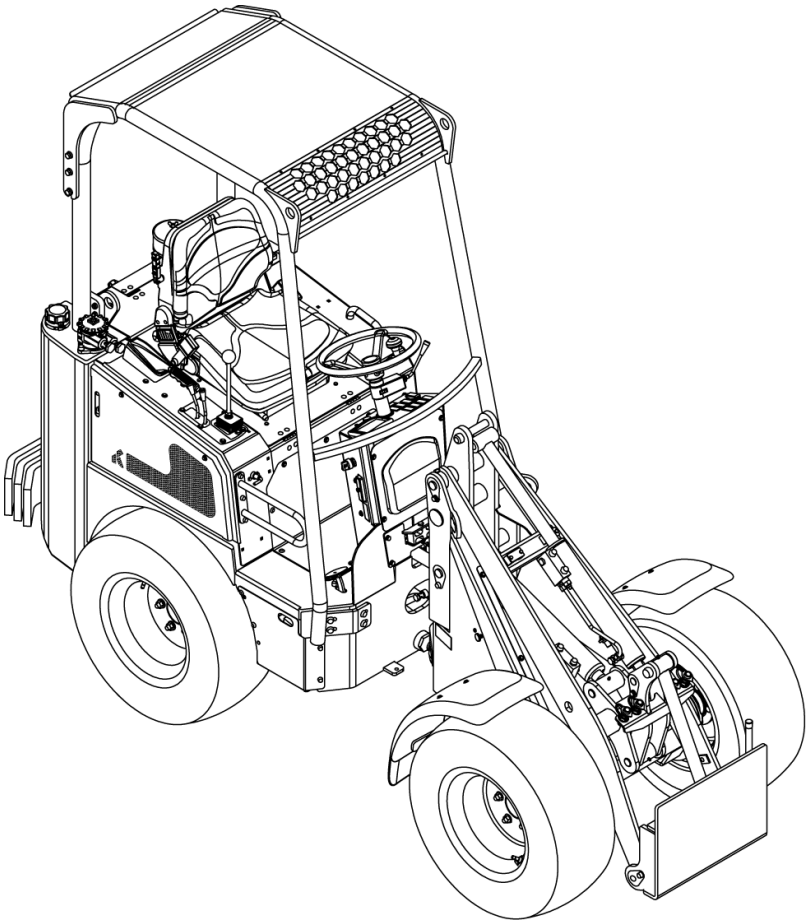
KNIKMOPS

User instructions

Knikmops wheel loader

KM 80, KM 85, KM 90, KM 100, KM 120, KM 125, KM 130 and KM 170



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Contact details

Gebroeders Geens N.V.

Hinnenboomstraat 5

2320 Hoogstraten (Belgium)

Tel. +32 (0)3-314 79 30

Fax +32 (0)3-314 84 56

E-mail: info@knikmops.be

Table of Contents

1. Introduction

1.1 About these instructions

These instructions provide all information required to work with the Knikmops wheel loader and corresponding attachments – pallet fork, volume buckets, shovel buckets, and rubble buckets.

The Knikmops wheel loader is referred to as the "machine" in these instructions. The volume buckets, shovel buckets, and rubble buckets are referred to as the "buckets" in these instructions. The attachments known as "pallet fork" and "buckets" are jointly referred to as "attachments" in these instructions.

The instructions apply to the following types of machine: KM 80, KM 85, KM 90, KM 100, KM 120, KM 125, KM 130, KM 170, including both the H and TE versions (telescopic arm).

The "pallet fork" and "buckets" must be coupled to the Knikmops, articulated loader, wheel loader, telescopic handler, excavator, or a similar machine. The term "machine" is used in these instructions as a reference term, even if an intermediate attachment is used.

These instructions were originally compiled in Dutch. All other language versions are translations of the original. In the event of doubt about the accuracy of a translation, the Dutch version takes precedence.

It is not always possible to provide a detailed illustration of each separate part of the machine. The illustrations in this document may, therefore, show a standard structure. The illustrations are solely for instruction purposes.

1.2 Version history

Date	Version	Notes
December 2021	1.0	First version

1.3 Target group

These instructions are intended for the following target groups:

- machine operators
- personnel who carry out daily maintenance on the machine

1.4 Symbols used

The following symbols are used in this document:

Symbol	Function	Description
	Warning!	"Warning" means that there is a risk of physical injury or death if the instructions are not followed.
	Caution	"Caution" means that there is a risk of damage to the equipment if the instructions are not followed.
	Note	"Note" is used to provide additional information.

2. Machine numbers

2.1 Machine identification

Model:

Chassis number:

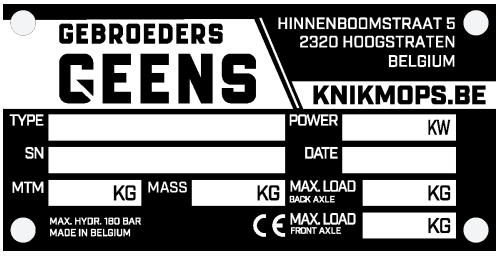
Engine number:

Color:

Delivery date:

Stamp of accredited Knikmops distributor:

2.2 Type plate



The figure below shows an example type plate on the machine or the attachment. The actual type plate shows the correct data according to the type of machine or attachment.

3. Intended use

The machine has been designed for work and transportation activities in road construction, garden landscaping, and related industries. Attachments can be coupled to and uncoupled from the machine for use in different applications.

Only use attachments that are intended for your machine and that have been approved by the manufacturer.

The "pallet fork" attachment is used for moving pallets.

The "bucket" attachments are used for shoveling, moving, and pouring bulky goods.

4. Safety

4.1 Safety instructions

4.1.1 Instructions before use of the machine and attachments

- Read the instructions carefully before using the machine.
- Ensure that no one is at risk.
- Carry out the procedures fully and in the specified order.
- Retain these instructions with the machine and corresponding attachments. If no instructions are available, inform your employer.
- Ensure that all warning symbols on the machine and attachments are legible. Replace illegible warning symbols promptly.
- Allow the machine to warm up in a well-ventilated environment before use.
- Assess the terrain on which you intend to drive beforehand and demarcate hazardous points.
- Use the machine on ground with sufficient load-bearing capacity only.
- Workplace environment:
  - The machine is suitable for driving on public roads provided that it has the correct registration certificates, lighting, and warning elements.
  - The operator must comply with the legal traffic regulations if driving on public roads.
  - The workplace must always be sufficiently illuminated.
- Replace damaged protective devices promptly.
- Never remove the safety bar or safety roof.
- Do not modify the machine or attachments unless this has been approved in advance by the manufacturer.
- Use only attachments and machines from the manufacturer.
- Use the machine and the attachments only as intended. If you intend to use them for a different purpose, please contact the manufacturer.
- The manufacturer is not liable for damage that results from improper use of the machine or attachments.
- If you replace parts, always contact the manufacturer and use only parts that are supplied by the manufacturer.
- Start the machine only when sitting in the operator's seat.
- When starting or switching off the machine's engine, the hydraulic drive unit must be switched off and the handbrake must be engaged.
- Keep the operator's seat, pedals, and steps clean.

- Stow materials and tools when not in use.
- Avoid prolonged overloading of the hydraulic systems. Failure to do so will cause the machine to overheat. Always move the hydraulic control of the machine to the neutral position when starting up.
- Avoid jerky movements, other than necessary for normal use.
- Avoid heavy lifting when the machine is running at fully capacity.
- Avoid excessive swinging of the machine when the attachments is on the ground.
- All connections between the attachments and machine must be fitted with proper latches.
- The mechanical and hydraulic coupling parts must be properly lubricated and accessible.
- If the machine is equipped with an attachment which requires periodic inspection, evidence of inspection must always be present in the machine.
- If using the attachment in combination with a machine not from the manufacturer, or if using other attachments, the manufacturer is unable to accept responsibility for use of the combination.
- Take the weight of the attachment into account when checking the load values of the machine. This weight is indicated on the type and in the instructions.
- When using an attachment, subtract the weight of the attachment from the load values.
- The load on the arm must not cause the machine to tip, as this could cause the machine to tip over.
- The arm must be adjusted such that the load is suspended stationary when the control lever is in the neutral position.
- Do not operate the arm unnecessarily.
- Ensure that attachments are correctly locked at all times.
- Follow the instructions for the attachment in question.
- The capacity and stability of the machine to which the attachment is coupled must be matched to the attachment.
- The coupling on the machine must be consistent with the hinge coupling on the attachment.
- The weights being lifted must not exceed the prescribed value of the machine and the attachment. The maximum lifting weight is stated on the type plate and in the instructions.
- Avoid unevenly distributed lifting loads.
- Use of counterweights other than those recommended by the manufacturer may cause overloading and thus prove hazardous to the operator and bystanders.

4.1.2 Instructions for the user

- Only personnel who have been trained by the manufacturer or importer are permitted to use, maintain, and repair the attachments.
- Personnel must:
  - be eighteen years of age or older.
  - be physically and mentally healthy.
  - have the requisite knowledge and skills.
  - have a driver's license (for driving on public roads).
- Personnel in training may only use the machine and the attachments under the supervision of trained personnel.
- Not wear loose clothing of jewelry. Tie long hair back.
- Use personal protective equipment, such as safety clothing, safety shoes, safety goggles, and proper work gloves.
- Use ear protection. The sound level is more than 93 dB(A).
- It is the operator's responsibility to ensure that bystanders are unable to access the immediate vicinity of the machine, interchangeable equipment, and loads.

4.1.3 Instructions for use of the machine and attachments

- Observe all safety instructions for the machine while working with the machine and attachment.
- In the event of a malfunction or damage to the machine, stop the machine and report it to your employer. Ensure the malfunction is resolved promptly.
- Avoid slopes and bumps to the fullest extent possible. The machine may become unstable.
- If you must drive on a slope, bear the following in mind:
  - Driving on a slope without a safety bar or cab is extremely dangerous and strictly prohibited.
  - Driving parallel to the slope is permitted only if the following conditions are met:
    - The slope must not exceed 10°.
    - The arm must be retracted and be as low to the ground as possible.
    - The travel speed must not exceed 3 km/h.
  - If the machine tips over:
    - Keep the safety belt on.
    - Remain in the machine.
    - Switch the machine off completely.
- Always drive with the arm retracted when driving a TE version machine.

- Avoid turning the steering wheel when the machine is stationary.
- Never transport people with the machine or attachments.
- Do not make sharp turns at high speed.
- Keep the safety belt on at all times.
- If you notice that the machine is becoming unstable or skidding, stop the machine as promptly as possible with the attachment on the ground.
- Avoid high speeds with a low oil temperature – drive at low revolutions (1,500 rpm) unladen for the first five minutes.
- In the event of pending danger, give a warning signal and stop the machine, if necessary.
- In poor visibility and darkness, always keep the machine's lights on.
- If you do not have sufficient visibility, you must be accompanied by trained personnel. Personnel must be recognizable as such and always remain in your line of sight.
- Do not use the machine at landfill sites where there is a risk of the machine falling unless there are facilities in place to prevent rolling or crashing.
- Never leave the machine running if no one is at the steering wheel.
- Before stopping the machine, lower the attachment as close to the ground as possible. This prevents people from falling over the attachment and prevents the arm from suddenly tilting downward.
- If the hydraulic steering cylinder fails, fit the articulation lock.
- If driving the machine with a pallet fork:
  - The pallet fork must be suspended low above the ground.
  - Draw attention of people around the machine to the risk of falling loads.
- If driving the machine with a bucket:
  - The bucket must not be suspended too far above the ground. Bulky goods may fall from the bucket and impact the operator if the bucket is too far from the ground, resulting in serious injury.
  - The underside of the bucket can only withstand light loads. In the lowermost position, the edge of the bucket can hit the ground when tilted forward, which can cause an overload.
  - If the bucket is too low to the ground, the ground and the bucket itself may become permanently damaged.
- If possible, park on level ground and pull the parking brake upward.
- Carefully consider how you use the attachment.
- If the hydraulic fast attachment for connecting the attachment is not working properly, stop immediately to avoid accidents.

- Lifting and hoisting equipment must not be used if it has not been inspected or not inspected promptly.
- When the machine is stationary, operations under the attachment, whether the attachment is laden or unladen, are not permitted.

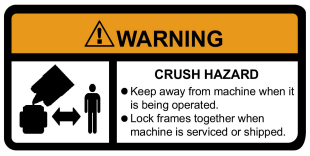
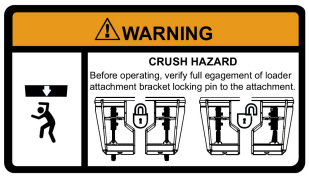
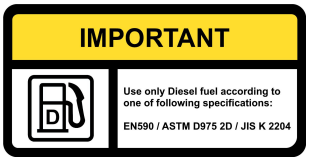
4.1.4 General safety instructions

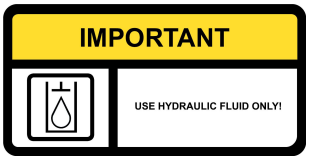
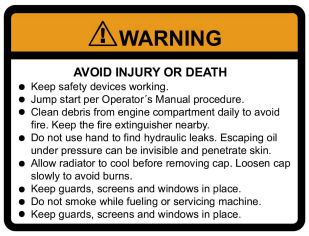
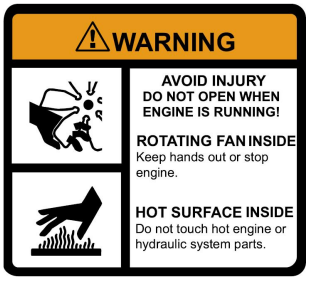
- Lifting and hoisting equipment such as chains, plastic straps, and steel straps must satisfy these requirements:
  - sufficiently strong, properly dimensioned, and in good condition
  - comply with local labor and safety regulations
- Follow local labor and safety regulations and environmental laws
- Ensure that you know where fire extinguishing equipment is located.
- In the event of a fire, you must keep a sufficient distance from the machine. If the hydraulic fluid lines become overheated, they are at risk of rupturing and causing intense flames of burning hydraulic fluid.
- Use only fuses from the manufacturer.
- Ensure that no oil or grease gets on to the machine. In the event of a spillage, clean it immediately.
- Only use the machine in well-ventilated spaces.
- Never use the machine as an anchoring point.
- The ROPS/FOPS safety cab is compulsory in any situation in which material can fall downward or the operator is undertaking hazardous activities on a slope.
- To prevent life-threatening situations, do not modify the safety cab in any way.
- Mirrors, light fittings, and similar fixtures may only be fitted to the safety bar with a clamp.
- Welding, drilling, and similar activities on the bar are not permitted. Replace a damaged ROPS/FOPS safety cab promptly.
- If you wish to start the regeneration process, take the following into account:
  - Regenerate outdoors only or in an adequately ventilated space.
  - Keep a safe distance from the machine.
  - Do not switch the machine off.
  - Keep the engine compartment closed.

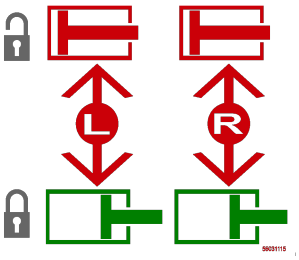
4.2 Safety symbols on the machine

The safety symbols on the machine and the attachments must always be legible and be replaced if damaged.

4.2.1 General safety symbols

Symbol	Description
	Personnel not operating the machine must stay out of its vicinity.
	Safety instructions that you must read before starting the machine. You must always follow these safety instructions carefully.
	Standing under the load is prohibited.
	Safety instructions that you must read to avoid overturning the machine.
	Safety instructions that you must read to avoid being crushed by the machine.
	Verify the full engagement of the loader attachment bracket locking pin to the attachment to avoid being crushed.
	Verify Diesel fuel specifications.

Symbol	Description
	Install the FOPS if there is a risk of falling objects.
	Safety instructions on what to do when the machine tips over.
	Use hydraulic fluid only.
	Safety instructions that you have to read carefully to avoid injury or death.
	Never remove the ROPS.
	Do not open when the engine is running.

Symbol	Description
	Always read the operator manual and safety instructions.
	Maintain 3-point contact during entry and exit if your are the operator and keep a safe distance from the machine during entry and exit if you are not the operator.
	Risk of burns: beware of hot machine parts.
	Handbrake on/off.
	Valve operation (see Sticker for hydraulic operation on page 19 for more information).

5. Description of components

5.1 Overview

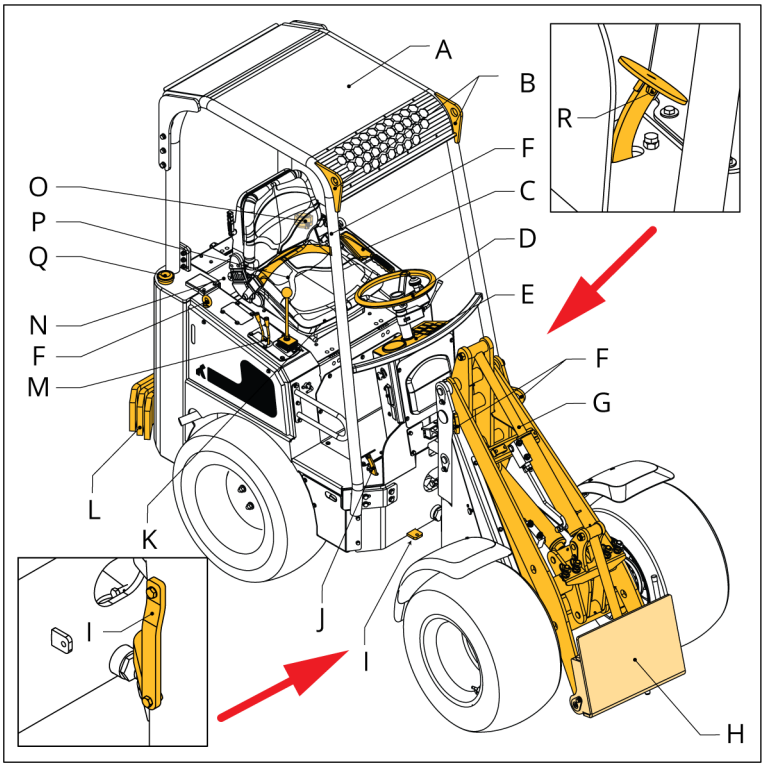


Figure 1: Overview of the machine

A	Safety cab (compulsory when working on slopes or where there is a risk of falling materials)	J	Accelerator pedal
B	Lifting eyelets for hoisting the machine with a safety cab	K	Operator's seat
C	Parking brake	L	Counterweights (optional)
D	Steering wheel	M	Hydraulic operation
E	Dashboard	N	Engine compartment
F	Lifting eyelets for hoisting the machine without a safety cab	O	Fuel tank
G	Arm	P	Safety belt
H	Connector plate	Q	Hydraulic tank
I	Articulation lock locking pin	R	Inching pedal

5.2 Dashboard

Different dashboard types are available according to the machine.

5.2.1 Dashboard type 1 – standard version

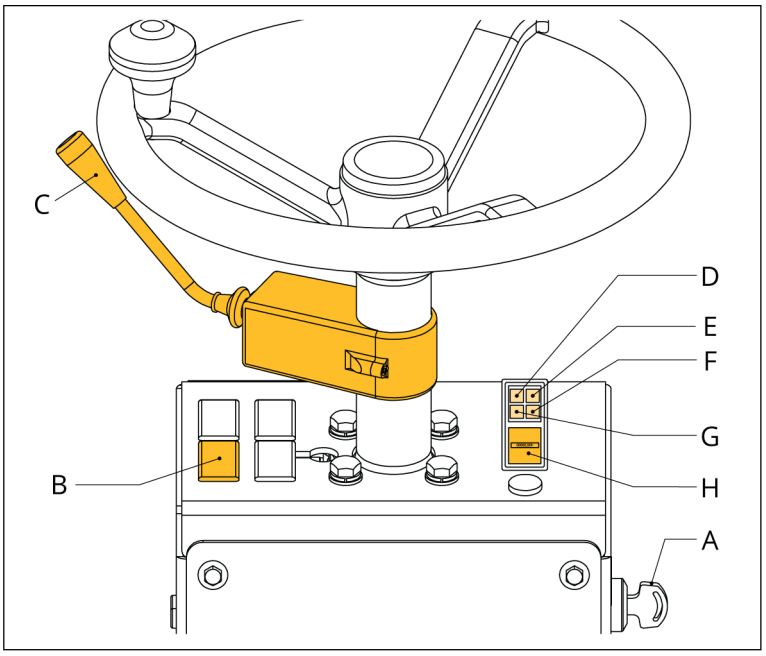


Figure 2: Overview of dashboard type 1 – standard version

A	Ignition key	F	Glow plug lamp for the diesel engine
B	Shurlock button (only for the "hydraulically operated locking pin on the connector plate" option)	G	Engine temperature lamp
C	VNA switch	H	Operating hours counter
D	Battery voltage lamp		
E	Oil pressure lamp		

5.2.2 Dashboard type 2

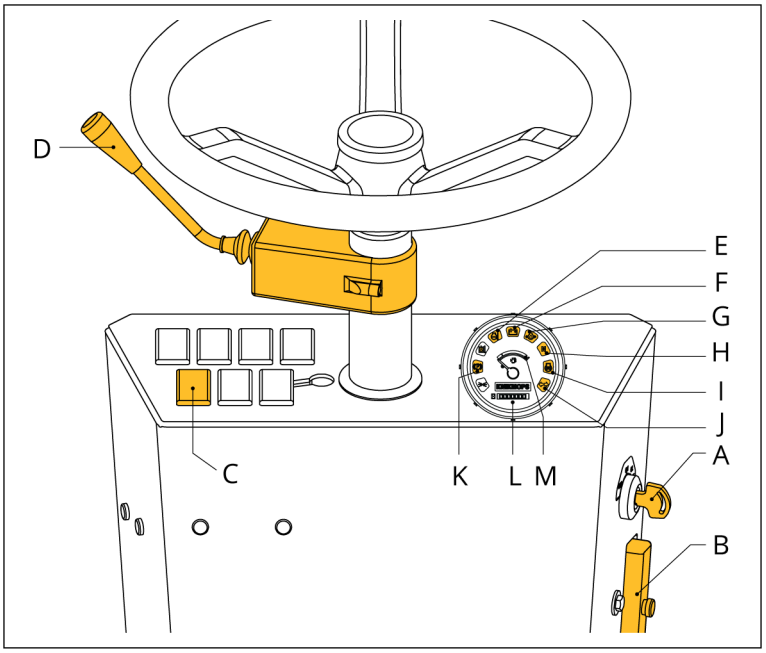


Figure 3: Overview of dashboard type 2

A	Ignition key	H	Neutral position indicator
B	Fuse box	I	Glow plug lamp for the diesel engine
C	Shurlock button (only for the "hydraulically operated locking pin on the connector plate" option)	J	Direction indicator
D	VNA switch	K	Parking brake
E	Coolant temperature	L	Operating hours counter
F	Battery voltage	M	Fuel indicator
G	Engine oil pressure		

5.3 Hydraulic operation

5.3.1 Hydraulic operation – standard version

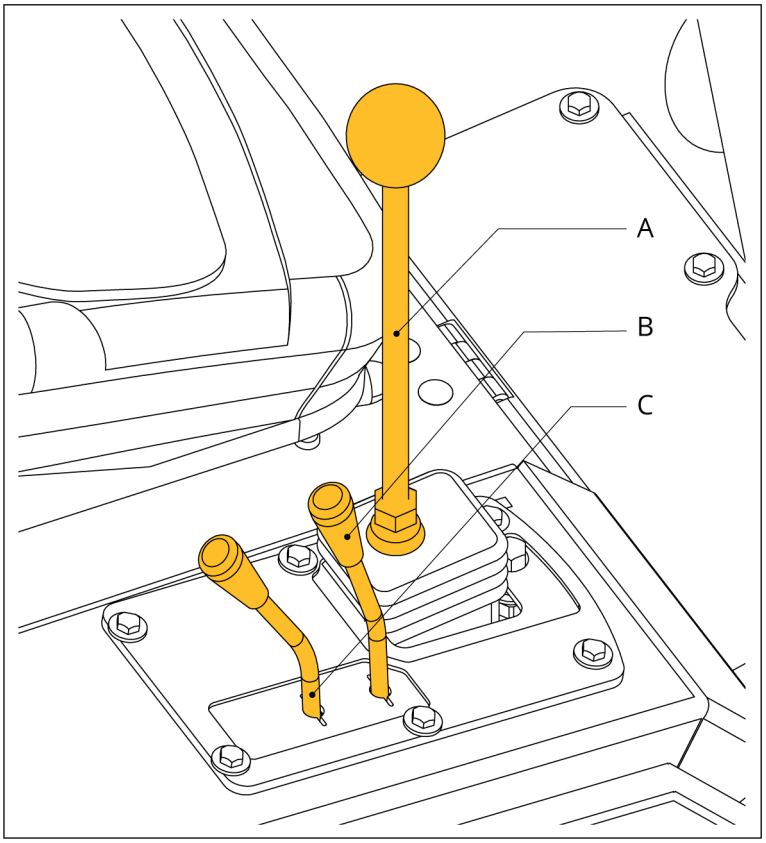


Figure 4: Hydraulic operation – standard version

A	Cross lever	C	Lever for hydraulic assistance function, right
B	Lever for hydraulic assistance function, left		

	If the machine is equipped with a hydraulically operated locking pin, the "lever for hydraulic assistance function, left" is also used to uncouple the attachment.

5.3.2 Hydraulic operation – TE version

This version is also available as an option on other types of machine. In that case, the standard VNA switch is omitted.

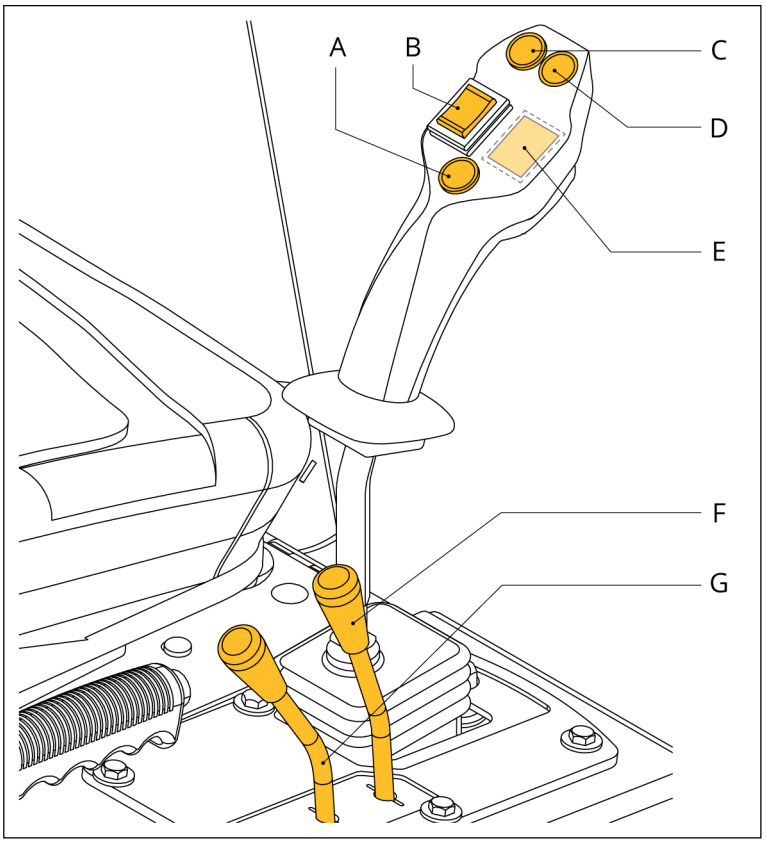


Figure 5: Hydraulic operation – TE version

A	Horn	E	High/low adjustment button (only on types KM 125 and KM 250)
B	Travel direction button	F	Lever for hydraulic assistance function, left
C	Telescope button	G	Lever for hydraulic assistance function, right
D	Spare button (optional: horn)		

5.3.3 Hydraulic operation – eHC version

This version is also available as an option on other types of machine. In that case, the standard VNA switch is omitted.

	eHC stands for electric hydraulics control.

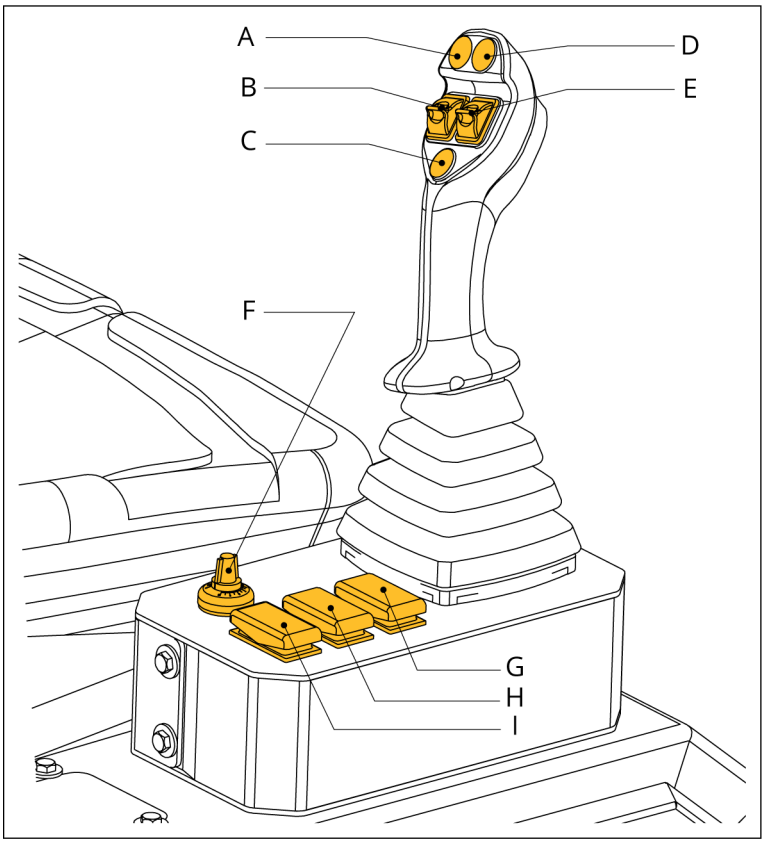


Figure 6: Hydraulic operation – eHC version

A	Button for hydraulic function, A direction	F	Flow control
B	Travel direction button	G	Switch for locking the right-hand function
C	Spare button (optional: horn)	H	Switch for selecting fixed stop or double action
D	Button for hydraulic function, B direction	I	High/low transmission button (types KM125 and KM250 only) or laser function on/off switch
E	Telescope button		

5.3.4 Sticker for hydraulic operation

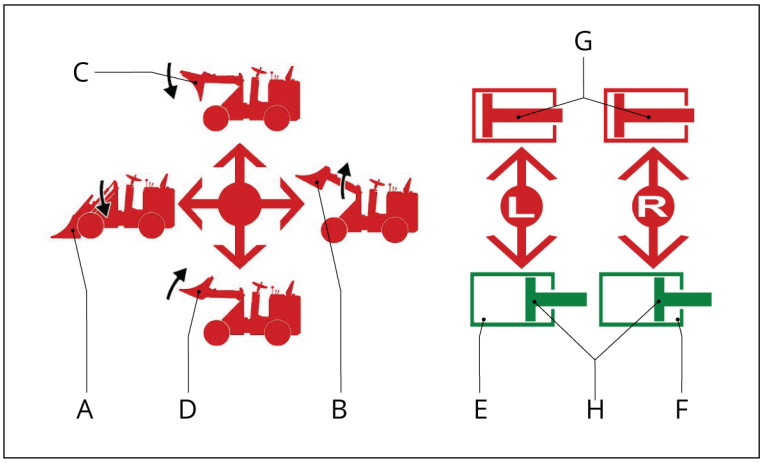


Figure 7: Sticker for hydraulic operation

A	Lower arm	E	Hydraulic assistance function, right
B	Raise arm	F	Hydraulic assistance function, left
C	Connector plate, front	G	Hydraulic pressure on hydraulic connection side with red dust cap
D	Connector plate, rear	H	Hydraulic pressure on hydraulic connection side with green dust cap

5.4 Connector plate

5.4.1 Connector plate with manually operated locking pin

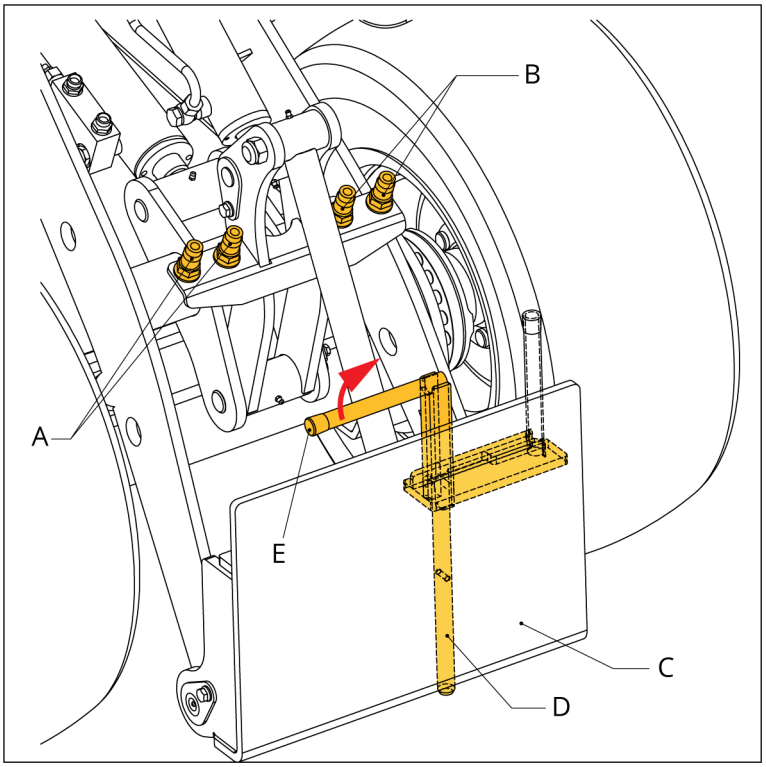


Figure 8: Connector plate with manually operated locking pin

A	Connection for hydraulic assistance function, right	D	Locking pin
B	Connection for hydraulic assistance function, left	E	Locking lever
C	Plate of connector plate		

5.4.2 Connector plate with hydraulically operated locking pin

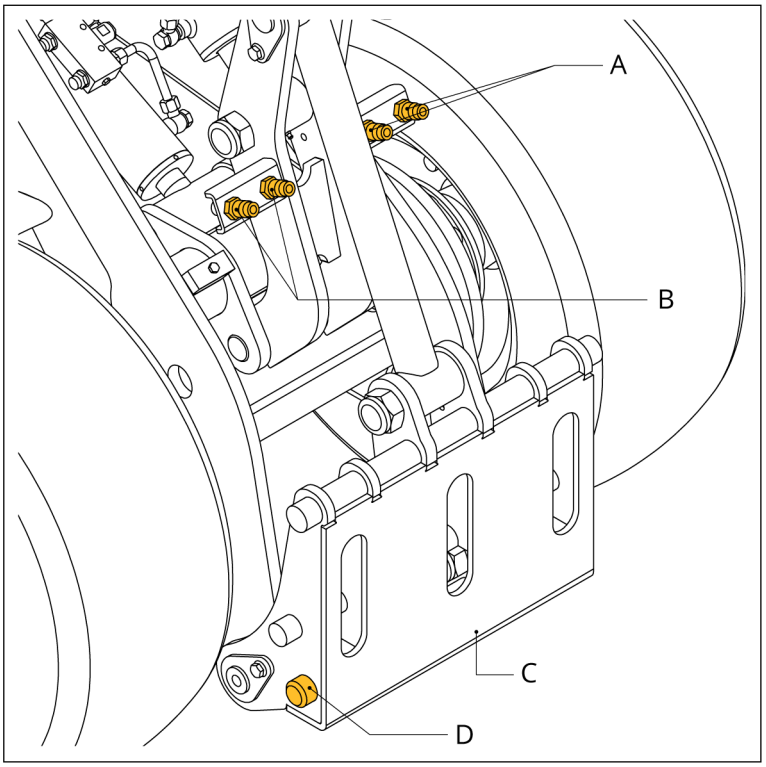


Figure 9: Connector plate with hydraulically operated locking pin

A	Connection for hydraulic assistance function, left	C	Plate of connector plate
B	Connection for hydraulic assistance function, right	D	Locking pins

6. Operating the machine

6.1 Operator's seat

The illustration below is a standard depiction of the operator's seat. A different operator's seat may be optionally requested. Please contact your distributor for more information. If you opt to use a different operator's seat, follow the instructions supplied with that seat.

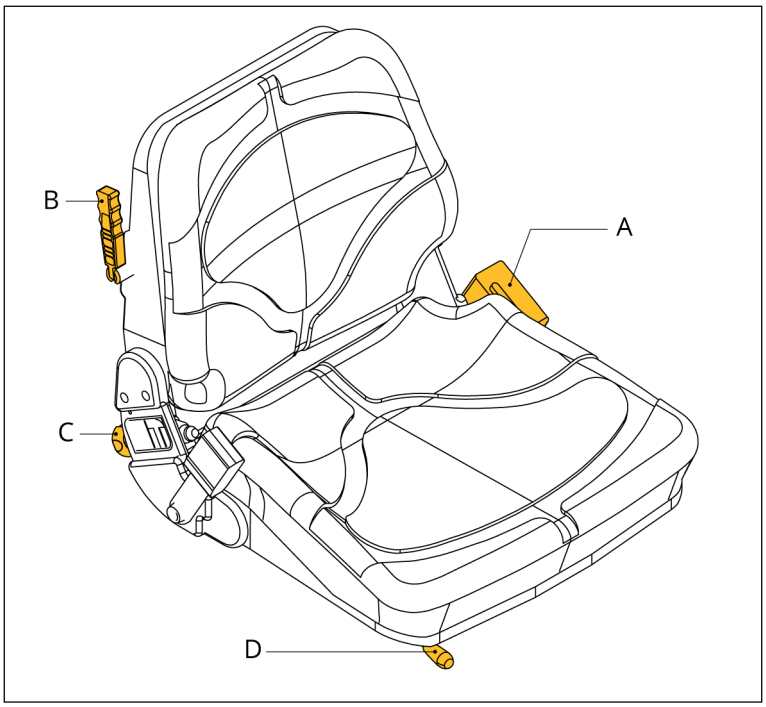


Figure 10: Operator's seat

A	Lever for adjusting the backrest angle	C	Button for backrest
B	Button for adjusting the weight of the operator	D	Lever for adjusting the operator's seat forward or backward

6.2 Starting

6.2.1 Preparatory work

Before actually starting the machine, a number of precautionary measures and actions are required.

1 Carry out daily maintenance.

See Daily maintenance on page 57.

2 Check the fuel level and the level of the hydraulic fluid.

Optional: top up the tank in question.

For more information on how to check the fuel tank, see Checking the fuel tank on page 42.

For more information on how to top up the hydraulic fluid, see Checking/ topping up the hydraulic fluid on page 75.

3 If you are working in a dusty environment, ensure that the cyclone filter is still usable.

Optional: Clean the cyclone filter.

For more information on how to clean the cyclone filter, see Cleaning the cyclone filter on page 64.

4 Put the following controls in the neutral position:

- VNA switches
- Levers for operating the connector plate and hydraulic assistance functions

5 Sit down on the operator's seat.

6 Put on the safety belt and click it in place.

6.2.2 Starting a machine with a Kubota engine

Once you have completed all preparatory work, you can start the machine.

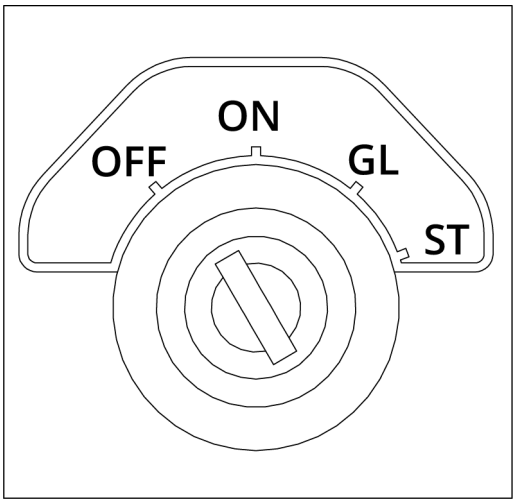


Figure 11: Kubota engine ignition

1 Insert the key into the ignition.

2 Move the VNA switch to neutral and, if applicable, the manual throttle lever to the central position.

3 Turn the key to the **ON** position.

4 Check that the following lamps are on:

- Battery voltage lamp
- Oil pressure lamp

5 Turn the key to the **GL** position. Wait until the glow plug lamp goes out.

6 Turn the key to the **ST** position.

7 The key returns to the **ON** position

6.2.3 Starting a machine with a Yanmar engine

Once you have completed all preparatory work, you can start the machine.

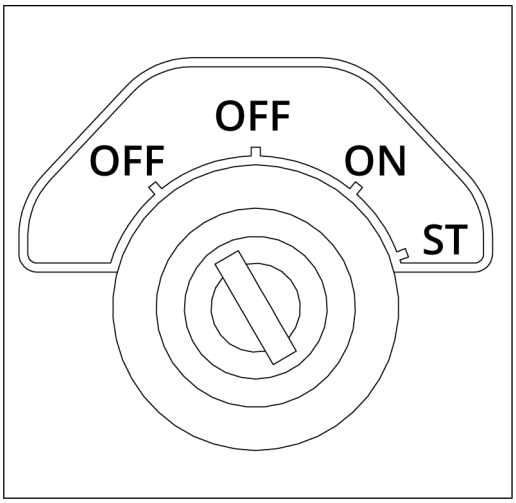


Figure 12: Yanmar engine ignition

1 Insert the key into the ignition.

2 Move the VNA switch to neutral and, if applicable, the manual throttle lever to the central position.

3 Turn the key to the **ON** position and wait for the glow plugs to finish preheating.

4 Check that the following lamps are on:

- Battery voltage lamp
- Oil pressure lamp

5 If you have a display:

- The display starts up
- The oil pressure LED indicator lights up

6 Turn the key to the **ST** position.

7 The key returns to the **ON** position.

6.3 Stopping

6.3.1 Stopping a machine with a Kubota engine

Proceed as follows to stop the machine.

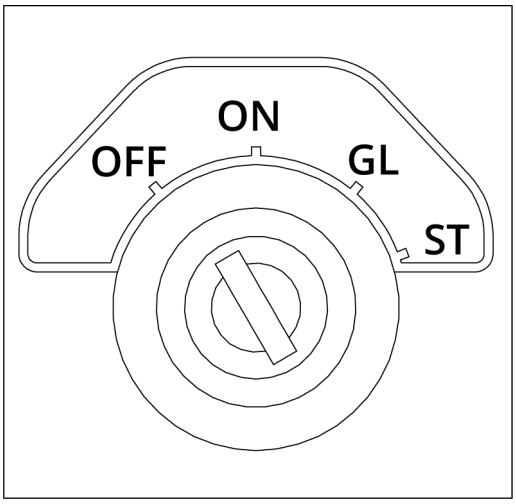


Figure 13: Kubota engine ignition

1 Bring the machine to a halt on a level surface, if possible.

2 Do one of the following:

- Lower the arm to the ground if no load is present.
- Place the load against the ground.

3 Pull the parking brake upward as far as it will go.

4 Put the following levers in the neutral position:

- VNA switch
- Arm lever
- Both levers for the hydraulic assistance functions

5 Move the key to the **OFF** position.

6 Remove and store the key.

6.3.2 Stopping a machine with a Yanmar engine

Proceed as follows to stop the machine.

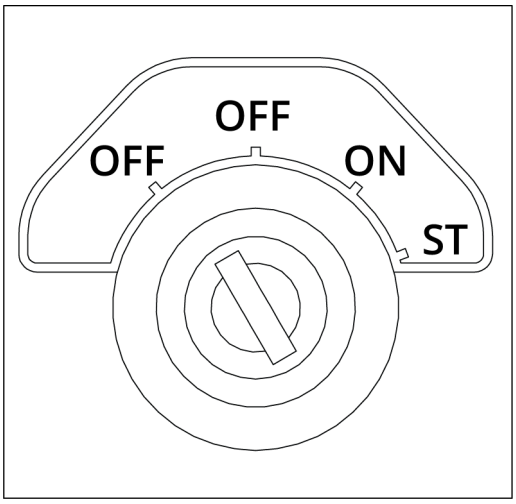


Figure 14: Yanmar engine ignition

1 Bring the machine to a halt on a level surface, if possible.

2 Do one of the following:

- Lower the arm to the ground if no load is present.
- Place the load against the ground.

3 Pull the parking brake upward as far as it will go.

4 Put the following levers in the neutral position:

- VNA switch
- Arm lever
- Both levers for the hydraulic assistance functions

5 Move the key to the central **OFF** position.

6 Remove and store the key.

6.4 Driving

6.4.1 Operating principle – wheel propulsion

Hydraulic wheel motors propel the front wheels of the machine. There is one motor per wheel. The hydraulic pressure comes from a hydraulic pump which is in turn powered by a diesel engine.

The machine's accelerator pedal controls the speed of the diesel engine and, indirectly, the power and speed of the hydraulic system. The inching pedal can be used as a pedal to decrease or determine the speed. That way, the engine speed of the Knikmops is separate from the actual travel speed. This means you can adjust the speed of a specific attachment without changing the speed of the Knikmops itself.

You can use the inching pedal at the same time as the accelerator pedal or clutch pedal in order to drive slowly over uneven ground, for example, or to drive slowly to lift heavy loads. The inching pedal itself has no effect on the speed of the engine. You can, therefore, use the accelerator pedal (for force) and inching pedal (to limit the speed) at the same time. Depressing the inching pedal fully stops the machine.

6.4.2 Locking differential

The illustration provides more information on the location of the locking differential on the machine. A locking differential is a differential with the facility to limit the permissible difference in speed between two driven wheels of the machine.

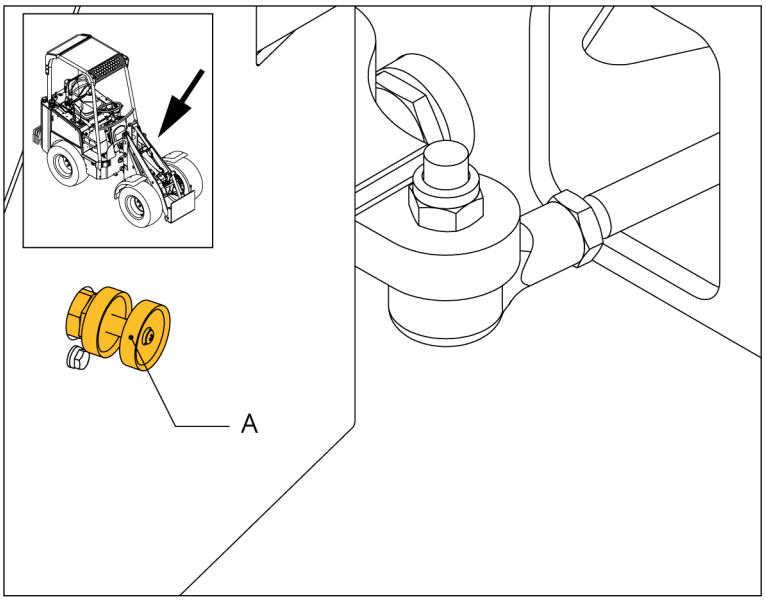


Figure 15: Locking differential

A Locking differential adjustment button

The locking differential adjustment button is used to activate the differential. This may be necessary when driving on wet, muddy, or uneven ground.

For more information, see Switching the locking differential on/off manually on page 27.

	Caution! If used incorrectly, the tires will exhibit excess wear and the machine will become harder to steer.

6.4.2.1 Switching the locking differential on/off manually

	Caution! If used incorrectly, the tires will exhibit excess wear and the machine will become harder to steer.

If your machine is equipped with an electronic locking differential control, press the button on the dashboard to switch the locking differential off and on.

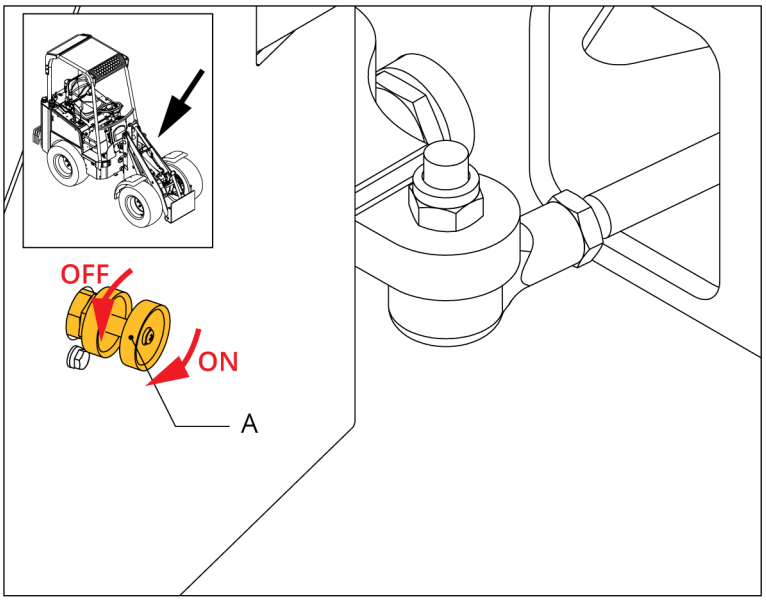


Figure 16: Locking differential

1 Turn the locking differential adjustment button (A) clockwise as far as it will go to switch the differential on.

2 Turn the locking differential adjustment button (A) counter-clockwise as far as it will go to switch the differential off.

6.4.3 Driving: standard version

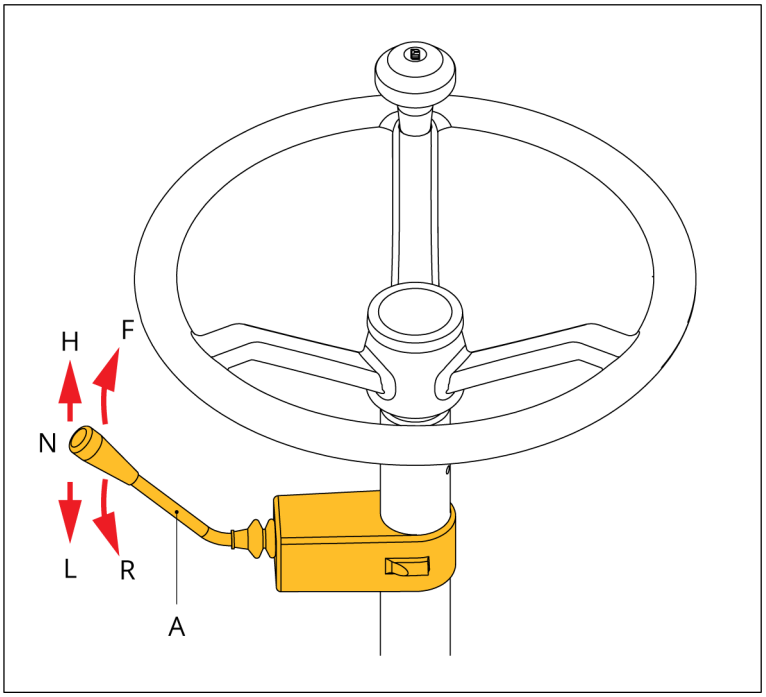


Figure 17: Driving: standard version

	Warning! If you notice that the machine is becoming unstable or skidding, stop the machine as quickly as possible with the attachment on the ground.

1 Press the button on the parking brake and push the parking brake down as far as it will go.

2 Choose a travel direction.

- To move forward, move the VNA switch (A) into the forward position (F).
- To move in reverse, move the VNA switch (A) into the reverse position (R).

	When the VNA switch is in the neutral position (N), the machine will not move.

3 Depress the accelerator pedal.

4 Push the VNA switch upward (H) or downward (L) to change the machine's gear.

	On type KM 250, you must do this at low revolutions.

5 Release the accelerator pedal again and depress the inching pedal to brake.

6.4.4 Driving - TE version

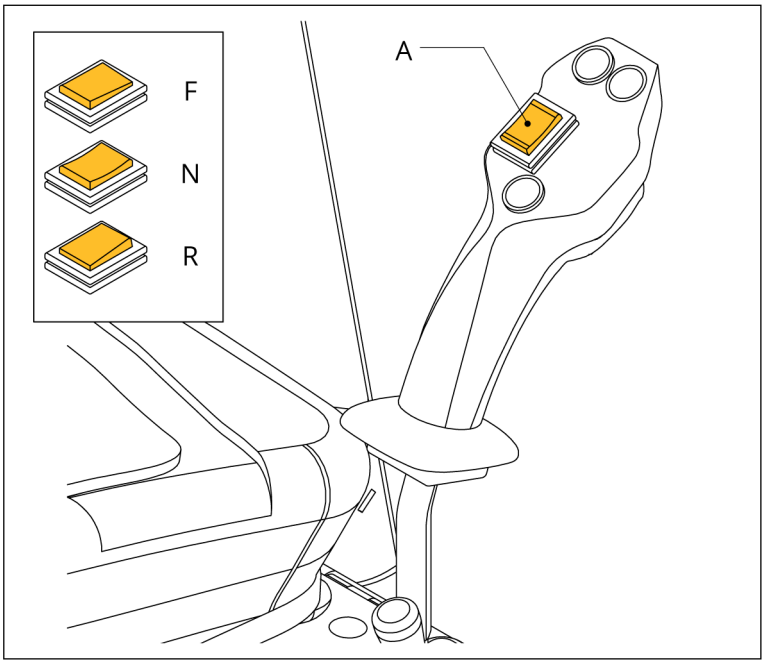


Figure 18: Driving - TE version

	Warning! If you notice that the machine is becoming unstable or skidding, stop the machine as quickly as possible with the attachment on the ground.

	This version is also available as an option for other types. In that case, the standard VNA switch is omitted.

1 Press the button on the parking brake and push the parking brake down as far as it will go.

2 Choose a travel direction.

- To move forward, move the driving direction button (A) into the forward position (F).
- To move in reverse, move the driving direction button (A) into the reverse position (R).

	When the driving direction button is in the neutral position (N), the machine will not move.

3 Depress the accelerator pedal.

4 Use the driving direction button to change machine's gear.

	This function is standard on types KM125 and KM250 and optional on other types.

5 Release the accelerator pedal again and depress the inching pedal to brake.

6.4.5 Driving: eHC version

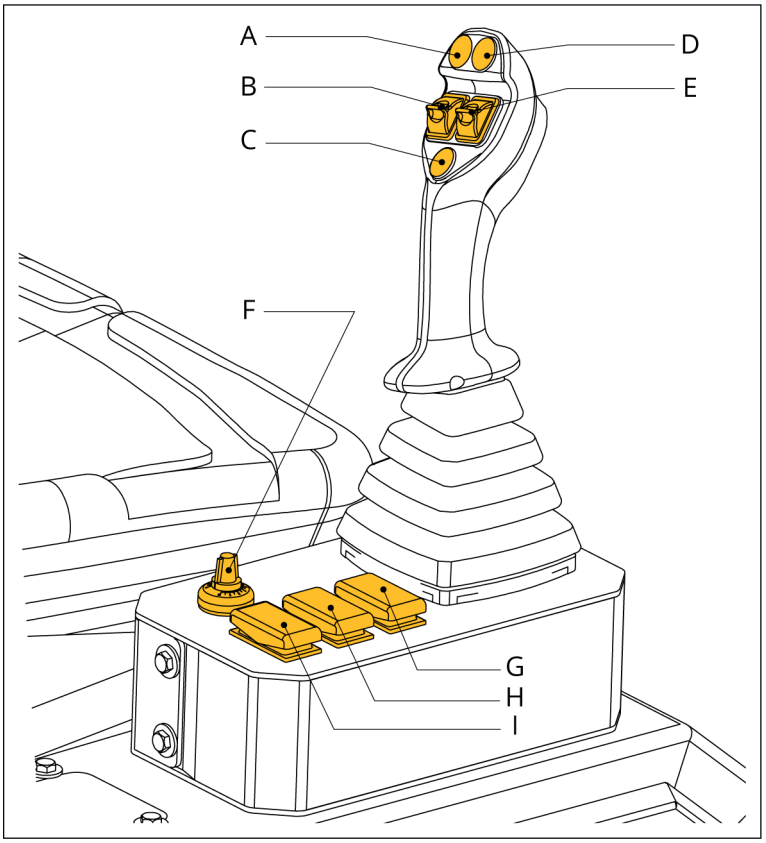


Figure 19: Driving: eHC version

	Warning! If you notice that the machine is becoming unstable or skidding, stop the machine as quickly as possible with the attachment on the ground.

	This version is also available as an option for other types. In that case, the standard VNA switch is omitted.

1 Press the button on the parking brake and push the parking brake down as far as it will go.

2 Choose a travel direction.

- To move forward, move the driving direction button (B) into the forward position.
- To move in reverse, move the driving direction button (B) into the reverse position.

	When the driving direction button (B) is in the neutral position, the machine will not move.

3 Depress the accelerator pedal.

4 Use the driving direction button to change machine's gear.

	This function is standard on types KM125 and KM250 and optional on other types.

5 Release the accelerator pedal again and depress the inching pedal to brake.

6.5 Operating the arm

An arm is the lifting section of the machine. The arm can be used for activities such as excavation, laying stones, carrying pallets, and more, depending on the attachment that is coupled to the machine.

6.5.1 Operating the arm – standard version

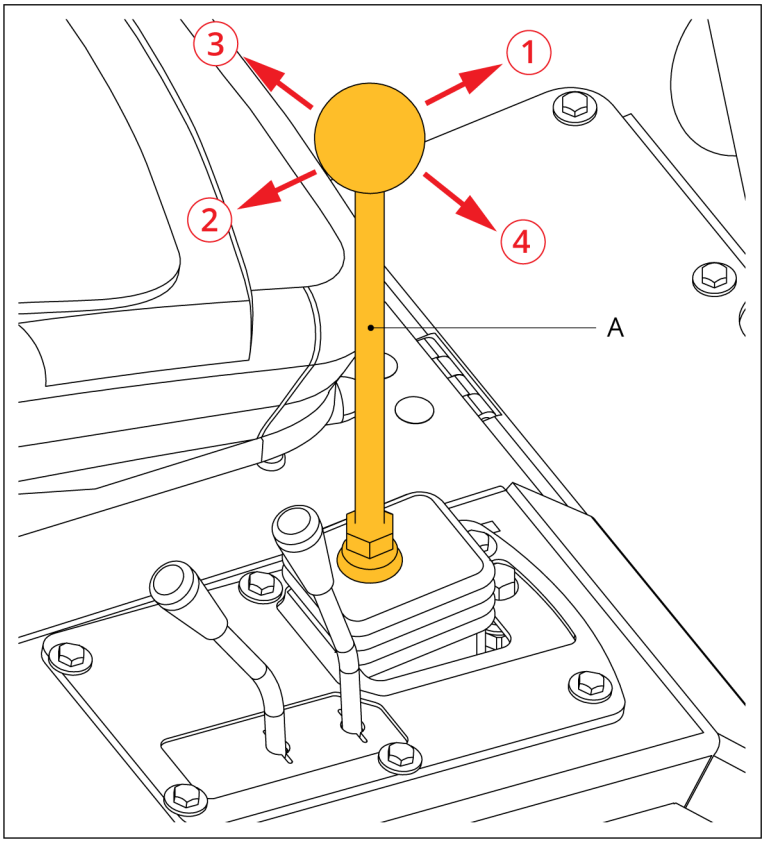


Figure 20: Operating the arm – standard version

1 Push the arm lever (A) forward (1) to lower the arm.

2 Pull the arm lever (A) backward (2) to raise the arm.

3 Pull the arm lever (A) to the left (3) to tilt the connector plate backward.

4 Push the arm lever (A) to the right (4) to tilt the connector plate forward.

6.5.2 Operating the arm – TE version

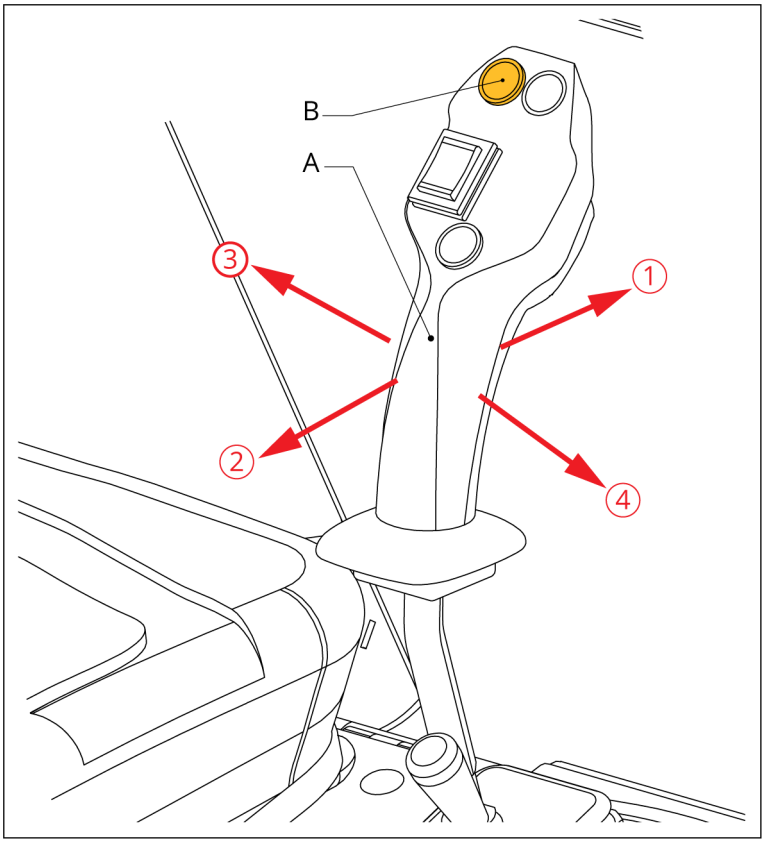


Figure 21: Operating the arm – TE version

	This version is also available as an option for other types. In that case, the telescope button will be non-functional.

1 Push the arm lever (A) forward (1) to lower the arm.

2 Pull the arm lever (A) backward (2) to raise the arm.

3 Pull the arm lever (A) to the left (3) to tilt the connector plate backward.

4 Push the arm lever (A) to the right (4) to tilt the connector plate forward.

5 Press and hold the telescope button (B) and push the arm lever backward (2) to extend the arm.

6 Press and hold the telescope button (B) and push the arm lever forward (1) to retract the arm.

6.5.3 Operating the arm – eHC version

	This version is also available as an option for other types. In that case, the telescope button will be non-functional.

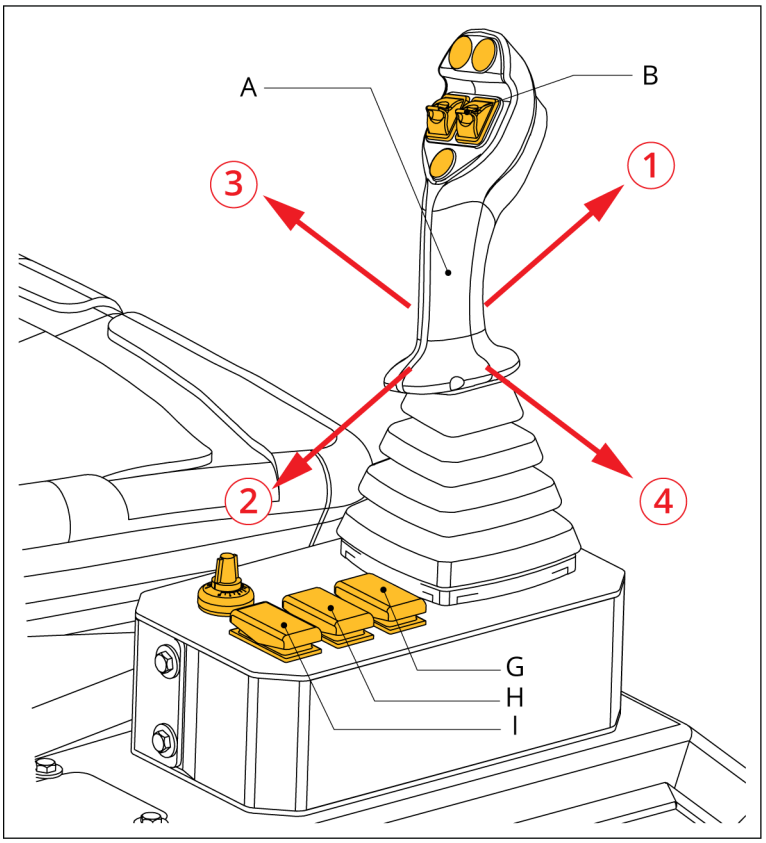


Figure 22: Operating the arm – eHC version

1 Push the arm lever (A) forward (1) to lower the arm.

2 Pull the arm lever (A) backward (2) to raise the arm.

3 Pull the arm lever (A) to the left (3) to tilt the connector plate backward.

4 Push the arm lever (A) to the right (4) to tilt the connector plate forward.

5 Move the telescope button (B) upward to extend the arm.

6 Move the telescope button (B) downward to retract the arm.

6.6 Coupling an attachment

6.6.1 Releasing the hydraulic pressure

1 Turn the key to the OFF position to switch the engine off.

2 Move the levers for the hydraulic assistance function to the left and right once.

6.6.2 Coupling with a manually operated locking pin

Start by releasing the hydraulic pressure. For more information, see Releasing the hydraulic pressure on page 36. In addition, ensure that the hydraulic fast attachments are clean.

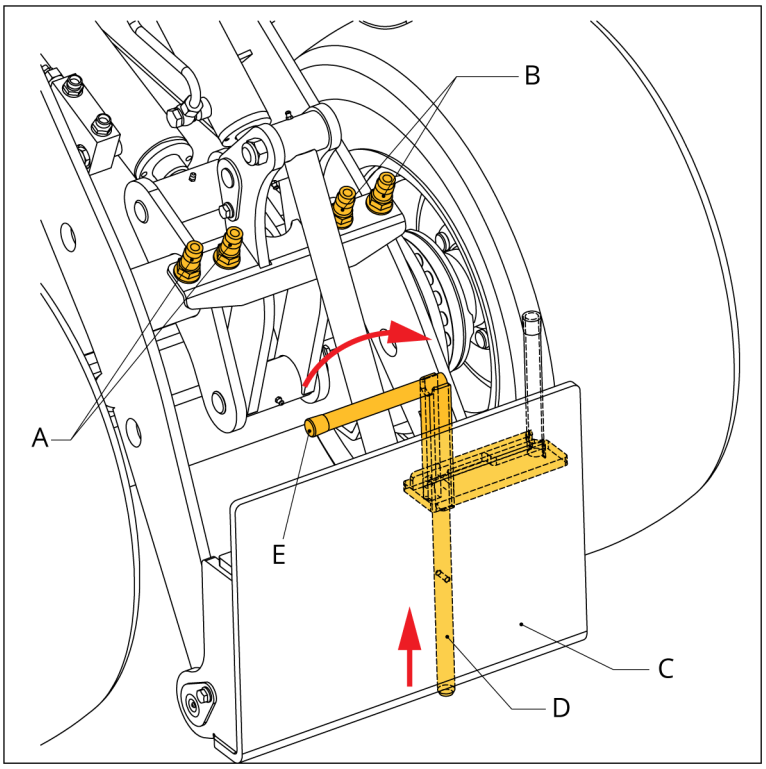


Figure 23: Coupling with a manually operated locking pin

1 Drive the machine up to the attachment that you wish to couple.

2 Lower the arm as low to the ground as possible.

3 Tilt the connector plate (C) forward.

4 Drive the machine forward until the connector plate makes contact with the attachment.

5 Raise the connector plate until the attachment is fully against the connector plate.

	You may need to tilt the connector plate backward slightly in this step.

6 Move the locking pin lever (E) to the lock position.

7 Check that the locking pin (D) has been ejected and that the locking pin has secured the attachment.

8 If necessary, connect the hydraulic hoses for the attachment to the connections for the hydraulic assistance functions (A) and (B).

	Warning! Ensure that the assistance functions are properly connected.

A hydraulically operated locking pin may also be installed on a connector plate with manually operated locking pin.

6.6.3 Coupling with a hydraulically operated locking pin

Start by releasing the hydraulic pressure. For more information, see Releasing the hydraulic pressure on page 36. In addition, ensure that the hydraulic fast attachments are clean.

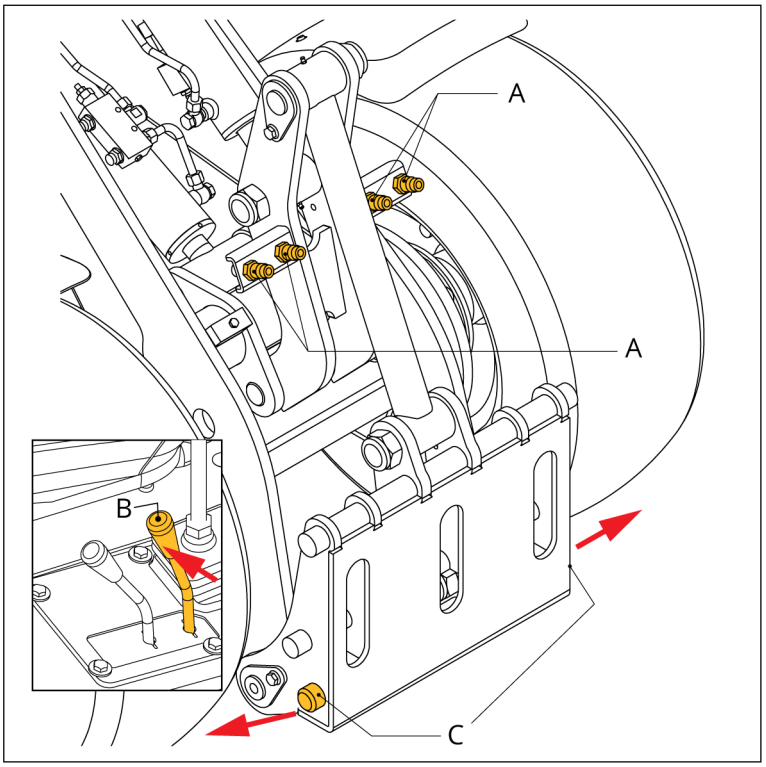


Figure 24: Coupling with a hydraulically operated locking pin

1 Drive the machine up to the attachment that you wish to couple.

2 Lower the arm as low to the ground as possible.

3 Tilt the connector plate (C) forward.

4 Drive the machine forward until the connector plate makes contact with the attachment.

5 Raise the connector plate until the attachment is fully against the connector plate.

You may need to tilt the connector plate backward slightly in this step.

6 Move the lever for the hydraulic assistance function (B) toward the machine until the locking pins (C) have extended.

7 Choose one of the following options based on your dashboard type:

- Press and hold the corresponding button on dashboard type 1 so that the locking pins temporarily retract.

For more information, see button B in Dashboard type 1 – standard version on page 14.

- Press and hold the corresponding button on dashboard type 2 so that the locking pins temporarily retract.

For more information, see button C in Dashboard type 2 on page 15.

8 Once the attachment has slid over the connector plate, release the button to allow the locking pins to extend.

9 Check that both locking pins have been ejected and have secured the attachment.

10 If necessary, connect the hydraulic hoses for the attachment to the connections for the hydraulic assistance functions (A).

6.7 Uncoupling an attachment

6.7.1 Uncoupling with a manually operated locking pin

Caution!
If the attachment is connected to the hydraulic fast attachments, disconnect the assistance function connections first before uncoupling the attachment from the machine.

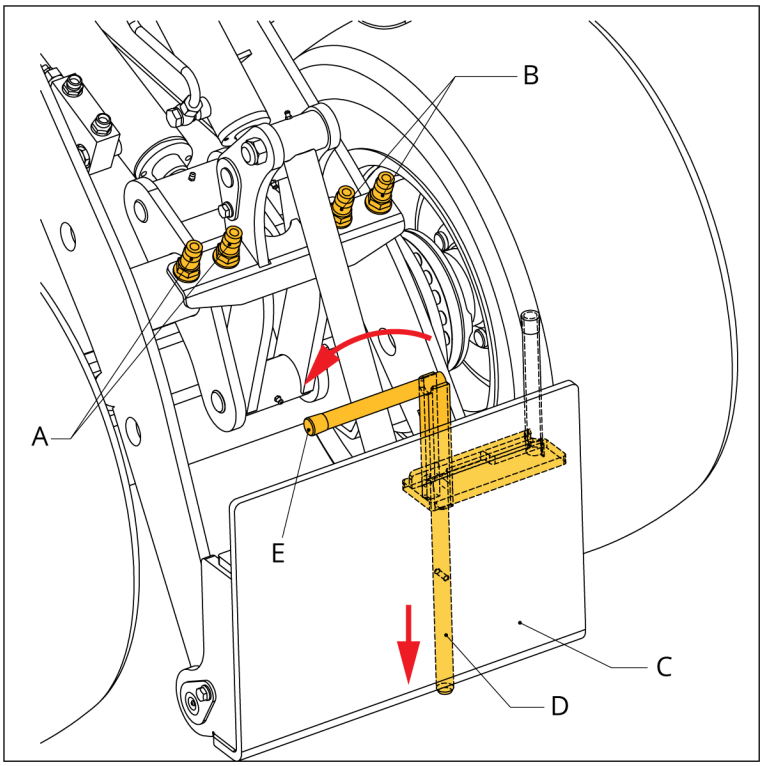


Figure 25: Uncoupling with a manually operated locking pin

1 Place the attachment on the ground.

2 If hydraulic assistance functions are connected, proceed as follows:

- Switch the machine off completely.
- Move the lever to operate the hydraulic assistance function that you wish to release back and forth to allow the pressure to escape from the hydraulic assistance functions.
- Release the hydraulic hoses for the attachment from the connections for the hydraulic assistance functions (A) and (B).
- Fit the dust covers to the connections for the assistance functions.

3 Move the locking pin lever (E) to the unlock position.

The locking pin (D) slides inward and unlocks the attachment.

4 Carefully tilt the connector plate (C) forward until the attachment is released from the connector plate.

6.7.2 Uncoupling with a hydraulically operated locking pin

	**Caution!** If the attachment is connected to the hydraulic fast attachments, disconnect the assistance function connections first before uncoupling the attachment from the machine.

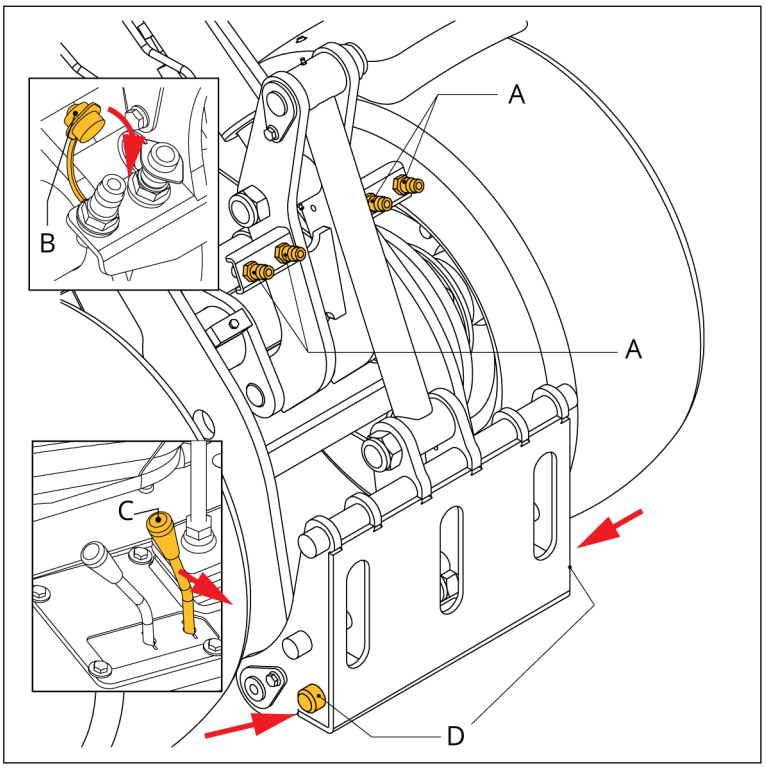


Figure 26: Uncoupling with a hydraulically operated locking pin

1 Place the attachment on the ground.

2 If hydraulic assistance functions are connected, proceed as follows:

- Switch the machine off completely.
- Move the lever to operate the hydraulic assistance function (C) that you wish to release back and forth to allow the pressure to escape from the hydraulic assistance functions.
- Release the hydraulic hoses for the attachment from the connections for the hydraulic assistance functions (A).
- Fit the dust covers to the connections for the assistance functions.

3 Push the lever for the hydraulic assistance function of the machine forward and at the same time, press on the Shurlock button until the locking pins (D) have retracted.

4 Release the lever for the hydraulic assistance function, and the Shurlock button.

5 Carefully tilt the connector plate forward until the attachment is released from the connector plate.

6.8 Checking the fuel tank

If you want to know how much fuel remains in the tank, there are two options.

6.8.1 Checking the fuel tank with dashboard type 1

For more information on the dashboard type that you have, see Dashboard on page 14.

1 Turn the ignition key to the OFF position to switch the engine off.

2 Allow the engine to cool down sufficiently.

3 Remove the tank cap.

4 Check whether there is still sufficient fuel in the fuel tank using the level rod provided.

	The level rod can be found at the front of the tank.

5 Fill the fuel tank if the fuel is nearly depleted.

For more information, see Filling the fuel tank on page 43.

6.8.2 Checking the fuel tank with dashboard type 2

For more information on the dashboard type that you have, see Dashboard on page 14.

1 Check the fuel indicator on your dashboard.

2 Fill the fuel tank if the fuel is nearly depleted.

For more information, see Filling the fuel tank on page 43.

6.9 Filling the fuel tank

	**Warning!** The fuel is flammable and may be hazardous. Exercise caution when handling fuel and fill in a well-ventilated area away from naked flames and sparks.
	**Warning!** Do not smoke while filling.
	**Caution!** The fuel tank must never be allowed to run dry. Should this happen, air may enter the fuel system. In that case, a recognized maintenance engineer must remove the air from the fuel system.
	**Warning!** Only use the correct fuel and do not mix with petrol or alcohol. Doing so could damage the engine or cause an explosion.
	For further information on the correct type of fuel, see Consumables on page 88.

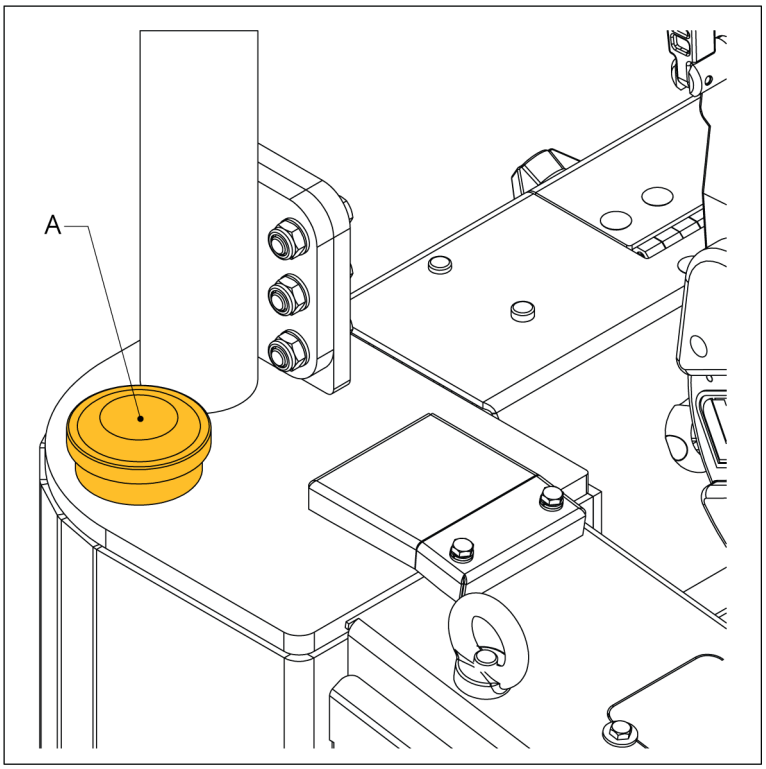


Figure 27: Fuel tank

1 Turn the ignition key to the OFF position to switch the engine off.

2 Allow the engine to cool down sufficiently.

3 Remove the tank cap (A).

4 Fill the fuel tank and refit the tank cap.

Caution!
Do not allow fuel to drip onto the machine. In the event of a spillage, clean it immediately.

6.10 Fitting counterweights

A minimum of two people are required to lift the counterweights. Each counterweight has a weight of more than 30 kg.

	Fit only genuine parts developed for Knikmops to the rear of the machine.

	Warning! People are not allowed to stand at the rear of the machine to act as counterweights.

6.10.1 Installing the first weight

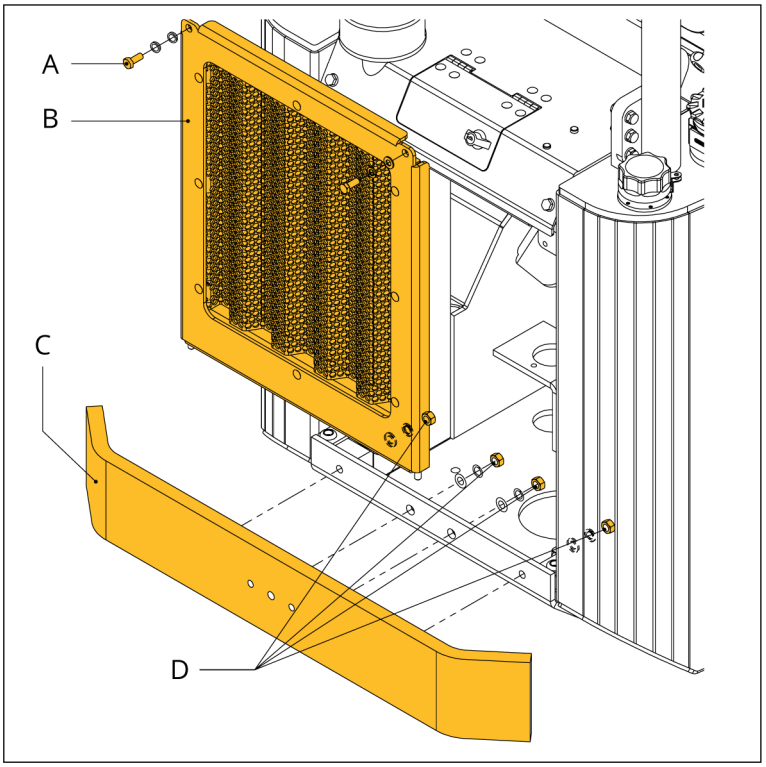


Figure 28: Installing the first weight

1 Remove the bolts (A).

2 Remove the panel (B).

3 Secure the counterweight (C) with the washers and nuts (D).

4 Secure the panel (B) with the bolts (A).

6.10.2 Installing the second and third weight

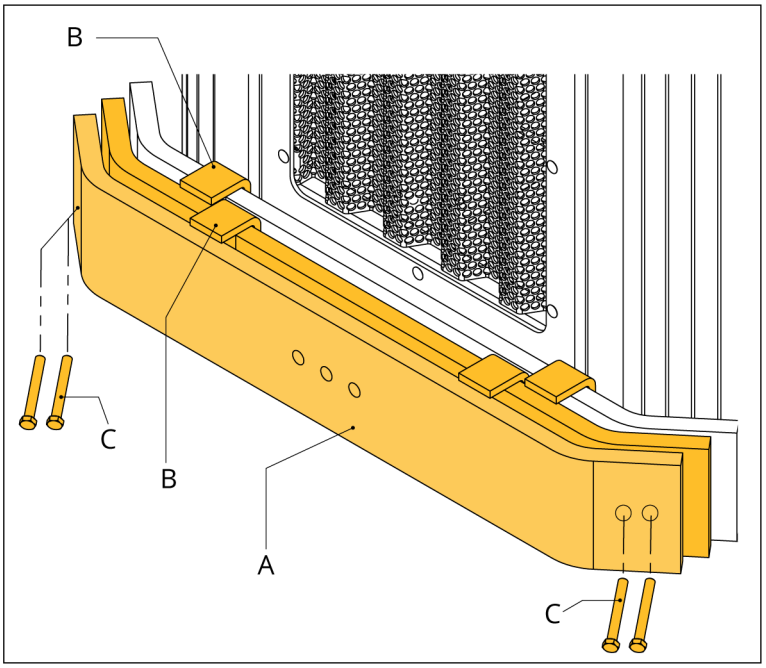


Figure 29: Installing the second and third weight

1 Suspend the counterweight (A) from the first counterweight using the hook (B).

2 Fit the counterweight with the locking bolts (C).

6.11 Installing and removing the articulation lock

The articulation lock prevents the machine from articulating in the event of a problem with the steering system.

6.11.1 Fitting the articulation lock

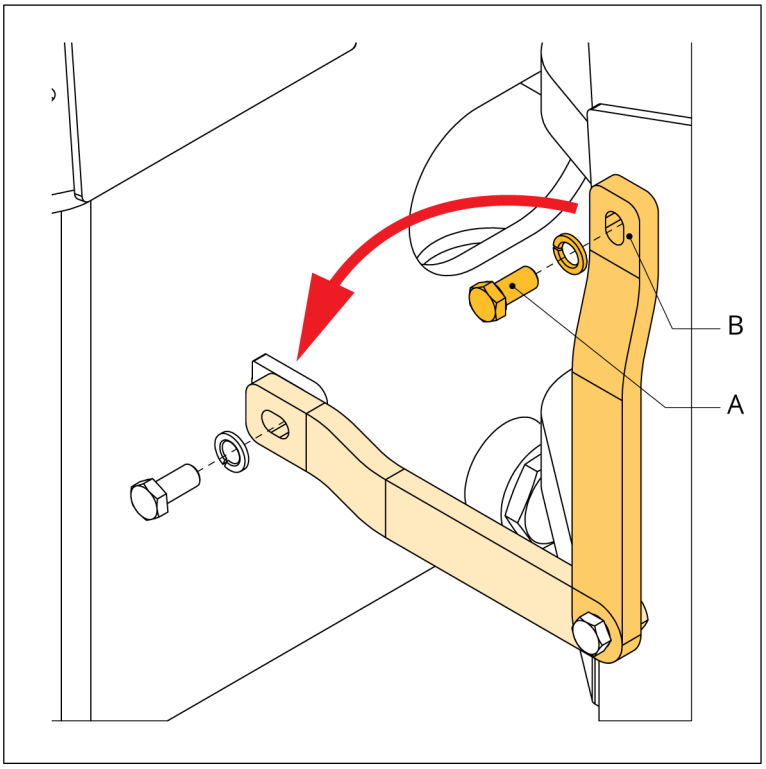


Figure 30: Fitting the articulation lock

1 Turn the ignition key to the OFF position to switch the engine off.

2 Remove the bolt (A).

3 Turn the articulation lock (B) toward the lug at the rear of the machine.

4 Use the bolt (A) to secure the articulation lock to the lug.

6.11.2 Removing the articulation lock

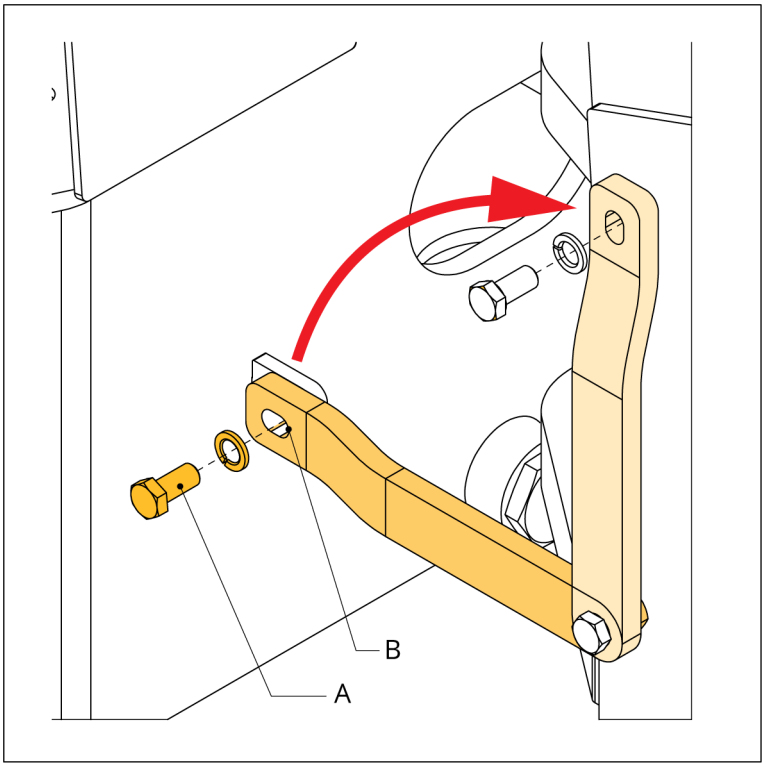


Figure 31: Removing the articulation lock

1 Remove the bolt (A).

2 Turn the articulation lock (B) toward the front of the machine.

3 Use the bolt (A) to refit the articulation lock to the machine.

6.12 Preheating

	The machine may be fitted with an optional preheating element.

	The figure in this section shows the cable connection for the KM 100.

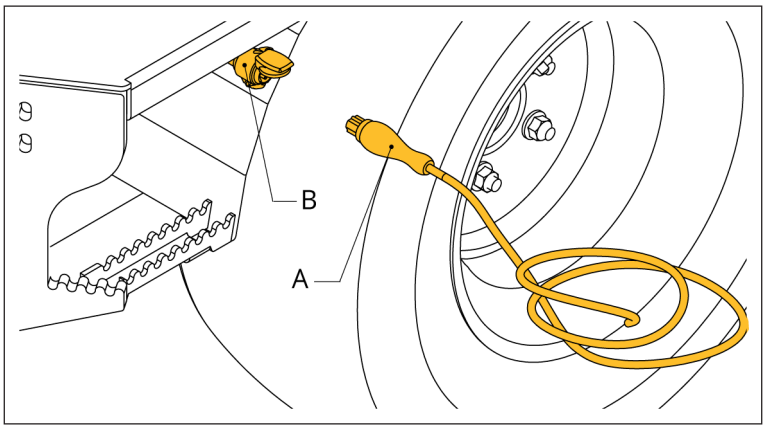


Figure 32: Connecting the cable to allow the machine to be preheated

1 Take the supplied cable (A) and connect the machine to the socket and the connection point (B) on the machine.

	Start preheating at least 1.5 hours before you wish to start the machine. In the event of very low temperatures (below -10°C/14°F), a longer preheating time may be required.

7. Attachment – bucket

7.1 Overview

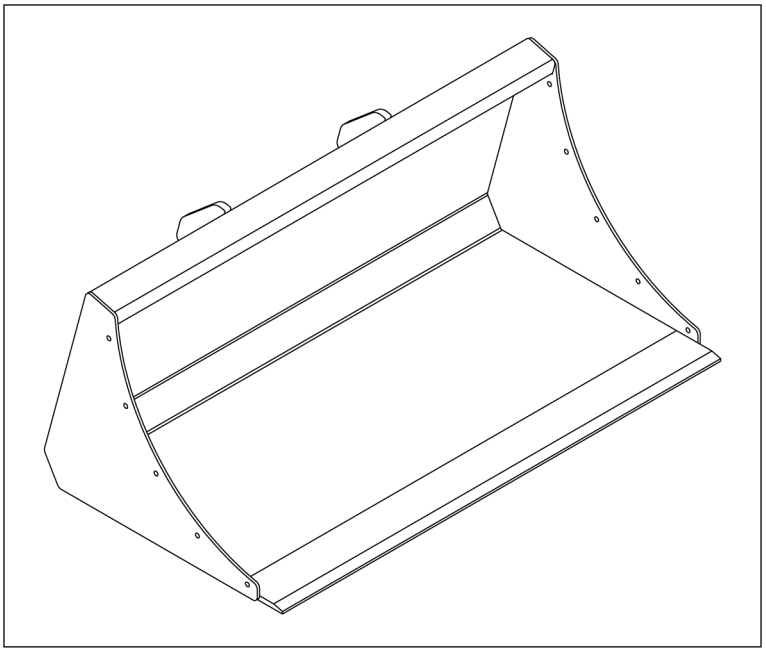


Figure 33: Example bucket

7.2 Commissioning

Before coupling the attachment to the machine, a number of items must be checked:

- The machine has sufficient capacity to be equipped with the attachment in all potential situations, e.g., when pivoting or rotating.
- The connection points on the machine are consistent with the connection points on the attachment.
- The requisite maintenance has been carried out.

For more information, see Maintaining the buckets and pallet fork on page 83.

7.3 Coupling

This section covers attachment coupling.

For more information, see Coupling an attachment on page 36.

7.4 Using

Pay close attention to the bucket while handling it. A bucket that is hanging too low may permanently damage the ground and the bucket.

Driving with the bucket raised high poses a risk of tipping.

Caution!
You must warn persons nearby that they must stay away from the area of the load.

Please familiarize yourself with the safety instructions before using the attachment. For more information, see Safety instructions on page 5.

7.5 Driving

When driving a machine with a bucket, pay attention to the following:

- The bucket must not be suspended too far above the ground. Bulky goods may fall from the bucket and impact the operator if the bucket is too far from the ground, resulting in serious injury.
- The bucket must not be suspended too close to the ground to prevent the risk of damage to the bucket due to contact with the ground.

7.6 Uncoupling

1 Uncouple the attachment from the machine.
For more information, see Uncoupling an attachment on page 39.

2 Place the attachment in a secure location.
For more information, see Storage on page 56.

8. Attachment – pallet fork

8.1 Overview

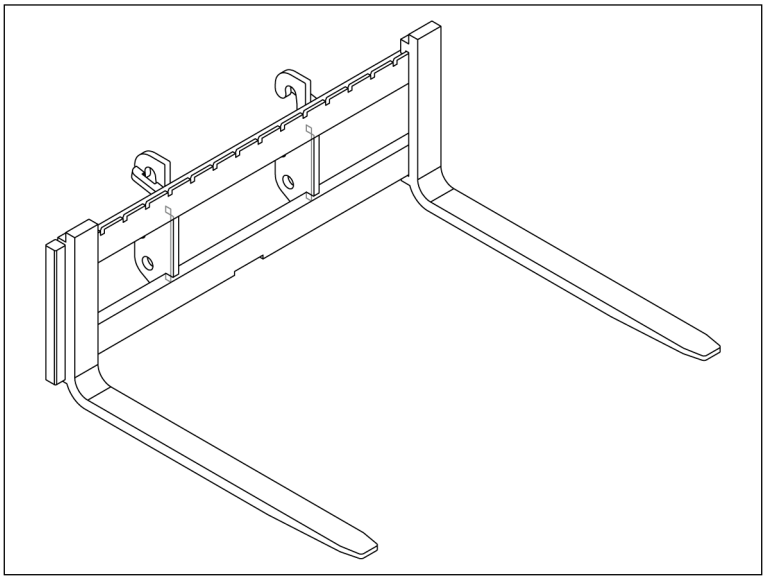


Figure 34: Example pallet fork

8.2 Commissioning

Before coupling the pallet fork to the machine, a number of items must be checked:

- The machine has sufficient capacity to be equipped with the attachment in all potential situations, e.g., when pivoting or rotating.
- The connection points on the machine are consistent with the connection points on the attachment.
- The requisite maintenance has been carried out.

For more information, see Maintaining the buckets and pallet fork on page 83.

8.3 Coupling

This section covers attachment coupling.

For more information, see Coupling an attachment on page 36.

8.4 Using

Please familiarize yourself with the safety instructions before using the attachment.

For more information, see Safety instructions on page 5.

8.5 Driving

1 Set the loading buckets to the correct width for the pallet you wish to transport:

   a Unlock the pallet fork by rotating the latch (see drawing) 90° upward.

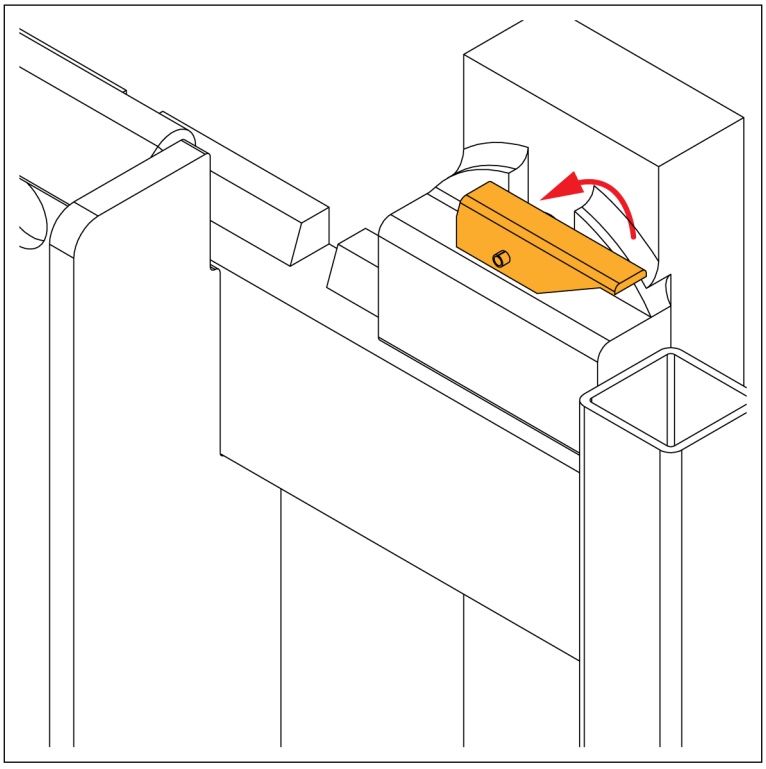


Figure 35: Adjusting the width of a pallet fork

   b Move the pallet forks to the desired width.

   c Lock the pallet fork by rotating the latch 90° downward.

2 Lower the loading buckets to around three centimeters above the ground.

   For more information, see Operating the arm on page 33.

3 Carefully drive forward with the machine until the loading buckets are in the pallet.

4 Raise the pallet fork.

   For more information, see Operating the arm on page 33.

Result: you can now drive with the pallet on the pallet fork.

	**Caution!** Ensure that the load is as close to the center of the pallets as possible so that you can raise the load as centrally as possible. This is better for the stability and load on the Knikmops.

	**Warning!** Driving with the load raised high poses a risk of tipping.

8.6 Uncoupling

1 Uncouple the attachment from the machine.

For more information, see Uncoupling an attachment on page 39.

2 Place the attachment in a secure location.

For more information, see Storage on page 56.

9. Transport and storage

9.1 Transportation – safety instructions

- Do not tow the machine.
- Do not expose the machine to external shocks, vibrations, or impact.
- Protect the machine from external influences, such as rain, splashing (salt) water, dirt, and dust.
- Use a mode of transportation, such as a trailer, that is capable of bearing the weight of the machine and the attachments. The weight of the complete attachment is stated on the type plate.
- If you move the attachment, prevent the attachment from tipping or falling. Use appropriate lifting equipment for this.
- Check that the mode of transportation is dry before loading the machine onto it.

9.2 Driving onto the mode of transportation

Warning!
Ensure that the ramps are clean and dry.

1 Drive the machine onto the mode of transportation to which you will secure the machine for transportation in reverse.

2 Place the arm as close to the floor of the mode of transportation as possible.

3 Stop the machine.

4 Pull the parking brake upward.

5 Ensure that the machine is stable.

6 Place chocks around the front and rear wheels.

7 Lock the machine with tension straps that meet the legal requirements, and apply the handbrake.

9.3 Lifting the machine and attachments

Before you begin: Ensure that the machine is straight and not articulated.

Caution!
You must use proper hoisting equipment to move the machine or attachment. Beware of the risk of the machine and attachments tilting or falling.

1 Switch the machine off completely.

2 Always fit the articulation lock if there is a problem with the steering system.

For more information, see Fitting the articulation lock on page 47.

3 Attach the lifting equipment to the lifting eyelets.

	**Caution!** The lifting equipment must not make contact with the hydraulic control.

	**Caution!** The lifting chains or straps must all be of the same length so that the machine remains horizontal during lifting.

4 Raise the machine.

5 Place the machine on a mode of transportation or in a storage location.

6 Remove the lifting equipment.

7 Remove the articulation lock.

For more information, see Removing the articulation lock on page 48.

9.4 Storage

If the machine is temporarily out of use, park the machine in a location that is protected from the weather.

The "bucket" attachment must always be stored horizontally and stable. Ensure that the attachments cannot tip or fall over. Support the attachments, if necessary.

10. Maintaining the machine

10.1 Daily maintenance

The operator of the machine or someone with an equivalent level of training may carry out daily maintenance.

Warning!
Do not touch hot parts of the machine, such as the engine, exhaust, and hydraulic system.

If you notice that something is wrong with a component, look for a solution promptly. Where specified, the operator may resolve the problem. Contact a recognized maintenance engineer for a resolution to other problems.

1 Lubricate the hinge points of the machine.

For more information, see Lubricating the hinge points on page 68.

2 Check that all requirements from the maintenance table have been satisfied with the machine switched off.

For more information, see Maintenance table – maintenance of machine when switched off on page 58.

3 Check that all requirements from the maintenance table have been satisfied with the machine switched on.

For more information, see Maintenance table – maintenance of machine when switched on on page 59.

4 Check that all requirements from the maintenance table have been satisfied in terms of periodic maintenance.

For more information, see Periodic maintenance (accredited maintenance engineer) on page 59.

10.2 Maintenance table – maintenance of machine when switched off

Machine part	Procedure	Rejection criterion	Action on rejection
Tires	Visually inspect for damage or sharp objects on in the tires.	Damage or sharp objects on in the tires.	Contact an accredited maintenance engineer.
	Check the tire pressure.	Tire pressure is outside of the specification on the tires.	Adjust the tire pressure to 1.5 bar.
Wiring	Visually inspect for damage to the wires.	Damage to the wires.	Contact an accredited maintenance engineer.
Fuel filter	Check for water in the filter.	There is water in the filter.	Contact an accredited maintenance engineer.
Fuel lines.	Check for cracks and leaks.	There are cracks in the lines or fuel is leaking.	Contact an accredited maintenance engineer.
Hydraulic fluid	Check the level. For more information, see Checking/topping up the hydraulic fluid on page 75.	The hydraulic fluid level is not OK.	Adjust the hydraulic fluid level. For more information, see Checking/topping up the hydraulic fluid on page 75.
Coolant	Check the level. For more information, see Checking/topping up the coolant on page 74.	The coolant level is not OK.	Adjust the coolant level. For more information, see Checking/topping up the coolant on page 74.
Engine cooling	Check for leaks.	There is a leak in the system.	See the operating instructions for the diesel engine.
Engine oil	Check the level. For more information, see Checking/topping up the engine oil on page 71.	The engine oil level is not OK.	Adjust the engine oil level. For more information, see Checking/topping up the engine oil on page 71.
Parking brake	Check operation. For more information, see Checking the parking brake on page 67.	The parking brake does not work properly.	Contact an accredited maintenance engineer.
Pins on the connector plate	Lubricate the pins.	-	For more information, see Lubricating via the lubrication nipples on page 70.
Cyclone filter (if present)	Check for soiling. For more information, see Cleaning the cyclone filter on page 64.	The cyclone filter is soiled on the inside.	Replace the cyclone filter.

Machine part	Procedure	Rejection criterion	Action on rejection
Fan belt	Check the tension. For more information, see Checking the fan belt tension on page 66.	The belt moves more than 9 mm or less than 7 mm.	Contact an accredited maintenance engineer.
Safety stickers	Check legibility.	The sticker is illegible.	Replace the sticker(s).
Complete machine	Visually inspect for damage.	Visible damage.	Contact an accredited maintenance engineer.
	Visually inspect for fluid leaks.	Leaks of hydraulic fluid, fuel, coolant, or battery acid.	Contact an accredited maintenance engineer.
Water separator	Check the water separator.	The filter in the water separator is saturated.	Replace the water separator.

10.3 Maintenance table - maintenance of machine when switched on

Machine part	Procedure	Rejection criterion	Action on rejection
Controls	Test all controls – levers, steering wheel, and pedals.	Not all controls work correctly.	Contact an accredited maintenance engineer.
Arm (TE version)	Extend and retract the arm.	The arm does not slide in and out properly.	Contact an accredited maintenance engineer.
Lamps on the dashboard	All lamps on the dashboard must light up briefly, with the exception of the engine temperature lamp, when the machine is started.	Not all lamps on the dashboard come on or go off again.	Contact an accredited maintenance engineer.
Lighting (if present)	Switch the lighting on.	The lighting does not switch on.	Contact an accredited maintenance engineer.
Interchangeable equipment	Test the attachment's functioning.	The attachment does not work correctly.	Contact an accredited maintenance engineer.

10.4 Periodic maintenance (accredited maintenance engineer)

An accredited maintenance engineer must carry out periodic maintenance on the machine. The table below lists the frequency at which certain maintenance activities must be carried out.

Caution!
Lubricate the machine after maintenance

Frequency	Activity	Procedure
First 50 hours	Replace the engine oil.	See the operating instructions for the diesel engine.
	Replace the engine oil filter.	See the operating instructions for the diesel engine.
	Drain the water separator.	See the operating instructions for the diesel engine.
	Check and, if necessary, clean the air filter.	Open the housing and check the air filter for soiling. If the air filter is soiled, it must be cleaned.
Every 150 hours	Lubricate the other lubrication points.	For more information, see Location of other lubrication points on page 70.
	Check the fuel tank for soiling, rust formation, and damage (inside and outside).	-
	Check the radiator lines and clamps.	See the operating instructions for the diesel engine.
	Check the air inlet.	See the operating instructions for the diesel engine.
Every 250 hours	Replace the engine oil	See the operating instructions for the diesel engine.
	Replace the engine oil filter	See the operating instructions for the diesel engine.
	Replace the air filter.	Open the housing and check the air filter for soiling. If the air filter is soiled, it must be replaced. For more information, see Replacing the air filter on page 77.
Every 450 hours	Clean the inside of the radiator.	See the operating instructions for the diesel engine.
Every 500 hours	Replace the fuel filter.	See the operating instructions for the diesel engine.
	Clean the water separator.	See the operating instructions for the diesel engine.
	Replace the air filter.	For more information, see Replacing the air filter on page 77.
First 600 hours	Replace the hydraulic fluid.	For more information, see Replacing hydraulic fluid filters on page 78.
Every 600 hours	Replace the hydraulic fluid filter.	For more information, see Replacing hydraulic fluid filters on page 78.
Every 750 hours	Check the valve play.	See the operating instructions for the diesel engine.

Frequency	Activity	Procedure
Every 1,200 hours	Replace the hydraulic fluid	For more information, see Replacing hydraulic fluid filters on page 78.
	Replace the fine filter.	For more information, see Replacing the air and fine filter on page 78.
	Replace the return filter.	For more information, see Replacing the return filter on page 80.
Every 1,500 hours	Check the injector pressure.	See the operating instructions for the diesel engine.
Every 3,000 hours	Check the turbo (if present).	See the operating instructions for the diesel engine.
	Check the injection pump.	See the operating instructions for the diesel engine.
	Check the injection timer.	See the operating instructions for the diesel engine.
Every 3,500 hours	Check the injection pressure.	See the operating instructions for the diesel engine.
Every year	Check for damage to electrical wires and for loose connectors.	-
Every two years	Replace the coolant.	See the operating instructions for the diesel engine.

10.5 Opening the engine compartment

	Warning! Do not touch hot engine parts. The engine compartment may only be opened when the engine is stationary.

	The procedure for opening the engine compartment depends on the type of machine. Check the machine type and select the correct procedure.

10.5.1 Opening the engine compartment – type 1

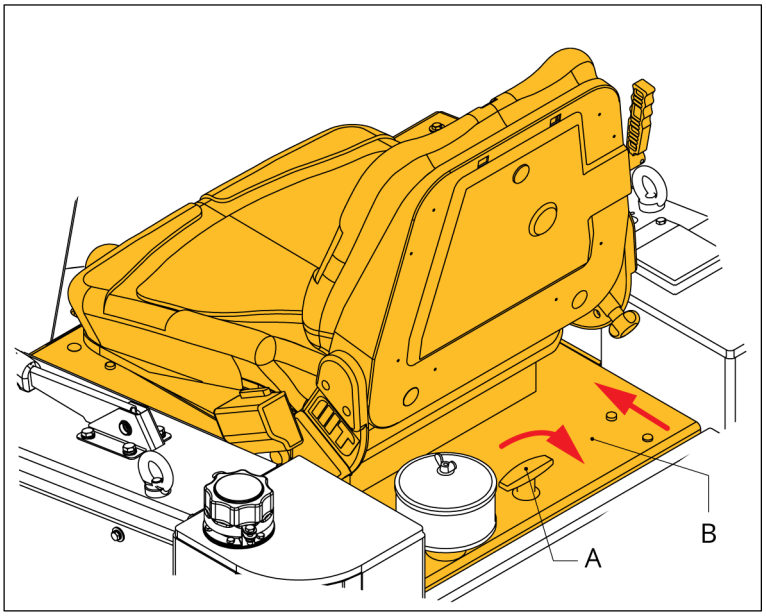


Figure 36: Opening the engine compartment – type 1 standard version

1 Set the lever (A) to the horizontal position.

2 Open the cover, including the operator's seat (B).

10.5.2 Opening the engine compartment - type 2

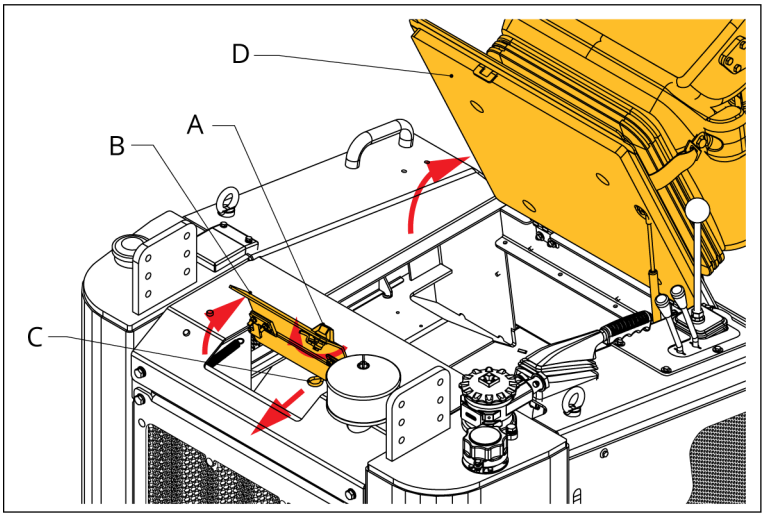


Figure 37: Opening the engine compartment – type 2 TE version

1 Set the lever (A) to the horizontal position.

2 Open the cover (B).

3 Pull the lever (C) and open the cover, including the operator's seat (D).

10.5.3 Opening the engine compartment - type 3

	Engine compartment type 3 is an obsolete model and is no longer in production.

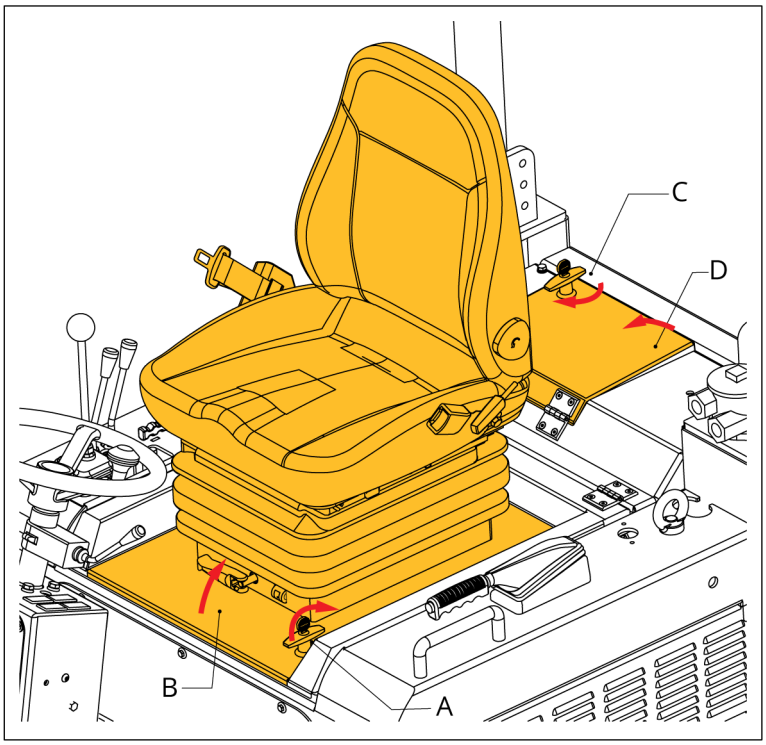


Figure 38: Opening the engine compartment – type 3 eHC version

1 Set the lever (A) to the horizontal position.

2 Open the cover, including the operator's seat (B).

3 Set the lever (C) to the horizontal position.

4 Open the cover (D).

10.6 Cleaning the cyclone filter

The cyclone filter is located at the rear of the machine and filters coarse dust from the air before it reaches the air filter.

	Not all machines have a cyclone filter.

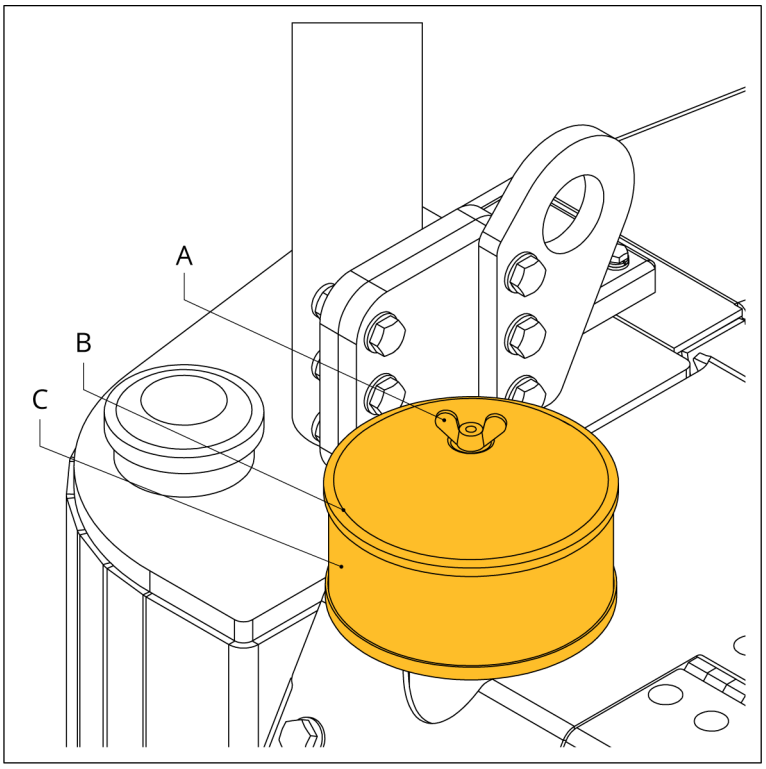


Figure 39: Cyclone filter

1 Undo the wing nut (A) on the cover.

2 Remove the wing nut, the cover (B), and the filter housing (C) in that order.

3 Clean the filter housing with compressed-air or water.

	If you clean the filter housing with water, ensure that the filter housing is completely dry after cleaning.

4 Fit the filter housing, cover, and wing nut in that order.

5 Tighten the wing nut.

10.7 Checking the fan belt tension

Switch the machine off to check the tension of the belt. Allow the machine to cool sufficiently before starting.

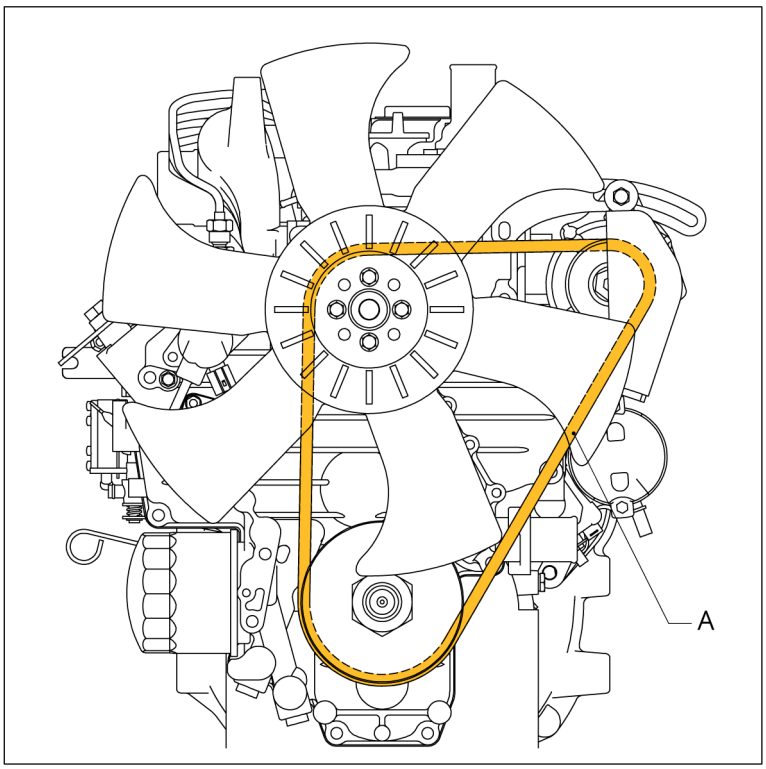


Figure 40: Kubota fan belt tension

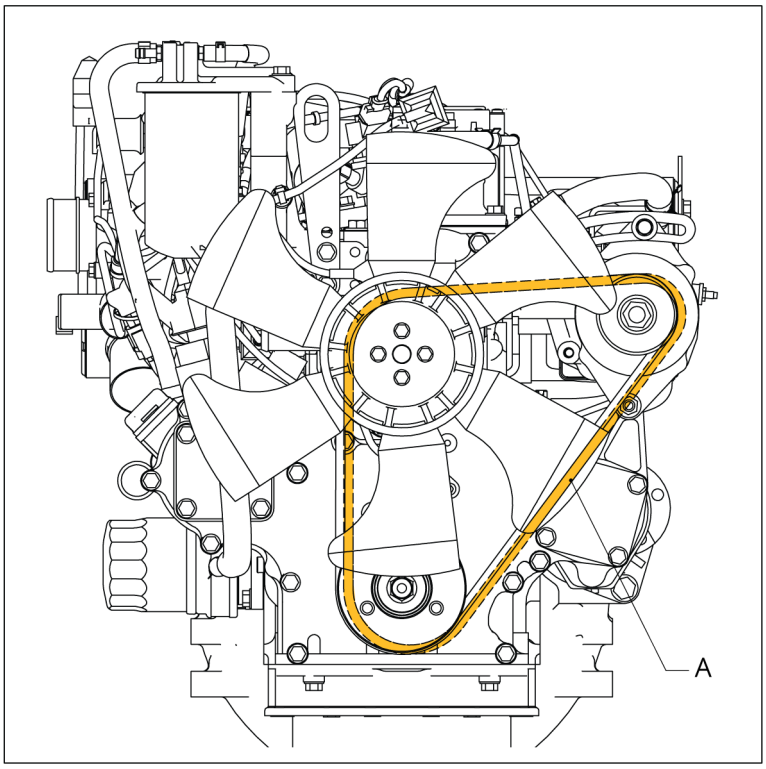


Figure 41: Yanmar fan belt tension

1 Open the engine compartment.

For more information, see Opening the engine compartment on page 62.

2 Use your thumb to press on the belt (A) at the longest span.

	There should be between 7 and 9 mm of play. If the belt moves more or less than the permitted play, contact a recognized maintenance engineer.

3 Close and lock the engine compartment.

10.8 Checking the parking brake

1 Pull the handbrake upwards as far as it will go.

2 Attempt to move forward and backward.

	The machine should not move. If the machine does move, contact a recognized maintenance engineer.

10.9 Lubricating the hinge points

10.9.1 Location of the lubrication nipples – standard version

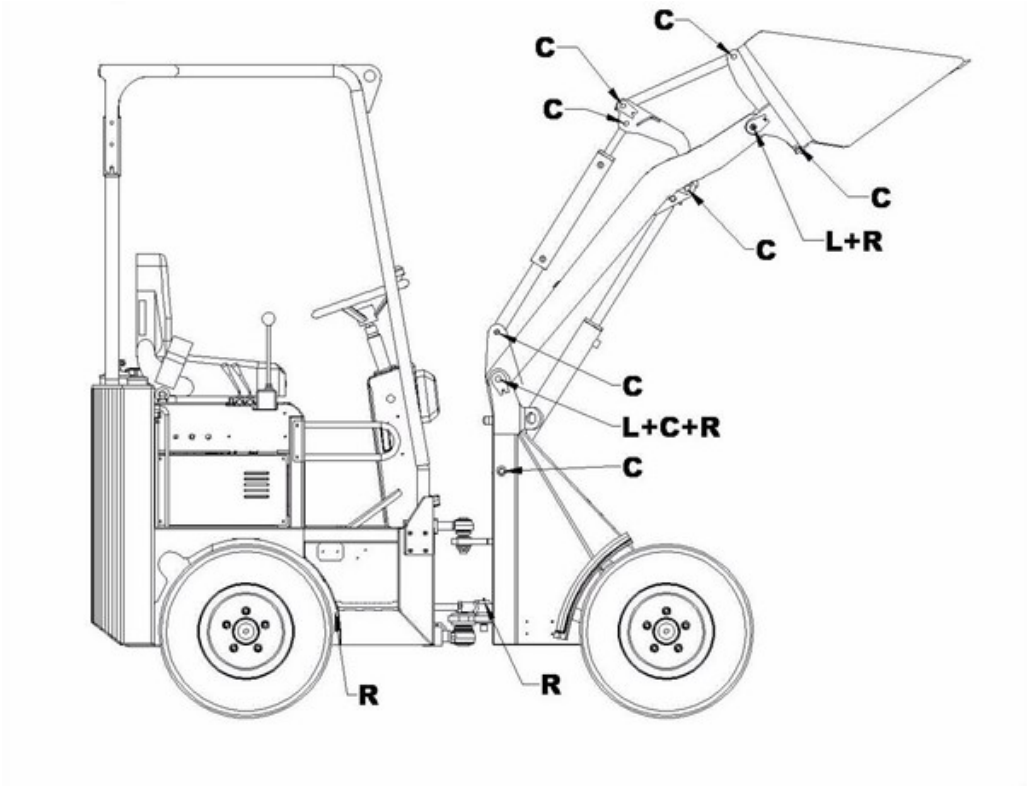


Figure 42: Location of the lubrication nipples – standard version

C	Lubrication nipple, center	L	Lubrication nipple, left
R	Lubrication nipple, right		

10.9.2 Location of the lubrication nipples – TE version

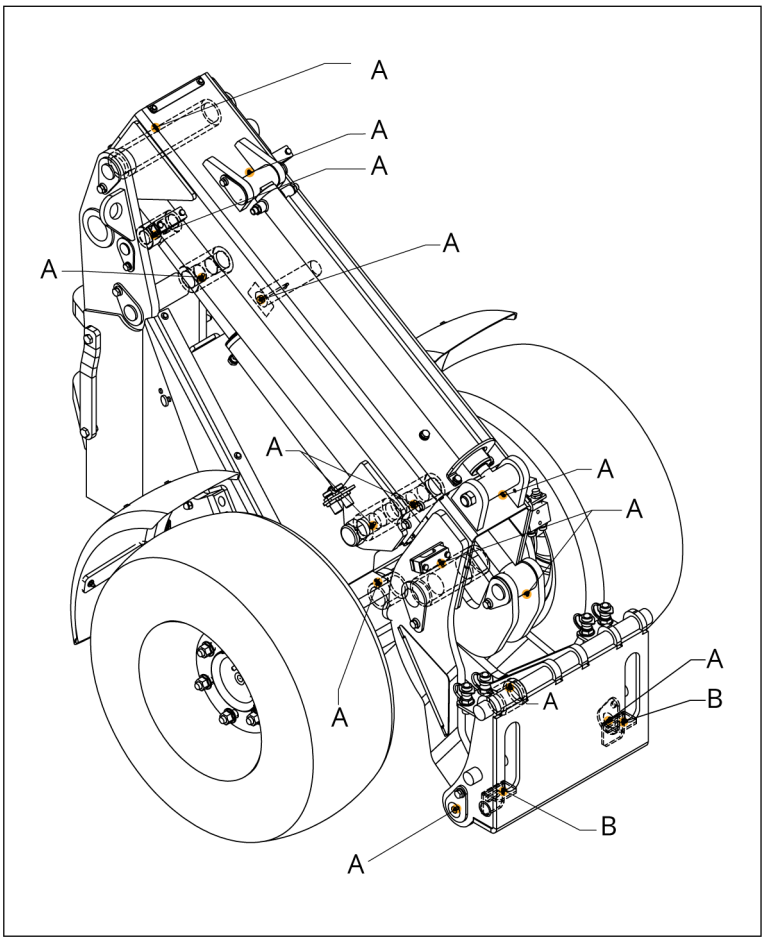


Figure 43: Location of the lubrication nipples – TE and eHC version

A	Lubrication nipple	B	Lubrication nipple for a horizontal, hydraulically operated locking pin.

10.9.3 Location of other lubrication points

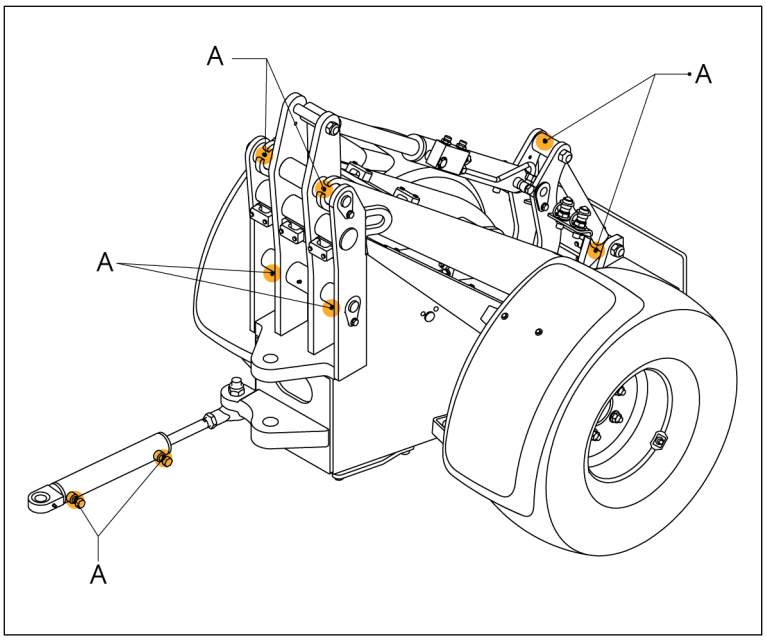


Figure 44: Location of other lubrication points

A Lubrication nipple

10.9.4 Lubricating via the lubrication nipples

Before you begin: Ensure that you have a grease gun to hand.

1 Attach the grease gun to a lubricating nipple.

2 Inject lubricating grease using the grease gun until it begins to emerge from the bearing.

3 Remove the grease gun from the lubrication nipple.

4 Remove excess grease.

5 Repeat for all points that you wish to lubricate.

	Some grease may be released after lubrication, which is perfectly normal.

10.10 Checking/topping up the engine oil

10.10.1 Checking the engine oil level

Warning!
The engine must be off while carrying out this procedure. Allow the engine to cool down sufficiently.

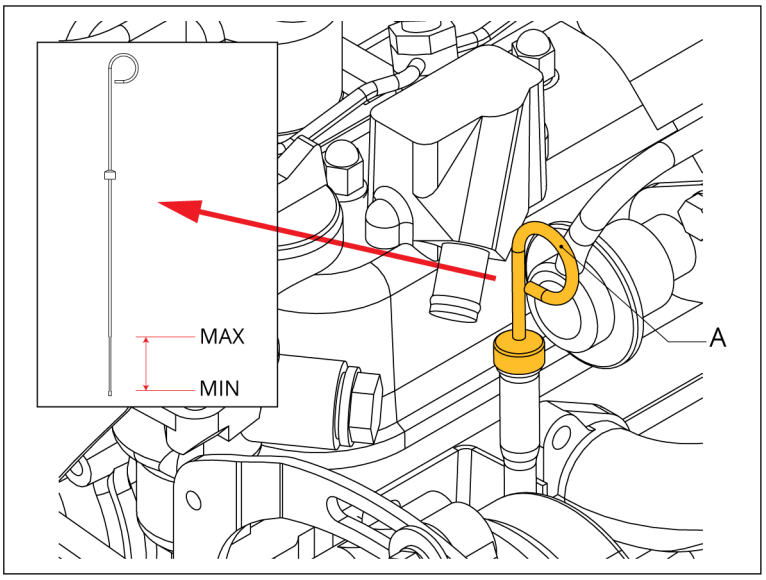


Figure 45: Checking the engine oil level – Kubota

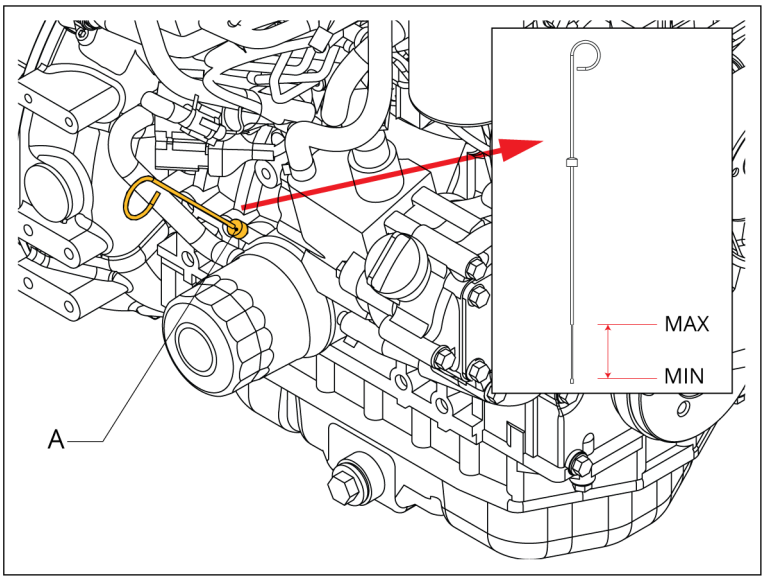


Figure 46: Checking the engine oil level – Yanmar

1 Open the engine compartment.

For more information, see Opening the engine compartment on page 62.

2 Remove the engine oil dipstick (A) from the holder.

3 Clean the engine oil dipstick and insert it back into the holder.

4 Remove the engine oil dipstick from the holder again.

5 Verify that the engine oil level is between the **MIN** and **MAX** markings.

If the engine oil level is too low, follow the steps in Topping up the engine oil on page 72.

6 Insert the engine oil dipstick back into the holder.

7 Close and lock the engine compartment.

10.10.2 Topping up the engine oil

Warning!
The engine must be off while carrying out this procedure. Allow the engine to cool down sufficiently.

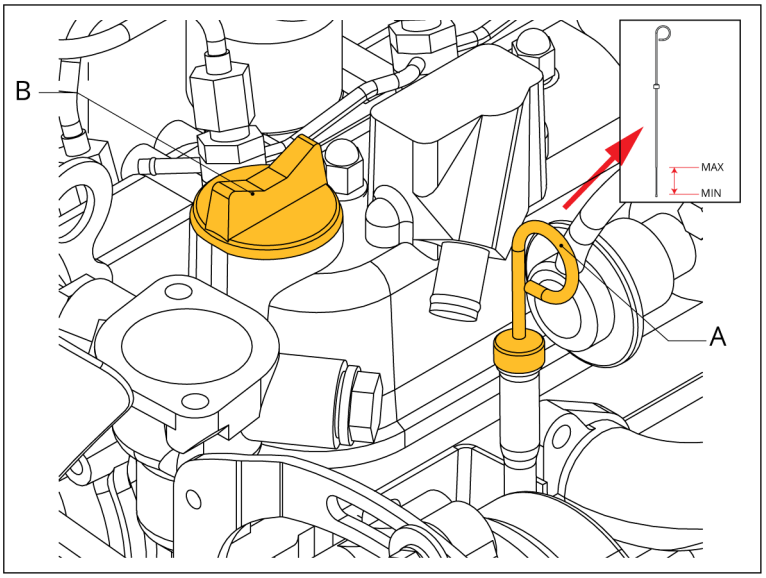


Figure 47: Topping up Kubota engine oil

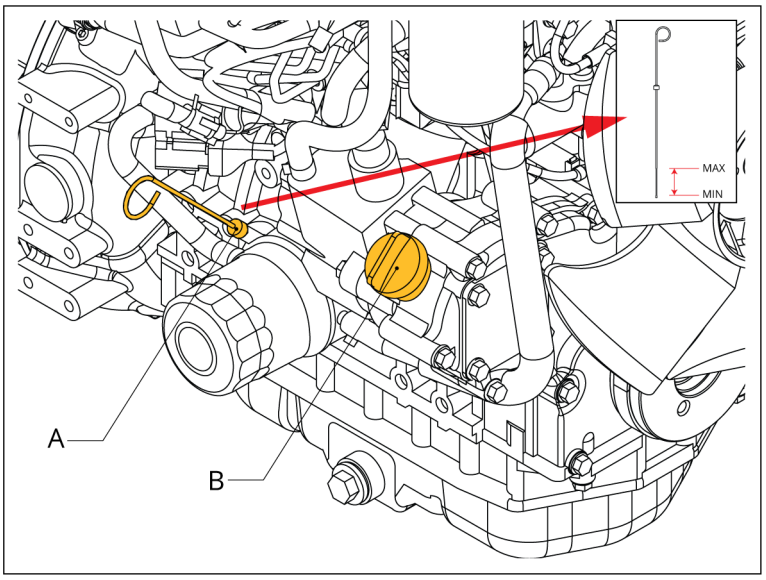


Figure 48: Topping up Yanmar engine oil

1 Open the engine compartment.

   For more information, see Opening the engine compartment on page 62.

2 Remove the engine oil cap (B).

3 Top up the oil tank and wait for five minutes.

   For the correct type of engine oil, see Consumables on page 88.

4 Remove the engine oil dipstick (A) from the holder.

5 Clean the engine oil dipstick and insert it back into the holder.

6 Remove the engine oil dipstick from the holder again.

7 Verify that the engine oil level is between the **MIN** and **MAX** markings.

8 Insert the engine oil dipstick back into the holder.

9 Close the engine oil cap if the engine oil level is OK. If the engine oil level is not OK, repeat steps 3 to 8.

10 Close and lock the engine compartment.

10.11 Checking/topping up the coolant

10.11.1 Checking the coolant level

Warning!
The engine must be off while carrying out this procedure. Allow the engine to cool down sufficiently.

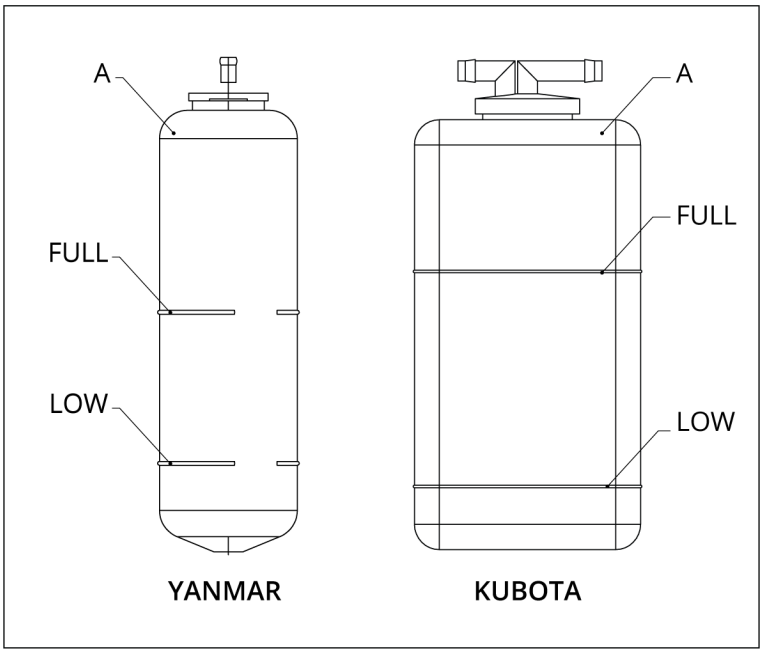


Figure 49: Checking the coolant level – Yanmar and Kubota

1 Open the engine compartment.

For more information, see Opening the engine compartment on page 62.

2 Check whether there is sufficient coolant in the reservoir (A).

The coolant level must be between **FULL** and **LOW**.

3 If the level is too low, top up the coolant.

For more information, see Topping up the coolant on page 74.

4 Close and lock the engine compartment.

10.11.2 Topping up the coolant

Warning!
The engine must be off while carrying out this procedure. Allow the engine to cool down sufficiently.

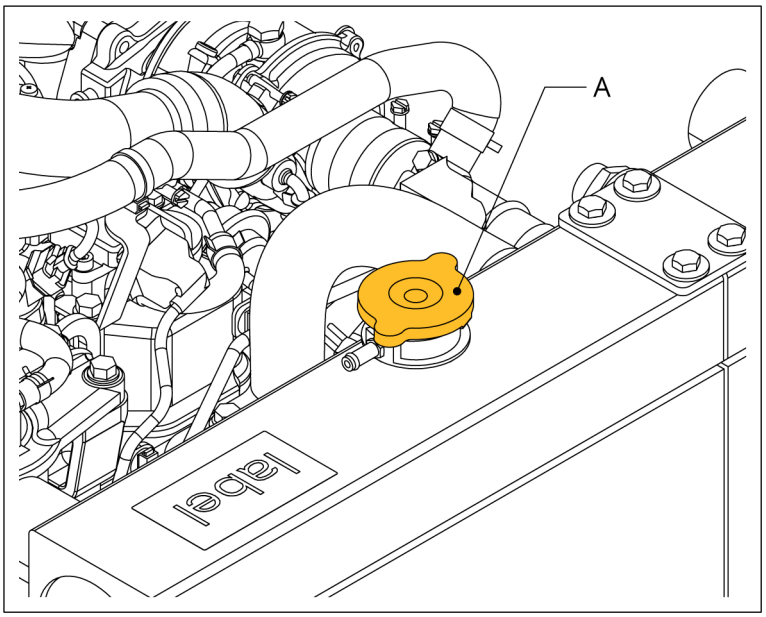


Figure 50: Topping up the coolant

1 Open the engine compartment.

For more information, see Opening the engine compartment on page 62.

2 Remove the cap (A) from the radiator.

	Allow excess pressure to escape before fully removing the cap.

3 Top up the coolant to the FULL mark on the reservoir.

For the correct type of coolant, see Consumables on page 88.

4 Screw the cap back onto the radiator.

5 Close and lock the engine compartment.

10.12 Checking/topping up the hydraulic fluid

Before starting – the temperature of the hydraulic fluid must be approx. 20°C, the hydraulic attachment must be in the lowermost position, and all other cylinders must be retracted.

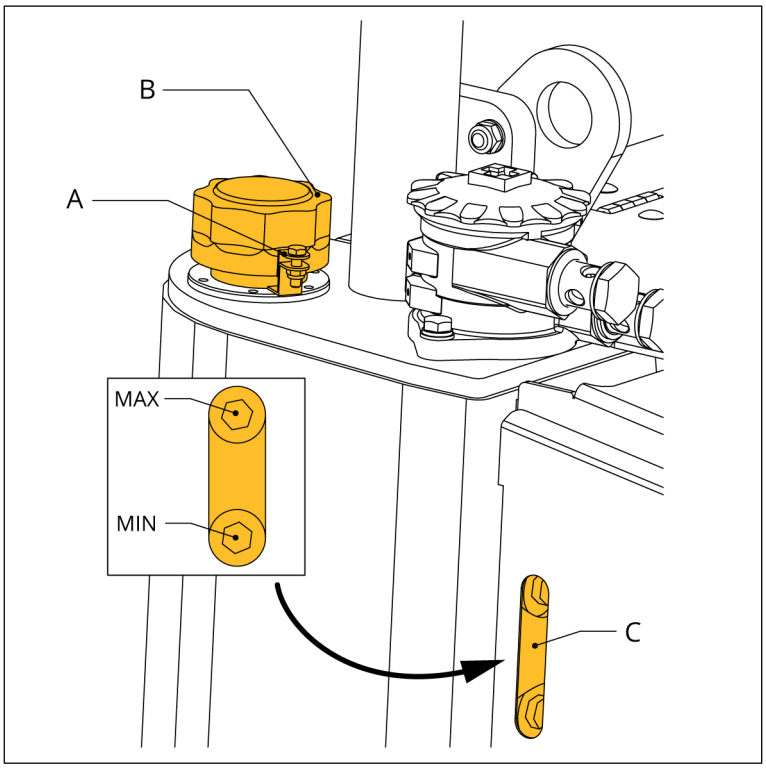


Figure 51: Checking/topping up the hydraulic fluid

10.12.1 Checking the hydraulic fluid level

1 Verify that the fluid level in the sight glass (C) is between the MIN and MAX markings.

2 If the fluid level is too low, top up the hydraulic fluid.

For more information, see Topping up the hydraulic fluid on page 76.

3 Contact a recognized maintenance engineer if the fluid level is too low.

10.12.2 Topping up the hydraulic fluid

1 Remove the bolt and nut (A).

2 Unscrew the filler cap (B).

3 Top up the tank.

	For the correct type of hydraulic fluid, see Consumables on page 88.

	Caution! Exercise caution when handling hydraulic fluid.

4 Screw the filler cap (B) back on.

5 Secure the filler cap with the bolt and nut (A).

10.13 Replacing the air filter

	Please contact the manufacturer for the correct replacement parts.

	Only an accredited maintenance engineer may carry out this procedure.

	It is recommended that the air filter be replaced whenever maintenance is carried out.

10.13.1 Removing the cover

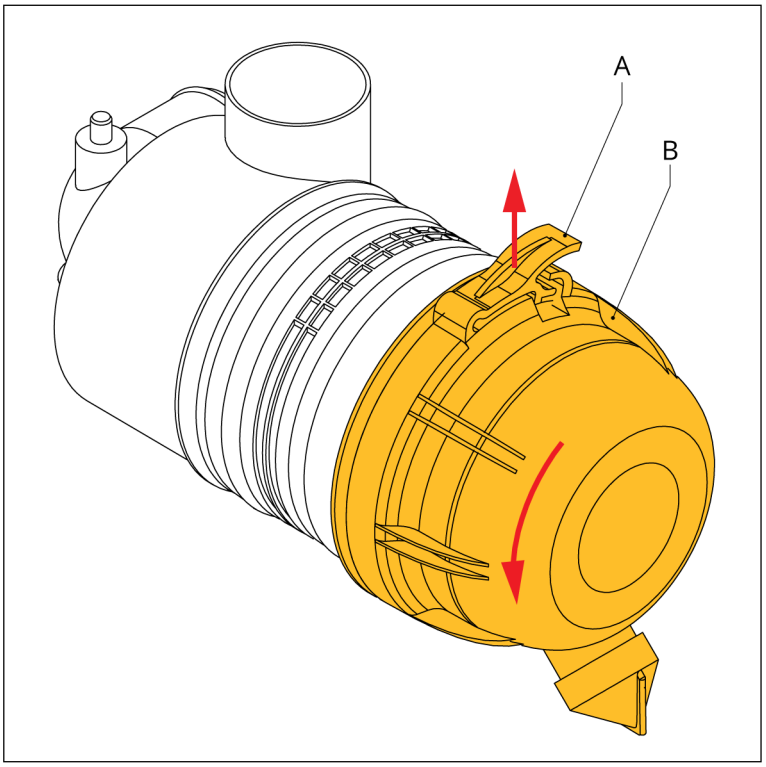


Figure 52: Removing the cover from the air filter

1 Open the engine compartment.

For more information, see Opening the engine compartment on page 62.

2 Press the retaining clip (A) upward and turn the cover (B) counter-clockwise to remove it.

10.13.2 Replacing the air and fine filter

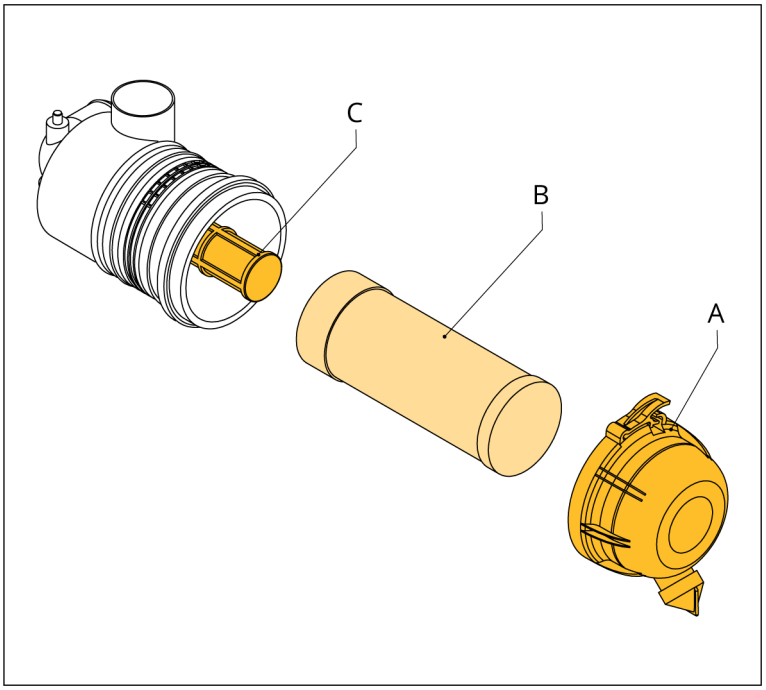


Figure 53: Replacing the air filter

1 Remove the old air filter (B).
2 Remove the old fine filter (C).
3 Fit the new fine filter (C).
4 Fit the new air filter (B).
5 Replace the cover (A) and turn it clockwise until the retaining clip engages.
6 Close and lock the engine compartment.

10.14 Replacing hydraulic fluid filters

	Please contact the manufacturer for the correct replacement parts.

	Only an accredited maintenance engineer may carry out this procedure.

10.14.1 Replacing the suction filter

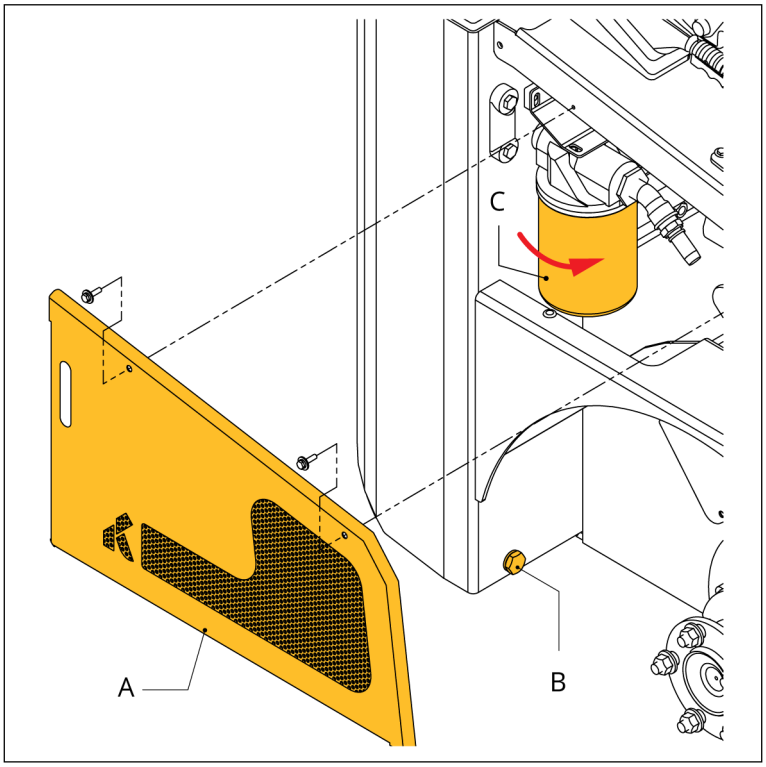


Figure 54: Replacing the suction filter

1 Remove the side panel (A).

2 Place a contain under the release cap (B).

3 Remove the release cap.

Result: hydraulic fluid runs from the release opening.

4 Remove the suction filter (C).

5 Replace the side panel.

6 Top up the hydraulic fluid.

For more information, see Topping up the hydraulic fluid on page 76.

	Always use new hydraulic fluid when topping up.

10.14.2 Replacing the return filter

	The return filter filters all oil that is returned from the system, shortly before it enters the hydraulic tank again.

	The return filter is only fitted on certain machine types.

	The return filter should only be replaced by a recognized maintenance engineer or dealer.

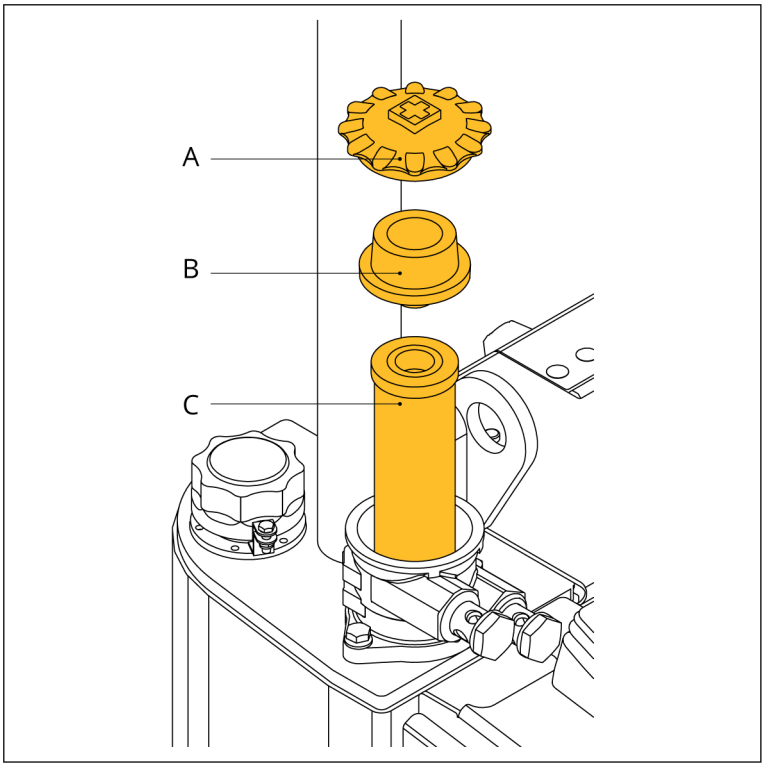


Figure 55: Replacing the return filter

1 Remove the side panel (A).

2 Place a contain under the release cap (B).

3 Remove the release cap.

Result: hydraulic fluid runs from the release opening.

4 Remove the return filter (C).

5 Install the new return filter.

6 Replace the side panel.

7 Top up the hydraulic fluid.

For more information, see Topping up the hydraulic fluid on page 76.

	Always use new hydraulic fluid when topping up.

10.15 Cleaning the machine

You must clean the machine at regular intervals. That way, you will keep the machine in good condition and make it easier to operate the arm and other controls.

You can clean the machine in a number of different ways. Remember to exercise caution when using certain cleaning agents. They must be properly diluted in clean water before use, otherwise there is a risk of damaging the machine.

If using a high-pressure cleaner, follow the instructions in Cleaning with a high-pressure cleaner on page 81.

	**Note!** Gebroeders Geens cannot be held liable for damage resulting from a failure to observe the points above.

10.15.1 Cleaning with a high-pressure cleaner

	**Caution!** Lubricate the lubrication points again after cleaning the machine.

If cleaning the machine with a high-pressure cleaner, the following must be taken into account:

- Do not direct the high-pressure cleaner at electrical components.
- Do not direct the high-pressure cleaner at bearings, hinges, or lubrication points.
- For the first three months, only use water with a temperature of up to 15°C and a maximum pressure of 40 to 60 bar.
- The temperature may be increased to 60°C after three months.
- Keep the high-pressure cleaner at least 50 cm away from the chassis.

Failure to follow these instructions may give rise to paint damage and impair the functioning of the machine itself.

10.15.2 Problems caused by improper cleaning

Problem	Cause
Machine remains dirty after cleaning.	Poor choice of cleaning agent, water temperature too low, or machine not rinsed off properly.
Residue of a solid substance on the paint surface after the machine has dried.	The machine was not rinsed off properly which has caused the cleaning solution to dry on the paint surface.

Problem	Cause
The machine has a mat appearance after drying.	The cleaning agent has had a corrosive effect on the paint. This is usually due to incorrect dilution of the cleaning agent or inadequate rinsing.
Lime or cement residue not removed.	Incorrect cleaning agent.
Change of color, reduced gloss, small cracks in the paint.	Pigment affected due to very strong acids or bases.

11. Maintaining the buckets and pallet fork

11.1 Daily maintenance

	The operator of the machine or someone with an equivalent level of training may carry out daily maintenance.

1 Lubricate the hinge points.

For more information, see Lubricating the hinge points on page 68.

2 Check whether a recognized maintenance engineer has carried out the other periodic maintenance.

3 Check the attachment for visible damage and for leaks of hydraulic oil while the machine is switched off.

4 Start the machine and check whether the hydraulic functions of the attachment are working correctly.

11.2 Maintenance and repair

	A specialist must carry out maintenance and repair work.

	Attachments may not be modified without the written consent of the manufacturer.

	If in doubt, consult the manufacturer.

1 Check hydraulic couplings, hoses, lines, and connections regularly for leaks, wear, and aging.

2 Replace damaged lines, hoses, lamps, or pressure gages promptly.

New hoses must satisfy the generally applicable requirements for medium pressure.

3 Inspect the attachment every 250 operating hours for wear, deformation, and crack formation. The attachment must also be inspected in full for wear, deformation, and crack formation in the event of unforeseen events which may have caused the attachment to be damaged.

12. Decommissioning and disposal

If the machine or attachments are no longer suitable for further use, you must separate the materials and send them individually to designated organizations or businesses.

In the case of the pallet fork, you must also remove the hydraulic hoses and drain the hydraulic oil.

13. Troubleshooting

13.1 Procedure

1 Use the table to help you to resolve problems.

2 Contact a recognized maintenance engineer or the manufacturer if you are unable to find a resolution to the problem.

3 Tell the service engineers the software version of your display when you communicate with them by telephone or e-mail. That way, they will be able to provide the correct information.

4 Describe the problem in as much details possible and clearly indicate the steps that you had already taken before contacting the recognized maintenance engineer or manufacturer.

13.2 Troubleshooting

If you encounter a malfunction or problem that is not listed in this table, contact your dealer immediately.

Problem	Possible cause	Possible solution
The engine does not start and the starter motor does not turn.	The starter motor is broken.	Contact an accredited maintenance engineer or the manufacturer.
	The battery is flat.	Contact an accredited maintenance engineer or the manufacturer.
The engine does not start but the starter motor turns.	Insufficient fuel in the tank.	Top up the fuel and bleed the system.
	The glow plugs were not on for long enough.	Hold the ignition key in the GL position for longer when starting the machine.
	A hydraulic function is still switched on.	Move all levers for hydraulic assistance functions to the neutral position. For more information on the positions of the levers, see Hydraulic operation on page 16.

Problem	Possible cause	Possible solution
The engine does not output sufficient power.	The cyclone filter is soiled.	Clean the cyclone filter. For more information, see Cleaning the cyclone filter on page 64.
	The fuel filter is soiled.	Replace the fuel filter. See the operating instructions for the diesel engine.
	The air filter is soiled.	Replace the air filter. See Replacing the air and fine filter on page 78.
	A hydraulic function is still switched on.	Move all levers for hydraulic assistance functions to the neutral position. For more information on the positions of the levers, see Hydraulic operation on page 16.
	Wrong fuel.	Contact an accredited maintenance engineer or the manufacturer.
The machine does not move.	There is insufficient hydraulic fluid.	Top up the hydraulic fluid. See Topping up the hydraulic fluid on page 76.
	The clutch is broken.	Contact the dealer.
	There is an electronic problem.	Contact the dealer.
The machine has tipped over.	-	1 Keep the safety belt on. 2 Remain in the machine. 3 Turn the ignition key to the OFF position to switch the engine off. 4 Do not restart the machine. Oil on top of the piston can damage the engine. 5 Exit the machine. Contact an accredited maintenance engineer or the manufacturer.

Problem	Possible cause	Possible solution
The hydraulic connection of the attachment cannot be coupled.	The machine is still pressurized.	1 Turn the ignition key to the OFF position to switch the engine off. 2 Move the levers for the hydraulic assistance functions back and forth a few times to allow the hydraulic pressure to escape.
	The attachment is still pressurized.	Release the hydraulic pressure from the attachment by unscrewing the hose. Be aware of the risk of spraying hydraulic fluid.
		Couple the depressurized hose to the machine and repeat the solution above.

14. Technical specification

The technical file, detailed drawings, structural calculations, and the original CE declarations are available from the manufacturer for inspection.

14.1 Consumables

Consumables	Specification
Fuel	Diesel class EN 590. If in doubt, consult the user manual for the diesel engine. Check the regulations for the country in which you are located and observe them carefully. In certain countries, "red diesel" is prohibited.
Engine oil	Oil API class CJ-4. Pallas 900 10W40 from Unil
Hydraulic fluid	AZOLLA Z546 or UNIL HFO46.
Coolant	COOLELF AUTO SUPRA -26 °C or Unil Paradian.
Lubricating grease	General lubricating grease classification NLGI 2.

14.2 Machine dimensions

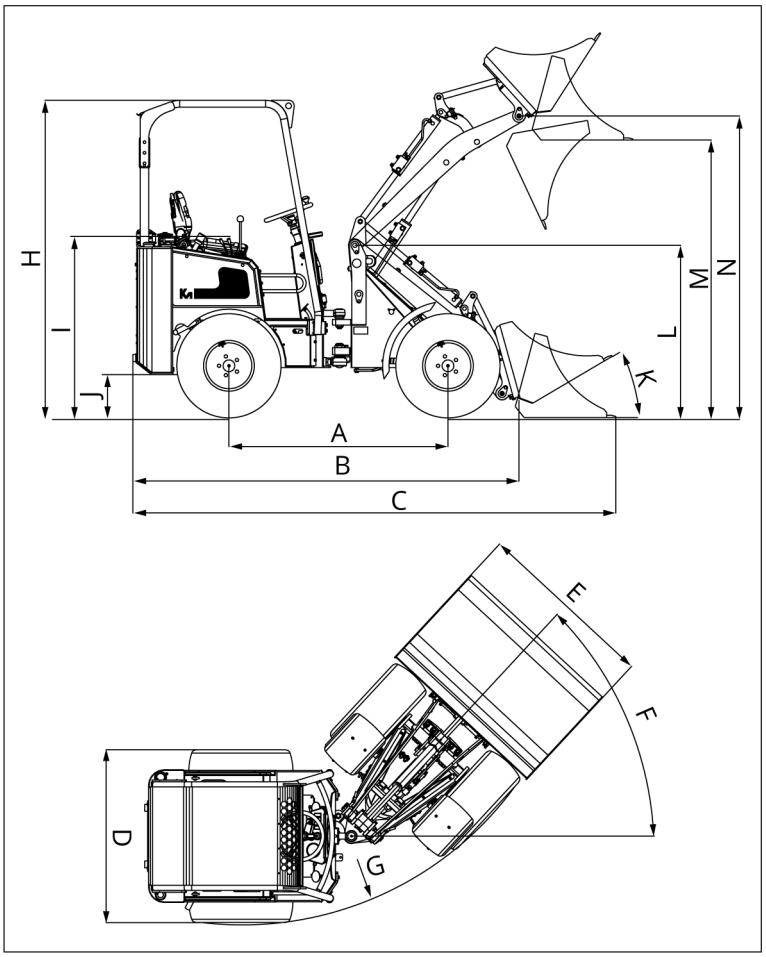


Figure 56: Machine dimensions

A	Wheelbase	H	Rollbar height/ROPS FOPS height
B	Total length without shovel bucket	I	Seat height
C	Total length with shovel bucket	J	Ground clearance
D	Overall width	K	Tipping-in angle from ground surface
E	Width	L	Arm hinge height
F	Maximum turning angle	M	Transfer height
G	Turning radius outside edge	N	Connector plate hinge maximum height

Dimensions					
Position	**Parameter**	**KM80**	**KM85**	**KM90**	**KM100**
A	Wheelbase (mm)	1,415	1,415	1,445	1,445
B	Total length without shovel bucket (mm)	2,360	2,360	2,400	2,400
C	Total length with shovel bucket (mm)	2,935	2,935	2,940	2,940
D	Overall width (mm)	750/1,020	750/1,020	930/1,180	930/1,180

Dimensions					
Position	**Parameter**	**KM80**	**KM85**	**KM90**	**KM100**
E	Width of shovel bucket (mm)	800/1,100	800/1,100	960/1,250	960/1,250
F	Maximum turning angle (°)	50	50	45	45
G	Turning radius outside edge (mm)	2,120	2,120	2,380	2,380
H	Rollbar height/ROPS FOPS height (mm)	2,040/2,100	2,040/2,100	2,225/2,250	2,225/2,250
I	Seat height (mm)	1,070	1,070	1,125	1,125
J	Ground clearance (mm)	205	205	245	245
K	Tipping-in angle from ground surface (°)	30	30	32	32
L	Arm hinge height (mm)	1,060	1,060	1,165	1,165
M	Transfer height (mm)	1,715	1,715	1,775	1,775
N	Connector plate hinge maximum height (mm)	1,895	1,895	2,030	2,030

Dimensions					
Position	**Parameter**	**KM100TE**	**KM120**	**KM120H**	**KM120TE**
A	Wheelbase (mm)	1,530	1,550	1,585	1,650
B	Total length without shovel bucket (mm)	2,610	2,710	2,710	2,860
C	Total length with shovel bucket (mm)	3,250	3,390	3,390	3,540
D	Overall width (mm)	930/1,180	950/1,250	950/1,250	950/1,250
E	Width of shovel bucket (mm)	960/1,250	1,000/1,270	1,000/1,270	1,000/1,270
F	Maximum turning angle (°)	45	47	47	47
G	Turning radius outside edge (mm)	2,380	2,400	2,400	2,400
H	Rollbar height/ROPS FOPS height (mm)	2,225/2,250	2,170/2,260	2,170/2,260	2,170/2,260
I	Seat height (mm)	1,125	1,270	1,270	1,270
J	Ground clearance (mm)	245	315	315	315
K	Tipping-in angle from ground surface (°)	30	30	30	30
L	Arm hinge height (mm)	1,265	1,230	1,465	1,320
M	Transfer height (mm)	2,230/2,790	1,975	2,570	2,420/3,030
N	Connector plate hinge maximum height (mm)	2,405/2,965	2,145	2,740	2,590/3,200

Dimensions						
Position	**Parameter**	**KM125**	**KM125H**	**KM125TE**	**KM130**	**KM130H**
A	Wheelbase (mm)	1,550	1,585	1,650	1,550	1,585
B	Total length without shovel bucket (mm)	2,710	2,710	2,860	2,710	2,710

Dimensions						
Position	**Parameter**	**KM125**	**KM125H**	**KM125TE**	**KM130**	**KM130H**
C	Total length with shovel bucket (mm)	3,390	3,390	3,540	3,390	3,390
D	Overall width (mm)	950/1,250	950/1,250	950/1,250	950/1,250	950/1,250
E	Width of shovel bucket (mm)	1,000/1,270	1,000/1,270	1,000/1,270	1,000/1,270	1,000/1,270
F	Maximum turning angle (°)	47	47	47	47	47
G	Turning radius outside edge (mm)	2,400	2,400	2,400	2,400	2,400
H	Rollbar height/ ROPS FOPS height (mm)	2,170/2,260	2,170/2,260	2,170/2,260	2,170/2,260	2,170/2,260
I	Seat height (mm)	1,270	1,270	1,270	1,270	1,270
J	Ground clearance (mm)	315	315	315	315	315
K	Tipping-in angle from ground surface (°)	30	30	30	30	30
L	Arm hinge height (mm)	1,230	1,465	1,320	1,230	1,465
M	Transfer height (mm)	1,975	2,570	2,420/3,030	1,975	2,570
N	Connector plate hinge maximum height (mm)	2,145	2,740	2,590/3,200	2,145	2,740

Dimensions				
Position	**Parameter**	**KM130TE**	**KM170**	**KM170TE**
A	Wheelbase (mm)	1,650	1,770	1,850
B	Total length without shovel bucket (mm)	2,860	2,990	3,240
C	Total length with shovel bucket (mm)	3,540	3,800	4,075
D	Overall width (mm)	950/1,250	1,135/1,400	1,135/1,400
E	Width of shovel bucket (mm)	1,000/1,270	1,400/1,500	1,400/1,500
F	Maximum turning angle (°)	47	50	50
G	Turning radius outside edge (mm)	2,400	2,760	2,760
H	Rollbar height/ROPS FOPS height (mm)	2,170/2,260	2,300/2,380	2,300/2,380
I	Seat height (mm)	1,270	1,340	1,340
J	Ground clearance (mm)	315	335	335
K	Tipping-in angle from ground surface (°)	30	30	30
L	Arm hinge height (mm)	1,320	1,335	1,365

Dimensions				
Position	**Parameter**	**KM130TE**	**KM170**	**KM170TE**
M	Transfer height (mm)	2,420/3,030	2,230	2,490/3,140
N	Connector plate hinge maximum height (mm)	2,590/3,200	2,405	2,660/3,310

14.3 Maximum machine load

Caution!
Do not exceed the maximum load.

Caution!
Avoid asymmetrical distribution of the load.

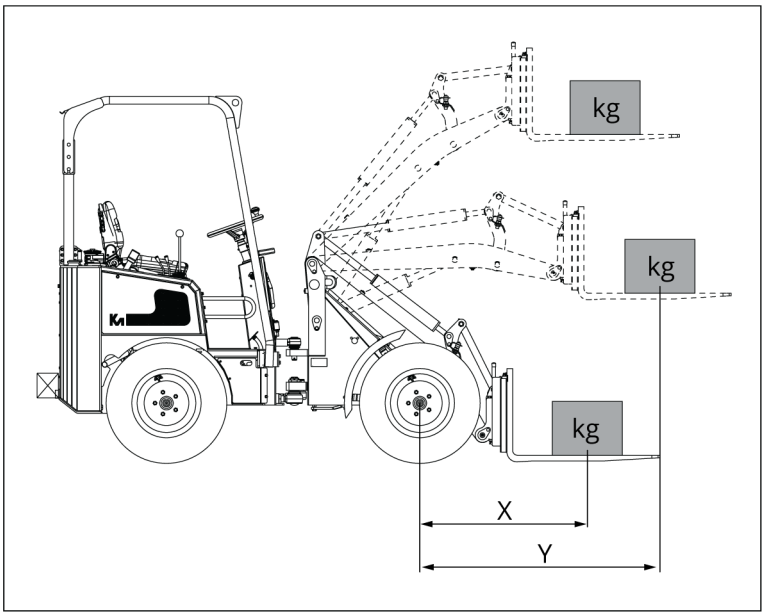


Figure 57: Maximum machine load

X Fully retracted arm (lowest torque) Y Fully extended arm (highest torque)

Maximum load		KM80		KM85	
Position	**Status**	**X/Y**	**Value**	**X/Y**	**Value**
1	Not articulated	X = 820 mm	910 kg	X = 830 mm	700 kg
2	Not articulated	Y = 1,235 mm	730 kg	Y = 1,205 mm	460 kg
3	Not articulated	-	490 kg	-	550 kg

Maximum load		KM90		KM100		KM120H	
Position	**Status**	**X/Y**	**Value**	**X/Y**	**Value**	**X/Y**	**Value**
1	Not articulated	X = 820 mm	800 kg	X = 820 mm	910 kg	X = 985 mm	1,250 kg

Maximum load		KM90		KM100		KM120H	
Position	**Status**	**X/Y**	**Value**	**X/Y**	**Value**	**X/Y**	**Value**
2	Not articulated	Y = 1,235 mm	700 kg	Y = 1,235 mm	730 kg	Y = 1,620 mm	850 kg
3	Not articulated	-	460 kg	-	490 kg	-	630 kg

Maximum load		KM100TE		KM120	
Position	**Status**	**X/Y**	**Value**	**X/Y**	**Value**
1	Not articulated, telescopic arm retracted	X = 995 mm	800 kg	X = 1,020 mm	1,260 kg
1	Not articulated, telescopic arm extended	X = 1,800 mm	400 kg	-	-
2	Not articulated, telescopic arm retracted	Y = 1,475 mm	450 kg	Y = 1,450 mm	970 kg
2	Not articulated, telescopic arm extended	Y = 2,110 mm	260 kg	-	-
3	Not articulated, telescopic arm retracted	-	230 kg	-	740 kg
	Not articulated, telescopic arm extended	-	230 kg	-	-

Maximum load		KM120TE		KM125TE	
Position	**Status**	**X/Y**	**Value**	**X/Y**	**Value**
1	Not articulated, telescopic arm retracted	X = 1,060 mm	1,100 kg	X = 995 mm	1,100 kg
1	Not articulated, telescopic arm extended	X = 1,925 mm	640 kg	X = 1,800 mm	640 kg
2	Not articulated, telescopic arm retracted	Y = 1,550 mm	840 kg	Y = 1,475 mm	840 kg
2	Not articulated, telescopic arm extended	Y = 2,250 mm	500 kg	Y = 2,110 mm	500 kg
3	Not articulated, telescopic arm retracted	-	520 kg	-	520 kg
	Not articulated, telescopic arm extended	-	380 kg	-	380 kg

Maximum load		KM125		KM125H	
Position	**Status**	**X/Y**	**Value**	**X/Y**	**Value**
1	Not articulated	X = 1,020 mm	1,260 kg	X = 985 mm	1,250 kg
2	Not articulated	X = 1,450 mm	970 kg	X = 1,620 mm	850 kg
3	Not articulated	-	740 kg	-	630 kg

Maximum load		KM130		KM130H	
Position	**Status**	**X/Y**	**Value**	**X/Y**	**Value**
1	Not articulated	X = 1,020 mm	1,260 kg	X = 985 mm	1,250 kg
2	Not articulated	X = 1,450 mm	970 kg	X = 1,620 mm	850 kg
3	Not articulated	-	740 kg	-	630 kg

Maximum load		KM130TE		KM170TE	
Position	**Status**	**X/Y**	**Value**	**X/Y**	**Value**
1	Not articulated, telescopic arm retracted	X = 1,060 mm	1,100 kg	X = 1,345 mm	1,240 kg
1	Not articulated, telescopic arm extended	X = 1,925 mm	640 kg	X = 1,785 mm	880 kg
2	Not articulated, telescopic arm retracted	Y = 1,550 mm	840 kg	Y = 2,200 mm	1,150 kg
2	Not articulated, telescopic arm extended	Y = 2,250 mm	500 kg	Y = 2,520 mm	710 kg
3	Not articulated, telescopic arm retracted	-	520 kg	-	820 kg
	Not articulated, telescopic arm extended	-	380 kg	-	610 kg

Maximum load		KM170		KM180	
Position	**Status**	**X/Y**	**Value**	**X/Y**	**Value**
1	Not articulated	X = 1,120 mm	1,470 kg	X = 1,120 mm	1,470 kg
2	Not articulated	X = 1,645 mm	1,180 kg	X = 1,645 mm	1,180 kg
3	Not articulated	-	880 kg	-	880 kg

14.4 Other technical machine data

Other technical data				
Parameter	**KM80**	**KM85**	**KM90**	**KM100**
Fuel tank capacity (l)	20	20	33	33
Diesel engine type	Kubota D722	Kubota D902	Kubota D1105	Kubota D1105
Soot filter	No	No	No	No
Engine power (kW/hp)	13/18	17/23	19/25	19/25
Number of cylinders	3	3	3	3
Output of work hydraulics (l/min)	28	28	33	33
Pressure of work hydraulics (bar)	180	180	180	180
Curb weight without attachment (kg)	820	820	1,000	1,050
Lifting power (kg)	460	460	550	700
Breakout force (kg)	450	450	640	640
Top speed (km/h)	13	13	16	18

Other technical data				
Parameter	**KM100TE**	**KM120**	**KM120H**	**KM120TE**
Fuel tank capacity (l)	33	37	37	37
Diesel engine type	Kubota D1105	Kubota D1105	Kubota D1105	Kubota D1105
Soot filter	No	No	No	No
Engine power (kW/hp)	19/25	19/25	19/25	19/25
Number of cylinders	3	3	3	3
Output of work hydraulics (l/min)	33	33	33	33
Pressure of work hydraulics (bar)	180	180	180	180
Curb weight without attachment (kg)	1,280	1,400	1,450	1,650
Lifting power (kg)	450	900	825	850
Breakout force (kg)	990	1,000	925	970
Top speed (km/h)	18	18	18	18

Other technical data				
Parameter	**KM125**	**KM125H**	**KM125TE**	**KM130**
Fuel tank capacity (l)	37	37	37	37
Diesel engine type	Kubota D1105	Kubota D1105	Kubota D1105	Kubota V1505
Soot filter	No	No	No	No
Engine power (kW/hp)	19/25	19/25	19/25	19/25
Number of cylinders	3	3	3	4
Output of work hydraulics (l/min)	45	45	45	37
Pressure of work hydraulics (bar)	180	180	180	180
Curb weight without attachment (kg)	1,400	1,450	1,650	1,450
Lifting power (kg)	900	825	850	900
Breakout force (kg)	1,000	925	970	1,000
Top speed (km/h)	10/20	10/20	10/20	20

Other technical data				
Parameter	**KM130H**	**KM130TE**	**KM170**	**KM170TE**
Fuel tank capacity (l)	37	37	45	45
Diesel engine type	Kubota V1505	Kubota V1505	Yanmar 3TNV80FT	Yanmar 3TNV80FT
Engine power (kW/hp)	19/25	19/25	19/25	19/25
Soot filter	No	No	No	No
Number of cylinders	4	4	3	3
Output of work hydraulics (l/min)	37	37	33	33
Pressure of work hydraulics (bar)	180	180	180	180

Other technical data				
Parameter	**KM130H**	**KM130TE**	**KM170**	**KM170TE**
Curb weight without attachment (kg)	1,500	1,700	1,750	2,150
Lifting power (kg)	850	875	1,400	1,300
Breakout force (kg)	950	970	1,250	940
Top speed (km/h)	20	20	18	18

14.5 Sound level

	Unit: dB(A)
	LwA*
Knikmops	93

*LWA: guaranteed sound power level for airborne sound.

14.6 Bucket dimensions

This section contains an overview of the different types of bucket available for each type of machine, as well as the dimensions.

These dimensions are the standard buckets for the machines. Other versions and sizes are available on request. Data and more information can be obtained from your Knikmops distributor.

The following are reference illustrations of the shovel bucket, volume bucket, and rubble bucket.

Shovel bucket 20139151 (1,250 mm)

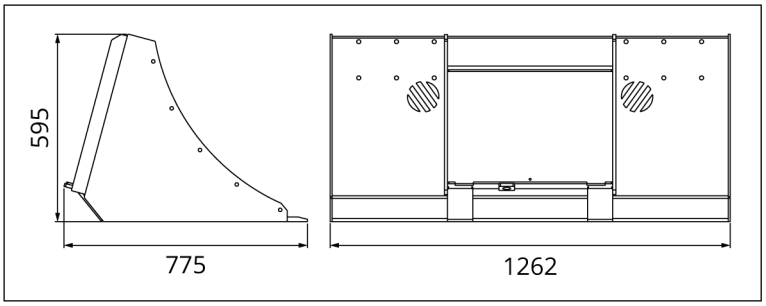


Figure 58: Shovel bucket 20139151 (1,250 mm)

Volume bucket 20139198 (1,270 mm)

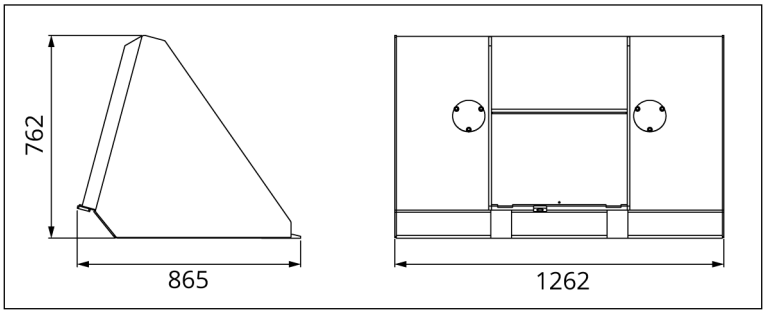


Figure 59: Volume bucket 20139198 (1,270 mm)

Rubble bucket 20099025 (1,250 mm)

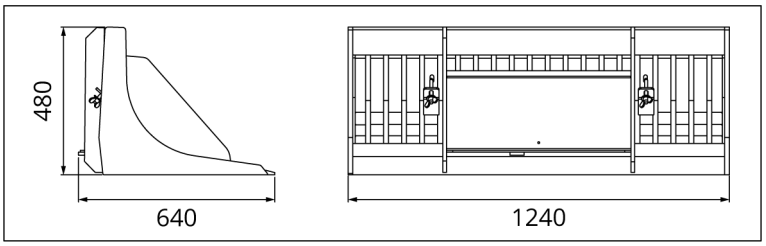


Figure 60: Rubble bucket 20099025 (1,250 mm)

Machine	Item number	Name	Weight (kg)	Volume (l)	Volume (l) + 25%
KM80	20099074	Shovel bucket 1.10 m wide SN110	72	160	200
	20099130	Volume bucket 1.10 m wide SG110	93	280	350
KM90/100	20099133	Shovel bucket 1.25 m wide SN125	78	185	231
	20099131	Volume bucket 1.25 m wide SG125	100	315	394
KM80/90/100	20099025	Rubble bucket 1.25 m wide	126	103	129
KM130	20139151	Shovel bucket 1.25 m wide SN125	112	240	300
	20139198	Volume bucket 1.27 m wide SG127	141	480	600
	20139150	Rubble bucket 1.25 m wide	156	175	219
KM180	20250011	Shovel bucket 1.40 m wide SN140	167	285	356
KM250	20250000	Shovel bucket 1.50 m wide SN150	178	306	383
KM180/250	20250007	Volume bucket 1.50 m wide SG150	285	984	1,230
	20250002	Rubble bucket 1.53 m wide	244	378	473

14.7 Pallet fork dimensions

This section contains an overview of the different types of pallet fork available for each type of machine, as well as the dimensions.

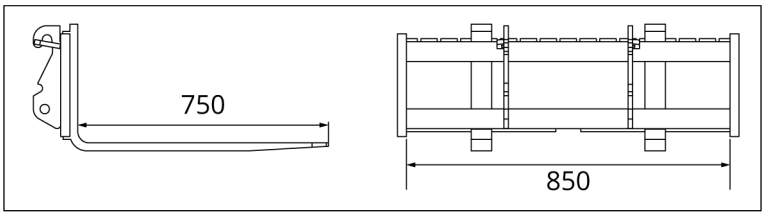


Figure 61: Pallet fork dimensions

Machine	Item number	Length	Width	Weight
KM80/KM85	20099082	0.75 m	0.85 m	96 kg
KM90/KM100	20099080	0.75 m	0.85 m	96 kg
KM120/KM125/KM130/ KM140	20139143	0.90 m	0.85 m	112 kg
KM180/KM250	20250100	1.10 m	1.10 m	144 kg
KM180/KM250	20250101	1.10 m	1.42 m	176 kg

15. Options and attachments

15.1 Options

Option name	Description
3-point lifting device	This lifting device allows you to couple mechanically propelled machines to the rear of your Knikmops. This is a lifting device as for a category 1 tractor.
Cutter teeth	This options allows you to loosen stony ground or rubble.
Bucket positioning rod	This option allows the attachment (shovel/leveling frame) to be placed neatly on the ground.
Tires	We offer various types of tire so that you can use the one that suits the work you are doing.
Custom or corporate color	We offer the option to have your machine sprayed in your custom or corporate color.
Ground weight	The ground weight increases stability and traction while working.
Drill bit	A drill bit for drilling holes in the ground for all manner of uses such as installing fence posts. Available with an extender (length 1 m) and in different drill diameters of 10 to 100 cm.
Cab	The cab is ideal for work in poor weather conditions. The cab is equipped with work lights, windscreen washers at the front and rear, and heating (if applicable).
Central lubrication	Central lubrication ensures that the hinge points of the arm are lubricated automatically, thus extending the service life of the components.
Counterweight	The counterweight provides greater lifting power and more stability when lifting heavy loads.
Electrical lock	This function allows the locking differential to be switched on and off electrically.
Additional hydraulic cooler	This cooler provides additional cooling during activities that require a constant and large hydraulic flow.
Galvanized attachment plate	Attachment that can be attached to a rubber snow scraper to allow a large mound of snow to be moved without the snow falling behind the shovel.
Toolbox	This toolbox helps to ensure that your tools are always with the Knikmops.
Hand throttle	The hand throttle provides a higher engine speed, independently of the travel speed. This allows implements to be propelled that require a greater hydraulic flow at a lower travel speed. The hand throttle can be installed by the user himself/herself on request. Gebroeders Geens can supply a self-build kit. Contact Gebroeders Geens for more informations.
Log splitter cross-piece	Cross-piece that can be mounted on a log splitter. The log splitter cross-piece can split a log into four pieces in a single movement.
Supports (for stone transportation clamp)	Clamping supports that allow the stone transportation clamp to be adjusted to the desired shape of the stones.
Hydraulic arm suspension	This function makes driving the machine at higher speeds more comfortable.
Hydraulic leakage line	A leakage line may be required on hydraulically driven machines that require a large hydraulic flow in order to lower the pressure and heat in the hydraulic system.

Option name	Description
Hydraulic fast attachment, rear	This allows you to operate hydraulically propelled devices that you can attach to the rear of the machine.
Hydraulic vacuum unit	Vacuum unit hydraulically propelled by the machine's engine, which means that there is no need for an additional petrol engine.
HyE control	This option allows you to operate multiple hydraulic functions at the same time. The additional function can be controlled with the joystick. This option also controls the Geco leveler.
HyF control	This option allows you to operate multiple hydraulic functions at the same time. The additional function can also be operated with the joystick.
Hydraulic fast attachment coupling	This option allows you to swap your attachment quickly without having to leave your Knikmops.
Joystick control	Joystick controls allow you to operate functions such as forward/ reverse and the horn with the joystick lever that you use to control the arm.
Click clamp	The click clamp is a clamp that can be folded so that the Knikmops can be used in areas of low clearance.
LED strobes	LED strobes increase your visibility on site or in traffic. These are mounted to the bracket at the rear.
Manual inching	Manual inching is a means of setting the travel speed of the Knikmops and the drive mechanism of the hydraulic system to different speeds without affecting one another. You can then change the hydraulic transmission without affecting the speed of the engine – ideal when using a mower. You can also leave the inching pedal in a fixed position (this is the more cost-effective alternative to a system with a regular hand throttle).
Attachable claw	Claw that can be mounted to shovel buckets, tile forks, manure forks, rubble buckets, pallet forks, clamping arms, and more. The size and number of teeth vary according to the attachment to which it the claw is mounted.
License plate support	For attaching your license plate to the Knikmops.
Folding safety roof	Comprises a cab profile that you mount to the Knikmops. The safety roof can be folded in and collapsed with ease.
Raised edges	Can be fitted to a shovel bucket to add volume to the bucket.
ROPS-FOPS bar	Protects your machine in the event of tipping over (rolling over protection system) and from falling objects (falling objects protection system).
Folding ROPS-FOPS bar	This bar protects your machine from tipping over (rolling over protection system) and from falling objects (falling objects protection system). You can fold the ROPS-FOPS bar in to move through areas of low clearance.
Fast attachment coupling	A different fast attachment coupling to the standard connection system of the Knikmops.
Mudguard extensions	Prevents your Knikmops from becoming unnecessarily dirty.
Towbar	Allows you to move a trailer around the site.
Extender bar for screed beam	Extender bars can be mounted to the screed beam to lengthen it or shorten it.
Suction cups	For use with a frame and arm; fit the suction cups for a vacuum system on a Knikmops/Rollmops. You can use the suction cups to position and move coping stones, tiles, and other materials that can be moved by suction force. The suction cups are available in different sizes depending on the use.

Option name	Description
Fixed stop	Ensures that you don't need to constantly hold the lever for the additional hydraulic function when mowing, brushing, etc., but that the lever stays in position.
Spring steel slat for screed beam	Spring loaded slats mounted on the left and right of the stone transportation clamp to push the stones together so that they are tighter.
Safety roof (ROPS-FOPS)	Cab frame that can be optionally mounted to the Knikmops to protect against rolling if the Knikmops should tip.
Raised frame	An raised frame for attachment to the pallet forks. Provides higher support for material; also improves safety for the operator.
Extender	Extender for the drill so that you can drill deeper holes.
Heating hydr. + engine	Keeps the machine's engine and hydraulic system at the correct temperature in the cold winter months. This helps the machine to start more smoothly and drive more smoothly after being started up. This option is recommended in locations where the temperature is lower than -10°C/14°F. This option operates on mains power.
Water tank for dust suppression for brush with collector bin	Can be optionally attached to the brush with collector bin to prevent blowing dust.
Road lighting	This option helps to ensure safety on the road. The option includes two headlights and tail lights with side lights, low beam, and turn indicators.
Work lighting	This option is ideal for enabling work at dusk or at night. The option includes two work lights at the front and one at the rear.
Tarp	Tarp cover to cover the steering console and operator's seat.
Comfort seat	This seat is more comfortable and has improved springs when compared to the standard seat.
Side brush for brush with collector bin	Option for brush with collector bin. This brush allows you to more easily clean edges, corners, and similar.
Side plates for tile fork	For optional attachment to the tile fork.
Beacon	The beacon is ideal for ensuring that you are visible on the road or on site. Mounted to the bracket at the rear.
Floating boom	This option allows you to deactivate the lifting cylinder so that the arm can move freely. This then allows an attachment such as a leveler/ cutter to follow the ground free from the machine.

15.2 Attachments

Name of attachment	Description
Screed beam	Levels beds for paved surfaces such as roads, cycle paths, driveways, squares, and more.
Asphalting bucket	For asphalting small areas such as driveways, parking lots, and business premises. It is also ideal for work on road surfaces.
Bale clamp	Grips, stacks, and transports straw, hay, and grass bales.
Concrete transportation bucket	Transports large quantities of liquid concrete and discharges them in hard-to-access areas.
Tree clamp	Transports sawn tree trunks and branches, also fitted with a rotator to maneuver tree trunks to any angle. The tree clamp can also be used to remove limited amounts of shrub.

Name of attachment	Description
Stone gripping clamp	Lays heavy grass sections and coping stones and is available in two versions – grass clamp and the edging stone clamp.
Brush with collector bin	Cleans large surfaces and is fitted with a collector bin in which dirt can be easily collected. The collector bin can be emptied mechanically; there is also the option of a side brush that makes it easier to clean edges, gutters, and corners.
Overhead tipping bucket	Can tip bulky materials such as stones, rubble, and sand into a truck or high container.
Rotary mower	Mows short grass; can also be fitted with a side or rear grass ejection channel. The mower is available with a mulching kit and collecting bin. The mulching kit allows the grass to be mowed extra short.
Three-point lifting device	Can be used for implements without PTO shaft and comprises two side arms in a V shape between which a third arm can be moved up and down.
Double stone transportation clamp	Grips twice as much as the standard stone transportation clamp.
Leveling bucket	Excavates, levels, and moves large volumes of soil and be used both forward and in reverse. When driving in reverse, small quantities of soil can be leveled and flattened with the necessary force.
Geco leveler with laser control (eHC)	Can level or flatten a foundation layer for paving or concreting.
Grass edge cutter	Cuts the edge of a grass area quickly and efficiently and comprises a disk that vertically borders the sod of grass, followed by a blade that severs the roots.
Shovel bucket	Can transport various materials as well as scoop sand, etc.
Sweeping brush for bucket	Quickly cleans large surfaces, combined with a shovel bucket.
Shovel bucket with claw	Transports unconventional or lightweight materials, such as straw, branches, pruning waste, and more.
Post hole borer	Easily drills holes for fence posts or plants; can also be used when pouring concrete, planting trees, and installing a meadow fence.
Earth dumper	Moves large quantities of soil to hard-to-access areas and fits easily through narrow passages.
Ground leveling frame	Levels ground quickly. Useful for flattening large, uneven areas, driveways, and lawn seed beds.
Rotary tiller	Tills uncultivated plots, vegetable gardens, and lawns.
Large volume bucket	Transports large quantities and can carry almost twice as much as the standard shovel bucket.
Hedge trimmer	Trims hedges both horizontally and vertically. The hedge trimmer can also be extended to trim high hedges.
Height gage	Tool for smoothing paver beds to the correct size.
Wood chipper	Chips branches.
Log splitter	Splits large logs and stumps into smaller pieces.
Hydraulic vacuum system	Positions coping stones, tiles, etc. using a vacuum pump so that there is no damage such as from clamping tools.
Hydraulically adjustable scraper	Scraper that, with the aid of a cylinder, is tilted to push material to the side (hydraulic tilt adjustment).
Hydraulic arm	Can lift and move loads with added range.
Sand brush	Sweeps sand between newly laid pavers or quickly sweeps pruning waste and decomposition waste to keep the site clear or to prepare for the next day.

Name of attachment	Description
Flail mower	Mows tall grass, areas with significant weed growth, and even light forms of wood structure.
Paver clamp	Automatic paver to mechanically lay all kinds of paver from a pallet onto a bed.
Pinching bucket	Can dig trenches and pits.
Jib	Suitable for minor excavation work such as trenches in the ground for pipes or lines.
Jib with controls	Suitable for minor excavation work such as trenches in the ground for pipes or lines with control from the jib itself.
Layer clamp	Grips and moves pavers horizontally.
Mixing bucket	Mixes sand and cement. The mixing bucket can be used to prepare screed or cement and move it to the right location.
Fertilizer spreader	Spreads fertilizer evenly over a specific area.
Manure fork	Can clamp and move hay, straw, manure, and pruning waste.
Mortar mixer	Mixes gravel, sand, cement, and water into mortar. Attached to the Knikmops, transports the mortar to the desired location.
Mulch mower	Trims a hedge as desired, without straining the body.
Weed brush	Comprises braided steel cables, whether or not with a cover, to remove stubborn weeds from paved surfaces.
Mobile ramps	Ramps for moving implements and vehicles to a higher level.
Ramp	Ramp for driving a pallet onto.
Pole mower	Mows in tight locations where conventional mowers find it hard to access, such as around poles, trees, next to fences, under barbed wire, and more.
Pallet transporter	Moves heavy pallets, which is useful for a smaller machine.
Pallet fork	Moves pallets.
Pallet fork with claw	Transports goods with a less conventional shape, such as tree trunks. The goods can then be additionally clamped so that they cannot move from one place to another.
Rubble bucket	Scoops loose stones and rubble.
Rubble bucket with insert	Functions as a shovel bucket thanks to an insert.
Rubble bucket with claw	Loads and transports loose materials such as branches, logs, straw, manure, construction waste, and more.
Radial sweeper	Brushes paved surfaces. The brush is available as a polypropylene version that is soft and perfect for sweeping loose and lightweight items. To remove small weeds, the radial sweeper for your Knikmops is made with steel wire.
Ripper	Removes shrubs and roots by severing them or sawing through them and then pulling them up.
Rotating brush	Can rotate to clean squares and paths.
Rotary harrow	Levels the ground and crumbles up clods of earth.
Scraper	Cleans paved areas of sand, mud, and manure. The scraper itself has a rubber material so that it does not damage the surface.
Scraper, U-shaped	Scraper with folded edges.
Trencher	Can dig trenches to 120 cm in depth for cables, pipes, or hoses.
Snow scraper	Clears snowed-in squares, cycle paths, public roads, and driveways.

Name of attachment	Description
Gravel bucket with roller	Spreads sand and other fine material dosed over a surface such as asphalt. The gravel bucket with roller is often used for paving work. The gravel bucket with roller can distribute the material more finely and evenly than a regular gravel spreader.
Gravel spreader	Spreads sand and other fine material dosed over a certain area.
Sprayer tank	Cleans tools after having been covered with dust. This attachment is equipped with a motor that allows you to remove the material, as well as with a high-pressure pump.
Stack holder	Holds stacked stones in place in the stone transportation clamp while being moved. The stack holder is hydraulically controlled.
Automatic paver	Grips batches of paver on the pallet to move them.
Stone transportation clamp	Moves large quantities of paver.
Bale fork	Moves straw with the aid of two height-adjustable support pillars that stop the bales from falling backward.
Tile clamp	Hydraulically controlled clamp that clamps the object being lifted with a cylinder.
Tile fork	Breaks out old paving.
Tile fork with claw	Scoops and/or moves cobblestones, pruning waste, manure, and other objects that can be clamped.
Vacuum frame	Frame to which you can mount your chosen suction cups. The size depends on the type of Knikmops/Rollmops and what the frame is being used for.
Vacuum system with petrol engine	Positions coping stones, tiles, and heavier materials through suction force so that there is no damage, e.g., from clamping tools.
Four-in-one bucket	Scrapes the ground, scoops sand or stones, grips all kinds of object, and can discharge its load high up.
Batching bucket	Transports and doses sand, screed, and ready-mixed concrete to backfill coping stones and to seal trenches.
Feed bucket	Helps livestock farmers supply animals with feed.
Implement trailer	Can carry the implements of mini tractors.
Sawdust spreader bucket	Spreads sawdust, chopped straw, fine wood chips, compost, and more.

16. Maintenance carried out

17. Glossary

Words	Description
Fine filter	A filter that can effect a certain level of filtering. The fine filter is not intended to filter coarse dirt particles from a fluid but to filter micro-particles of dirt from a pre-filtered fluid.
Hydraulic hose	Flexible hollow pipe for the transportation of hydraulic fluids from one location to another.
Inching pedal	Pedal with which the operator can drive slowly forward or in reverse over a short distance for precise machine positioning.
Cyclone filter	Cleans the air to the desired level before the air passes to other filters for further purification.
Red diesel	Diesel or gasoil with a lower rate of excise duty.
Shurlock button	Prevents the machine from being operated unexpectedly when the operator enters and exits the machine.
Water separator	Filter for diesel engines to remove condensation from the diesel.

18. CE declaration of conformity

EC declaration of conformity for machinery
Gebroeders Geens N.V.
Hinnenboomstraat 5, 2320 Hoogstraten
Belgium

Hereby declares that Knikmops types KM80, 85, 90, 100, 120, 125, 130, 140, 170, 180, 250 and all H and TE versions for transportation in road construction, the construction industry, agricultural industry, or related industries satisfy the stipulations of the Machinery Directive 2006/42/EC, ROPS:EN ISO 3471, and FOPS:EN ISO 3449 in accordance with the test procedures as specified in NEN-ISO 21299:2009(E).
From year of construction 2022
With serial number from XX-123456789-XX

The volume bucket, shovel bucket, rubble bucket, and other types of bucket as attachments for use in road construction satisfy the provisions of the Machinery Directive (Directive 98/37/EC, including 89/392/EEC, 91/368/EEC, and 93/68/EEC), as well as NEN-EN 292-1/2 and 1050.

The pallet fork as an attachment for use in road construction satisfies the provisions of the Machinery Directive (Directive 2006/42/EC, including 98/37/EC, 89/392/EEC, 91/368/EEC, 93/44/EEC, and 93/68/EEC), as well as NEN-EN10028-1/7 EN-ISO 14121-1 and ISO/TR 14121-2.

Compiled by Gebroeders Geens N.V., Hoogstraten (Belgium).
Prepared in Hoogstraten (Belgium), March 25, 2019

Manager, F. Geens