscrew the fuel filter (2).
- Moisten the rubber gasket ring on the new filter with diesel oil.
- Screw the new filter on and tighten it by hand.
- Set the changeover valve to the ON position.
- Vent the fuel system ([page 87](#)).
- Check the fuel filter for leak.
- Close the engine cover.



ENVIRONMENTAL INFORMATION

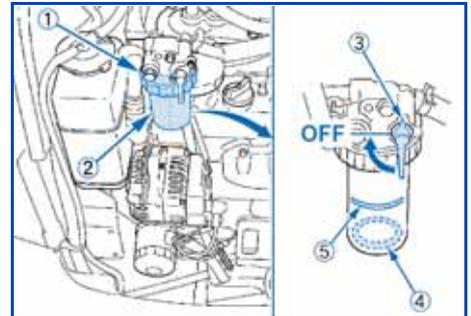
Dispose of the cleaning cloths in accordance with current environment protection regulations.

5.9 Checking and cleaning the water separator



NOTE

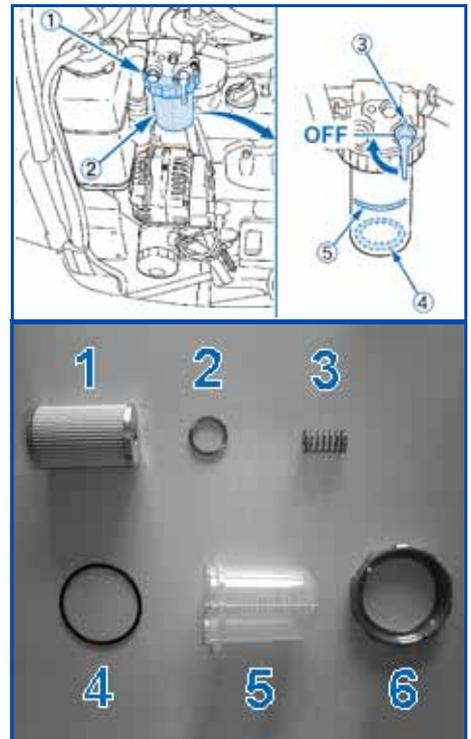
Water and dirt in fuel are collected in the water separator. The water separator has a red plastic ring (4) that floats at the height of the water level. If any contamination is present or the red plastic ring is floating above the mark (5), the water separator must be cleaned.



ENVIRONMENTAL INFORMATION

Place a cleaning cloth under the water separator to prevent any fuel from getting on the ground.

- Open the engine cover ([page 87](#)).
- Set the change-over valve (3) to the OFF position.
- Unscrew the ring nut (1), holding onto the cup (2).
- Remove the cup.
- Empty the cup (5) and clean it with clean diesel oil.
- Check the filters (1) for excess contamination, replacing if necessary.
- Replace the gasket ring (4) and lubricate it with diesel oil.
- Install the components, following the order of 1 to 6.
- Tighten the ring nut (6) by hand; do not use a tool.
- Set the changeover valve to the ON position.
- Vent the fuel system ([page 87](#)).
- Check the water separator for leak.
- Close the engine cover.

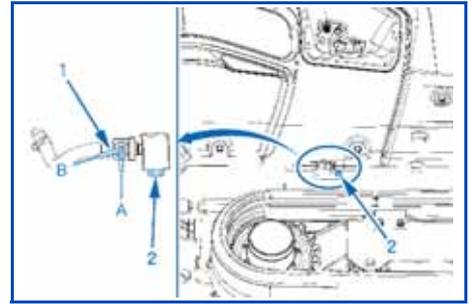


ENVIRONMENTAL INFORMATION

Dispose of the cleaning cloths in accordance with current environment protection regulations.

5.10 Draining the water in the fuel tank

- Place a container with a capacity of at least 12 l under the drain valve.
- Remove the drain plug (2).
- Open the drain valve (1) by turning it to position (B) and drain water.
- Close the drain valve by turning it to position (A).
- Screw the drain plug back in.



ENVIRONMENTAL INFORMATION

Dispose of the fluid in a container in accordance with current environment protection regulations.

5.11 Checking the fuel lines and air intake hoses

- Open the engine cover ([page 87](#)).
- Check the condition of all accessible fuel lines, air intake hoses and clamps and check if they are attached properly.
- Damaged parts must be repaired or replaced.
- Close the engine cover.

5.12 Replacing the return filter in the hydraulic oil reservoir



CAUTION

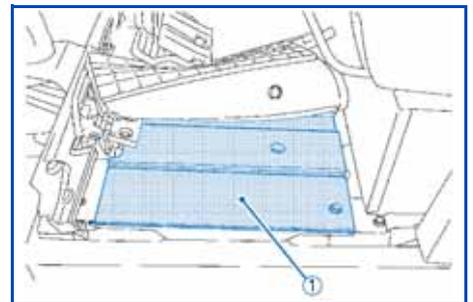
When working on the hydraulic system, absolute cleanliness must be observed.



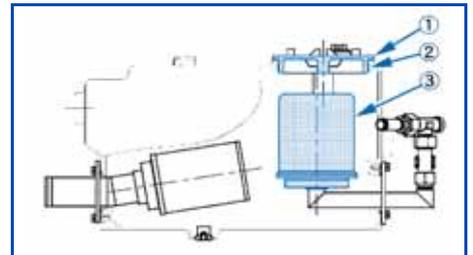
CAUTION

Only work with cold hydraulic oil.

- Remove the floor plate (1).



- Unscrew the cover (1).
- Remove the return filter (3) and replace it with a new one.



ENVIRONMENTAL INFORMATION

Dispose of the return filter in accordance with current environment protection regulations.

- Check the condition of the gasket ring (2), replacing it if necessary.
- Replace and fasten the cover.

5.13 Replacing the intake filter in the hydraulic oil reservoir



CAUTION

When working on the hydraulic system, absolute cleanliness must be observed.



CAUTION

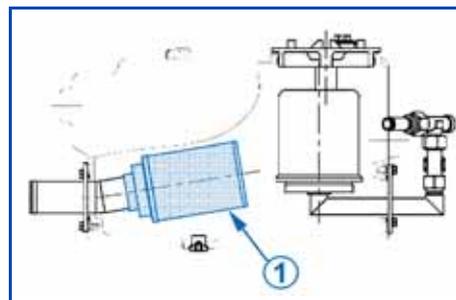
Only work with cold hydraulic oil.



NOTE

The intake filter must be replaced in combination with changing the hydraulic oil.

- Drain the hydraulic oil ([page 103](#)).
- Remove the return filter in the hydraulic oil reservoir ([page 101](#)).
- Unscrew the intake filter (see diagram).
- If necessary, wipe any dirt off with a clean lint-free cloth.



ENVIRONMENTAL INFORMATION

Dispose of the intake filter and cleaning cloth in accordance with current environment protection regulations.

- Screw on the new intake filter by hand.
- Place the return filter ([page 101](#)).
- Fill up the hydraulic oil ([page 104](#)).

5.14 Filling up/changing the hydraulic oil



CAUTION

When working on the hydraulic system, absolute cleanliness must be observed.



WARNING

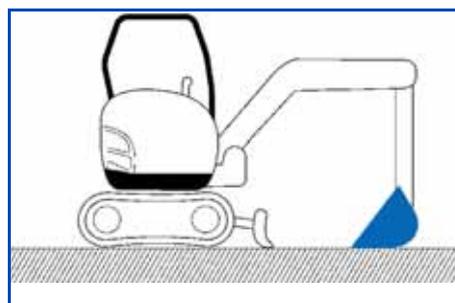
Only work with cold hydraulic oil.



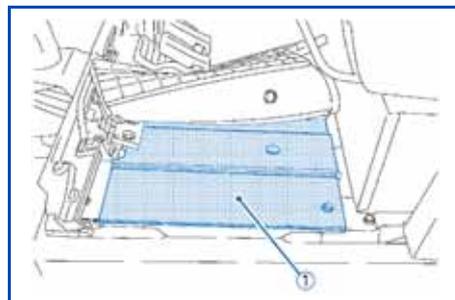
NOTE

The hydraulic oil must be changed in combination with replacing the intake filter.

- Position the excavator on a level surface.
- Lower the attachment and dozer blade to the ground, as shown in the diagram.
- Switch the engine off.

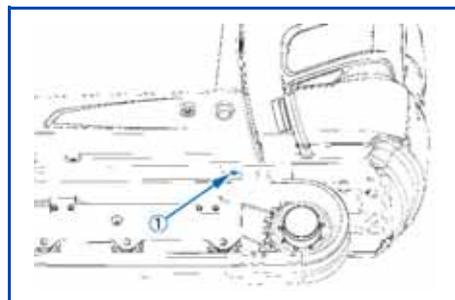


- Open the floor plate (1).



5.14.1 Draining the hydraulic oil

- Place a container with a capacity of at least 70 l under the drain for the hydraulic oil.
- Unscrew the drain plug (1) and drain the hydraulic oil.
- Put a new gasket ring on the drain plug and screw it back in.

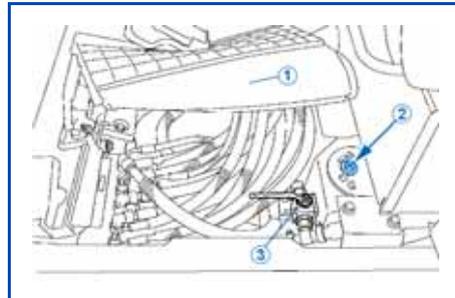


5.14.2 Filling with hydraulic oil

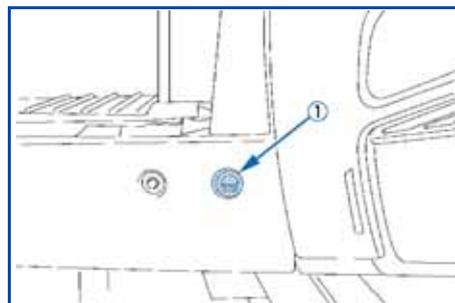
Fill quantity when changing the oil: about 14.2 l

Fill quantity of complete system: 27 l

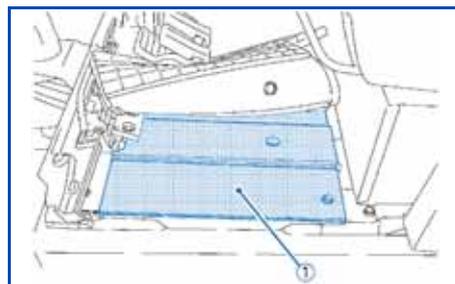
- Unscrew the closing plug (1) of the hydraulic oil tank.
- Place a clean funnel with a fine sieve in the opening of the closing plug.



- Add hydraulic oil up the center of the gauge glass (1).
- Screw the closing plug of the hydraulic oil tank back in.
- Start the engine (page 58) and go through all operations of the control elements.
- Lower the attachment and dozer blade to the ground (page 103).
- Switch the engine off.
- Check the level of the hydraulic oil, adding if necessary.



- Replace the floor plate (1).



5.15 Maintenance of the battery

Regular maintenance can extend the service life of the battery considerably.



CAUTION

When working with batteries, appropriate safety gloves and safety goggles must be used.

5.15.1 Checking the battery

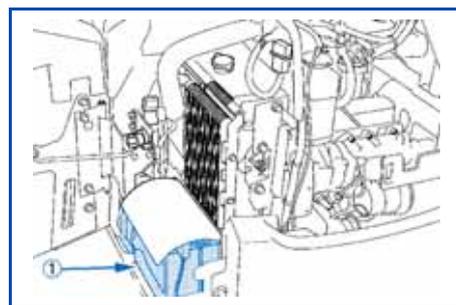
- Open the side cover.



CAUTION

Maintenance-free batteries may not be opened.

Check the battery (1) for proper mounting, tightening it if necessary.



WARNING

Be careful when cleaning the positive terminal; there is a danger of a short circuit. Do not use metal tools.

- Check whether the battery terminals are clean, cleaning them if necessary and grease them with terminal grease.
- Close the side cover.

5.15.2 Charging the battery

- Battery acid is very caustic. Contact with battery acid must be avoided at all times. If clothing, skin or eyes nevertheless come in contact with battery acid, rinse the parts in question with water immediately. For contact with eyes, consult a physician immediately! Neutralize spilled battery acid immediately.
- When working with batteries, appropriate safety gloves and safety goggles must be used.
- Batteries may only be charged in ventilated areas. Smoking, open fire or open flames are prohibited in these areas.
- When charging batteries, oxyhydrogen is produced and open flames could result in an explosion.
- When charging batteries that have been highly discharged, the closing plugs must be removed from the batteries. If the batteries are only being charged slightly, the closing plugs may remain on the batteries.

**WARNING**

Charging the batteries may only be done when the starter switch is in the STOP position and the ignition key has been removed.

-
- Make the battery accessible.
 - Check the fluid level of the battery. If necessary, add distilled water.

**WARNING**

When removing and connection the battery, always follow the recommended order due to the danger of short circuiting.

-
- Remove the negative terminal cover and the pole terminal. Set the pole terminal aside to rule out any contact with the negative terminal.
 - Remove the positive pole terminal.
 - Connect the battery charging station to the battery in accordance with the instructions of the manufacturer of the charging station. Charging must be done carefully.
 - After charging, clean the battery and, if necessary, add fluid.
 - Check the acid density with a hydrometer. The density must be between 1.24 and 1.28 g/l. If the acid density between the individual cells of a battery deviate significantly, the battery is most likely defective. The battery in question must be checked with a battery tester. Inform qualified personnel.

5.15.3 Removing and installing, replacing the battery

**WARNING**

When removing and connection the battery, always follow the recommended order due to the danger of short circuiting.

-
- Make the battery accessible.
 - Remove the negative terminal cover and the pole terminal. Set the pole terminal aside to rule out any contact with the negative terminal.
 - Remove the positive terminal cover and pole terminal. Set the pole terminal aside to rule out any contact with the positive terminal.
 - Lift the battery holder and the battery from the superstructure.



NOTE

When replacing the battery, only use a battery of the same type with the same capacity and the same dimensions.

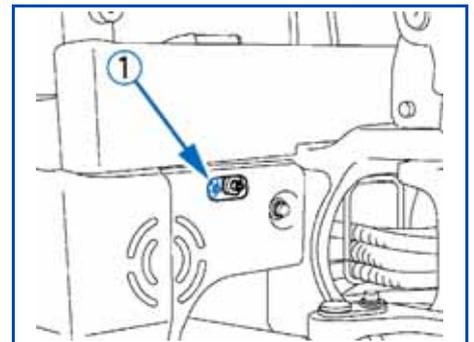
- Before replacing the battery, the battery terminals and battery clamps must be greased with terminal grease.
- Place the battery in the superstructure and fasten it with the battery holder. Check the battery for proper mounting. The excavator may not be used with a loose battery.
- Connect the positive pole terminal to the positive terminal (+) of the battery and replace the positive terminal cover.
- Connect the negative pole terminal to the negative terminal (-) of the battery and replace the negative terminal cover.

5.16 Lubrication

All necessary lubrication on the chassis is described below.

5.16.1 Greasing the swivel block

- Grease the grease nipple (1) with the grease gun.



NOTE

The swivel block must be lubricated every 90°. About 50 g of grease (about 20 turns with the grease gun) must be applied (see section "[Maintenance products](#)" (page 117)).



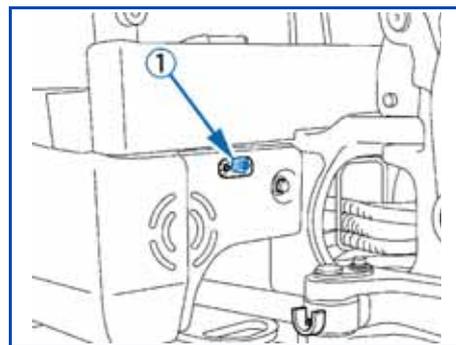
WARNING

When rotating the superstructure, make sure the turning circle is free of persons and materials. For the next greasing service, put the starter switch in the STOP position and remove the ignition key.

- Start the excavator and rotate the superstructure 90° several times. After greasing the superstructure, rotate the superstructure 360° several times to spread the grease evenly.

5.16.2 Greasing the swivel block bearing

- Grease the grease nipple (1) with the grease gun.



NOTE

The swivel block bearing must be lubricated every 90°. In each position 5 turns of the grease gun must be applied (see section "[Maintenance products](#)" (page 117)).



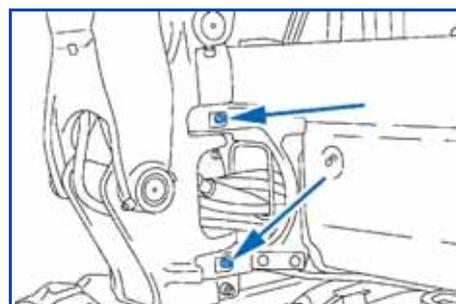
WARNING

When rotating the superstructure, make sure the turning circle is free of persons and materials. For the next greasing service, put the starter switch in the STOP position and remove the ignition key.

- Start the excavator and rotate the superstructure 90° several times. After greasing the superstructure, rotate the superstructure 360° several times to spread the grease evenly.

5.16.3 Greasing the swivel block attachment

Apply grease to both lubrication points (see diagram; see section "[Maintenance products](#)" (page 117)) until new grease is discharged.

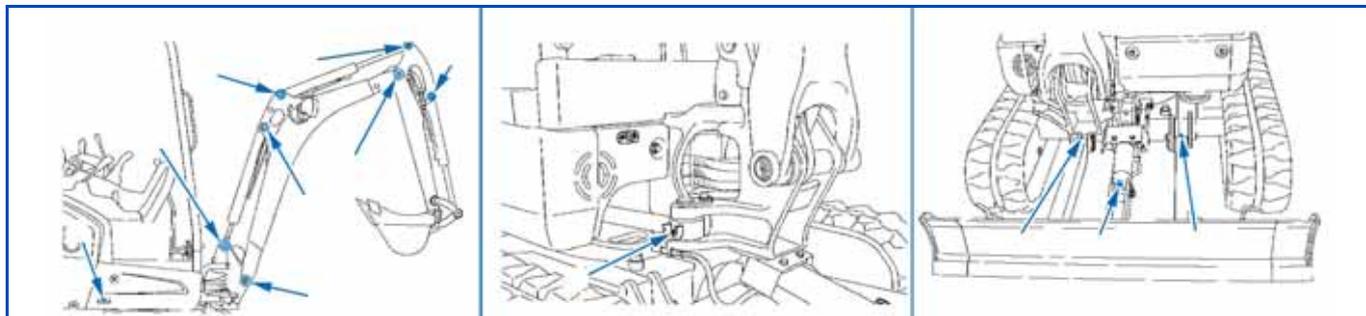


ENVIRONMENTAL INFORMATION

Wipe off the grease that is discharged immediately, storing the contaminated cleaning cloths in the appropriate crates until they are disposed of.

5.16.4 Other lubrication points

- Start the engine ([page 58](#)).
- Position the boom, arm and dozer blade as shown in the diagram. Switch the engine off and remove the ignition key. See section "[Excavation \(using the control elements\)](#)" ([page 69](#)).
- Apply grease to all lubrication points (see section "[Maintenance products](#)" ([page 117](#))) until new grease is discharged.



ENVIRONMENTAL INFORMATION

Wipe off the grease that is discharged immediately, storing the contaminated cleaning cloths in the appropriate crates until they are disposed of.

5.17 Checking and adjusting the rubber track tension

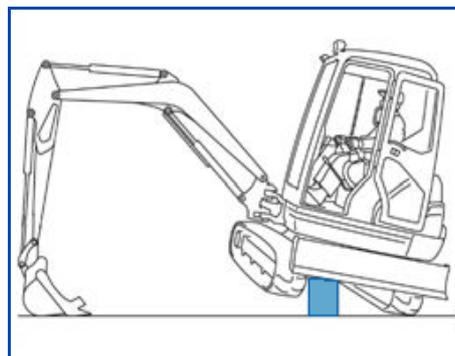


CAUTION

Rubber tracks that have been set too tightly are exposed to a lot of wear and tear.
Rubber tracks that have been set too loose are exposed to a lot of wear and tear and can fall off.

When parking the excavator with rubber tracks, make sure the joint is located on the top between the guides (See “Checking and adjusting the rubber track tension” on page 110).

- Clean the whole of the running gear; look out for stones between the rubber track and drive sprocket or impeller. The area around the rubber track cylinder must be cleaned.
- Rotate the superstructure 90° with respect to the direction of travel, as shown in the diagram.
- Lower the attachment to the ground and lift the excavator about 200 mm from the ground on one side.

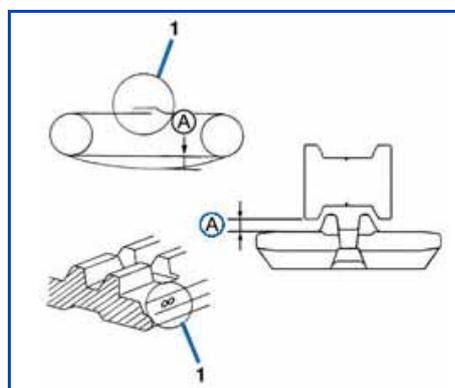


CAUTION

Have an assistant check this procedure.
Support the excavator with suitable bracing. Take the weight of the vehicle into account.

5.17.1 Checking the tension of the rubber track

- The joint (1) of the rubber track is located between the impeller and the drive sprocket.
- Check the rubber track sagging as shown in the diagram.
 - Rubber track sagging “A” 10-15 mm
- If the rubber track sagging is more than 25 mm, the rubber track must be retightened.
- Tighten or loosen the rubber track if necessary.
- Start the engine and run the raised rubber track briefly.



WARNING

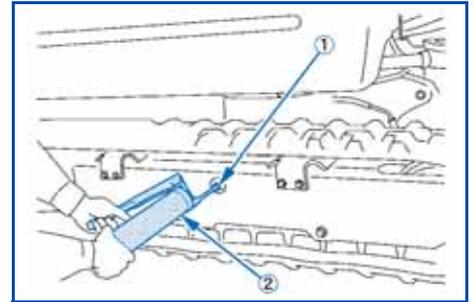
The area around the running rubber track must be free of persons. After running, the starter switch must be put in the STOP position and the ignition key removed.

- Check the rubber track tension again, adjusting if necessary.
- Carry out the same work on the second rubber track.

5.17.2 Adjusting the rubber track tension

Tightening

- Place the grease gun (2) on the grease nipple (1).
- Operate the grease gun until the recommended rubber track tension is achieved.



Loosening

- Carefully unscrew the pressure valve and loosen the rubber track.



WARNING

Be careful, because grease could squirt out of the cylinder opening.

- Replace the pressure valve and tighten it with 100-110 Nm.
- Tighten the rubber track.

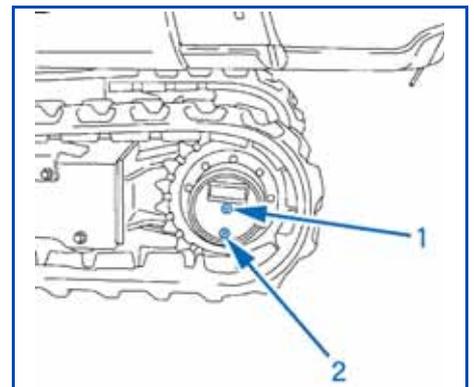
5.18 Changing the oil of the final drives



NOTE

Only change the oil when the final drive is lukewarm. If necessary, drive the excavator until it is warm.

- Adjust the excavator on an even surface so that the drain plug (2) is in the lowest position.
- Place a container with a capacity of at least 2 l under the drain plug.
- Unscrew the drain plug and drain the oil CPL. Put a new gasket ring on the drain plug and tighten it.
- Unscrew the oil filler plug (1).
- Add the oil (see section "**Maintenance products**" (page 117)). The correct oil level is the bottom of the thread for the checking plug. Fill quantity: 0.33 l
- Put a new gasket ring on the oil fill plug and tighten it.
- Carry out the same work on the second final drive.



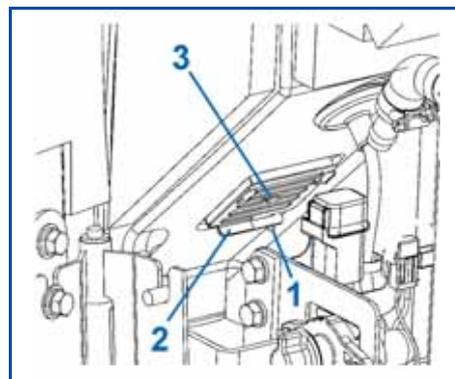
5.19 Checking, cleaning and replacing the external air filter



NOTE

If the excavator is used in a particularly dusty environment, the outside air filter must be checked more often.

- Open the side cover.
- Remove the locking pint (1) from the cover plate (2).
- Pull the mounting pin (3) from the cover plate.
- Lift the cover plate with mounting pin and remove it together with the outside air filter of the cladding.



Checking

- Check the outside air filter for dirt and any damage. If there is a lot of dirt or damage, the outside air filter must be replaced.

Cleaning



NOTE

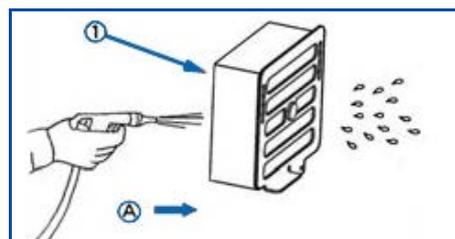
Clean using only purified compressed air with a max. pressure of 2 bar.



WARNING

Safety goggles must be used when working with compressed air.

- Blow the filter (1) clean with compressed air in the direction "A" opposite the normal flow direction.



CAUTION

When installing the filter, do not damage it. Using a damaged filter will allow dirt in the heating system, which will result in heavy damage.

- Place the outside air filter.
- Place the locking pin.
- Close the side cover.

5.20 Checking the pipelines and hose lines of the heating



CAUTION

Only check when the engine is cold.

- Open the engine cover ([page 87](#)).
- Open the side cover.
- Check the condition of all pipelines and hose lines of the heating (cracks, bulges, hard spots) and check for proper attachment. Please contact your EUROTRAC dealer if defects are found in relation to this check. Only qualified personnel may work on the heating.
- Close the engine cover and the side cover.

5.21 Replacing the line filter



NOTE

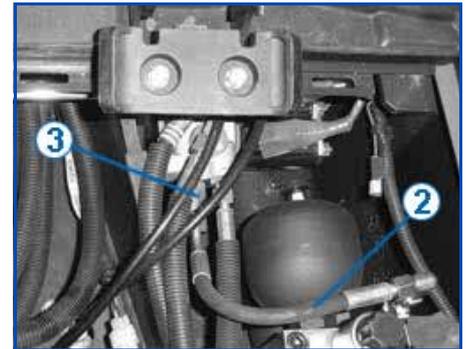
The replacement activities are described on the basis of the example of the left control lever; replacing the right control lever is done in the same way.

- Remove the pressure from the pilot circuit.
- Fold up the left control console (1).
- Remove the lowest plate parts.
- Unscrew the hydraulic line (white).
- Unscrew the line filter (2).
- Screw in a new filter.
- Connect the hydraulic line again.
- Replace the plate parts.
- Replace the line filter on the right control lever.



5.22 Replacing the valve filter in the extra circuit

- Remove the pressure from the pilot circuit.
- Remove the floor mat.
- Remove the right bottom plate (1).
- Unscrew the hydraulic line (2).
- Unscrew the line filter (3).
- Screw in a new filter.
- Fasten the hydraulic line again.
- Replace the right bottom plate.
- Replace the floor mat.



6. Checking the bolt connections

The following summary contains the tightening torque for the bolt connections. Only tighten the connections with a torque wrench. Any values missing can be requested from EUROTRAC.

6.1 Tightening torque for bolts

	4 T (4.6)	7 T (8.8)	9 T (9.8-10.9)
M 6	7.8~9.3 (0.8~0.95)	9.8~11.3 (1.0~1.15)	12.3~14.2 (1.25~1.45)
M 8	17.7~20.6 (1.8~2.1)	23.5~27.5 (2.4~2.8)	29.4~34.3 (3.0~3.5)
M 10	39.2~45.1 (4.0~4.6)	48.1~55.9 (4.9~5.7)	60.8~70.6 (6.2~7.2)
M 12	62.8~72.6 (6.4~7.4)	77.5~90.2 (7.9~9.2)	103.0~117.7 (10.5~12.0)
M 14	107.9~125.5 (11.0~12.8)	123.6~147.1 (12.6~15.0)	166.7~196.1 (17.0~20.0)
M 16	166.7~191.2 (17.0~19.5)	196.1~225.6 (20.0~23.0)	259.9~304.0 (26.5~31.0)
M 20	333.4~392.3 (34.0~40.0)	367.7~431.5 (37.5~44.0)	519.8~568.8 (53.0~58.0)

Unit: Nm (kgf•μ)



NOTE

With a protective roof use 9 T bolts but tighten with a 7 T tightening torque



CAUTION

Screw connections in the plastic cladding between the driving position and engine area may only be tightened with a max. tightening torque of 21 Nm. If the screws are tightened with a tightening torque greater than 21 NM, the thread lining of the plastic cladding will let loose or be destroyed.

6.2 Tightening torque for hose clamps

Size	Item number	Hydraulic oil	Water	Air
10-16	69741-7287-0	4.0 Nm	3.0 Nm	2.5 Nm
13-20	69481-1116-0	4.0 Nm	3.0 Nm	2.5 Nm
16-25	69741-7281-0	4.0 Nm	4.5 Nm	2.5 Nm
22-32	69741-7284-0	4.0 Nm	4.5 Nm	2.5 Nm
25-40	69741-7282-0	4.0 Nm	4.5 Nm	2.5 Nm
40-60	69481-1518-0	4.0 Nm	4.5 Nm	2.5 Nm
32-50	69741-7283-0	4.0 Nm	4.5 Nm	2.5 Nm
50-70	69741-7285-0	4.0 Nm	4.5 Nm	2.5 Nm

6.3 Tightening torque for hydraulic hoses

Key width	Tightening torque (Nm)	Hose size	Thread
14	15-20	DN 4-1/8"	M12 x 1.5
17	15-20	DN 6-1/4"	M14 x 1.5
19	30-35	DN 8-5/16"	M16 x 1.5
22	40-45	DN 10-3/8"	M18 x 1.5
27	50-55	DN 13-1/2"	M22 x 1.5

Values also apply for connecting piece with pre-mounted nuts.

6.4 Tightening torque for hydraulic hoses

Key width	Tightening torque (Nm)	Line size	Thread
17	30-35	6 x 1	M12 x 1.5
17	30-35	8 x 1	M14 x 1.5
19	40-45	10 x 1.5	M16 x 1.5
22	60-65	12 x 1.5	M18 x 1.5
27	75-80	15 x 1.5	M22 x 1.5
30	90-100	16 x 2	M24 x 1.5
32	110-120	18 x 2	M26 x 1.5
36	130-140	22 x 2	M30 x 2
41	140-160	25 x 2.5	M36 x 2
27	60-65	15 x 1.5	M22 x 1.5 only for ED-2

6.5 Tightening torque for hydraulic connecting pieces

Thread	Key width	Tightening torque (Nm)	Line size	Thread
1/8"	14	15-20	4 x 1	M10 x 1.0
1/8"	17	25-35	6 x 1	M12 x 1.5
1/4"	19	34-45	8 x 1	M14 x 1.5
1/4"	19-22	40-55	10 x 1.5	M16 x 1.5
3/8"	22-24	45-65	12 x 1.5	M18 x 1.5
1/2"	27	70-80	15 x 1.5	M22 x 1.5
1/2"	27	80-90	16 x 2	M24 x 1.5
3/4"	32	100-120	18 x 2	M26 x 1.5
1"	36	120-140	22 x 2	M30 x 2

7. Maintenance products

	Recommended			Standard filling		Notes
	Outside temperature	Viscosity	Quality standard	Brand	Type	
Engine oil	In the winter or with low temperatures	SAE 10W SAE 20W	API CF* API CI-4 API CJ-4			When using diesel fuel with a higher sulfur content (between 0.50 and 1.00%), the engine oil and the oil filter must be replaced at shorter intervals. Never use diesel oil with a sulfur content higher than 1.00%.
	In the summer or at high environmental temperatures	SAE 30 SAE 40 SAE 50				
	All weather conditions	15W-40*		Shell	Rimula R4L*	15W40, API CJ-4
Coolant			G048* SAE J1034* MB 325.0* ASTM D3306* D4985	ROWE	Hightec Anti-freeze AN (-37 °C)*	Always used distilled water to mix with antifreeze. When mixing, always observe the recommendations of the coolant manufacturer. Never mix with other coolants.
Grease		NLGI-2*	DIN 51825 KP2K-30*	Mobil	Mobilux EP2*	
		NLGI-1		WEICON	Anti-Seize Standard	Only use during the first 50 operating hours (at all grease locations and around the swivel block).
Hydraulic oil	In the winter or with low temperatures	ISO 32 ISO 46*		Shell	Tellus S2M46*	
Transmission oil	In the winter or with low temperatures	SAE 75 SAE 80	MIL-L-2105C*			

*These operating materials are used by the manufacturer with the first filling.

8. Repairs on the Machine

- Only trained personnel may carry out repairs on the machine.
- If repairs to supporting parts are done, such as, for example, welding work on chassis parts, these must be checked by an expert.
- After the repairs, the machine may only be put into operation if it can be guaranteed that it will run without failure.

TECHNICAL SAFETY CHECK

The basis for carrying out the technical safety checks are the current national labor standards, accident-prevention standards and technical specification of the countries that use them.

The operator must carry out the technical safety check in accordance within the time frame specified in that country.

This trained person must have adequate knowledge about the machine described here based on a vocational training and experience and be familiar with the relevant national (work) safety regulations and the generally accepted rules of technology to such a degree that that person can assess the work safety specific condition of the machine.

The expert must be neutral in drawing up his inspection report and assessment and not be influenced by personal or economic interests or the interests of the company. A visual check must be performed as well as a function check; all parts must be checked for their condition and completeness as well as proper operation of the safety facilities.

Implementing this check must be documented as an inspection result; at least the following must be listed:

- Date and scope of the inspection, listing the partial inspection yet to be done;
- The results of the inspection, listing the defects observed;
- An assessment, whether there are objections to putting into operation or continuing to use the excavator;
- Data about required reinspections;
- Name, address and signature of the inspector.

The operator/employer (entrepreneur) is responsible for observing the inspection intervals. The knowledge and rectification of the defects must be confirmed in writing by the operator/employer, stating the date in the inspection report.

The inspection report must be saved at least until the next inspection.

SHUTTING DOWN AND STORAGE

If the excavator will be shut down up to six months for operational reasons, the measures as described below must be carried out before, during and after shutting it down. If shut down for longer than six months, the extra measures must be coordinated with the manufacturer.

Safety Provisions for Shutting Down and Storage

The "[General safety instructions](#)" ([page 10](#)), the "[Safety Instructions for Use](#)" ([page 46](#)) and the "[Safety Provisions for Maintenance](#)" ([page 88](#)) must be observed.

While shut down, the excavator must be protected against unauthorized use.

Storage conditions

With regard to load-bearing capacity, the storage place must be able to bear the weight of the excavator. The storage place must be frost-free, dry and well-ventilated.

Measures before shutting down

- Clean and dry the excavator thoroughly ([page 92](#)).
- Check the level of the hydraulic oil, adding if necessary ([page 103](#)).
- Change the engine oil and oil filter ([page 96](#)).
- Drive the excavator to the storage location.
- Remove the battery ([page 106](#)) and store it in a dry and frost-free area. If necessary, a loading device must be connected to preserve the charge.
- Lubricate the swivel block ([page 107](#)).
- Lubricate the swivel block bearing ([page 108](#)).
- Lubricate other lubrication points ([page 109](#)).
- Lubricate the swivel block attachment ([page 108](#)).
- Greasing the bucket pins and bucket connecting pins ([page 52](#)).
- Check the antifreeze level of the coolant, adding if necessary ([page 93](#)).
- Lubricate the piston rods of the hydraulic cylinders with grease.

Measures during shutting down

- Charge the battery regularly ([page 105](#)).

Recommissioning after the shut down

- Clean the excavator if necessary ([page 92](#)).
- Check the hydraulic oil for condensation, changing if necessary ([page 103](#)).
- Remove the grease from the piston rods of the hydraulic cylinders.
- Install the battery ([page 106](#)).
- Check that the safety facilities work.
- Carry out the activities before daily putting into operation ([page 50](#)). If there are defects observed when putting into operation, the excavator may only be used after the defects have been resolved.
- If the technical safety inspection is scheduled during the shutdown, this must be done before putting it into operation again.
- Start the engine ([page 58](#)). Operate the excavator with a lower engine speed and go through all of the functions.

LIFT CAPACITY OF THE MACHINE

1. Calculated Lift Capacity (Structural)

- The lift capacity of the excavator is based on ISO 10567 and is not greater than 75% of the static tipping load or 87% of the hydraulic carrying capacity.
- The lift capacity is measured at the foremost pin of the arm. The arm is fully extended for this. The load is borne by the boom cylinder.
- The lift conditions are:
 - Rotate to 360°, with the dozer blade up and down. The position of the dozer blade is not relevant to the maximum lift capacity while rotating to 360°.
 - At the front, dozer blade down
 - At the front, dozer blade up
- The length of the arm not only affect the lifting conditions circumstance, but also the authorized lift capacity and the stability. Compare the dimensions of the machine arm with the information in the lift capacity table to use the valid lift capacity for your machine.
-



NOTE

For dimensions with respect to the arm, see section "[Dimensions](#)" (page 31).

2. Lifting Device

- For excavators with an authorized lift capacity of 1.0 t or more, lift operations are only permitted if the excavator is equipped with the following safety systems in accordance with EN 474-5:
 - Line rupture protection on the boom cylinder ([page 125](#))
 - Line rupture protection on the arm cylinder ([page 125](#))
 - Overload warning system ([page 126](#))
- If the dozer blade is used for support, an additional line rupture protection must be installed in accordance with EN 474-1 to increase the stability of the machine ([page 125](#)).
- Excavators with a permitted lift capacity of 1.0 t or more may only be used in lifting operations if the overload warning system is activated ([page 126](#)).
- The lifting device must be fastened to the attachment or the other parts of the excavator in such a way that the unintentional release of the lifting cable is excluded.
- The installation on the attachment or the equipment must be done in such a way that there is a good view between the operator and assistant (the person who attaches the lifting cable to the lifting device).
- The lifting device must be positioned in such a way that the pulling direction of the lifting cable is always vertical and that no other machine parts can change the pulling direction.
- The lifting device must be executed and positioned that unintentional shifting of the lifting cable cannot occur.
- When positioning the lifting device, it must be made sure that no restrictions (for example, getting snagged) occur that may hinder normal operation of the excavator.
- Welding attachments (for example, hooks) may only be done by competent personnel. For these activities, please consult your EUROTRAC dealer.
- The lifting device must hold a load at any location on the attachment of boom section that is 2.5 times the nominal lift capacity.

3. Load-Carrying Device

A load-carrying device must have all of the following properties:

- The system must hold a load that is 2.5 times the nominal lift capacity, regardless of where the load is attached.
- The system must be constructed in such a way that the raised section cannot fall down because of, for example, protection facilities.
- The system must be constructed in such a way that the lifting device of the attachment cannot slide off.



CAUTION

Lifting loads larger than the values given in the table is prohibited.



CAUTION

Always observe the maximum lift capacity of the means of support (for example, load hooks). It is not permitted to carry load that exceed the maximum lift capacity.



CAUTION

The values given in the table apply only to work done on a solid and horizontal surface. When working on a soft surface, the excavator may tilt because the load is applied unilaterally and the rubber track and the dozer blade could sink into the ground.



CAUTION

The values given in the table are related to the load without a bucket; when using the bucket, the weight of the bucket must be detracted from the values. The weight of the accessories installed (e.g. grippers, quick-change systems, etc.) must be detracted from the lift capacity.



CAUTION

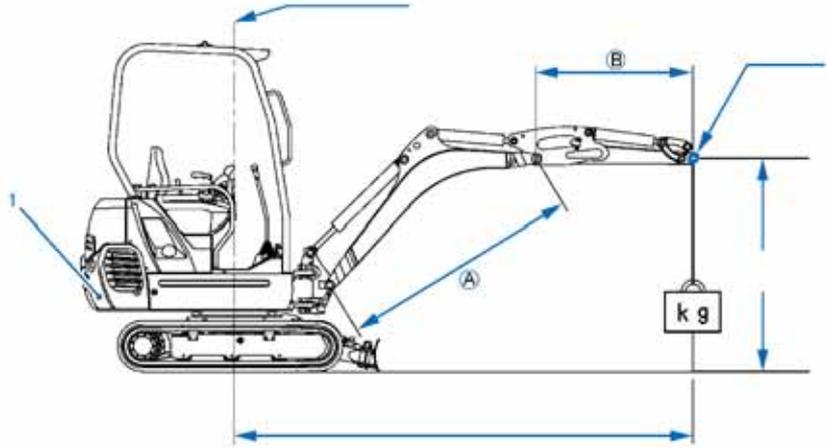
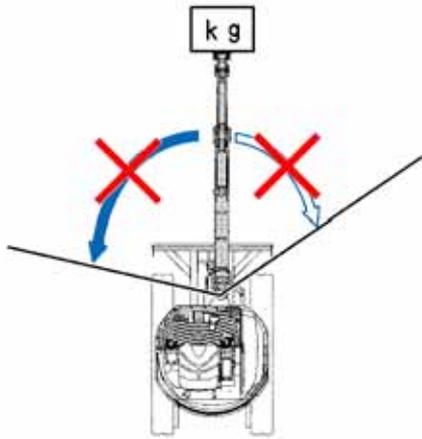
In lifting operations, the boom may not be swiveled to the right or the left. The machine could tilt! To prevent unintentional operation, raise the locking flap of the boom swing pedal.



CAUTION

While lifting, the rubber tracks may not be driven or moved.

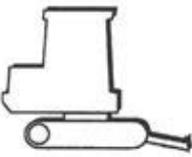
To prevent tilting, sliding or other possible risks when lifting, extreme caution is advised. The operator must raise the load in the center, prevent unexpected movements of the machine and take care that the load does not swing back and forth.



		Counterweight	(A)	(B)
HE18-1	Protective roof/cab	90 kg	1.81 m	1.19 m

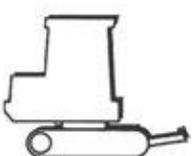
4. Maximum lift capacity when rotating 360°

Lift capacity at the front, dozer blade down, only with line rupture protection valve on the dozer blade cylinder

LIFT CAPACITY HEIGHT (mm)		Turning radius of the lift capacity (mm)											
				Min.	1500	2000	2500	3000	3500	Max.			
GL	4000												
	3500												
	3000												
	2500						2.1						
	2000						2.2	2.5					
	1500					2.4	2.6	2.6					
	1000					4.2	3.3	2.9	2.5	2.5			
	500					5.5	3.9	3.0	2.5				
	0				5.4	5.7	4.0	3.0	2.4				
	-500			5.3	7.7	5.2	3.8	2.8					
	-1000			7.8	6.8	4.5	3.3	2.4					
	-1500			11.0	5.5	3.6	2.5						
	-2000												
	-2500												

Unit: kN (t)

Lift capacity at the front, dozer blade up

LIFT CAPACITY HEIGHT (mm)		Turning radius of the lift capacity (mm)										
				Min.	1500	2000	2500	3000	3500	Max.		
GL	4000											
	3500											
	3000											
	2500						2.2					
	2000						2.2	2.6				
	1500					2.5	2.8	2.6				
	1000					4.4	3.4	2.6	2.0			
	500					4.5	3.3	2.5	2.0	1.9		
	0				5.6	4.4	3.2	2.4	1.9			
	-500			5.5	6.8	4.3	3.1	2.4				
	-1000			8.2	6.8	4.3	3.1	2.4				
	-1500			11.5	5.7	3.8	2.7					
	-2000											
	-2500											

Unit: kN (t)

ACCESSORIES

The accessories approved for this excavator for specific countries are described in the following sections. For more accessories, please contact your EUROTRAC dealer.



WARNING

Accessories from other manufacturers may only be installed after obtaining written permission from EUROTRAC. See also "[Authorized Use](#)" (page 11).

1. Flashing light

A flashing light (1) for the excavator is available as an accessory. It is installed on a base (2) on the protective roof or the cab roof.

Switching the flashing light on and off is done with the flashing light switch; see section "[Right control console](#)" (page 38).



2. Line rupture protection

Line rupture protection prevents the sudden loss of oil in the connected hydraulic cylinder if a line or hose ruptures in the hydraulic circuit. This will prevent the load or the attachment from suddenly falling down or prevent the machine from tilting when using the dozer blade as support.

A line rupture protection is installed directly on the hydraulic connection of the boom cylinder (2) and the arm cylinder (1).

In addition, a line rupture protection valve can also be installed on the hydraulic connection of the dozer blade cylinder (3).

For excavators with an authorized lift capacity of 1.0 t or more, lift operations are only permitted if the excavator is equipped with the following safety systems in accordance with EN 474-5:

- Line rupture protection on the boom cylinder
- Line rupture protection on the arm cylinder
- Overload warning system



If the dozer blade is used for support, an additional line rupture protection must be installed in accordance with EN 474-1 to increase the stability of the machine.

For equipping your excavator, contact your EUROTRAC dealer. The line rupture protection has already been set on the excavator in the factory.

The warranty lapses if the setting of the line rupture protection is changed.



WARNING

A change in the adjustment of these valves may result in serious injury and can even cause death and, for that reason, is strictly prohibited.

Changing the setting of or repairing the line rupture protection valves is prohibited. These may only be completely replaced by your EUROTRAC dealer.

Operating instructions

- Before using the excavator, the seal of the line rupture protection must be checked. If the seal is missing or the line rupture protection is damaged, no excavating work may be performed.
- Swiveling the boom during lifting operations is not permitted.

3. Stone Damage Protection

The stone damage protection is a protective grille that protects the operator from falling objects or objects that are thrown upwards.

The stone damage protection is fastened to attachment points (arrows) on the protective roof respectively the cab.



4. Quick-Change Systems and Attachments

The quick-change system is fastened to the arm and to the bucket connection with bolts. This is only for EUROTRAC bucket accessory attachment.

The accompanying operating instructions have been added to the operating instructions of the excavator. For more information, please contact your EUROTRAC dealer or distributor.

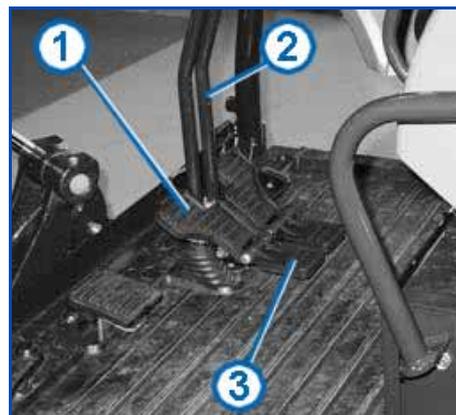
The size, weight and arm-bearing device of the excavator are factors that must be taken into account when selecting the attachments. These factors must be provided by the manufacturer of the attachments when ordering the attachments, and the operator must observe these factors. Various attachments can only be used in a restricted manner.

5. Bucket Accessories

For more bucket accessories, please contact your EUROTRAC dealer or distributor.

6. Foot Pedals Kit

The foot pedals kit (1) allows the drive levers (2) to be operated by the user's feet. The functions of the left and right foot pedal correspond to the functions of the left and right drive levers.

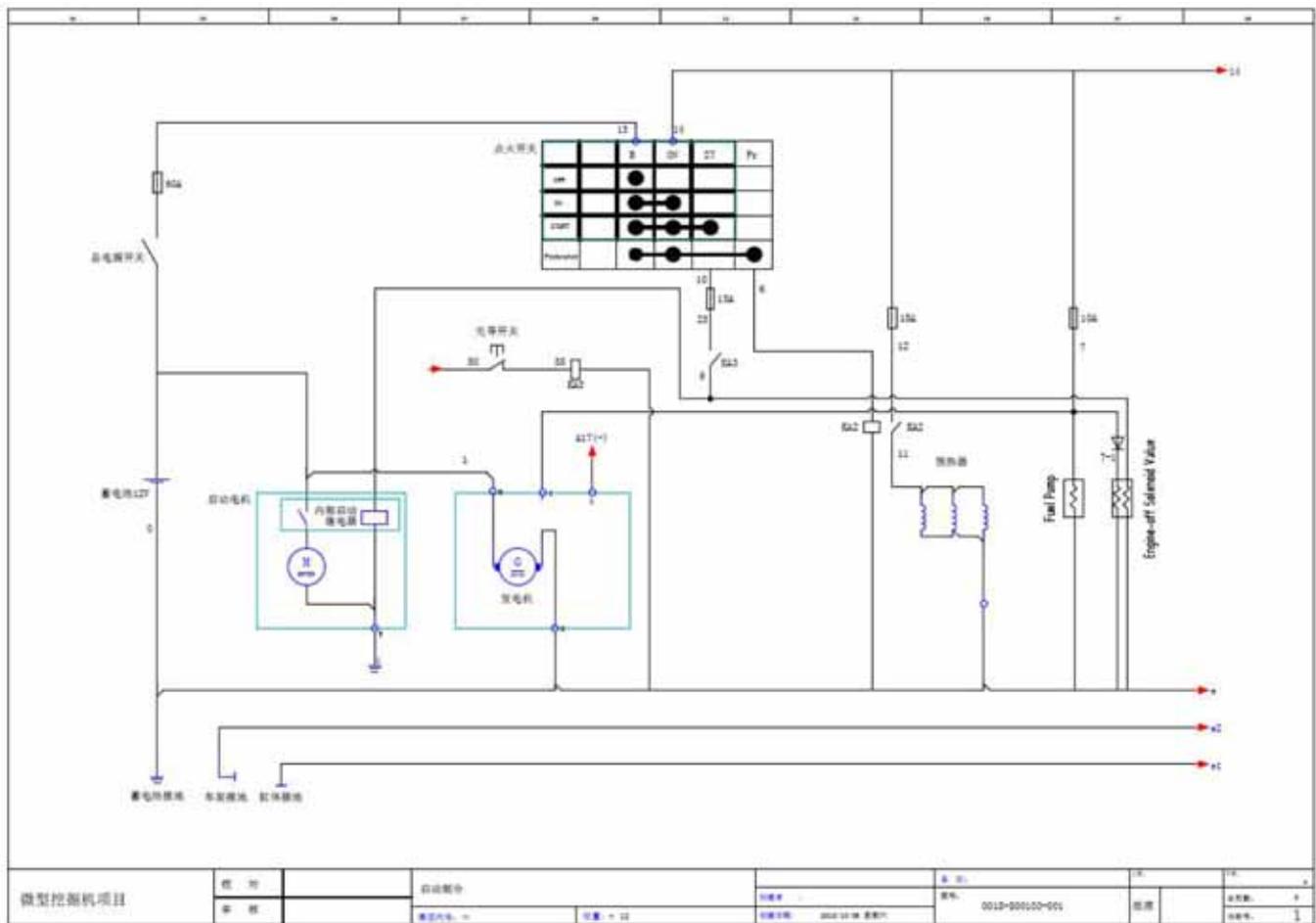


NOTE

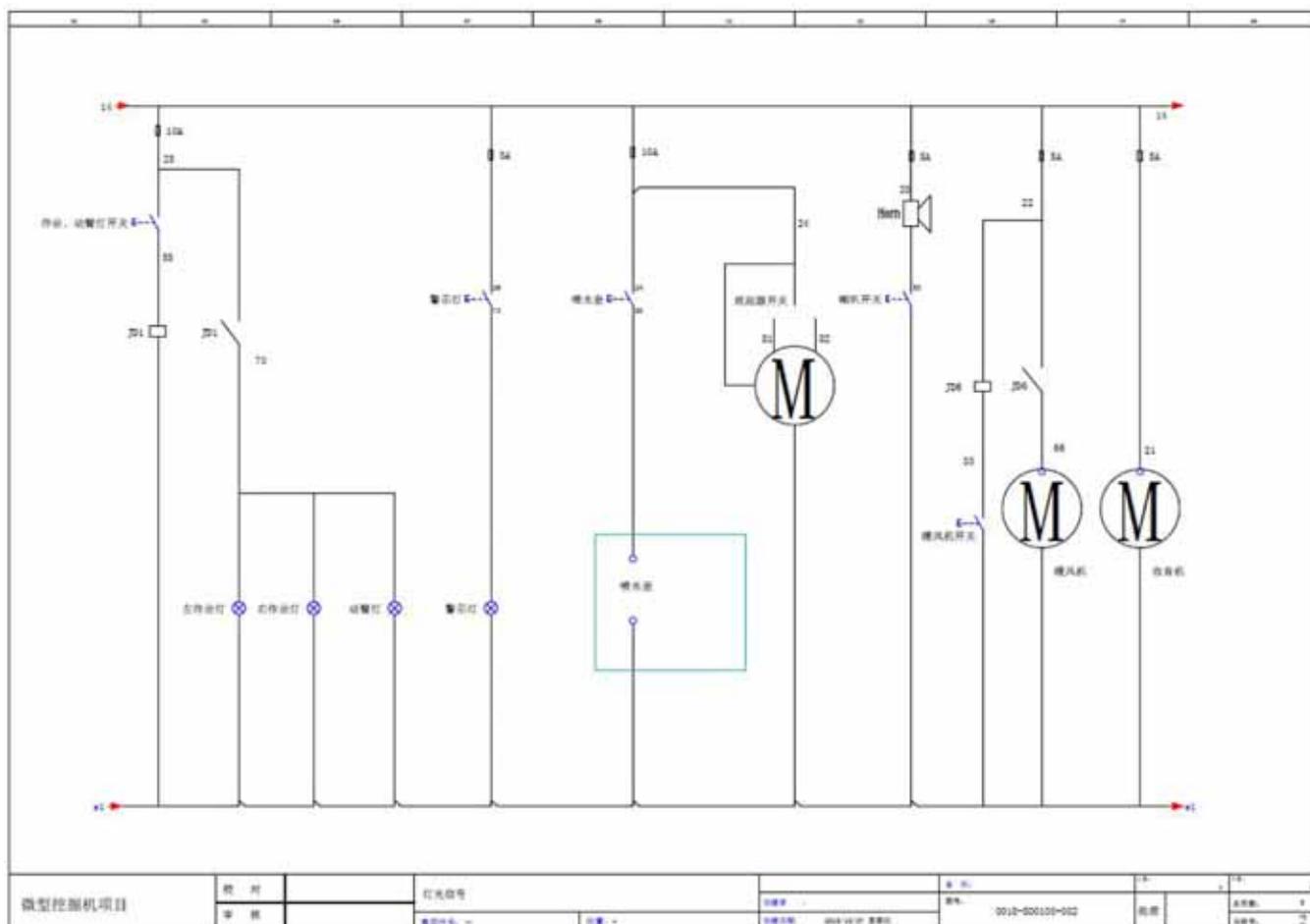
To operate the foot pedals, fold the pedal extensions (3) fold them towards the back. After use, and for optimum freedom of movement in the foot area, fold the pedal extensions towards the front.

ELECTRICAL DIAGRAMS

1. Electrical diagram 1



2. Electrical diagram 2



4. Electrical diagram 4

