

KÄRCHER



OPERATING INSTRUCTIONS

MC 150 ATTACHMENTS

Imprint

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Foreword

Kärcher Municipal GmbH would like to thank you for the purchase of an attachment¹ from our company and wishes you safe use at all times.

Read these operating instructions carefully before using your attachment for the first time so that you can fully utilise its performance potential. These operating instructions contain important information on the operation, use and maintenance of your attachment.

For the sole purpose of better readability, gender-specific spelling and multiple designations have been omitted. All personal designations should nevertheless be regarded as gender-neutral.

Operating instructions

These operating instructions are always supplied together with the respective attachment. It is a component of the attachment and must remain with the attachment. If you have lost the operating instructions, order a replacement immediately by contacting your service partner or Kärcher Municipal GmbH.

If you sell your attachment, you must hand over these operating instructions to the new owner. Obtain written confirmation that the operating instructions have been handed over to the new owner and keep this proof.

The operating instructions must always be kept close to the attachment so that they are available to every user and operator. When attaching an attachment to the equipment carrier vehicle, we recommend placing these operating instructions in the respective vehicle for quick access.

The illustrations contained in these operating instructions are only to be understood as basic illustrations, as they may differ from your attachment in individual details or only show one of the possible vehicle and equipment variants. No claims can be inferred from the figures, specifications and/or descriptions in these operating instructions.

Directional indications such as “left” and “right” are always to be understood in the direction in which the equipment carrier vehicle is travelling, unless a different view is expressly described.

Rotation directions such as “clockwise” are to be understood from the operator's point of view, unless a different view is expressly described.

As we incorporate new developments and improvements into the production of our attachment as quickly as possible, it is possible that one or two details in the operating instructions may appear out of date. In this case, please do not hesitate to contact your responsible service partner, who has access to the most up-to-date information.

¹ , where the term “attachment” always also includes container attachments. For the sake of readability, however, the text usually only refers to the attachment

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1 Safety instructions



The operating instructions are a component of the attachment. To ensure proper and safe use of the attachment, read these operating instructions and act accordingly.

- Read the operating instructions completely before working with the attachment.
- Read and follow the operating instructions and observe the information in the “Safety instructions” chapter.
- Keep the operating instructions with the attachment for future reference and pass them on to a subsequent owner of the attachment.
- Add any supplement published by Kärcher Municipal GmbH, such as e.g. enclosed supplementary sheets, to these operating instructions.
- Handle the operating instructions with care. Do not remove any pages or make any parts illegible.
- When attaching an attachment to the equipment carrier vehicle, we recommend placing these operating instructions in the respective vehicle for quick access.
- In addition, always observe the operating instructions for the vehicle on which the respective attachment is to be used.

Read these operating instructions before using your attachment for the first time. Pay particular attention to the information in the “Safety instructions” chapter and read this chapter from start to finish.

Before carrying out a handling instruction, read the relevant warnings that precede it.

Follow this information and act accordingly.

In addition to these operating instructions, reference is made to other generally applicable safety regulations.

Store these operating instructions for later use, for the instruction of new operating personnel or for subsequent owners.

1.1 Operating instructions: Obligation to read



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- Handle the operating instructions with care. Do not remove any pages or make any parts illegible.
- When attaching an attachment to the equipment carrier vehicle, we recommend placing these operating instructions in the respective vehicle for quick access.
- In addition, always observe the operating instructions for the vehicle on which the respective attachment is to be used.



The illustrations in these operating instructions show various attachments that are optionally available for your vehicle.

- The illustrations may differ in detail from the attachments fitted to your vehicle.

1.2 Before using an attachment



The operating instructions are a component of the attachment. To ensure proper and safe use of the attachment, read these operating instructions and act accordingly.

- Read the operating instructions completely before working with the attachment.
- Read and follow the operating instructions and observe the information in the “Safety instructions” chapter.
- Keep the operating instructions with the attachment for future reference and pass them on to a subsequent owner of the attachment.
- Add any supplement published by Kärcher Municipal GmbH, such as e.g. enclosed supplementary sheets, to these operating instructions.
- Handle the operating instructions with care. Do not remove any pages or make any parts illegible.
- When attaching an attachment to the equipment carrier vehicle, we recommend placing these operating instructions in the respective vehicle for quick access.
- In addition, always observe the operating instructions for the vehicle on which the respective attachment is to be used.

Any person who is involved in the assembly, installation, commissioning, operation, maintenance, servicing and troubleshooting of the vehicle, the attachments and the attached containers, e.g. a waste container, must have read and understood the complete operating instructions and in particular the safety chapters for the vehicle and the attachments and attached containers before starting work of any kind.

The respective person must confirm this in writing with their signature and date. This confirmation must be stored safely.

1.3 Operating location | Road approval | Driving licence

Operating location

Attachments fitted to a vehicle may only be used outdoors.

Your vehicle with the intended attachments described in these operating instructions is designed for use on public roads and can be authorised by the relevant authorities.

Road approval

The attachment must conform to the nationally applicable regulations when used on public roads.

This also includes a licence plate requirement of the vehicle for clear identification on public roads. If you have any questions about road approval, please contact your service partner or the relevant authority in your country.

Observe the applicable national regulations for travelling on public roads.

Driving licence

When driving on public roads, ensure that the driver has a valid driving license for the vehicle on which the attachment is attached. If you are unsure, please contact the authority responsible for this in your country.

It is prohibited to drive the vehicle on which the attachment is attached on public roads and places without a valid driving licence for this vehicle.

1.4 Intended use

The attachments are intended for use on a multifunctional system vehicle (equipment carrier).

The attachments mounted on a vehicle have been designed for use in the municipality. The sweeping system is designed exclusively for use in plant maintenance for sweeping (on hard surfaces such as asphalt, cobblestones, screed, concrete, etc.) and for transporting waste, such as e.g. dirt, leaves, dust, paper, small branches, small fragments, grit, etc.

A vehicle with an attached attachment must be driven with appropriate care in road traffic. The instructed driver must decide which driving situations he/she can handle with the vehicle with an attached attachment. This decision is at the sole discretion of the driver.

We would like to point out that an attachment, such as e.g. a sweeping system, and an installed container (especially when transporting liquids), changes the centre of gravity of the vehicle and the driver must therefore take these changed boundary conditions into account through his/her driving style (speed, steering movements, curve radii, etc.).

The attachment may only be used for the intended use, as illustrated and described in these operating instructions. Intended use also includes regular cleaning, the attachments and installed containers, compliance with the prescribed maintenance intervals and the specified intervals for replacing all hydraulic hoses (every 6 years).

The attachments and installed containers may only be used, maintained and serviced by persons familiar with these and who have been instructed on the dangers associated with these. The legally applicable general safety and accident prevention regulations must be adhered to.

All other safety regulations, occupational health care regulations and road traffic regulations must also be adhered to.

Symbols and signs on the attachments and container attachments that are no longer legible or no longer present must be replaced. Please contact your service partner or Kärcher Municipal GmbH.

This also applies when replacing components, e.g. due to wear or damage, on which symbols and signs were originally attached. These must be reattached to the new components in the same place.

The operating personnel must:

- Be physically and mentally suitable.
- Have been instructed in the handling of the attachments.
- Have read and understood these operating instructions and the operating instructions for the vehicle on which the attachment is attached.
- Have provided the operating company with verification of capability to operate the vehicle with the attached attachments.
- Be explicitly nominated to operate the vehicle with the attached attachments by the operating company.

1.5 Unauthorised use

Any use other than the described intended use is unauthorised use. Any hazard caused by unauthorised use is the responsibility of the operator and not of Kärcher Municipal GmbH. The manufacturer is not responsible for any resultant damage. Use for other purposes than those described in these operating instructions is prohibited.

Transporting persons on the loading area or attachments is not allowed.

Never sweep or vacuum explosive liquids, inflammable gases or undiluted acids and solvents. These include petrol, paint thinners or heating oil, which can form explosive vapours or mixtures through suction air turbulence, also acetone, undiluted acids and solvents because these attack the materials used in the machine.

Never sweep and/or vacuum reactive metal dusts (e.g. aluminium, magnesium, zinc). In conjunction with highly alkaline or acidic detergents these generate explosive gases.

No smouldering or burning objects may be swept in or sucked in with the vehicle.

1.6 Human error

DANGER



Risk of accident with possible fatal consequences due to driving and operating errors under the influence of alcohol and other mind-altering substances.

Persons under the influence of alcohol, drugs (e.g. cannabis) and medication, are prohibited from carrying out work on and with the vehicle, attachments and container attachments (e.g. waste container) and are also prohibited from driving and operating the vehicle and its attachments and container attachments.

- Driving and operating errors can lead to serious accidents with fatal consequences for the driver himself as well as for uninvolved third parties in the vicinity of the vehicle due to a substance-induced change in perception.
- Persons who are under the influence of alcohol, mind-altering substances such as e.g. intoxicants or drugs, performance-enhancing substances and/or medication are prohibited from driving, operating, maintaining and repairing the vehicle, attachments and container attachments.
- This also applies to people who have undergone a general or local anesthetic in the last 24 hours, e.g. in the course of dental treatment.

All persons in the area of the vehicle and the attachments must be made aware of potential dangers.

Dangers could be:

- Human error due to failure to observe the safety instructions.
- Unexpected movements of the attachments and vehicle.
- Escaping operating materials due to leaks, bursting of pipes and containers etc.
- Risk of accident when driving, steering and braking as a result of unfavourable ground conditions such as slopes, slipperiness, unevenness or poor visibility etc.
- Fire and explosion hazard caused by the battery and voltage.
- Risk of poisoning from exhaust fumes.
- Risk of fire due to fuel and operating materials.

1.7 Foreseeable misuse

Comply with the applicable national regulations.

Any type of improper use is prohibited.

The operating personnel are liable for hazards resulting from incorrect use. Use for other purposes than those described in these operating instructions is prohibited.

No structural, design or other modifications may be made to the attachments.

No safety devices may be deactivated, bypassed or switched off. Only use the attached attachments with intact and complete safety equipment.

- Do not stay in the danger zone, see chapter "Danger zones".
- Do not operate the attachments in the vicinity of potentially explosive spaces.
- Never transport persons with the vehicle (except in the seats provided), on the attachments or on an attached container attachment.
- Do not use the attachments in forestry.
- Do not use the attachments for dispersing insecticide, pesticide or fertiliser.
- The attachments are not toys for children. Always keep children away from the attachments and container attachments, regardless of whether the attachments or container attachments are attached to a vehicle or not.

1.8 Danger zones

⚠ WARNING

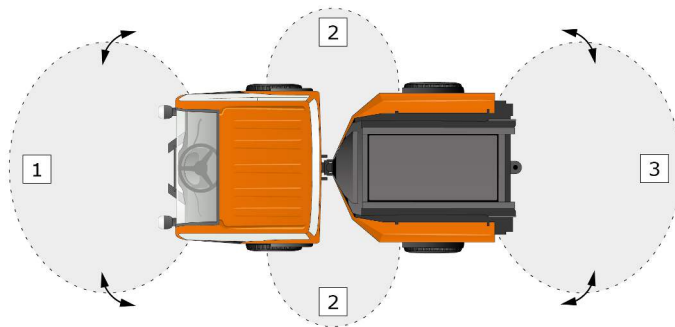


There is a risk of injury from crushing and entrapment when operating the vehicle.

- No persons may be in the vicinity of the vehicle and the attachments during operation.
- When handling attachments and/or attached containers, always use your personal protective equipment (**PPE**) (at least protective gloves and safety shoes) to avoid injuries caused by entrapment or falling objects.

The operating and service personnel must ensure that no persons are present in the danger zones during operation.

The danger zones of a mounted sweeping system and a mounted container can vary significantly depending on the setting, speed, curve radii, etc.



Danger zones on vehicles with articulated steering

- 1 Front mounting space
- 2 Articulated area
- 3 Rear mounting space

1.9 For the US state of California

CALIFORNIA Proposition 65 Warning

WARNING



Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If you are in an enclosed area, discharge the exhaust air to the outside.
- Do not modify or manipulate the exhaust system.
- Only run the engine at idle speed if necessary.

Further information can be found at www.P65warnings.ca.gov/diesel.

WARNING



This product can expose you to chemicals such as benzene, which are known to the State of California to cause cancer, birth defects or other reproductive harm.

Among other uses, benzene is used in the production of cleaning agents, lubricants, coolants and other chemicals.

- Restrict any contact with media containing benzene and the resulting vapours.
- Ensure adequate ventilation when handling media containing benzene in an enclosed area.
- Where possible, do not use cleaning agents and other chemicals as additives in a fresh water tank.
- If you want to use well water to fill fresh water tanks, have this well water tested for benzene contamination before use.

If your water comes from a public supplier, it is already regularly tested for benzene.

Further information can be found at www.P65warnings.ca.gov/benzene.

1.10 Warning and hazard notices, signal words

Preceding warning and hazard information

DANGER



Designates a danger with a high degree of risk, which will result in death or serious injuries if not avoided.

WARNING



Designates a danger with a moderate degree of risk, which may result in death or serious injuries if not avoided.

CAUTION



Designates a danger with a low degree of risk, which may result in death, moderate or minor injuries if not avoided.

NOTICE

Deals with damage to the environment and the vehicle as well as further information for the user.

Signal words for embedded warning and hazard information

 **DANGER** Designates a danger with a high degree of risk, which will result in death or serious injuries if not avoided.

 **WARNING** Designates a danger with a moderate degree of risk, which may result in death or serious injuries if not avoided.

 **CAUTION** Designates a danger with a low degree of risk, which may result in death, moderate or minor injuries if not avoided.

 **NOTICE** Deals with damage to the environment and the vehicle as well as further information for the user.

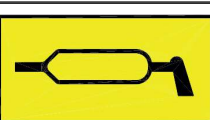
1.11 Symbols on the attachments and container attachments



All symbols and signs must be present, clean and in legible condition.

- Immediately replace illegible, lost or absent symbols and information notices. Please contact your service partner or Kärcher Municipal GmbH.
- When replacing components on which symbols or signs were attached, these symbols and information signs must be reattached to the replaced components.

	⚠ DANGER Risk of burns from hot surfaces. Allow the vehicle to cool down before working on it.
	⚠ DANGER Risk of injury due to spraying objects. Keep a sufficient distance away from persons, animals and other objects.
	⚠ WARNING Danger of injury. Danger of crushing and shearing at belts, side brushes, waste container and hood.
	⚠ CAUTION Rotating machine parts.
	ADVICE Warning of escaping high-pressure fluid. Beware of escaping high-pressure fluid. Observe the notices in the operating instructions.

	⚠ DANGER Risk of impact, risk of crushing.
	When transporting or working under suspended loads, use suitable means for supporting.
	Lubrication point.
	Read the operating instructions.

1.12 User groups

1.12.1 Operations manager

Qualification:

- Specialised technical training.
- Instructed by qualified employees of the manufacturer or their authorised representatives in the handling of the vehicle, the attachments and the container attachments (e.g. waste container).
- Instructed on safety regulations, accident prevention rules and occupational safety.
- Driving licence (the required driving licence category varies from country to country and can be obtained from the relevant authority).

Obligation of the person responsible for operations

- The vehicle with its attachments and container attachments, e.g. a waste container, may only be operated in perfect and safe condition.
- The operating and service personnel must be instructed in the operation and maintenance of the vehicle, the attachments and the superstructure containers, e.g. a waste container with tipping function.
- A work and safety briefing must be carried out with the operating and service personnel. Safety- and hazard-conscious working must be taught. Ensure that only persons who are familiar with the basic regulations on occupational safety and accident prevention and who have been instructed in the safe handling of the vehicle, the attachments and the container attachments work on and in the vicinity of the vehicle, the attachments and the container attachments. Operating and service personnel to be trained may only work with and on the vehicle, the attachments and the container attachments under supervision.
- The operating and service personnel must wear their personal protective equipment (**PPE**) (protective goggles, close-fitting protective clothing, protective gloves and suitable footwear if necessary). Persons not wearing personal protective equipment (**PPE**) must be removed from the vehicle, the attachments and the container attachments.

1.12.2 Operating personnel

Qualification:

- Trained.
- Physically and mentally suitable.
- At least 16 years old. National regulations deviating from these may also apply.
- Instructed by qualified employees of the manufacturer or their authorised representatives in the handling of the vehicle, the attachments and the container attachments (e.g. waste container).
- Driving licence (the required driving licence category varies from country to country and can be obtained from the relevant authority).
- Operating instructions for the vehicle and, if attachments are used, also the operating instructions for the attachments, have been read and understood.

Obligations of the operating personnel

DANGER



Risk of accident with possible fatal consequences due to driving and operating errors under the influence of alcohol and other mind-altering substances.

Persons under the influence of alcohol, drugs (e.g. cannabis) and medication, are prohibited from carrying out work on and with the vehicle, attachments and container attachments (e.g. waste container) and are also prohibited from driving and operating the vehicle and its attachments and container attachments.

- Driving and operating errors can lead to serious accidents with fatal consequences for the driver himself as well as for uninvolved third parties in the vicinity of the vehicle due to a substance-induced change in perception.
- Persons who are under the influence of alcohol, mind-altering substances such as e.g. intoxicants or drugs, performance-enhancing substances and/or medication are prohibited from driving, operating, maintaining and repairing the vehicle, attachments and container attachments.
- This also applies to people who have undergone a general or local anesthetic in the last 24 hours, e.g. in the course of dental treatment.

CAUTION



Risk of accident and injury due to improper operation of attachments, towed equipment and trailers.

Incorrect operation of the attachments and incorrectly attached implements or towed implements and trailers can lead to accidents and subsequent injuries.

- Read these operating instructions before handling (e.e.g. attaching and dismantling, operation, cleaning, etc.) attachments and body containers and act in accordance with them.
- Observe the safety instructions in these operating instructions and also in the operating instructions for the vehicle on which the attachments or container attachments are installed.
- Always observe the permissible loads for the vehicle to which the attachments or container attachments are to be attached.



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- Read the operating instructions completely before working with the attachment.
- Read and follow the operating instructions and observe the information in the “Safety instructions” chapter.
- Keep the operating instructions with the attachment for future reference and pass them on to a subsequent owner of the attachment.
- Add any supplement published by Kärcher Municipal GmbH, such as e.g. enclosed supplementary sheets, to these operating instructions.
- Handle the operating instructions with care. Do not remove any pages or make any parts illegible.
- When attaching an attachment to the equipment carrier vehicle, we recommend placing these operating instructions in the respective vehicle for quick access.
- In addition, always observe the operating instructions for the vehicle on which the respective attachment is to be used.

1.12.3 Service personnel

General qualification:

- Specialised technical/hydraulic/mechanical/electrical training.
- Instructed by qualified employees of the manufacturer or their authorised representatives in the handling of the vehicle, the attachments and the container attachments (e.g. waste container).
- Instructed on safety regulations, accident prevention rules.
- Handling of air conditioning refrigerant only by trained personnel.
- Driving licence (the required driving licence category varies from country to country and can be obtained from the relevant authority).

Professional qualification for high-voltage technology:

⚠ DANGER



The HV system may only be de-energised by an “expert for work on HV intrinsically safe vehicles in service workshops”.

Working on high-voltage systems in series vehicles requires special knowledge and skills. Different qualification levels ensure that all qualified staff is adequately trained to meet the safety and performance requirements.

For general work on HV vehicles, such as e.g. Brake service, wheel change, must be at least qualification level 1S. In Germany, the individual levels comprise the following powers in accordance with DGUV Regulation 209.093 :

- **Qualification level S: Security awareness (“Sensitised person”)**
The entry-level qualification includes security awareness training. This enables employees to identify the high-voltage components and understand the basic safety requirements.
- **Qualification level 1S: Electrically instructed person for HV systems**
Level 1S is aimed at persons who work on high-voltage systems under supervision. It includes theoretical knowledge and practical skills to be able to work safely with these systems under supervision.
- **Qualification level 2S: Qualified person for HV systems**
Employees at qualification level 2S can work independently on high-voltage systems. They are able to carry out complex tasks such as fault diagnosis and repair work.
- **Qualification level 3S: Responsible qualified electrician for HV systems**
With the highest qualification level 3S, specialists can take full responsibility for work on high-voltage systems. They develop skills in designing and monitoring safety and work procedures.

Obligations of the service personnel

DANGER



Risk of accident with possible fatal consequences due to driving and operating errors under the influence of alcohol and other mind-altering substances.

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- Driving and operating errors can lead to serious accidents with fatal consequences for the driver himself as well as for uninvolved third parties in the vicinity of the vehicle due to a substance-induced change in perception.
- Persons who are under the influence of alcohol, mind-altering substances such as e.g. intoxicants or drugs, performance-enhancing substances and/or medication are prohibited from driving, operating, maintaining and repairing the vehicle, attachments and container attachments.
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- Handle the operating instructions with care. Do not remove any pages or make any parts illegible.
- When attaching an attachment to the equipment carrier vehicle, we recommend placing these operating instructions in the respective vehicle for quick access.
- In addition, always observe the operating instructions for the vehicle on which the respective attachment is to be used.

1.13 Salt adhesion during winter operation

If you use attachments in winter for clearing and gritting work, there is a risk of considerable salt ingress into the entire vehicle.

The road salt applied (e.g. sodium chloride or calcium chloride) not only collects as massive incrustations on the entire vehicle, especially in areas closer to the road such as a sweeping system, but also penetrates into all cavities, cracks, grooves and joints on the attachments and container attachments.

The aggressive road salt quickly causes damage to the vehicle through corrosion and attacks seals, rubbers and attachment parts.

During winter operation, the attachments and container attachments must therefore be thoroughly cleaned more frequently in order to remove the salt ingress and prevent corrosion damage and further consequential damage caused by salt ingress.

Clean the attachments and container attachments thoroughly after use in winter service. Take care to remove salt from hard-to-reach areas in particular and then rub these areas dry.

In some situations, it may also be necessary to remove incrustations formed by road salt during use in order to protect relevant attachment and container attachment components from loss of function.

1.14 Drain water at low ambient temperatures

At low ambient temperatures, the water in the water tanks must be drained at the end of work, when the vehicle is no longer in use, to prevent it from freezing.

If the water contained in the water tanks freezes, this can result in damage to the water tanks and the water pipes.

1.15 Attachments for equipment carrier vehicles

Our attachments described in these operating instructions are intended for installation on the front or rear of a multifunctional equipment carrier designed for this purpose. Container attachments are also possible on the respective vehicle, for example for holding sweepings or as grit containers.

Other attachments and container attachments from other manufacturers may only be used if they have been approved by Kärcher Municipal GmbH. Kärcher Municipal GmbH accepts no liability for accidents or malfunctions from non-approved attachments or container attachments.

Always observe the operating instructions for the equipment carrier vehicle to which the attachments or container attachments are to be attached.

1.15.1 Attachments

Attachments are optional and can be attached to the intended attachment points on a vehicle designed for this purpose.

Before installing attachments, check that they are suitable for installation and use: Weight, suspension, speed, power consumption etc.

Attachments that exceed the permitted axle load or endanger the safety and/or stability of the vehicle may not be used.

The attachments described in these operating instructions correspond to the vehicle-specific attachment specifications of Kärcher Municipal GmbH for the equipment carrier vehicle MC 150 from our company. Further information is available from your service partner.

In principle, attachments that have not been approved by Kärcher Municipal GmbH must not be operated.

Attachments that endanger the safety or stability of the vehicle on which they are to be attached may not be used.

A change in the vehicle's centre of gravity when an attachment is fitted or replaced changes the driving characteristics of the vehicle. This presents an increased risk of accident. In this case, familiarise yourself with the vehicle and its altered driving characteristics in a safe area before driving off.

Keep the hydraulic connections of the attachment clean. Clean the plug and coupling with a lint-free cloth before use.

There is a risk of injury from crushing and entrapment when installing the attachments. Do not reach between the attachment point and the attachment. Read the operating instructions for the intended attachment carefully. Wear your personal protective equipment **PSA/PPE** (protective gloves, safety shoes and suitable protective clothing) when installing, removing and operating attachments.

There is a risk of burns when releasing the hydraulic connections on attachments due to hot hydraulic couplings. Allow the vehicle and attachment to cool down before releasing the hydraulic connections. Wear your personal protective equipment **PSA/PPE** (protective gloves, safety shoes and suitable protective clothing) when releasing the hydraulic connections.

Make sure that you connect the attachment hydraulic connections correctly. The hydraulic system must not be pressurised when doing this. If the hydraulic connections are swapped, the function may be reversed (e.g. right-hand instead of left-hand movement of the attachment, simultaneous movement of front and rear attachment when using the same hydraulic circuit). Test the functions of attachments in a safe environment before starting work.

Always switch off the vehicle's engine when installing or removing attachments. As a general rule, no persons are allowed to stand underneath attachments.

No-one may stand between the vehicle and the attachment. There is a risk of injury or even death from falling components.

When working under raised attachments, these must also be mechanically supported to prevent them from falling suddenly in the event of a loss of pressure.

Attachments may only be put into operation and used if all protective devices are fitted, in the protective position and functional.

When the vehicle is travelling on the road with an attachment, the attachment must be in the transport position (raised, secured and covered with any protective covers). Ensure that the attachment does not move unintentionally by switching off the work functions.

Lower attachments (except sweeping systems) completely during work breaks and switch off the work functions to prevent unintentional movements.

It is forbidden to transport persons on or with the attachments.

1.15.2 Ballasting

When using attachments, check if equalising ballast must be used on the intended vehicle.

For information on this, read the operating instructions for the intended vehicle or contact your service partner.

Always comply with the vehicle manufacturer's specifications for ballasting. There is a risk of injury due to the vehicle tipping over and a risk of damage to the vehicle or components.

1.15.3 Floating position

Carefully lower an attached attachment before switching on the floating position. When the floating position is switched on, a raised attachment quickly falls to the ground, depending on its own weight.

Ensure that no persons are in the danger zone when switching on the floating position. There is a risk of injury due to a rapidly falling attachment.

1.15.4 Tilting device for emptying the waste container

DANGER



Risk of serious injury, crushing and even death when working under an unsecured, raised waste container.

In the event of a pressure drop in the system, the raised, unsecured waste container can suddenly lower and trap or shear off persons or body parts.

- For all work under a raised waste container, the safety bolts must be inserted on both sides of the raised waste container and secured with the retaining clips. The safety bolts mechanically secure the raised waste container against sudden lowering in the event of a pressure drop.
- Never carry out work under an unsecured, raised waste container.

You can mount a tiltable waste container as a container attachment on your MC 150 vehicle. If you want to empty the waste container, drive to a suitable location and park the vehicle with the waste container attached on a level surface **without a steering angle** and activate the parking brake. Emptying while travelling is prohibited.

If you park the vehicle with a steering angle in order to tip a waste container, the waste container may damage the driver cabin when it is lifted or the vehicle may tip over due to unevenly distributed loads. There is a risk of injury due to the vehicle tipping over and a risk of damage to the vehicle or components.

When raising and lowering the waste container, make sure that there are no people in the danger zone. There is a risk of injury as the tilting device with the waste container may fall due to an unforeseeable drop in pressure.

Keep a safe distance from the surroundings and structural installations when emptying the waste container on heaps and ramps.

For emptying, move the direction lever to the neutral position (center position) so that the parking brake is activated. Otherwise the vehicle may start moving unintentionally and there is a risk of personal injury and damage to property.

When emptying, always lift the waste container completely to the end position to avoid any residue remaining in the waste container.

Make sure that no persons or animals are in the swivel range of the waste container during the emptying process.

Do not reach into the linkage of the emptying mechanism. This presents a risk of crushing and shearing.

1.15.5 High dumping

There is a risk of injury from the raised waste container on vehicles with high dumping.

Secure the lifted waste container before working. Fit the retainer only from outside the danger zone.

1.15.6 Additional lighting/work lights

If the lower headlights of your vehicle are covered by an attachment, you must use the upper work lights. You can switch on the upper work lights in the ceiling console in the driver cabin.

If an attachment or container attachment, e.g. a waste container, conceals the exterior lighting equipment of the vehicle, this lighting equipment must also be fitted to the attachment or container attachment and must be functional.

Observe the country-specific registration conditions that apply to the country in which you are using the vehicle.

1.15.7 Special attachments

If you would like to operate a special attachment on your vehicle, please contact your service partner or Kärcher Municipal GmbH.

In principle, attachments that have not been approved by Kärcher Municipal GmbH must not be operated.

1.16 Cleaning

Before cleaning, switch off the vehicle's engine (ignition key position [0]) and remove the ignition key from the ignition lock.

Only clean your vehicle, attachments and container attachments in designated areas with a suitable collection point for waste water. Do not allow the washing water to enter the environment. There is a risk of environmental damage.

If you are cleaning the vehicle with the tipping device raised, the raised tipping device, e.g. a lifted waste container, must always be additionally mechanically secured to prevent injuries caused by a suddenly lowering tipping device.

Protect electrical parts (sockets, control units, alternator, etc.) and air filters, etc. from moisture.

Clean your vehicle regularly. Use a high-pressure cleaner for exterior cleaning and keep a minimum distance of 75 cm (29.5 in.) from the vehicle. Use a maximum pressure of 80 bar (1160 psi) at 70 °C (158 °F) water temperature. Cover electrical/electronic parts, insulation panels and stickers and do not expose them to direct water jets.

Do not expose seals, all ventilation grilles and air intake grilles, air inlet openings, the screw-in cover with air filter of the hydraulic oil tank, all other covers and closures of containers and tanks etc. as well as the hydraulic hoses and valves to a direct jet of water.

Do not clean the articulated joint of your vehicle using a high-pressure cleaner.

Be careful not to point the water jet directly at the tyres when cleaning the vehicle with a high-pressure cleaner. This can lead to tyre damage that cannot be seen with the naked eye.

There is a risk of accident and damage to the vehicle due to the sudden detachment of tyre components or the bursting of a tyre while driving.

1.17 Operating materials

Observe the safety instructions on the handling of operating materials. Observe the safety data sheets for the respective operating material; these can be obtained from the manufacturer.

Do not eat or drink when handling operating materials. Do not inhale mists or vapours. Wear your personal protective equipment **PSA/PPE** (safety goggles and protective gloves) when handling operating materials.

The hydraulic system is under high pressure. There is a risk of injury from hydraulic oil escaping under high pressure. Hydraulic oil can penetrate the skin and cause serious injuries. Seek medical attention immediately, even for small wounds, otherwise serious infections may occur.

Do not allow any operating materials to come into contact with hot parts, e.g. on the motor. There is a risk of fire due to flammable operating materials.

Immediately absorb leaked or spilt operating materials with suitable binding agents and dispose of them in an environmentally friendly manner in accordance with the regulations applicable at your operating location.

Liquid waste is hazardous to groundwater and must be collected in closed, authorised containers and disposed of in an environmentally friendly manner in accordance with the regulations applicable at your operating location.

Never pour operating materials or liquid waste into containers that are normally used for drinking. There is a risk of severe chemical burns and poisoning, including death, if accidentally drinking from a drink bottle containing e.g. from a drink bottle in which one of these substances was filled.

1.18 Maintenance | Repair | Service

Comply with the legally prescribed safety inspections for attachments at your operating location.

Repairs and service work may only be carried out by your service partner or authorised Customer Service.

During operation, an attachment can unintentionally start moving due to an electronic fault or similar fault without the driver being present in the vehicle. For example, during test operation in the workshop, etc.

For maintenance, repair and servicing:

- Bring the attachment into the raised position and support it mechanically.
- Bring the travel direction selector switch into the neutral position (middle position).
- Switch off the engine (ignition key position [0]) and remove the ignition key from the ignition lock.
- Make sure that the parking brake has automatically activated.
- Use chocks to secure the vehicle against rolling away.
- Disconnect the vehicle battery via the main switch.

Regular maintenance work must be carried out by the operating personnel, see the relevant maintenance chapter. Failure to carry out maintenance work that must be carried out by the operator, or maintenance work that is overdue, incomplete or not carried out at all, will also invalidate the warranty.

After repairs to attachments and/or a container attachment, check the repaired or replaced components by carrying out a test run or test drive in a safe area and test for correct function.

For all work under a raised waste container, the waste container must be mechanically secured against lowering, for example via locked safety supports on both sides. The safety supports secure the raised waste container against sudden lowering in the event of a pressure drop.

Never carry out work under an unsecured, raised waste container.

Remove non-tipping container attachments before maintenance, repair and service work.

Allow the vehicle and attached attachments to cool down before carrying out any work, otherwise there is a risk of burns due to hot surfaces.

During maintenance, repair or similar work, immediately collect leaked or spilt operating materials in suitable containers and dispose of them in an environmentally friendly manner in accordance with the regulations applicable at your operating location.

Before carrying out any work on the vehicle's electrical system the main switch [vehicle battery disconnected] .

Always disconnect the vehicle battery before carrying out any work on the electrical system, where tools, spare parts etc. may come into contact or come into contact with electrical components. Check beforehand whether your radio is secured with a radio code and whether you have this code to hand for restarting the radio at a later date.

Only have work on the hydraulic system carried out by an authorised Customer Service. Never disconnect hydraulic lines during operation. Depressurise the hydraulic system before working on it.

Troubleshooting, fault elimination and repair during thunderstorms, blizzards, sandstorms, etc. only in roofed buildings.

No welding, sawing or grinding work on safety-related components, e.g. load-bearing structures such as frames, etc.

Only use original spare parts. Contact your service partner or Kärcher Municipal GmbH for this. Otherwise, damage to an attachment or container attachment caused by a spare part not approved by Kärcher Municipal GmbH may invalidate the warranty.

1.19 Storage

Store attachments that are not in use in a well-ventilated, clean and dry room with a level surface and on this.

Do not use plastic film to cover the device, as this will encourage the formation and accumulation of condensation.

If you want to store an attached sweeping system together with the vehicle, make sure that the sweeping system is raised and the sweeping brushes are unloaded.

If the sweeping brushes rest on the floor for a longer period of time when the sweeping system is lowered, they can become permanently deformed due to the sweeping system's own weight.

Sweeping systems removed from the vehicle are stored on changing carriages specially designed for the respective sweeping system.

Make sure that all connections and connections such as e.g. hydraulic hoses, are stored safely and protected from dirt and damage on the changing carriage.

You can purchase the changing carriages from Kärcher Municipal GmbH or your service partner.

If you want to store a vehicle with an installed waste container, empty and clean the waste container thoroughly beforehand to prevent mould from forming.

If you want to store a vehicle with attached or mounted tanks for liquid media, empty these tanks completely beforehand. Make sure that the inside of the tank is ventilated to allow air pressure equalisation in the event of temperature fluctuations, e.g. by only loosely fitting a threaded cap and not tightening it.

Failure to follow these instructions can result in damage to the attachments.

1.20 Disposal | Packaging

The operator must ensure that replaced parts and fluids (e.g. operating fluids and lubricants) are disposed of in an environmentally friendly manner in accordance with the regulations applicable at the operating location and the applicable safety data sheets.

When attachments, container attachments or attachment kits have reached the end of their service life, the operator is responsible for their legally compliant disposal. For this purpose, the attachments, container attachments and attachment kits can be handed over to a legally authorised private or public company.

Packaging waste is generated when attachments, container attachments or attachment kits are delivered. Immediately remove the packing residue and dispose of this in an environmentally friendly manner. You can obtain detailed information from your environmental protection authority responsible for this.

Packaging residues are not toys for children. Keep packaging residues out of the reach of children.

For further questions on the disposal of used attachments or container attachments, contact your local service partner or directly contact Kärcher Municipal GmbH.

1.20.1 Environmental protection

Components such as operating materials and lubricants, e.g. engine oil, that pose a potential hazard to human health and the environment if handled incorrectly or disposed of incorrectly must not be disposed of with household rubbish.

If you have any questions about environmental protection and the disposal of components and substances that are hazardous to health and the environment, please contact Kärcher Municipal GmbH or your local service partner.

2 General notes

Please observe the following instructions, which apply to all attachments and additional equipment described in these operating instructions:

DANGER



Risk of crushing due to the attachment lowering unexpectedly.

- If you are working under raised attachments, always secure them mechanically against sudden lowering, e.g. by underlaying them with suitable blocks, for example wooden blocks.

WARNING



Risk of injury due to the weight of the attachment.

- Observe the following when handling attachments, such as e.g. removal or installation, the tare weight of the attachment.

WARNING



There is a risk of injury from crushing and entrapment when installing and removing the attachments.

- When installing and removing attachments and/or attached containers, always use your personal protective equipment (**PPE**) (at least protective gloves and safety shoes) to avoid injuries caused by entrapment or falling objects.
- Do not reach between the attachment point and the attachment.
- Always secure raised attachments mechanically as well, e.g. by using suitable supports to prevent injuries caused by an attachment dropping unexpectedly.

CAUTION



There is a risk of burns when releasing the hydraulic connections due to hot hydraulic couplings.

- Allow the vehicle to cool down before releasing the hydraulic connections.
- Wear your personal protective equipment **PSA/PPE** (protective gloves, safety shoes and suitable protective clothing) when releasing the hydraulic connections.

CAUTION



Risk of slipping due to spilled or leaked operating fluids and lubricants.

- Remove leaked or spilled operating fluids and lubricants immediately with a binding agent and dispose of them in an environmentally friendly manner.

NOTICE

At low ambient temperatures, the water in the water tanks may freeze if the vehicle is not used for a longer period of time. This can result in damage to the water tanks and the water pipes.

- The water in the water tanks must be drained at the end of work, when the vehicle is subsequently parked, to prevent it from freezing.

NOTICE

Risk of fire due to leaked oil, operating fluids or lubricants contacting hot surfaces on the vehicle.

- Remove any leaked, flammable media from the vehicle immediately.
 - Immediately eliminate any leaks from which flammable media escapes or could escape.
- If necessary, contact an authorised Customer Service or your service partner.

- Only disconnect and connect plug-in couplings, for example hydraulic connections, and other connections with due care and in the knowledge of what you are doing. Always keep the connections and ports free of dirt.
- A square spanner is required to open panels and covers. This is supplied with the vehicle and is part of the equipment.
To prevent damage to the vehicle and/or the attachments, do not use any other tools.
- Environmentally harmful substances are carried in the vehicle, attachments and additional equipment. It is therefore essential to observe the local regulations on environmental protection during use, maintenance and care of the attachments, additional equipment and the entire vehicle.

2.1 Attachments described in these operating instructions

The following attachments and additional equipment are optionally available from Kärcher Municipal GmbH for the MC 150 vehicle.

If you have already configured your vehicle with attachments at the time of purchase, these will be fitted at the factory and are ready for immediate use together with your newly purchased vehicle.

In this case, the attachments are part of the scope of delivery of your vehicle MC 150.

Attachment	Description in chapter
Waste container	"Waste container (factory-fitted)", page 33
Suction mouth	"Suction mouth", page 45
2-brush sweeping system	"2-brush sweeping system (factory-fitted)", page 49
3-brush sweeping system	"3-brush sweeping system (factory-fitted)", page 56
Manual suction hose	"Manual suction hose (factory-fitted)", page 85
High-pressure cleaner	"High-pressure cleaner (factory-fitted)", page 87
Front power lift (attachment kit)	"Front power lift (attachment kit)", page 95

2.2 Operator's workplace

Depending on the type of work, the operator's workplace can be in the driver cabin on the driver's seat or directly on the attachment.

The following table provides information on the operator's workplace while carrying out the work intended for the respective attachment.

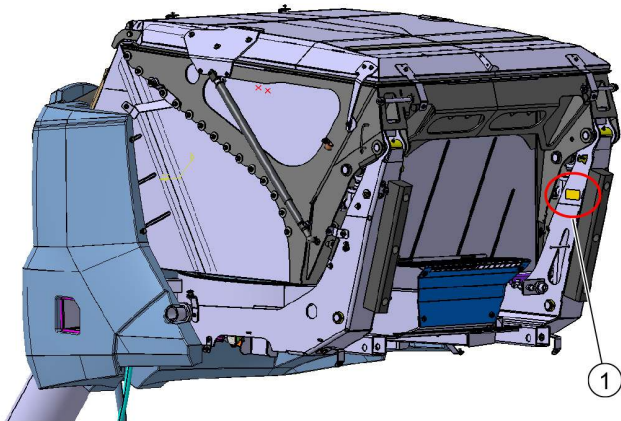
Attachment or attachment kit	Operator's workplace
Waste containers and sweeping systems	In the driver cabin on the driver's seat.
High-pressure cleaner	Outside the vehicle at the spray lance.
Manual suction hose	Outside the vehicle on the manual suction hose.
Front power lift (attachment kit)	With the attachment attached to this: In the driver cabin on the driver's seat.

2.3 Type plates on the attachments

The type plates are located on the attachments, each in a clearly visible position.

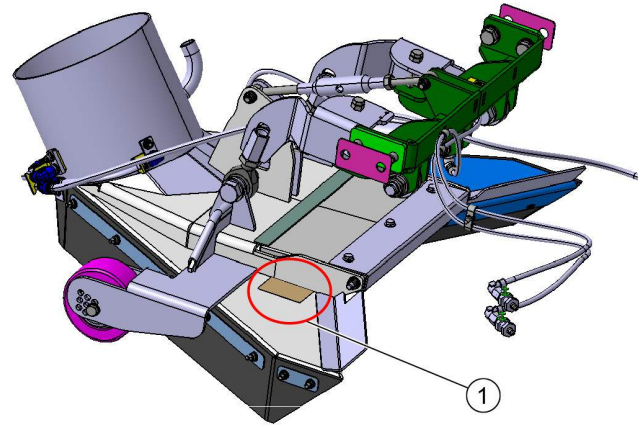
You can find information such as the year of manufacture of an attachment and other specific details, such as the tare weight, on the type plate of the respective attachment.

The following illustrations show the respective position of the type plate.



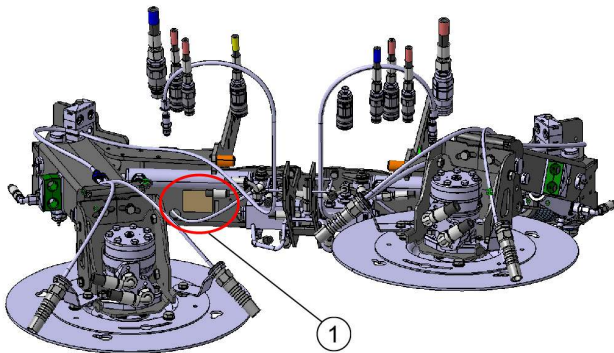
Waste container

- 1 Type plate



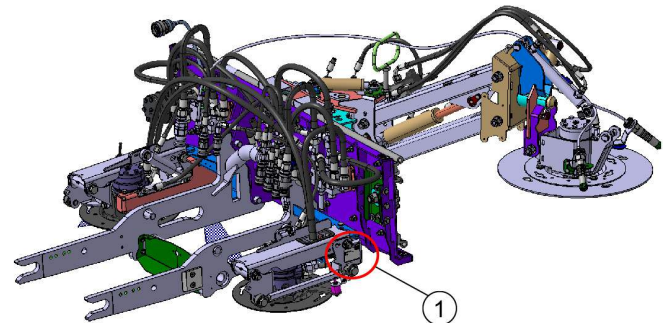
Suction mouth

- 1 Type plate



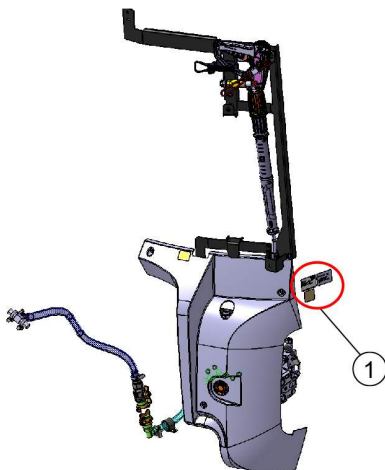
2-brush sweeping system

- 1 Type plate



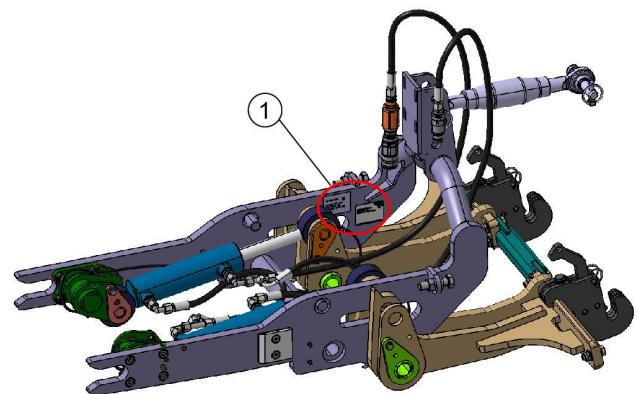
3-brush sweeping system

- 1 Type plate



High-pressure cleaner

- 1 Type plate (attached to the vehicle with a built-in high-pressure cleaner)



Front power lift

- 1 Type plate

2.4 Scope of delivery

Checking the scope of delivery

The attachments described in these operating instructions are intended for factory fitting in accordance with the order confirmation if the vehicle was configured in this way when it was purchased. Check the scope of delivery of your vehicle with the factory-fitted attachments against this order confirmation on vehicle handover or when your vehicle is delivered.

The scope of delivery may vary depending on the selected attachment and/or selected container attachment.

Your attachment purchased separately from the vehicle will be delivered to you in accordance with the order confirmation.

Please report any defects or shipping damage identified on the vehicle with attached attachments when it is handed over, or when separately ordered attachments are delivered, directly to your service partner.

The instruction on how to handle and operate the vehicle with attached attachments is carried out when the vehicle is handed over. The vehicle is subject to instruction and may not be driven and/or operated without instruction, which must be confirmed with date and signature.

2.5 Warranty

The warranty conditions issued by our relevant sales company apply in all countries.

We shall remedy possible malfunctions on your attachment within the warranty period free of cost, provided that a material or manufacturing flaw is the cause.

In the event of a warranty claim, please contact your service partner with your purchase receipt.

Expiry of the warranty

The following circumstances, among others, lead to expiry of the warranty:

- Failure to observe the specifications, notes and instructions in these operating instructions.
- Improper use.
- Continued operation despite recognisable damage and defects.
- Switching off, bypassing or manipulating safety devices.
- Structural, constructional or other changes.
- Installation of accessories and spare parts that have not been approved by Kärcher Municipal GmbH.
- Attaching implements that do not comply with the applicable installation guidelines.
- Failure to carry out maintenance work that must be carried out by the operator, or maintenance work that is overdue.
- Service and inspection work that is missed, overdue, not carried out or not carried out in full, which must be carried out by the service partner and/or an authorised Customer Service.
- Welding work not carried out by the service partner or an authorised Customer Service in accordance with the specifications of Kärcher Municipal GmbH.

This list is not necessarily complete. Please contact your service partner or Kärcher Municipal GmbH for more information.

2.6 EC Declaration of Conformity

The EC Declaration of Conformity for the machine, the waste container including its accessories (such as e.g. high-pressure cleaners) and the brush sweeping systems including all variants and accessories are enclosed with the vehicle as separate printed products.

2.7 Accessories and spare parts

Only use original accessories and original spare parts because they ensure that the device will run safely and fault-free. Only by using original accessories and original spare parts (products approved by Kärcher Municipal GmbH) will you retain your warranty claims.

To avoid hazards and material damage, the installation of spare parts and other repairs may only be carried out by your service partner or an authorised Customer Service.

For information on accessories and spare parts, please contact your service partner or Kärcher Municipal GmbH.

Original accessories: Suction mouth camera² and reversing camera³



Use as suction mouth camera or reversing camera

The suction mouth camera is fastened at the brush sweeping system suction mouth⁴.

As a reversing camera, the camera is attached to the rear of the vehicle.

² option

³ option

⁴ option

3 Before starting a journey

⚠ CAUTION



Risk of accident and injury due to improper operation of attachments, towed equipment and trailers.

Incorrect operation of the attachments and incorrectly attached implements or towed implements and trailers can lead to accidents and subsequent injuries.

- Read these operating instructions before handling (e.e.g. attaching and dismantling, operation, cleaning, etc.) attachments and body containers and act in accordance with them.
- Observe the safety instructions in these operating instructions and also in the operating instructions for the vehicle on which the attachments or container attachments are installed.
- Always observe the permissible loads for the vehicle to which the attachments or container attachments are to be attached.

3.1 Safety check on the sweeper

Carry out the safety check in addition to the departure check on the equipment carrier vehicle.

ADVICE Only start the journey if all points of the safety check are without objection.

Check the operational and traffic safety of the vehicle before driving.:

- Fastening of the waste container.
- Check the hydraulic and electrical connections to the equipment carrier.
- Check the spray water connections to the sweeping system and suction mouth.
- Recycling water ⁵ connection to the suction mouth.
- Check the spray water filling level at the fresh water tank.
- Recycling water ⁶ filling level in the waste container.
- Check the sweeping system and brushes for entangled cords and tape.
- Check the connections at the sweeping system and suction mouth.
- Check the fastening of the sweeping system and suction mouth.

⁵ option

⁶ option

4 Locking of the front attachments

⚠ CAUTION



Risk of accident due to an incorrectly locked attachment.

Check that the locking mechanism is set correctly each time you attach an implement.

The locking mechanism is used to secure mounted attachments, such as e.g. sweeping system, front power lift, etc. The locking levers are located in the centre of the front mounting for attachments.



Lock

- 1 Locking lever
- 2 Adjusting nut

Opening the lock

1. Press the locking lever (1) upwards.
The lock is now open.
2. An attached attachment is no longer secured and you can now remove it or attach an attachment.

Closing the lock

ADVICE The locking mechanism must be adjusted correctly via the adjusting nuts (2) when the attachment is attached for the first time or transferred to another vehicle. When correctly adjusted, the locking mechanism must engage when pressed down beyond the dead point.

1. Press the locking lever (1) downwards.
The lock is engaged beyond the dead point.
2. Adjust the locking mechanism using the adjusting nut (2).
3. Check that the attachment and the locking mechanism are securely and correctly seated on both sides of the holder.

5 Coupling attachments to the vehicle hydraulically

⚠ CAUTION



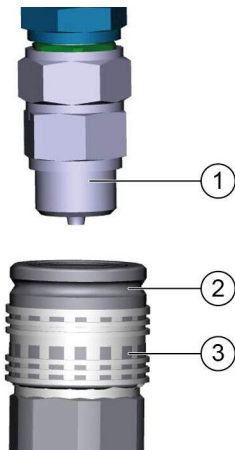
There is a risk of burns when releasing the hydraulic connections due to hot hydraulic couplings.

- Allow the vehicle to cool down before releasing the hydraulic connections.
- Wear your personal protective equipment **PSA/PPE** (protective gloves, safety shoes and suitable protective clothing) when releasing the hydraulic connections.

NOTICE

Risk of damage to the hydraulic connections due to ingress of contamination.

- Keep the hydraulic connections clean.
- Clean the plugs and couplings with a clean, lint-free cloth before connecting and disconnecting hydraulic connections.
- Close all unused hydraulic connections with the dust protection cap provided. This prevents dirt and dust deposits on the hydraulic connection, which can enter the hydraulic system and damage it when a hydraulic line is connected.



Hydraulic coupling

- 1 Coupling connector
- 2 Coupling sleeve
- 3 Ring

Coupling

1. Pull the ring (3) of the coupling sleeve (2) downwards and hold.
2. Press the coupling connector (1) of the attachment hydraulic hose into the coupling sleeve (2).
3. Release the ring (3).
4. Check that the hydraulic coupling is securely engaged.
The attachment is hydraulically coupled to the vehicle.

Uncoupling

1. Depressurise the hydraulic system, see chapter “Depressurising the hydraulic system (pressure relief)” in the vehicle operating instructions.
2. Pull the ring (3) of the coupling sleeve (2) downwards and hold.
3. Pull the attachment hydraulic hose out of the coupling sleeve (2).
The attachment is hydraulically uncoupled from the vehicle.

6 Ex factory waste container and sweeping system

DANGER



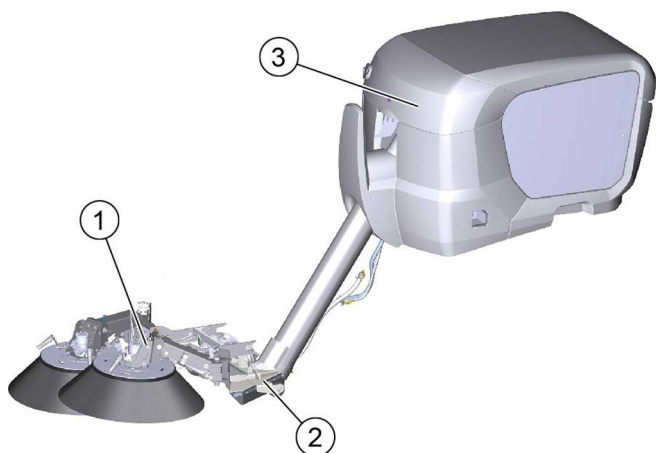
There is a risk of injury from the raised waste container on vehicles with high dumping.

- Secure the lifted waste container before working.
- Fit the retainer only from outside the danger zone.

6.1 Intended use

- In conjunction with a sweeping system, the waste container is designed exclusively for use in plant maintenance for sweeping (on hard surfaces such as asphalt, cobblestones, screed, concrete, etc.) and for transporting waste, such as e.g. dirt, leaves, dust, paper, small branches, small fragments, grit, etc.
- Intended use also includes regular cleaning of the waste container and installed containers, compliance with the prescribed maintenance intervals and specified interval for replacing all hydraulic hoses (every six years).
- No smouldering or burning objects may be swept in or sucked into the waste container In conjunction with a sweeping system.
- Never sweep and/or vacuum reactive metal dusts (e.g. aluminium, magnesium, zinc). In conjunction with highly alkaline or acidic detergents these generate explosive gases.
- Never sweep or vacuum explosive liquids, inflammable gases or undiluted acids and solvents. These include petrol, paint thinners or heating oil, which can form explosive vapours or mixtures through suction air turbulence, also acetone, undiluted acids and solvents because these attack the materials used in the machine.

6.2 Components of the sweeping attachment



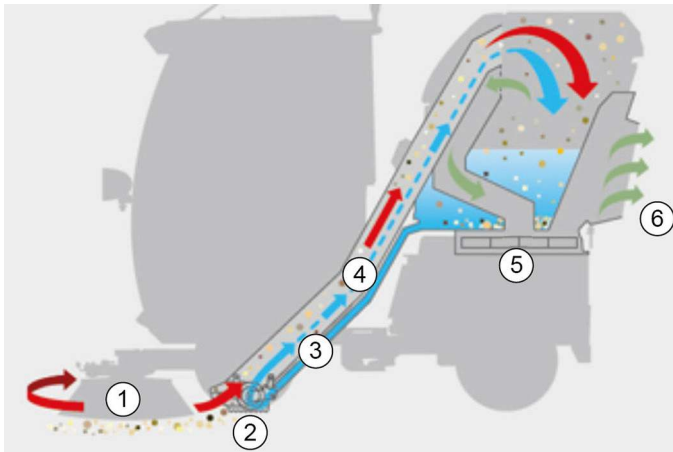
Sweeping system

- 1 Brush sweeping system
- 2 Suction mouth
- 3 Waste container

The entire sweeper attachment for use of the vehicle as a sweeper consists of:

- 2- or 3-brush sweeping system
- Suction mouth
- Waste container

6.3 Operating principle when using the vehicle as a sweeper



Sweeper operating principle

- 1 Side brushes
- 2 Suction mouth
- 3 Water circulation system/recycling mode⁷
- 4 Suction pipe
- 5 Waste container fan
- 6 Exhaust gas/ diffusor

- The dust created is bound by sprayed water.
- The side brushes (1) rotate inwards and convey the waste in front of the suction mouth (2).
- The suction fan (5) generates a vacuum and sucks the waste into the waste container.
- The filtered exhaust air (6) escapes from the rear side of the waste container.
- The dust is more effectively bound when using the optional water circulation system (recycling water mode) (3).

6.4 Waste container (factory-fitted)

The waste container can only be used in conjunction with a sweeping system or scrubbing system from Kärcher Municipal GmbH.

If you configured your vehicle with a waste container when you purchased it, it will already be fitted when your vehicle is delivered.

⁷ option

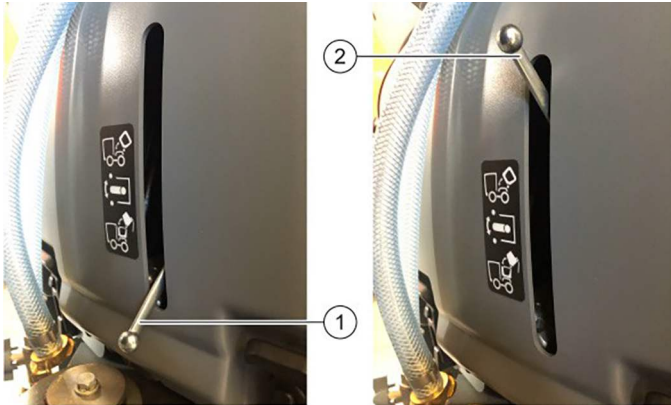
6.4.1 Waste container/attachment frame changeover

The switch lever is located at the front of the rear carriage, above the articulated joint.

There are two different versions of the switch lever depending on the version of the vehicle.

The switch lever is used to operate the changeover valve, which switches the hydraulics between an attached waste container and a tiltable attachment frame.

ADVICE The waste container and attachment frame are electronically monitored. Both functions cannot be activated simultaneously.



Waste container/attachment frame changeover

- 1 Switch lever in lower position: Waste container
- 2 Switch lever in upper position: Attachment frame

6.4.2 Emptying the waste container

⚠ CAUTION



Risk of injury due to tipping of the vehicle when emptying the waste container.

- Empty the waste container down only on a level and solid surface. If the vehicle is unstable, there is a risk of tipping due to the weight shift.

⚠ CAUTION



Risk of injury due to the vehicle rolling away when emptying the waste container.

- Secure the vehicle before starting the emptying process by moving the travel direction selector switch to the neutral position.
- Make sure that the parking brake has automatically activated.

⚠ CAUTION



Risk of injury if the suction fan is switched on.

- Switch off the suction fan before emptying the waste container. There is a risk of injury from entrapment of clothing, hair and limbs.

⚠ CAUTION



Risk of injury in the swivel range of the waste container when emptying.

- Make sure that no persons or animals are in the swivel range of the waste container during the emptying process. Person can be caught and injured by the moving waste container.

⚠ CAUTION



Risk of crushing and shearing when emptying the waste container.

- Do not reach into the linkage of the emptying mechanism. You could become trapped and injure yourself.

NOTICE

Risk of damage to the vehicle and/or the waste container when emptying.

- When emptying, keep a safe distance from stockpiles and ramps to avoid collisions during the emptying process.
- Empty the waste container down only on a level and solid surface. If the vehicle is unstable, there is a risk of tipping due to the weight shift.

NOTICE

Risk of fire when emptying the waste container over smouldering or smouldering materials.

- When emptying the waste container, make sure that there is no smouldering or smouldering material where the contents of the waste container will come to rest when emptying. The collected sweepings, such as e.g. dry leaves, could catch fire.

1. In transport mode, drive the vehicle slowly to the position in which the waste container is to be emptied.
2. Stop the vehicle.
3. Bring the travel direction selector switch into the neutral position (middle position).
4. Make sure that the parking brake has automatically activated.
5. Set the switchover lever to [waste container].
6. Switch on the **PTO** (Power Take Off) hydraulic system.
7. Raise the left side brush and switch it off (move the left joystick to the right and then push it back).
8. Raise the right side brush and switch it off (move the right joystick to the left and then push it back).
9. Switch off the water pump.
10. Wait 20 seconds.
11. Switch off the blower in the waste container.
12. Press the [Raise waste container/attachment frame] switch next to the driver's seat to raise the waste container, see "Controls for waste container or mounting frame", page 100.
13. Lift the waste container fully into its emptying position so that the entire contents are emptied.
14. Loosen adhering dirt with the dirt scraper⁸ and water and remove from the waste container.
15. Press the [Lower waste container/attachment frame] switch next to the driver's seat to lower the waste container back to the original position.

6.4.3 Removing the waste container

⚠ DANGER



Risk of serious injury, crushing and even death when working under an unsecured, raised waste container.

In the event of a pressure drop in the system, the raised, unsecured waste container can suddenly lower and trap or shear off persons or body parts.

- For all work under a raised waste container, the safety bolts must be inserted on both sides of the raised waste container and secured with the retaining clips. The safety bolts mechanically secure the raised waste container against sudden lowering in the event of a pressure drop.
- Never carry out work under an unsecured, raised waste container.

⁸ optional accessory, article number 2.852-251.7

 WARNING



Risk of injury when removing the waste container.

- Stop raising/lowering of the waste container immediately when a person enters the pivoting zone (= danger zone). The person can be caught and injured by the moving waste container.
- Set the waste container down only on a level and solid surface. If the waste container is unstable, it may tip over and injure you and other people in the vicinity.

NOTICE

Risk of damage to the vehicle and/or the waste container during removal and installation.

- Only install or remove the waste container when it is completely empty.
- Set the waste container down only on a level and solid surface. If it is not stable, the waste container can tip over and be damaged and/or damage the vehicle.
- When manoeuvring the vehicle, keep sufficient distance from the supports on which the removed waste container is or has been placed.
- If necessary, use the assistance of a second person (guide) to prevent contact with the supports when installing or removing the waste container.



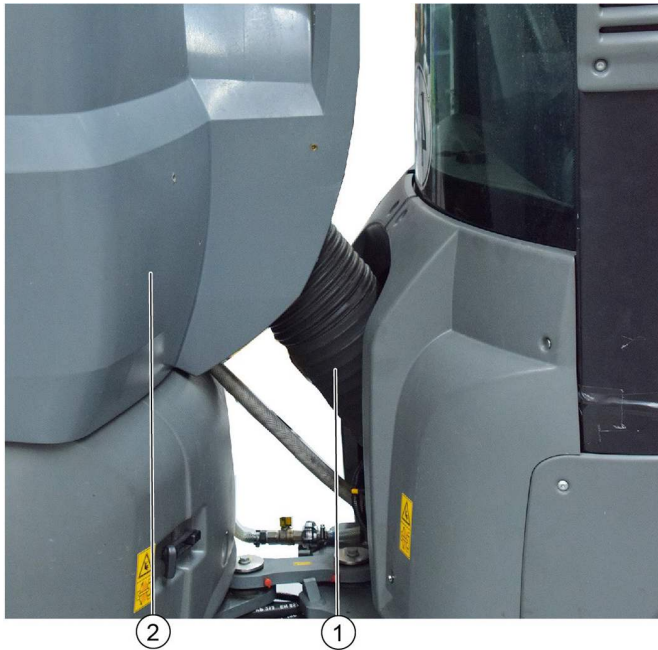
The waste container can only be removed and set down when the “Supports⁹” attachment kit is used.

- The descriptions of the removal and installation are based on the use of these parking supports.

The attachment kit for parking legs (parking supports) can be purchased from Kärcher Municipal GmbH:
Set of parking supports MC 150, article number: 2.321-038.0.

1. Completely empty the waste container and the fresh water tank.
2. Drive to the position where the waste container is to be parked.
Please note that you can only drive forwards out from under the parked waste container.
3. Turn the steering wheel all the way to the right to provide better access to the connections on the articulated joint.

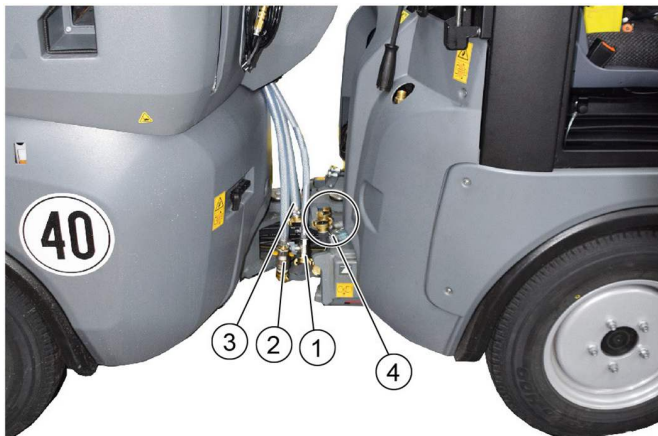
⁹ option



Installing/removing the waste container

- 1 Suction hose
- 2 Waste container

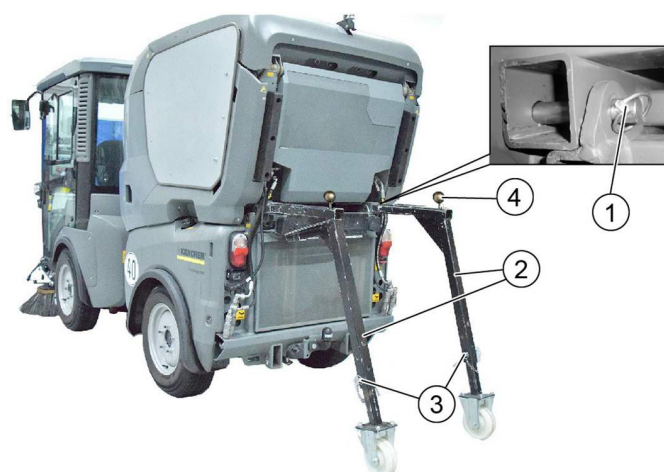
4. Pull the suction hose (1) off the waste container (2) and suction mouth and remove it.



Installing/removing the waste container

- 1 Hose
- 2 Hose
- 3 Hose
- 4 Water connections

5. Disconnect the recycling water hose connection.
6. Disconnect the fresh water hose connection.
7. Disconnect the optional high-pressure cleaner hose connection.
8. Straighten the steering wheel again.



Installing/removing the waste container

- 1 Safety bolt with locking pin
- 2 Rear parking supports
- 3 Height adjustment with bolts and retaining clips
- 4 Safety lever with retaining clips

9. Open the locking pin of the safety bolt (1) and remove it.
10. Pull the safety bolt (1) out.
11. Adjust the rear parking support (2) to an appropriate height and secure in this position.
ADVICE The corresponding height depends on the tyre type and the tyre pressure.
12. Press the locking lever (4) down and push the rear parking support (2) in as far as it will go.
13. Secure the safety lever (4) with the retaining clip.
14. Proceed in the same way with the second rear safety support.
15. Depressurise the hydraulics, see chapter "Depressurising the hydraulic system (pressure relief)" in the operating instructions for the vehicle.
16. Disconnect the electrical and hydraulic connections from the waste container.



Installing/removing the waste container

- 1 Front parking support
- 2 Safety lever with retaining clips
- 3 Brake

17. Set the changeover lever to the “up” position so that the attachment frame can be actuated hydraulically.
18. Lift the attachment frame with the waste container.
19. Press the locking lever (2) down and push the front parking support (1) in as far as it will go.
20. Secure the safety lever (2) with the retaining clip.
21. Proceed in the same way with the second front safety support.
22. Lower the attachment frame.
23. Actuate the roller brakes on the front parking supports.
The waste container now stands free on the parking supports.
24. Drive the rear of the vehicle carefully out from under the waste container.

6.4.4 Attaching the waste container

DANGER



Risk of serious injury, crushing and even death when working under an unsecured, raised waste container.

In the event of a pressure drop in the system, the raised, unsecured waste container can suddenly lower and trap or shear off persons or body parts.

- For all work under a raised waste container, the safety bolts must be inserted on both sides of the raised waste container and secured with the retaining clips. The safety bolts mechanically secure the raised waste container against sudden lowering in the event of a pressure drop.
- Never carry out work under an unsecured, raised waste container.

WARNING



Risk of injury when installing the waste container.

- Stop raising/lowering of the waste container immediately when a person enters the pivoting zone (= danger zone). The person can be caught and injured by the moving waste container.

NOTICE

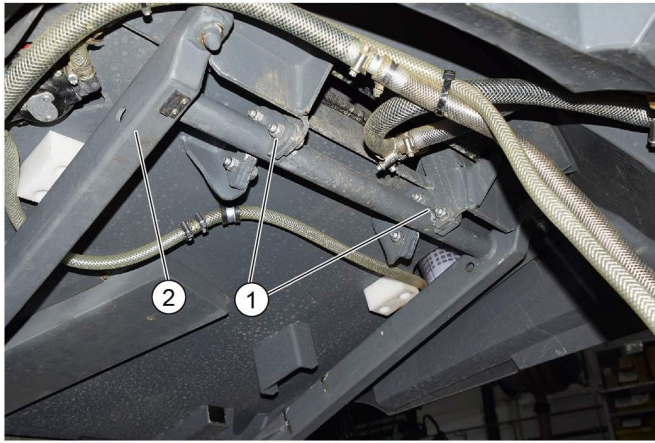
Risk of damage to the vehicle and/or the waste container during removal and installation.

- Only install or remove the waste container when it is completely empty.
- Set the waste container down only on a level and solid surface. If it is not stable, the waste container can tip over and be damaged and/or damage the vehicle.
- When manoeuvring the vehicle, keep sufficient distance from the supports on which the removed waste container is or has been placed.
- If necessary, use the assistance of a second person (guide) to prevent contact with the supports when installing or removing the waste container.



Installing/removing the waste container

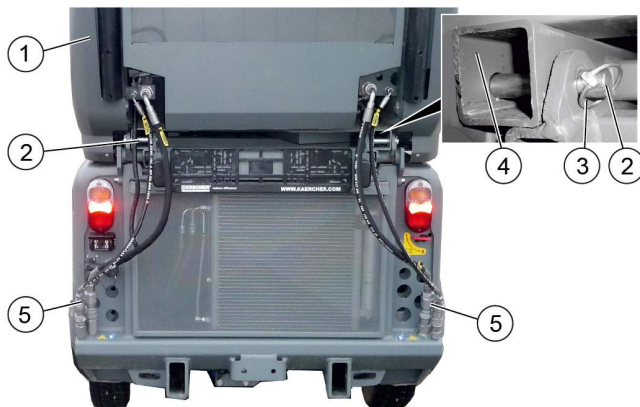
- 1 Front parking support
 - 2 Rear parking support
 - 3 Retaining clip
 - 4 Lever for securing the parking supports
1. Set the changeover lever to the “up” position so that the attachment frame can be actuated hydraulically.
 2. Drive the vehicle carefully and in a straight line backwards under the waste container resting on the parking supports (1) and (2).
Make sure that you approach the waste container from the side with the rear wall of the driver cabin facing the front of the waste container.
If necessary, have a second person instruct you so that you do not bump into the parking supports (1) and (2) when manoeuvring the vehicle.
 3. Lift the attachment frame under the waste container.



Installing/removing the waste container

- 1 Hooks
- 2 Attachment frame

4. Hook the waste container onto the attachment frame (2) using the retaining hooks (1).
5. Raise the attachment frame (2) until the front parking supports are relieved of weight and the rollers of the front parking supports are approx. 20 mm (0.79 in.) in the air.
6. Pull the safety catch and press the lever on the front parking supports to unlock them.
7. Pull out the front parking supports.
8. Lower the attachment frame with the waste container.
9. Pull the safety catch and press the lever on the rear parking supports to unlock them.
10. Pull out the rear parking supports.



Installing/removing the waste container

- 1 Waste container
- 2 Safety bolt
- 3 Locking pin
- 4 Frame
- 5 Hydraulic connection

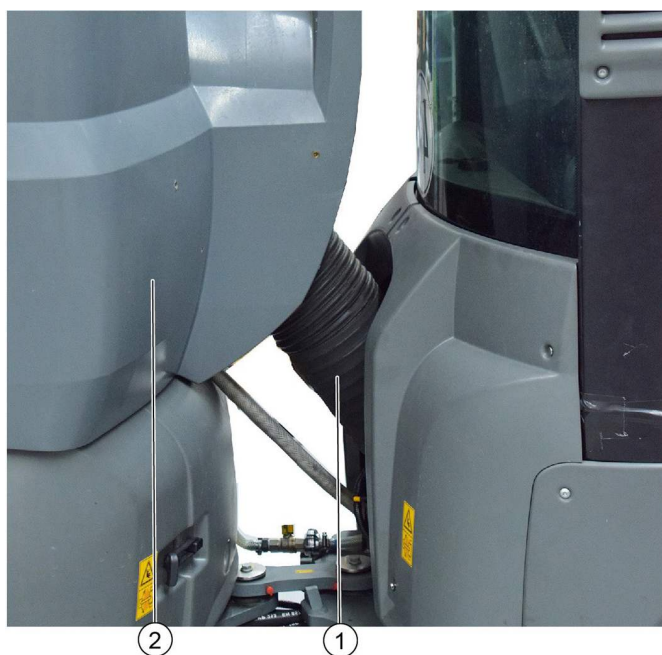
11. Push the safety bolt (2) the of waste container (1) in and secure with the locking pin (3).
12. Depressurise the hydraulics, see chapter "Depressurising the hydraulic system (pressure relief)" in the operating instructions for the vehicle.
13. Connect the electrical and hydraulic connections.



Installing/removing the waste container

- 1 Hose
- 2 Hose
- 3 Hose
- 4 Water connections

- 14. Turn the steering wheel all the way to the right to provide better access to the connections on the articulated joint.
- 15. Connect the recycling water hose.
- 16. Connect the fresh water hose.
- 17. Connect the optional high-pressure cleaner hose.



Installing/removing the waste container

- 1 Suction hose
- 2 Waste container

- 18. Install the suction hose (1) between the waste container (2) and suction mouth.
Installation of the waste container is now complete.

6.4.5 Filling the fresh water tank



Filling the water tank

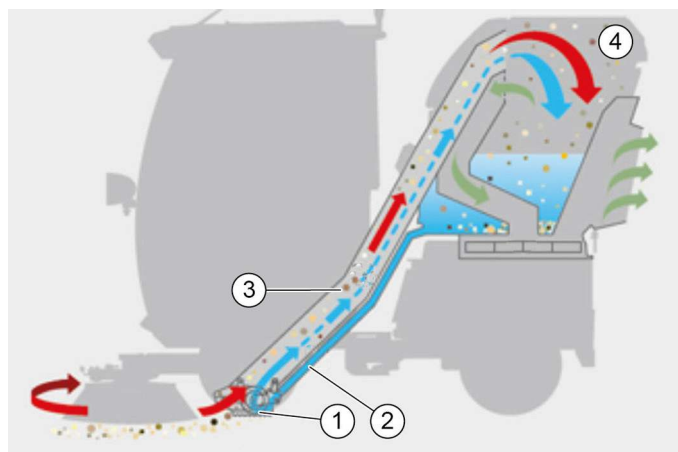
- 1 Filler neck
- 2 Symbol for the [Fill] lever position
- 3 Symbol for the [Closed] lever position
- 4 Switch lever
- 5 Filling level indicator

1. Park the vehicle and secure it against rolling away.
2. Switch off the engine.
3. Open the cap on the filler neck (1).
4. Set the changeover lever (4) to the [Fill] position (2).
5. Connect a water supply hose to the filler neck (1).

ADVICE To prevent back suction, the water hose must not be inserted into the fresh water tank when filling.

6. Open the water inlet and fill the fresh water tank.
7. Close the water inlet again.
8. Remove the water supply hose from the filler neck (1).
9. Close the cap on the filler neck (1).
10. Set the changeover lever (4) to the [Closed] position (3).

6.4.6 Water circulation system / recycling mode



Water circulation system / recycling mode

- 1 Suction mouth
- 2 Recycling water hose
- 3 Suction hose
- 4 Waste container

- In recycling mode, the suction hose (3) is continuously cleaned by water filled into the waste container (4).
- The water is filtered by a pipe filter in the waste container (4) and then channelled through the recycling water hose (2) to the suction mouth (1) via a valve.
- This recycling water is immediately sucked in again at the suction mouth (1) and then channelled back to the waste container (4) through the suction hose (3).
- This continuously cleans the suction hose (3).

6.4.7 Filling the fresh water tank in an optional water circulation system/recycling mode (recycling operation)

With a water circulation system (recycling operation), water is directly filled into the waste container.



Filling the fresh water tank in a water circulation system

- 1 Water filling connection (GEKA)
- 2 Right-hand panel
- 3 Water drain (fill height)

1. Park the vehicle and secure it against rolling away.
2. Switch off the engine.
3. Unlock the right-hand panel (2) and swivel it outwards.
4. Open the caps on the water filling connection (1) and the water outlet (3).
5. Connect a water supply hose to the water filling connection (1).
6. Open the water inlet and fill the waste container with fresh water (max. 100 litres / 21 imp. gal. / 26.42 us. gal.) until the filled fresh water emerges from the open water outlet (3).
7. Close the water inlet again.
8. Remove the water supply hose from the water filling connection (1).
9. Close the caps on the water filling connection (1) and the water outlet (3).
10. Close the right-hand panel (2) again.
11. Switch on recycling mode on the control panel to work with the water circulation system.

6.5 Suction mouth¹⁰

When installing a brush sweeping system for the first time: Fitting and connect the suction mouth

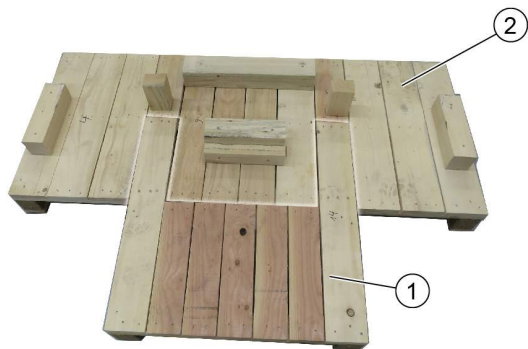
If you purchase a brush sweeping system at a later date, the optional suction mouth must be attached and connected to the brush sweeping system before it is installed.

The following chapters describe the procedure.

¹⁰ option

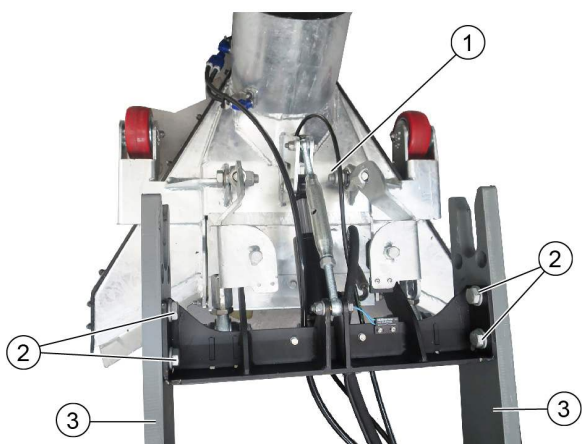
6.5.1 Installing the suction mouth

The suction mouth is attached to a separate pallet on delivery.



Pallet for transporting the brush sweeping system

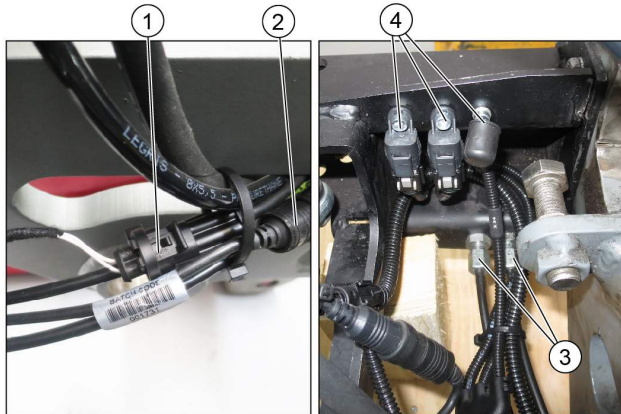
- 1 Small pallet of the brush sweeping system
 - 2 Pallet of the brush sweeping system
1. A small pallet (1) is mounted on the brush sweeping system pallet (2) to protect the upper link. Remove the small pallet (1) before fitting the suction mouth.



Suction mouth and top link arms

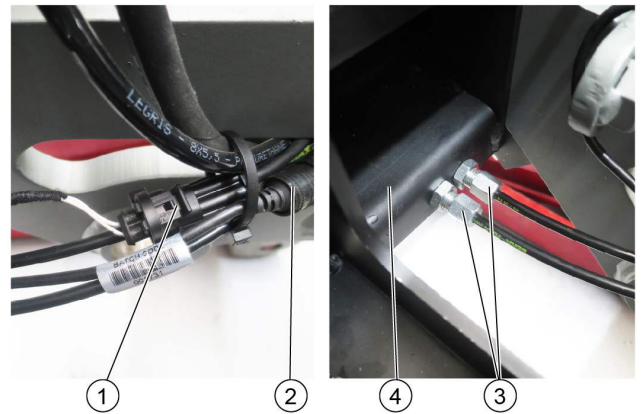
- 1 Suction mouth
 - 2 Screws, washers
 - 3 Upper steering arm
2. Screw the suction mouth (1) to the upper steering arm (3) using screws and washers (2).

6.5.2 Connecting the suction mouth



Connecting the suction mouth to a 2-brush sweeping system

- 1 Reed contact connection
- 2 Suction mouth camera connection ¹¹
- 3 Centralised lubrication connection (bulkhead fitting)
Only available on vehicles equipped with optional central lubrication.
- 4 Plug (not used)



Connecting the suction mouth to a 3-brush sweeping system

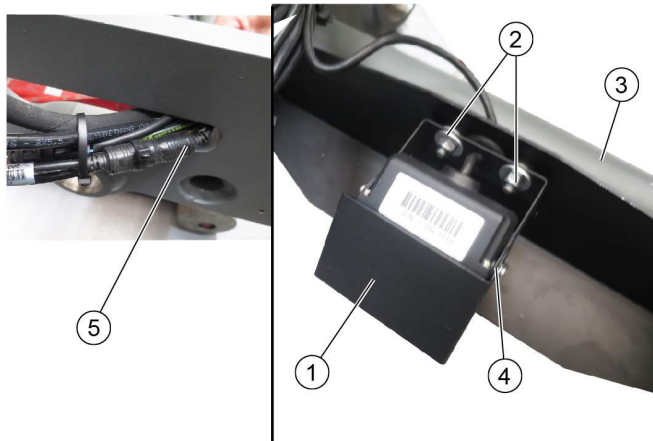
- 1 Reed contact connection
- 2 Suction mouth camera connection ¹²
- 3 Centralised lubrication connection (bulkhead fitting)
Only available on vehicles equipped with optional central lubrication.
- 4 Front plate

1. Connect the reed contact connection (1) to the brush sweeping system.
2. Screw the grease nipple for the centralised lubrication connection (3) into the bulkhead fitting.
ADVICE Only present on vehicles equipped with optional centralised lubrication.
3. Fit the bulkhead screw connection on the front plate (holes already present).
4. Plug in the hoses for the centralised lubrication system.
ADVICE Only present on vehicles equipped with optional centralised lubrication.
5. Connect the recycling water hose.
The hose is part of the scope of delivery of the sweeper attachment.
6. Screw the unused plugs onto the front plate.
7. Route and fasten the hoses and electrical cables in a professional manner.
If necessary, seek the help of a trained specialist.

¹¹ option

¹² option

6.5.3 Attaching and connecting the suction mouth camera¹³



Connecting the suction mouth camera

- 1 Suction mouth camera¹⁴
- 2 Screws, washers, nuts
- 3 Upper steering arm cross strut
- 4 Screws for adjusting/fastening the suction mouth camera (2x)
- 5 Suction mouth camera connection

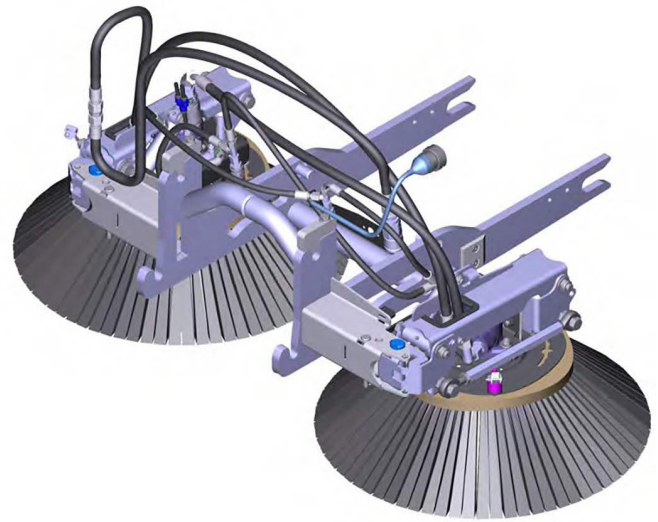
1. Fasten the suction mouth camera (1) to the upper steering arm cross strut (3) using 2 screws, washers and nuts (2).
2. Plug the suction mouth camera plug into the prepared connection (5).
3. Adjust the viewing angle of the suction mouth camera (1).
4. Fasten the adjusted suction mouth camera (1) with the screws (4).

¹³ option

¹⁴ option

6.6 2-brush sweeping system (factory-fitted)

If you configured your vehicle with a 2-brush sweeping system, possibly with the suction mouth¹⁵ when you purchased it, this will already be fitted when your vehicle is delivered.



2-brush sweeping system

2-brush sweeping system

- 1 2-brush sweeping system
- 2 Locking lever
- 3 Device detection plug
- 4 Hydraulic and water connections
- 5 Side brushes

Requirements for removing or installing the 2-brush sweeping system

We recommend a specially designed changing carriage for removing, installing, transporting and storing the 2-brush sweeping system. This changing carriage (2.852-065.0) is available as an optional accessory from Kärcher Municipal GmbH.

The pallet on which the 2-brush sweeping system is mounted on delivery can be used for dismantling and mounting the 2-brush sweeping system. The pallet serves as an assembly aid.

Contact your service partner or Kärcher Municipal GmbH if you need this pallet.

The following descriptions for dismantling and mounting the 2-brush sweeping system are based on the use of this pallet.

Use a lift truck (customer property) to remove or attach the 2-brush sweeping system in order to manoeuvre the pallet or changing carriage.

ADVICE If you have purchased your 2-brush sweeping system separately, you must fit the suction mouth¹⁶ to the 2-brush sweeping system before attaching it to the vehicle for the first time. The optional suction mouth is attached to a separate pallet on delivery of the 2-brush sweeping system.

¹⁵ option

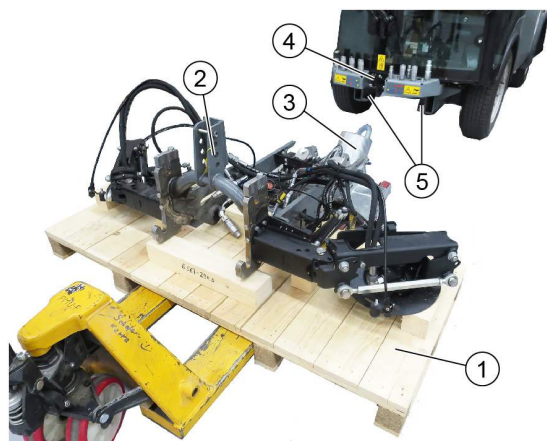
¹⁶ option

6.6.1 Removing the 2-brush sweeping system

Preparation for removal:

1. Park the vehicle on a level surface.
2. Set the travel direction selector switch in the neutral position (middle position).
3. Depressurise the front hydraulics, see chapter "Depressurising the hydraulic system (pressure relief)" in the operating instructions for the vehicle.
4. Switch off the engine.
5. Make sure that the parking brake has automatically activated.
6. Remove the ignition key from the ignition lock.
7. If necessary, secure the vehicle against rolling away.

Disconnection:



2-brush sweeping system on pallet

- 1 Pallet
 - 2 2-brush sweeping system
 - 3 Suction mouth¹⁷, installed
 - 4 Locking lever in the upper position (lock open)
 - 5 Holder on the vehicle
1. Remove the side brushes. This is performed in the same manner as when replacing worn side brushes, see "Replacing the side brush", page 76.
 2. Drive a lift truck (customer property) with the empty pallet (1) on it under the attached 2-brush sweeping system (2).
 3. Open the lock, see "Locking of the front attachments", page 30.
 4. Move the 2-brush sweeping system (2) on the pallet (1) out of the holder on the vehicle (5) approx. 10 cm .
 5. Disconnect the device detection plug from the vehicle.
 6. Disconnect the water and hydraulic hoses from the connections.
 7. Use the lift truck to move the pallet (1) with the 2-brush sweeping system (2) resting on it all the way out.
 8. Secure the disconnected connections (device detection plug, water and hydraulic hoses) on the pallet so that they are protected from dirt, slipping or falling and from damage caused by jamming or being driven over, etc.
If you use the changing carriage¹⁸ , there is a special holder on the changing carriage where you can stow the separate connections.
 9. If you do not want to attach any other attachment to the vehicle at this point, close the locks again, see "Locking of the front attachments", page 30.
 10. Store the removed 2-brush sweeping system on the pallet (1) together with the side brushes in a dry, well-ventilated place.

¹⁷ option

¹⁸ option

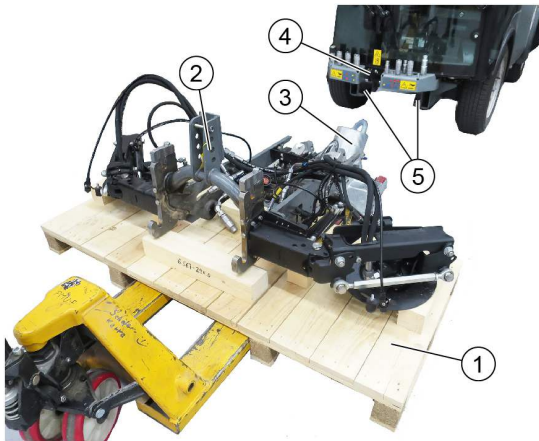
6.6.2 Installing the 2-brush sweeping system

ADVICE If you purchase a 2-brush sweeping system at a later date, the optional suction mouth must be attached and connected to the 2-brush sweeping system before it is installed. see "Suction mouth", page 45.

Preparation for installation:

1. Park the vehicle on a level surface.
2. Set the travel direction selector switch in the neutral position (middle position).
3. Switch off the engine.
4. Make sure that the parking brake has automatically activated.
5. Remove the ignition key from the ignition lock.
6. If necessary, secure the vehicle against rolling away.
7. Move the locking lever for securing the front attachments to the upper position, see "Locking of the front attachments", page 30.
8. Remove the small pallet to protect the top link from the large pallet on which the 2-brush sweeping system is mounted.
9. If your scope of delivery includes an optional suction mouth, make sure that it is already installed, see "Suction mouth", page 45.

Attachment:



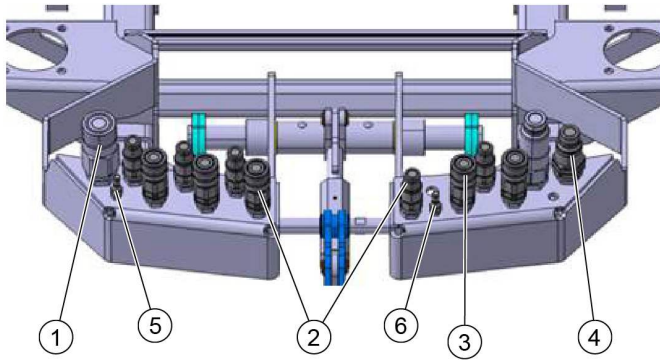
2-brush sweeping system on pallet

- 1 Pallet
- 2 2-brush sweeping system
- 3 Suction mouth¹⁹, installed
- 4 Locking lever in the upper position (lock open)
- 5 Holder on the vehicle

1. Drive a lift truck (customer property) under the pallet (1) with the attached 2-brush sweeping system (2).
2. Use the lift truck to drive the 2-brush sweeping system (2) into the holder on the vehicle (5) and position the 2-brush sweeping system (2) approx. 10 cm in front of the vehicle.
3. Ensure that the locking lever is in the upper position (4).
4. Attach the hydraulic hoses to the connections, see "Connecting the hydraulic and water connections", page 52. Ensure that the hydraulic hoses have the same connection colours.
5. Attach the water hoses to the connections, see page 52.
6. plug the device detection plug into the vehicle.
7. Drive the 2-brush sweeping system (2) into the holder on the vehicle (5) as far as it will go.
8. Close the lock, see "Locking of the front attachments", page 30.
9. Drive the lift truck with the empty pallet (1) on it out from under the vehicle. Keep the pallet (1) for possible later dismantling of the 2-brush sweeping system and for its storage or transport.
10. Install the side brushes. This is performed in the same manner as when replacing worn side brushes, see "Replacing the side brush", page 76.
11. The installation of the 2-brush sweeping system (2) is now complete and you can start operating it.

¹⁹ option

6.6.3 Connecting the hydraulic and water connections

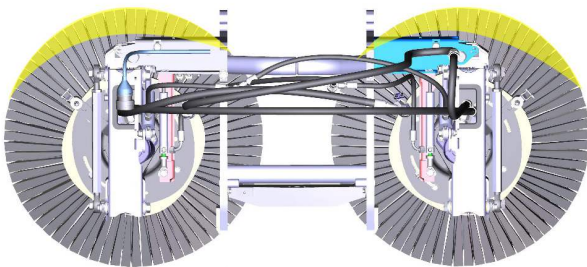


Hydraulic and water connections

- 1 Brush **PTO**
- 2 Suction mouth/sweeping brush: Swivelling
- 3 Sweeping brush: Raising / lowering
- 4 Brush **PTO**
- 5 Water connection, right-hand side of vehicle
- 6 Water connection, left-hand side of vehicle

1. Plug in the hydraulic hoses according to the colour coding.
2. Attach the water hoses for the right-hand side of the vehicle (5) and the left-hand side of the vehicle (6).

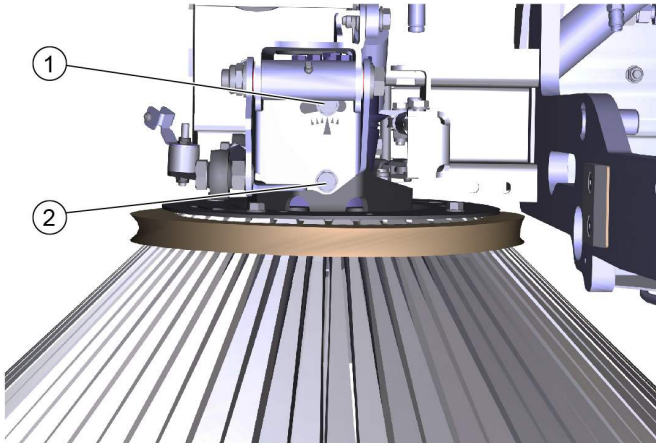
6.6.4 Setting the sweeping level of the 2-brush sweeping system



Adjusting the sweeping pattern

1. Switch off the engine and secure the vehicle against rolling away.
2. Adjust the sweeping pattern using the following descriptions as shown in the illustration above:
 - Left: 9:00 a.m. - 2:00 p.m. (9:00 a.m. - 2:00 p.m.)
 - Right: 10:00 a.m. - 3:00 p.m. (10:00 a.m. - 3:00 p.m.)

Adjusting the side inclination

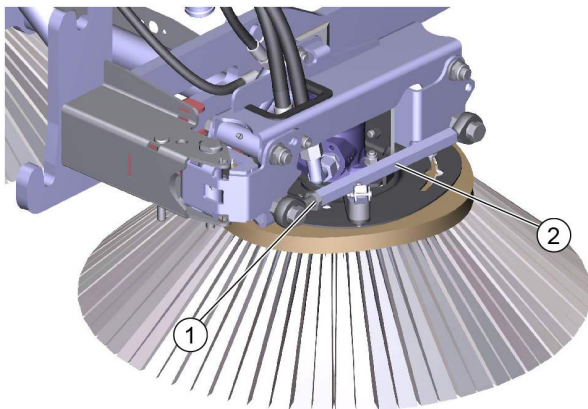


Adjusting the side inclination

- 1 Screw 1
- 2 Screw 2

1. Loosen the screws (1) and (2).
2. Adjust the side inclination of the side brush via the rotation point of the screw (1).
3. Tighten the screws (1) and (2) again.
4. Proceed in the same way with the 2nd side brush.

Adjusting the head inclination forwards



Adjusting the head inclination forwards

- 1 Lock nut
- 2 Hexagonal threaded rod

1. Loosen the lock nut (1).
2. Adjust the head tilt of the side brush using the hexagonal threaded rod (2).
3. Tighten the lock nut (1) again.
4. Proceed in the same way with the 2nd side brush.

Adjusting the sweeping brush contact pressure

The 2-brush sweeping system has a hydraulic brush contact pressure relief system.
You do not need to make any manual settings here.

6.6.5 Pedal for sweeping brush contact pressure

The contact pressure for the sweeping brushes is controlled via a separate pedal on the left-hand side of the steering column.



Pedals

- 1 Accelerator pedal
 - 2 Brake pedal
 - 3 Pedal for brush unloading/brush speed
(function only active with an attached sweeping system²⁰.)
1. Press the pedal (3) briefly in the case of heavy soiling.
The sweeping brushes then work with increased sweeping brush speed and full contact pressure.
 2. Press and hold the pedal (3) when reversing.
The suction mouth then remains down and the sweepings are sucked in even when reversing.

6.6.6 Brush contact pressure

A green bar in the multifunction display indicates a reduction in the brush contact pressure.
A red bar indicates an increase in the brush contact pressure.

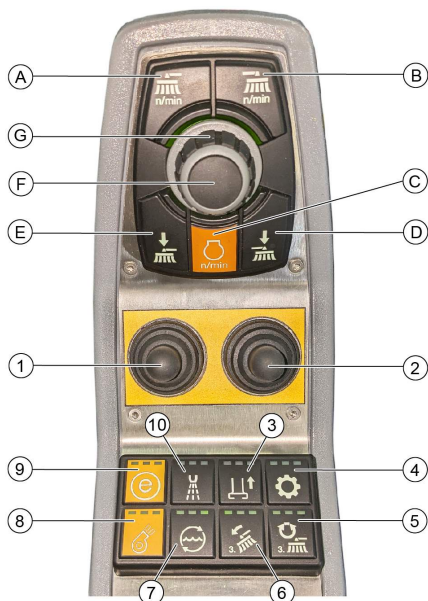
6.6.7 Control panel: Assignments for a sweeper with a 2-brush sweeping system



Active functions are indicated by illuminated symbols.

- The symbols in the switches and buttons light up when the respective function is switched on.

²⁰ option



- A** Sweeping brush speed selection, common for the left-hand and right-hand sides.
- B** Button is not used.
- C** Press the button to adjust the engine speed.
The suction performance depends on the set engine speed.
 - 1600 rpm light waste
 - 2200 rpm normal soiling
 - 2500 rpm strong, heavy soiling
- D** Button is not used.
- E** Left-hand and right-hand side brush contact pressure.
- F** Save button: Press to save set values or programs.
- G** Rotary knob: Press, then turn to change the set values.

Belegung Bedienkonsole

- 1** Left joystick:
 - Joystick forwards: Lower the brush arms simultaneously and switch on the side brushes.
 - Joystick backwards: Raise the brush arms simultaneously and switch off the side brushes.
 - Joystick to the left/right: Pivot the brush arms simultaneously.
- 2** Right joystick: Button is not used.
- 3** Raise/lower suction mouth
- 4** Switch the **PTO** hydraulic system on/off
- 5** Button is not used.
- 6** Button is not used.
- 7** Switch water circulation function on/off (recycling water)
- 8** Switch suction fan on/off
The suction fan has an afterrun time of approx. 15 seconds after being switched off.
- 9** ECO function: Switches the complete work program on.
PTO (side brushes, suction fan), fresh water, water circulation (recycling water).
- 10** Switch the water pump on/off

Switch over to 2-brush sweeping system

- 1. Switch on the ignition.
- 2. Press function button [F10] on the multifunction display of the vehicle.
- 3. Use the [F5] function key to select [Sweeping system pulled].

6.6.8 Maintenance and care of the sweeping systems

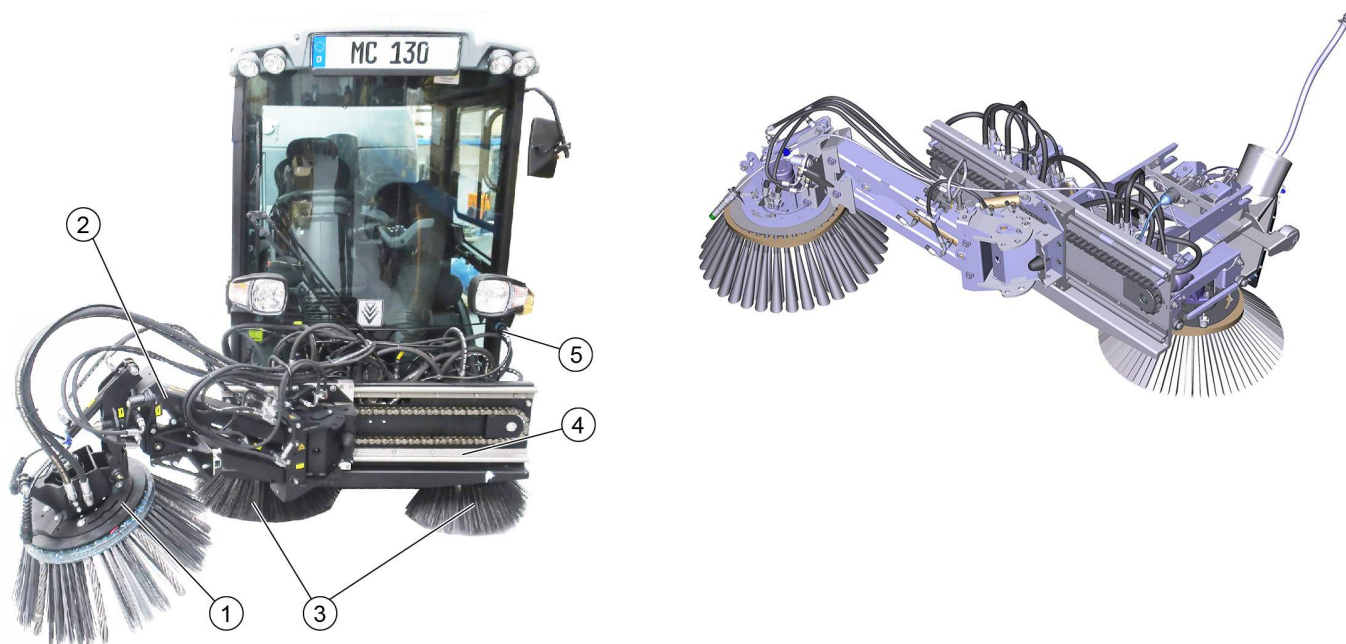
For maintenance and care of the sweeping systems, see "Maintenance and care of the 2-brush sweeping system", page 69 and/or "Maintenance and care of the 3-brush sweeping system", page 72.

6.7 3-brush sweeping system (factory-fitted)

If you configured your vehicle with a 3-brush sweeping system, possibly with the suction mouth²¹ when you purchased it, this will already be fitted when your vehicle is delivered.

The 3rd brush is a movable front brush, which is mounted on a carriage and can be moved horizontally.

If a corresponding weed brush is used as the 3rd brush, the 3-brush sweeping system can be used for weed removal



3-brush sweeping system

- 1 Front brush
- 2 Front brush arm
- 3 Side brushes (similar to the 2-brush sweeping system)
- 4 Carriage (linear guide)
- 5 Device detection plug

Requirements for removing or installing the 3-brush sweeping system

We recommend a specially designed changing carriage for removing, installing, transporting and storing the 3-brush sweeping system. This changing carriage (2.852-862.0) is available as an optional accessory from Kärcher Municipal GmbH.

The pallet on which the 3-brush sweeping system is mounted on delivery can be used for removing and installing the 3-brush sweeping system. The pallet serves as an assembly aid.

Contact your service partner or Kärcher Municipal GmbH if you need this pallet.

The following descriptions for removing and installing the 3-brush sweeping system are based on the use of this pallet.

Use a lift truck (customer property) to remove or attach the 3-brush sweeping system in order to manoeuvre the pallet or changing carriage.

ADVICE If you have purchased your 3-brush sweeping system separately, you must fit the suction mouth²² to the 3-brush sweeping system before attaching it to the vehicle for the first time. The optional suction mouth is attached to a separate pallet on delivery of the 3-brush sweeping system.

²¹ option

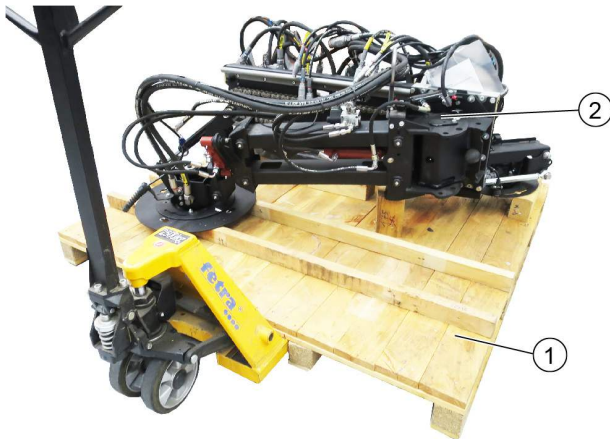
²² option

6.7.1 Removing the 3-brush sweeping system

Preparation for removal:

1. Park the vehicle on a level surface.
2. Set the travel direction selector switch in the neutral position (middle position).
3. Depressurise the front hydraulics, see chapter "Depressurising the hydraulic system (pressure relief)".
4. Switch off the engine.
5. Make sure that the parking brake has automatically activated.
6. Remove the ignition key from the ignition lock.
7. If necessary, secure the vehicle against rolling away.

Disconnection:



3-brush sweeping system on pallet

- 1 Pallet
- 2 3-brush sweeping system

1. Remove the side brushes and the front brush. This is performed in the same manner as when replacing worn side brushes, see "Replacing the side brush", page 76.
2. Drive a lift truck (customer property) with the empty pallet (1) on it under the attached 3-brush sweeping system (2).
3. Open the lock, see "Locking of the front attachments", page 30.
4. Move the 3-brush sweeping system (2) on the pallet (1) out of the holder on the vehicle approx. 10 cm.
5. Disconnect the device detection plug from the vehicle.
6. Disconnect the water and hydraulic hoses from the connections.
7. Use the lift truck to move the pallet (1) all the way out with the 3-brush sweeping system (2) resting on it.
8. Secure the disconnected connections (device detection plug, water and hydraulic hoses) on the pallet so that they are protected from dirt, slipping or falling and from damage caused by jamming or being driven over, etc.
If you use the changing carriage²³, there is a special holder on the changing carriage where you can stow the separate connections.
9. If you do not want to attach any other attachment to the vehicle at this point, close the locks again, see "Locking of the front attachments", page 30.
10. Store the removed 3-brush sweeping system on the pallet (1) together with the side brushes and front brush in a dry, well-ventilated place.

²³ option

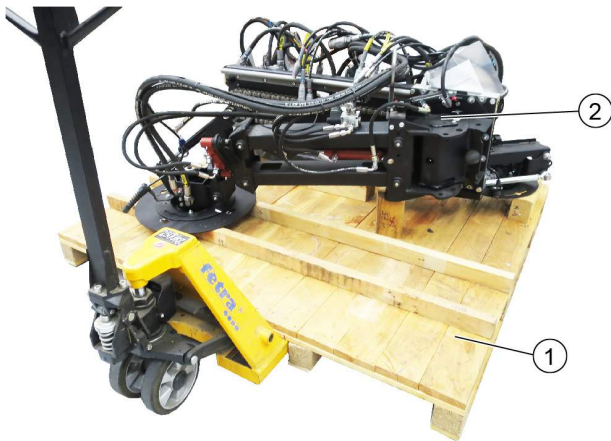
6.7.2 Installing the 3-brush sweeping system

ADVICE If you purchase a 3-brush sweeping system at a later date, the optional suction mouth must be attached and connected to the 3-brush sweeping system before it is installed. see "Suction mouth", page 45.

Preparation for installation:

1. Park the vehicle on a level surface.
2. Set the travel direction selector switch in the neutral position (middle position).
3. Switch off the engine.
4. Make sure that the parking brake has automatically activated.
5. Remove the ignition key from the ignition lock.
6. If necessary, secure the vehicle against rolling away.
7. Move the locking lever for securing the front attachments to the upper position, see "Locking of the front attachments", page 30.
8. Remove the small pallet protecting the upper steering arm from the large pallet on which the 3-brush sweeping system is mounted.
9. If your scope of delivery includes an optional suction mouth, make sure that it is already installed, see "Suction mouth", page 45.

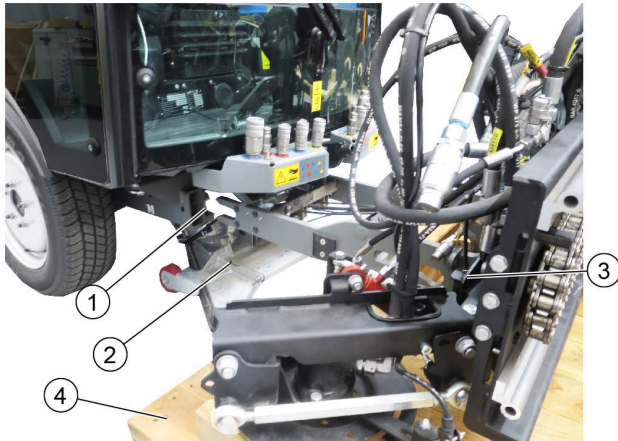
Attachment:



3-brush sweeping system on pallet

- 1 Pallet
- 2 3-brush sweeping system

1. Drive a lift truck (customer property) under the pallet (1) with the attached 3-brush sweeping system (2).



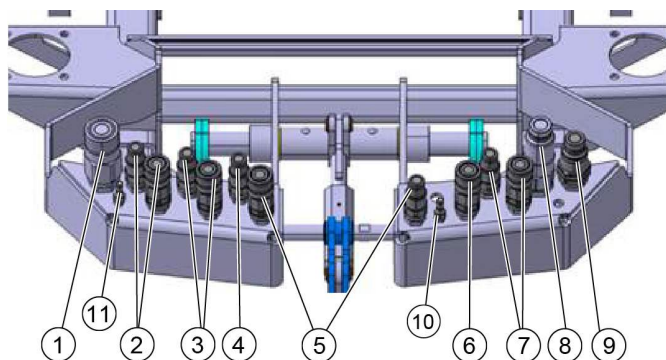
3-brush sweeping system for attachment to the vehicle

- 1 Holder on the vehicle
- 2 Suction mouth²⁴, installed
- 3 3-brush sweeping system
- 4 Pallet

2. Use the lift truck to drive the 3-brush sweeping system (3) into the holder on the vehicle (1) and position the 3-brush sweeping system (3) approx. 10 cm in front of the vehicle.
3. Ensure that the locking lever is in the upper position.
4. Attach the hydraulic hoses to the connections, see "Connecting the hydraulic and water connections", page 52. Ensure that the hydraulic hoses have the same connection colours.
5. Attach the water hoses to the connections, see page 52.
6. plug the device detection plug into the vehicle.
7. Drive the 3-brush sweeping system (3) into the holder on the vehicle (1) as far as it will go.
8. Close the lock, see "Locking of the front attachments", page 30.
9. Drive the lift truck with the empty pallet (4) on it out from under the vehicle.
Keep the pallet (4) for possible later removal of the 3-brush sweeping system and for its storage or transport.
10. Install the side brushes and the front brush. This is performed in the same manner as when replacing worn side brushes, see "Replacing the side brush", page 76.
11. The installation of the 3-brush sweeping system (3) is now complete and you can start operating it.

²⁴ option

6.7.3 Connecting the hydraulic and water connections

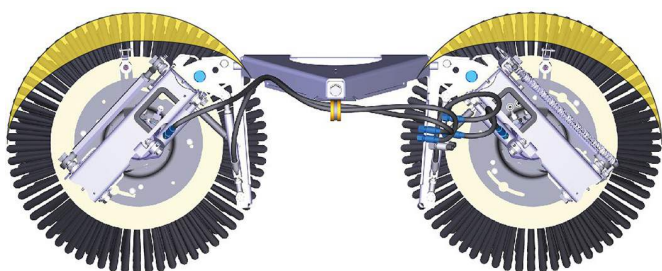


Hydraulic and water connections

- 1 Brush **PTO**
- 2 Tilt/roll front brush
- 3 Raise/lower front brush
- 4 Leakage oil
- 5 Pivot suction mouth/sweeping brush
- 6 Raise/lower sweeping brush
- 7 Pivot front brush
- 8 **PTO** 80 l/min (17.60 imp. gal. / 21.13 us. gal.)
- 9 Brush **PTO**
- 10 Water connection, left-hand side of vehicle
- 11 Water connection, right-hand side of vehicle

1. Plug in the hydraulic hoses according to the colour coding.
2. Attach the water hoses for the left-hand side of the vehicle (10) and the right-hand side of the vehicle (11).

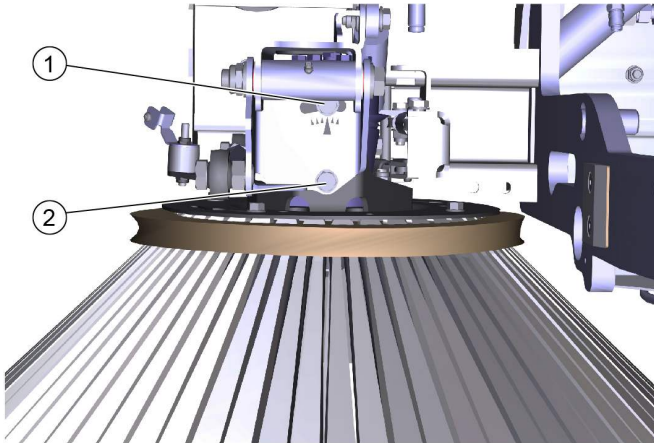
6.7.4 Adjusting the sweeping pattern of the 3-brush sweeping system



Adjusting the sweeping pattern

1. Switch off the engine and secure the vehicle against rolling away.
2. Adjust the sweeping pattern using the following descriptions as shown in the illustration above:
 - Left: 9:00 a.m. - 2:00 p.m. (9:00 a.m. - 2:00 p.m.)
 - Right: 10:00 a.m. - 3:00 p.m. (10:00 a.m. - 3:00 p.m.)

Adjusting the side inclination

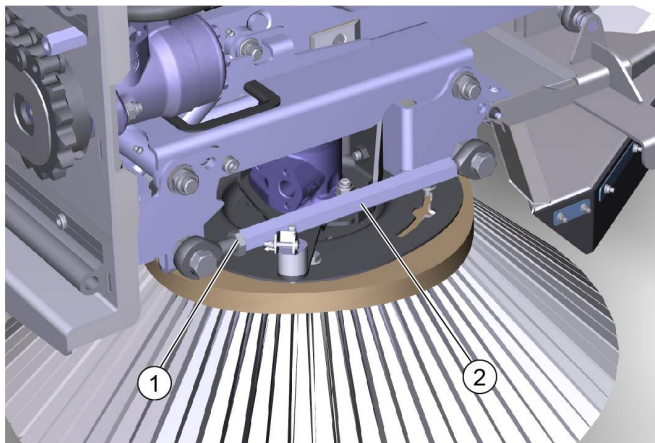


Adjusting the side inclination

- 1 Screw 1
- 2 Screw 2

1. Loosen the screws (1) and (2).
2. Adjust the side inclination of the side brush via the rotation point of the screw (1).
3. Tighten the screws (1) and (2) again.
4. Proceed in the same way with the 2nd side brush.

Adjusting the head inclination forwards



Adjusting the head inclination forwards

- 1 Lock nut
- 2 Hexagonal threaded rod

1. Loosen the lock nut (1).
2. Adjust the head tilt of the side brush using the hexagonal threaded rod (2).
3. Tighten the lock nut (1) again.
4. Proceed in the same way with the 2nd side brush.

Adjusting the sweeping brush contact pressure

The 3-brush sweeping system has a hydraulic brush contact pressure relief system. You do not need to make any manual settings here.

6.7.5 Pedal for sweeping brush contact pressure

The contact pressure for the sweeping brushes is controlled via a separate pedal on the left-hand side of the steering column.



Pedals

- 1 Accelerator pedal
 - 2 Brake pedal
 - 3 Pedal for brush unloading/brush speed
(function only active with an attached sweeping system²⁵.)
1. Press the pedal (3) briefly in the case of heavy soiling.
The sweeping brushes then work with increased sweeping brush speed and full contact pressure.
 2. Press and hold the pedal (3) when reversing.
The suction mouth then remains down and the sweepings are sucked in even when reversing.

6.7.6 Brush contact pressure

A green bar in the multifunction display indicates a reduction in the brush contact pressure.
A red bar indicates an increase in the brush contact pressure.

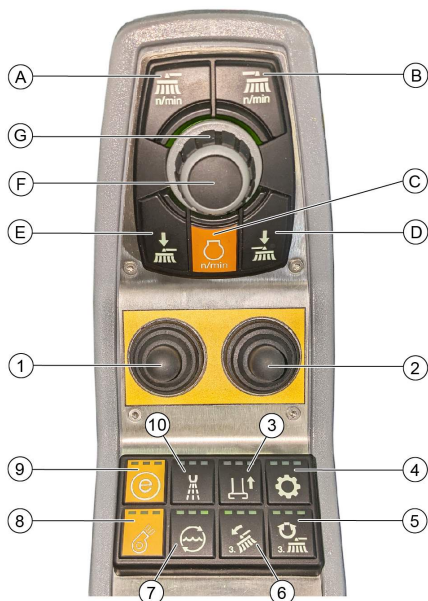
6.7.7 Control panel: Assignments for a sweeper with a 3-brush sweeping system



Active functions are indicated by illuminated symbols.

- The symbols in the switches and buttons light up when the respective function is switched on.

²⁵ option



- A** Front brush speed selection.
- B** Sweeping brush speed selection, common for the left-hand and right-hand sides.
- C** Press the button to adjust the engine speed.
The suction performance depends on the set engine speed.
 - 1600 rpm light waste
 - 2200 rpm normal soiling
 - 2500 rpm strong, heavy soiling
- D** Side brush load relief
- E** Front brush load relief/contact pressure
- F** Save button: Press to save set values or programs.
- G** Rotary knob: Press, then turn to change the set values.

Belegung Bedienkonsole

- 1** Left joystick: To operate the front brush.
 - Joystick forwards: Front brush lowers and switches on.
Increase the contact pressure in the case of heavy soiling.
 - Joystick backwards: Front brush raises and switches off.
 - Joystick to the left/right: Front brush moves to the left/right.
- 1** Right joystick: Operation of the side brushes.
 - Joystick forwards: Lower the brush arms simultaneously and switch on the side brushes.
 - Joystick backwards: Raise the brush arms simultaneously and switch off the side brushes.
 - Joystick to the left/right: Pivot the brush arms simultaneously.
- 3** Raise/lower suction mouth
- 4** Switch the **PTO** hydraulic system on/off
- 5** Front brush rotation direction reversal
- 6** When activated: Tilt/roll the front brush with the right joystick
- 7** Switch water circulation function on/off (recycling water)
- 8** Switch suction fan on/off
The suction fan has an afterrun time of approx. 15 seconds after being switched off.
- 9** ECO function: Switches the complete work program on.
PTO (side brushes, suction fan), fresh water, water circulation (recycling water).
- 10** Switch the water pump on/off

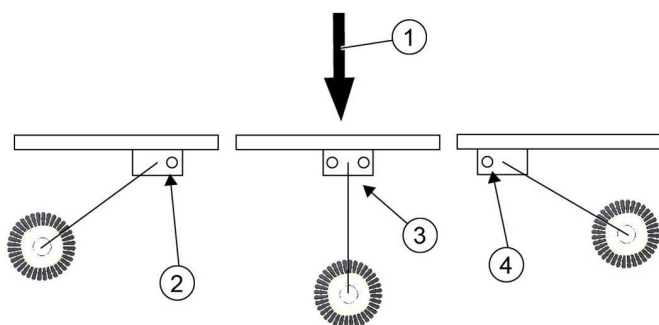
6.7.8 Using the weed brush

NOTICE

Risk of damage to the 3-brush sweeping system when used as a weed brush due to collision of the front brush arm with the linear guide.

- Depending on the setting of the splash guard on the front brush, you must ensure that there is sufficient clearance between the linear guide and the front brush arm during transport journeys.

You can use the 3-brush sweeping system as a weed brush by locking the position of the front brush in one of three possible positions.

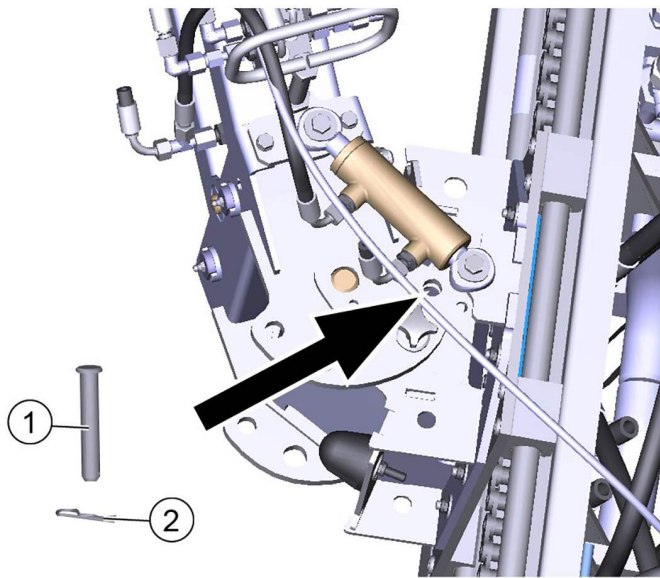


Possible positions for use as a weed brush

- 1 Travel direction
 - 2 Front brush right position (viewed in the travel direction)
 - 3 Front brush front centre position
 - 4 Front brush left position (viewed in the travel direction)
1. Lock the front brush in the desired working position using the bolt and cotter pin, see chapter "Securing the front brush during transport".
 2. If you want to work in the "left" position (4), you must activate the [Reverse direction of rotation of the front brush] function in the control panel, see chapter "Control panel: Assignments for a sweeper with a 3-brush sweeping system".

6.7.9 Securing the front brush for transport

When driving in public areas (transport journeys), you must secure (lock) the front brush.



Securing the front brush for transport

- 1 Bolt
- 2 Spring pin

1. Move the carriage of the front brush on the linear guide all the way to the left.
2. Secure the front brush for transport journeys as shown in the illustration above using the pin (1) and the cotter pin (2) in the position marked with the arrow.

6.7.10 Maintenance and care of the sweeping systems

For maintenance and care of the sweeping systems, see "Maintenance and care of the 2-brush sweeping system", page 69 and/or "Maintenance and care of the 3-brush sweeping system", page 72.

6.8 Maintenance, cleaning and care

6.8.1 General notes

DANGER



Risk of injury from electric shock.

- Switch off the engine before all care and maintenance work.
- Remove the ignition key from the ignition lock.
- Disconnect the vehicle battery via the main switch.

DANGER



Risk of serious injury, crushing and even death when working under an unsecured, raised waste container.

In the event of a pressure drop in the system, the raised, unsecured waste container can suddenly lower and trap or shear off persons or body parts.

- For all work under a raised waste container, the safety bolts must be inserted on both sides of the raised waste container and secured with the retaining clips. The safety bolts mechanically secure the raised waste container against sudden lowering in the event of a pressure drop.
- Never carry out work under an unsecured, raised waste container.

DANGER



Risk of crushing due to the attachment lowering unexpectedly.

- If you are working under raised attachments, always secure them mechanically against sudden lowering, e.g. by underlaying them with suitable blocks, for example wooden blocks.

WARNING



Risk of injury due to engine continuing to run after switching off.

- Wait 5 seconds after switching off the engine. Be sure to keep away from the work area during this period.

WARNING



Risk of burns from hot surfaces in the engine compartment.

The surfaces of the engine and other components such as the exhaust system, transmission, oil cooler, etc., become very hot during operation and can cause severe burns.

- Do not touch the engine, gearbox, exhaust system or other hot components when the engine is hot.

WARNING



Risk of poisoning of the organism by operating fluids and lubricants.

- Do not eat or drink when handling operating fluids and lubricants.
- Do not swallow any operating fluids or lubricants.
If accidentally swallowed, do not induce vomiting, but seek medical advice.
- Do not inhale spray mist and/or vapours.
- Wear your personal protective equipment (**PPE**) (safety goggles and protective gloves) when handling operating fluids and lubricants.
- Clean areas of skin that have come into contact with operating fluids and lubricants thoroughly with soap under running water.
- Consult a doctor if symptoms persist.

CAUTION



Risk of slipping due to spilled or leaked operating fluids and lubricants.

- Remove leaked or spilled operating fluids and lubricants immediately with a binding agent and dispose of them in an environmentally friendly manner.

NOTICE

Risk of fire due to leaked oil, operating fluids or lubricants contacting hot surfaces on the vehicle.

- Remove any leaked, flammable media from the vehicle immediately.
- Immediately eliminate any leaks from which flammable media escapes or could escape.
If necessary, contact an authorised Customer Service or your service partner.

Observe the following instructions:

- Allow the vehicle to cool down sufficiently prior to all care, maintenance and cleaning work.
- Remove a non-tipping container attachment mounted on the vehicle before carrying out maintenance, cleaning and repair work.
- Before you clean and service the vehicle, exchange parts or convert them to a different function, switch off the engine and remove the ignition key.
- Disconnect the vehicle battery using the Main switch.
- Check if your radio is secured with a radio code before disconnecting the vehicle battery.
If your radio has a radio code, make a note of it so that you can unlock the radio with the radio code after connecting the vehicle battery.
- Disconnect the vehicle battery before working on the electrical system.
- Have repair work, service work, inspections and work on electrical components carried out only by an authorised Customer Service.
- Any welding work on the vehicle or attachments is only permitted by an authorised Customer Service. Please contact your service partner for this.

6.8.2 Preparing the vehicle for maintenance work on the attachments

DANGER



Risk of serious injury, crushing and even death when working under an unsecured, raised waste container.

In the event of a pressure drop in the system, the raised, unsecured waste container can suddenly lower and trap or shear off persons or body parts.

- For all work under a raised waste container, the safety bolts must be inserted on both sides of the raised waste container and secured with the retaining clips. The safety bolts mechanically secure the raised waste container against sudden lowering in the event of a pressure drop.
- Never carry out work under an unsecured, raised waste container.

DANGER



Risk of crushing due to the attachment lowering unexpectedly.

- If you are working under raised attachments, always secure them mechanically against sudden lowering, e.g. by underlaying them with suitable blocks, for example wooden blocks.

1. Park the vehicle on a level surface.
2. Switch off the fan (suction fan).
3. If a sweeping system is fitted to your vehicle, lower the side brushes.
4. Set the travel direction selector switch in the neutral position (middle position).
The parking brake activates automatically.
5. Switch off the ignition (ignition key in position [0]).
6. Remove the ignition key from the ignition lock.
7. If necessary, secure the vehicle additionally against rolling away.

6.8.3 Securing the raised waste container

DANGER



Risk of serious injury, crushing and even death when working under an unsecured, raised waste container.

In the event of a pressure drop in the system, the raised, unsecured waste container can suddenly lower and trap or shear off persons or body parts.

- For all work under a raised waste container, the safety bolts must be inserted on both sides of the raised waste container and secured with the retaining clips. The safety bolts mechanically secure the raised waste container against sudden lowering in the event of a pressure drop.
- Never carry out work under an unsecured, raised waste container.



Securing the raised waste container

- 1 Safety bolts (2x)
- 2 Retaining clip (2x)
- 3 Storage for safety bolts with retaining clips (1x right, 1x left)
- 4 Secured position (1x right, 1x left)

1. Fully raise the waste container.
2. Remove the safety bolts (1) with the retaining clip (2) from their respective holders (3) on both sides.
3. Insert a safety bolt (1) at the locking positions (4) on both sides.
4. Secure both safety bolts (1) with one retaining clip (2) each.
The raised waste container is now mechanically secured against sudden lowering.
5. Before you can lower the raised waste container again, you must remove the safety bolts (1) and place them back in the respective storage compartment (3) together with the retaining clips (2).

6.8.4 Securing the tilting frame²⁶

DANGER



Risk of serious injury, crushing and even death when working under an unsecured, raised tilting frame.

In the event of a pressure drop in the system, the raised, unsecured tilting frame can suddenly lower and trap or shear off persons or body parts.

- For all work under a raised tilting frame, the safety support must be inserted under the tilting frame and secured with the safety cotter pin. The safety support mechanically secures the raised tilting frame against sudden lowering in the event of a pressure drop.
- Never carry out work under an unsecured, raised tilting frame.

²⁶ option



Securing the raised tilting frame

- 1 Piston rod
- 2 Locking pin
- 3 Safety bracket
- 4 Safety bracket holder

1. Raise the tilting frame completely.
2. Open the locking pin (2).
3. Remove the safety support (3) from the holder (4).
4. Fit the safety support (3) on one of the two piston rods (1).
You can attach the safety support (3) to the right or left piston rod (1).
5. Secure the safety support (3) with the locking pins (2).
The raised tilting frame is now mechanically secured against sudden lowering.
6. Before you can lower the raised tilting frame again, you must remove the safety support (3) and place it back in the holder (4) together with the retaining clip (2).

ADVICE When lowering the tilting frame, make sure that the suction hose lies correctly in the guide. You may need to manually push the suction hose into the guide before lowering the tilting frame.

6.8.5 Maintenance and care of the 2-brush sweeping system

Daily maintenance and care work

Lubricating the 2-brush sweeping system

ADVICE The existing lubrication points (grease nipples) are labelled. Use a conventional multi-purpose grease for lubrication.

1. Remove the protective cap from the grease nipple.
2. Remove all dirt from the grease nipple with a clean, dry cloth.
No dirt or impurities must get into the opening of the grease nipple during lubrication.
3. Attach the hand lever grease gun to the grease nipple.
4. Operate the hand lever of the grease gun to press the grease into the grease nipple.

Minimum lubrication quantity per grease nipple: 2 strokes with the hand lever grease gun.

1 stroke corresponds to approx. 2.5 ml (0.088 imp. fl. oz. / 0.085 us. fl. oz.) grease.

5. Continue lubricating carefully until grease begins to leak from the seals of the bearings belonging to the grease nipple.
6. Remove the hand lever grease gun and replace the protective cap on the grease nipple.
7. Use a clean, dry cloth to remove any grease that has escaped from the corresponding seals.

Check the 2-brush sweeping system for foreign objects

1. Check the sweeping brushes for wrapped cords and straps etc.
2. Remove them if they are present.

Weekly maintenance and care work

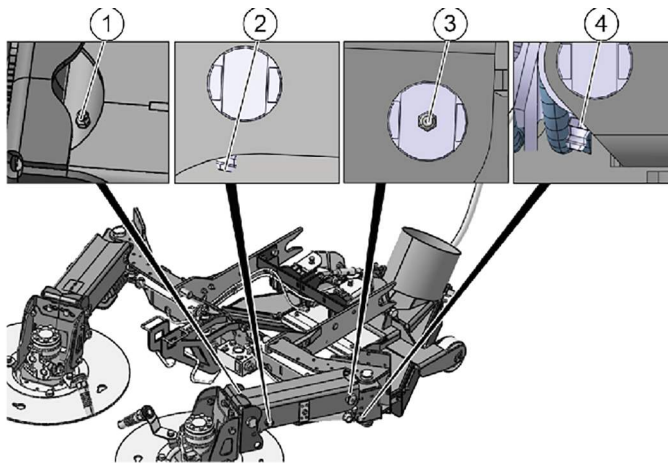
Checking the hydraulic connections

1. Clean any dirt from the hydraulic connections.
2. Check the hydraulic connections for leaks.
Have any leaks checked and, if necessary, repaired by an authorised Customer Service.

Checking the sweeping brushes

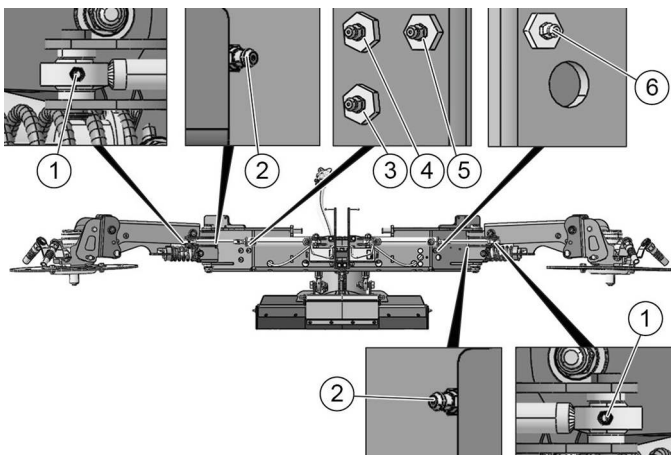
1. Check the individual sweeping brushes for wear, tear and damage.
2. If the sweeping brushes are worn, worn or damaged, contact your service partner to replace them.

Brush sweeping system lubrication plan



Brush sweeping system lubrication points

	Lubrication point	Number of lubrication points	Lubrication interval operating hours
1	Brush head lifting arm axle	1 each	every 8 h
2	Cylinder lifting arm axle	1 each	
3	Swivel bearing lifting arm axle	1 each	
4	Swivel bearing cylinder axle	1 each	



Brush sweeping system lubrication points

	Lubrication point	Number of lubrication points	Lubrication interval operating hours
1	Swivelling cylinder lifting arm axle	1 each	every 8 h
2	Swivel bearing base support axle	1 each	
3	Suction mouth cylinder support	1	
4	Suction mouth cylinder basic body	1	
5	Swivelling cylinder base support axle	1	
6	Swivelling cylinder base support axle	1	

Lubricating the brush sweeping system

ADVICE The existing lubrication points (grease nipples) are labelled. Use a conventional multi-purpose grease for lubrication.

Keep the V-belt and other drive belts free of grease and other soiling.

1. Remove the protective cap from the grease nipple.
2. Remove all dirt from the grease nipple with a clean, dry cloth.
No dirt or impurities must get into the opening of the grease nipple during lubrication.
3. Attach the hand lever grease gun to the grease nipple.
4. Operate the hand lever of the grease gun to press the grease into the grease nipple.

Minimum lubrication quantity per grease nipple: 2 strokes with the hand lever grease gun.

1 stroke corresponds to approx. 2.5 ml (0.088 imp. fl. oz. / 0.085 us. fl. oz.) grease.

5. Continue lubricating carefully until grease begins to leak from the seals of the bearings belonging to the grease nipple.
6. Remove the hand lever grease gun and replace the protective cap on the grease nipple.
7. Use a clean, dry cloth to remove any grease that has escaped from the corresponding seals.

6.8.6 Maintenance and care of the 3-brush sweeping system

NOTICE

Risk of damage to the bearings and risk of malfunction of the linear guide.

- The bearing units of the linear guide are self-lubricating dry bearings.
- These bearings must not be additionally lubricated.
- Do not bring brake cleaner, lubricants or other cleaning agents into contact with the bearings of the linear guide.
This could attack and destroy the bearing film.

Daily maintenance and care work

Lubricating the 3-brush sweeping system and the linear guide (without bearings)brush

ADVICE The existing lubrication points (grease nipples) are labelled. Use a conventional multi-purpose grease for lubrication.

1. Remove the protective cap from the grease nipple.
2. Remove all dirt from the grease nipple with a clean, dry cloth.
No dirt or impurities must get into the opening of the grease nipple during lubrication.
3. Attach the hand lever grease gun to the grease nipple.
4. Operate the hand lever of the grease gun to press the grease into the grease nipple.

Minimum lubrication quantity per grease nipple: 2 strokes with the hand lever grease gun.

1 stroke corresponds to approx. 2.5 ml (0.088 imp. fl. oz. / 0.085 us. fl. oz.) grease.

5. Continue lubricating carefully until grease begins to leak from the seals of the bearings belonging to the grease nipple.
6. Remove the hand lever grease gun and replace the protective cap on the grease nipple.
7. Use a clean, dry cloth to remove any grease that has escaped from the corresponding seals.

Checking the 3-brush sweeping system for foreign objects

1. Check the front brush and side brushes for wrapped cords and straps etc.
2. Remove them if they are present.

Weekly maintenance and care work

Cleaning the linear guide and checking the bearing foils

1. Only clean the entire linear guide with water or soap solution.
If the linear guide is very dirty, you can also clean it with a high-pressure cleaner.
2. Check the bearing foils for wear and damage.
Worn and/or damaged bearings must be replaced. Contact an authorised Customer Service.

Checking the hydraulic connections

1. Clean any dirt from the hydraulic connections.
2. Check the hydraulic connections for leaks.
Have any leaks checked and, if necessary, repaired by an authorised Customer Service.

Checking the sweeping brushes

1. Check the individual sweeping brushes for wear, tear and damage.
2. If the sweeping brushes are worn, worn or damaged, contact your service partner to replace them.

Monthly maintenance and care work

NOTICE

Risk of damage to the linear guide and the sweeping system due to incorrect tensioning of the chain drive.

- Check the tension of the chain drive at least once a month.
- The chain drive may only be tensioned by an authorised Customer Service. Contact your service partner for this.

Inspection and lubrication of the linear guide chain

ADVICE When lubricating the chain, make sure that no lubricant gets onto the rails of the linear guide.

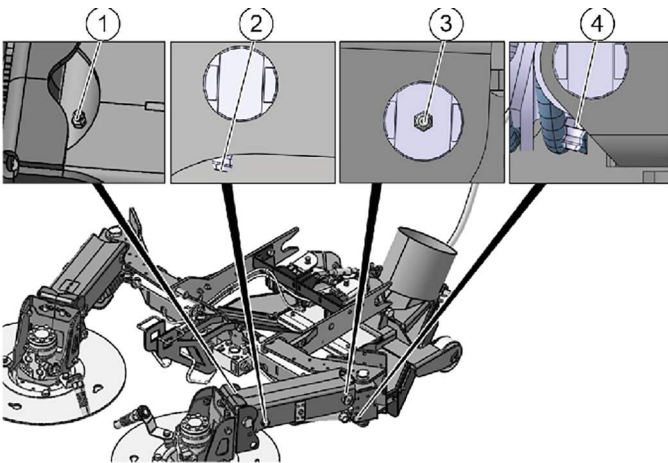
If this happens anyway, the tracks must be completely free of grease before the next use of the 3-brush sweeping system.

Never use petrol, acids or aggressive cleaning agents to clean the chain.

Regular lubrication of the chain extends the service life.

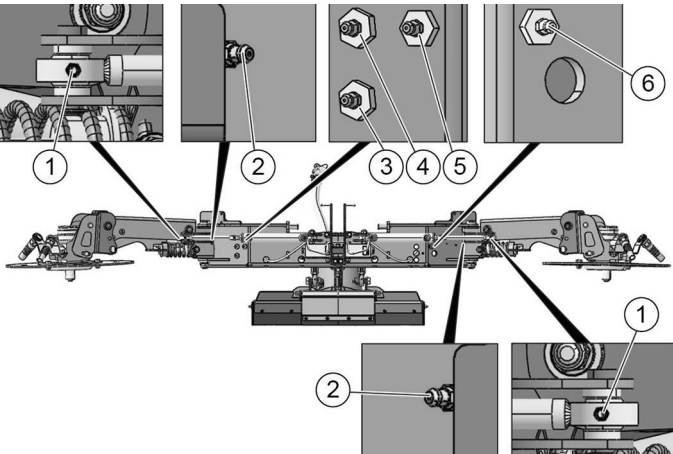
1. Clean the chain with cloths and brushes to remove dirt.
Stubborn dirt can be loosened with petroleum or cleaning fluid.
2. Apply new, suitable corrosion protection immediately after using grease-dissolving media.
3. To lubricate the chain, we recommend the relubricant "VP8 FoodPlus Spray" from the manufacturer IWIS.
Note that the lubricant must get into the chain joint. This means that it must penetrate between the protective roller and the bushing, and also between the inner and outer plates to the bolts and bushing.
4. If you notice a lack of lubrication in the form of increased noise, stiff joints or fretting corrosion in the joints, we recommend the following procedure:
Clean the chain with a very low viscosity oil. This flushes fretting corrosion, old lubricant and other dirt from the joint. When the chain has been cleaned, lubricate it with a suitable lubricant as described above.

Brush sweeping system lubrication plan



Brush sweeping system lubrication points

	Lubrication point	Number of lubrication points	Lubrication interval operating hours
1	Brush head lifting arm axle	1 each	every 8 h
2	Cylinder lifting arm axle	1 each	
3	Swivel bearing lifting arm axle	1 each	
4	Swivel bearing cylinder axle	1 each	



Brush sweeping system lubrication points

	Lubrication point	Number of lubrication points	Lubrication interval operating hours
1	Swivelling cylinder lifting arm axle	1 each	every 8 h
2	Swivel bearing base support axle	1 each	
3	Suction mouth cylinder support	1	
4	Suction mouth cylinder basic body	1	
5	Swivelling cylinder base support axle	1	
6	Swivelling cylinder base support axle	1	

Lubricating the brush sweeping system

ADVICE The existing lubrication points (grease nipples) are labelled. Use a conventional multi-purpose grease for lubrication.

Keep the V-belt and other drive belts free of grease and other soiling.

1. Remove the protective cap from the grease nipple.
2. Remove all dirt from the grease nipple with a clean, dry cloth.
No dirt or impurities must get into the opening of the grease nipple during lubrication.
3. Attach the hand lever grease gun to the grease nipple.
4. Operate the hand lever of the grease gun to press the grease into the grease nipple.

Minimum lubrication quantity per grease nipple: 2 strokes with the hand lever grease gun.

1 stroke corresponds to approx. 2.5 ml (0.088 imp. fl. oz. / 0.085 us. fl. oz.) grease.

5. Continue lubricating carefully until grease begins to leak from the seals of the bearings belonging to the grease nipple.
6. Remove the hand lever grease gun and replace the protective cap on the grease nipple.
7. Use a clean, dry cloth to remove any grease that has escaped from the corresponding seals.

6.8.7 Filling the fresh water tank

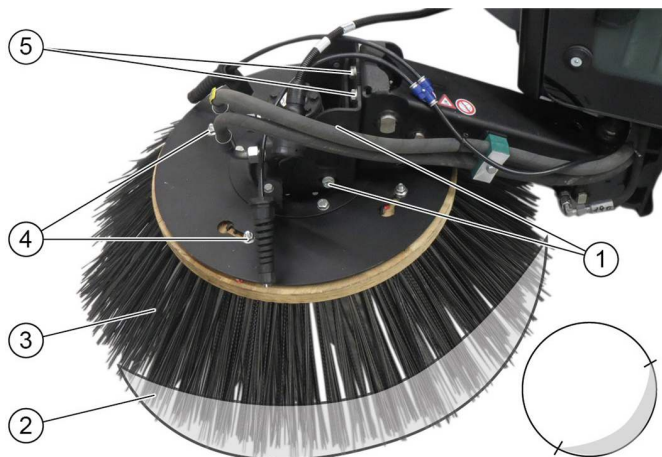


Filling the fresh water tank

- 1 Filler neck
- 2 Symbol for the [Fill] lever position
- 3 Symbol for the [Closed] lever position
- 4 Switch lever
- 5 Filling level indicator

1. Open the cap on the filler neck (1).
2. Set the changeover lever (4) to the [Fill] position (2).
3. Connect a water supply hose to the filler neck (1).
ADVICE To prevent back suction, the water hose must not be inserted into the fresh water tank when filling.
4. Open the water supply.
5. Fill the fresh water tank.
6. Check the filling level of the fresh water tank during filling using the filling level indicator (5).
7. Close the water inlet in good time before the fresh water tank is overfilled.
8. Remove the water supply hose from the filler neck (1).
9. Close the cap on the filler neck (1).
10. Set the changeover lever (4) to the [Closed] position (3).

6.8.8 Replacing the side brush



Replacing the side brush

- 1 Side screws
- 2 Sweeping pattern
- 3 Side brushes
- 4 Nuts (4x)
- 5 Rear screws

1. Raise the side brush (3).
2. Switch off the engine and remove the ignition key from the ignition lock.
3. Make sure that the parking brake has automatically activated.
4. Loosen the 4 nuts (4) to release the clamp.
5. Turn the side brush (3) in the slotted holes until you can remove it downwards.
6. Place the new side brush in the slotted holes and turn it until it touches the screws at the ends of the slotted holes.
7. Tighten the 4 nuts (4) to re-establish the clamp.

Adjusting the sweeping pattern

1. Use the side screws (1) and the rear screws (5) to adjust the sweeping pattern (2) as shown in the illustration above.

6.8.9 Flushing the water circulation system²⁷

1. Disconnect the hose coupling of the water circulation system on the waste container.
2. Connect the water supply hose to the water circulations system.
3. Open the water inlet and flush the water circulation system.
4. Set the [Irrigation] switch to the [Water circulation system] position.
This flushes the end of the suction piper better.
5. Close the water inlet again.
6. Connect the water supply hose from the water circulations system.
7. Reconnect the hose coupling of the water circulation system.

6.8.10 Empty the water reservoir

1. Open the drain hose valve on the left under the waste container.
2. Allow the water to drain completely.
3. Close the drain hose valve again.

²⁷ option

6.8.11 Clean the waste container and cover



Cleaning the waste container

- 1 Diffusor grille
- 2 Waste water sieve
- 3 Waste container

1. Completely drain the waste container (3).
2. Raise the waste container (3).
3. Remove the locking pins from the diffusor grille (1).
4. Clean the waste container (3) and the cover with a jet of water.
5. Also clean the area behind the waste water strainer (2) with a jet of water.
6. Fit the locking pins back onto the diffusor grille (1).
7. Lower the waste container (3).

6.8.12 Cleaning the blower



Cleaning the blower

- 1 Side cover
- 2 Blower chamber

1. Fully raise the waste container.
2. Secure the raised waste container with the safety bolts to prevent it from lowering, see "Securing the raised waste container", page 68.
3. Swivel the side cover (1) out to the side.
You now have access to the blower chamber(2).
4. Remove dirt and adhering impurities from the blower grille.
5. Then clean the fan grille with a damp cloth.
6. Swivel the side cover (1) back into place.
7. Remove the safety bolts from the raised waste container.
8. Full lower the waste container.

6.8.13 Cleaning the vacuum system

NOTICE

Risk of damage due to contaminated vacuum system.

A dirty vacuum system can cause the blower to run unevenly and lead to vehicle vibrations.

- Check the vacuum system daily for dirt and clean it if necessary.

1. Completely drain the waste container.
2. Park the vehicle on a level surface with the engine running.
3. Bring the travel direction selector switch into the neutral position (middle position).
4. Make sure that the parking brake has automatically activated.
5. Switch on the **PTO**.
6. Set the engine speed to 2200 rpm.
7. Switch on the blower.
8. Use a water hose to spray fresh water into the area of the suction mouth until clean water emerges from the diffuser.
The water collects in the waste container.
9. Drain the collected water from the waste container.
10. Run the fan to dry the waste container.
11. The cleaning process is complete when the waste container is dry.

ADVICE Contact an authorised Customer Service if the vibrations (caused by the fan not running smoothly) continue to occur, despite thorough cleaning of the vacuum system.

6.8.14 Cleaning the water filter

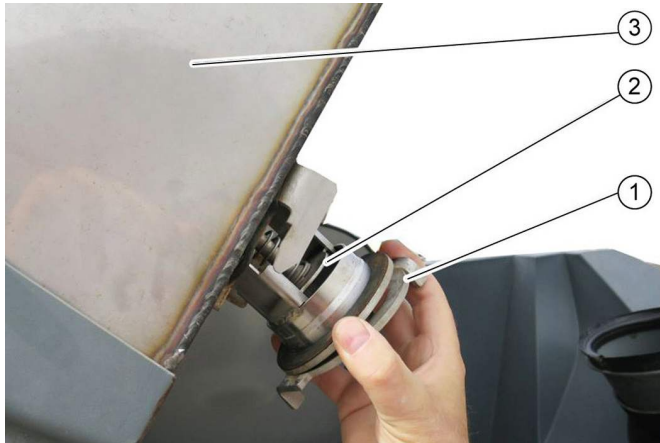
1. Fully raise the waste container.
2. Secure the raised waste container with the safety bolts to prevent it from lowering, see "Securing the raised waste container", page 68.
3. Open the advertising panel on the left.
4. Unlock the water filter and remove it from the holder.
5. Unscrew the filter housing.
6. Clean the water filter.
7. Insert the water filter.
8. Check for correct seating.
9. Screw the filter housing tight.
10. Fit the water filter in the holder and lock it in place.
11. Close the advertising panel on the left.
12. Remove the safety bolts from the raised waste container.
13. Full lower the waste container.
14. Check the additional water filters on the brush sweeping system and replace them if they are blocked.

6.8.15 Clean the spray nozzles

The spray nozzles are located on the side brushes and suction mouth.

1. Remove the spray nozzles.
2. Clean the spray nozzles with a brush and compressed air.
3. Re-install the spray nozzles.

6.8.16 Cleaning the recycling water valve



Cleaning the recycling water valve

- 1 Bayonet connection
- 2 Recycling water valve
- 3 Raised waste container

1. Completely drain the waste container (3).
2. Raise the waste container (3) completely if you have lowered it again after emptying.
3. Secure the raised waste container (3) with the safety bolts to prevent it from lowering, see "Securing the raised waste container", page 68.
4. Open the bayonet lock (1).
5. Remove the valve for the recycling water (2).
6. Clean the valve for the recycling water (2) under running water.
7. Reinstall the valve for the recycling water (2).
8. Close the bayonet lock (1).
9. Remove the safety bolts from the raised waste container (3).
10. Completely lower the waste container (3).

6.9 Transport and storage of the brush sweeping system

⚠ WARNING



Risk of injury due to the weight of the attachment.

- Observe the following when handling attachments, such as e.g. removal or installation, the tare weight of the attachment.

NOTICE

Risk of damage to the vehicle and the attachment due to the weight of the attachment.

- Observe the following when handling attachments, such as e.g. removal or installation, the tare weight of the attachment.

Transport

Only transport the brush sweeping system on the changing carriage recommended by Kärcher Municipal GmbH²⁸. The changing carriage is available as an optional accessory from Kärcher Municipal GmbH.

- Changing carriage for 2-brush sweeping system: 2.852-065.0
- Changing carriage for 3-brush sweeping system: 2.852-862.0

Alternatively, you can transport the brush sweeping system on the original pallet on which the brush and sweeper system is delivered.

Contact your service partner or Kärcher Municipal GmbH if you need this pallet.

²⁸ option

Storage

NOTICE

Risk of damage to the sweeping system through incorrect storage.

- Store a removed sweeping system on the changing carriage recommended by Kärcher Municipal GmbH.
 - Store the sweeping system in a dry, sheltered place on level ground.
 - Unload the sweeping brushes before each storage to prevent damage, e.g. through deformation.
-
1. Store the brush sweeping system removed from the vehicle on the changing carriage and stow the hydraulic hoses, water connections and power supply in such a way that they are protected from damage.
 2. Before you reattach the brush sweeping system to a vehicle, make sure that the side brushes are unloaded.

6.10 Troubleshooting guide

6.10.1 Faults in the sweeping systems

DANGER



Risk of injury from electric shock.

- Switch off the engine before all care and maintenance work.
- Remove the ignition key from the ignition lock.
- Disconnect the vehicle battery via the main switch.

You can remedy minor faults using the following table.

In case of doubt or if you cannot rectify the fault yourself, as well as for all faults not listed here, please contact the authorised Customer Service or contact your service partner.

Error	Cause	Remedy
Dust when sweeping/insufficient suction power.	Waste container full.	Empty the waste container.
	Suction fan switched off.	Switch on the suction fan.
	Hose on suction fan not correctly attached or defective.	Check the hose on the suction fan, attach it correctly if necessary or replace it if damaged.
	Seals defective or worn.	Check / replace the seals: • Suction fan sealing collar. • Filter chamber seal. • Waste container seals.
	Dust filter is not seated correctly and/or is dirty.	Check/clean/replace the dust filter: • Check that the dust filter is seated correctly. • In case of light soiling, clean the dust filter. • In case of damage or heavy soiling, replace the dust filter.
	Sealing strips badly adjusted and/or worn.	Check sealing strips for wear and tear. Readjust or replace if necessary.
	Cause cannot be determined.	Contact an authorised Customer Service.
Sweeping performance not satisfactory.	Roller brush and side brush worn out.	Check the roller brush and side brush for wear, replace them as necessary.
	Sealing strips badly adjusted and/or worn.	Check sealing strips for wear and tear. Readjust or replace if necessary.
	Coarse dirt is not trapped.	Check that the coarse dirt flap is fully functional.
	Sweeping roller halves are not working correctly.	Check that roller brush halves are correctly in place.
	Incorrect filling level of the hydraulic oil.	Check the filling level of the hydraulic oil. In case of discrepancies, contact an authorised Customer Service.
	Leakage in the hydraulic system.	Check the hydraulic system for leaks. In case of complaints, contact an authorised Customer Service.
	Cause cannot be determined.	Contact an authorised Customer Service.

Error	Cause	Remedy
The side brushes are not rotating.	Incorrect filling level of the hydraulic oil.	Check the filling level of the hydraulic oil. In case of discrepancies, contact an authorised Customer Service.
	Leakage in the hydraulic system.	Check the hydraulic system for leaks. In case of complaints, contact an authorised Customer Service.
	Side brushes are blocked by wrapped straps.	Check the side brushes for any tangled pieces of tape.
	Cause cannot be determined.	Contact an authorised Customer Service.
Activation of side brushes not working.		Contact an authorised Customer Service.
Waste container emptying does not work.		Contact an authorised Customer Service.

6.10.2 Emergency operation of the hydraulic valve via the emergency lift block²⁹

WARNING



Risk of burns from hot surfaces in the engine compartment.

The surfaces of the engine and other components such as the exhaust system, transmission, oil cooler, etc., become very hot during operation and can cause severe burns.

- Do not touch the engine, gearbox, exhaust system or other hot components when the engine is hot.

CAUTION



Risk of accident and injury due to vehicle rolling away.

- Before releasing the parking brake, secure the vehicle against unintentional rolling away using the emergency actuation, e.g. with wheel chocks.

NOTICE

Risk of damage to the hydraulic system.

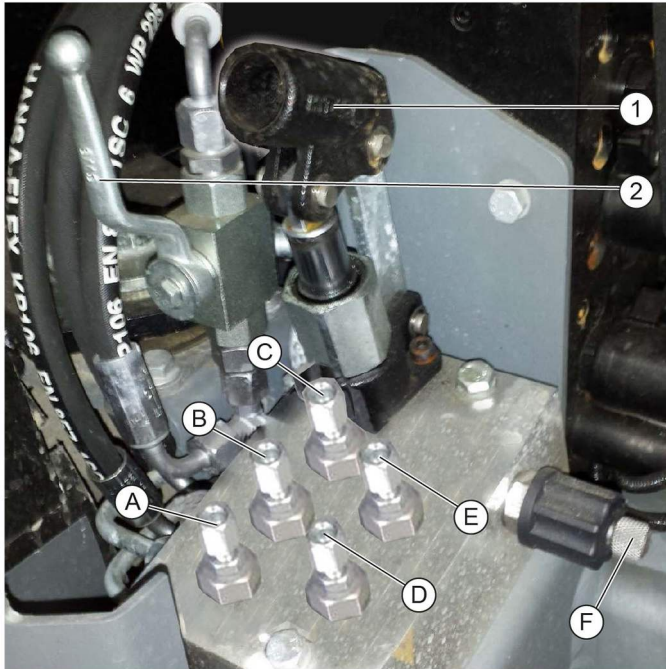
- Only operate the emergency lift pump when the engine is switched off.

²⁹ option

If the engine of your vehicle is no longer functional and/or there is no hydraulic pressure available, you must manually release the parking brake to load or tow the vehicle.

Manual operation of the waste container or attachment frame, as well as the front power lift or suction mouth, is also possible via the optional emergency lift block as part of emergency operation.

The emergency lift block is located on the outside left of the driver cabin, below the rear window frame.



Emergency lift block: Emergency operation hydraulic valve

- 1 Manual pump
- 2 Ball valve (illustration shows position in normal operation)
- A-E Screws
- F Knurled screw

ADVICE You need the pipe for operating the manual pump (1) and this is located at the side behind the driver's seat. A ring spanner to actuate the screws is included.

Releasing the parking brake spring actuator

1. Turn the 3 screws on the cover on the outside of the driver cabin to the left to unlock the cover.
2. Remove the cover.
3. Move the ball valve (2) to the horizontal position.
4. Unscrew the screw (C).
5. Insert the hand tube into the holder of the hand pump (1) and use it to actuate the hydraulic valve. The spring actuator releases.
6. Load the vehicle or tow it away.
7. Move the ball valve (2) back to the vertical position.
8. Screw in the screw (C). Spring actuator is actuated again (original position).
9. Attach the cover.
10. Lock the cover again with the 3 screws.

Manually raising/lowering the waste container/attachment frame

1. Turn the 3 cover screws to the left to unlock the cover.
2. Remove the cover.
3. Unscrew the screws (B, E, F).
4. Insert the hand tube into the holder of the hand pump (1) and use it to actuate the hydraulic valve.
The waste container/attachment frame raises.
5. Turn the screw (F) in slowly.
The waste container/attachment frame lowers.
6. Screw in all screws.
The basic position is now restored.

Manually raising/lowering the front power lift/suction mouth

1. Turn the 3 cover screws to the left to unlock the cover.
2. Remove the cover.
3. Unscrew the screws (A, D, F).
4. Insert the hand tube into the holder of the hand pump (1) and use it to actuate the hydraulic valve.
The front power lift/suction mouth raises.
5. Turn the screw (F) in slowly.
The front power lift/suction mouth lowers.
6. Screw in all screws.
The basic position is now restored.

6.11 Technical data for sweeping systems

Waste container	MC 150
Waste container volume (gross)	1300 l 285.96 imp. gal. 343.42 us. gal.
Waste container unloading height (max.)	1550 mm 61.02 in.
Water tank volume	195 l 42.89 imp. gal. 51.51 us. gal.
Diameter of side brush	900 mm 35.43 in.
Side brush speed (continuously variable)	0 - 110 rpm

Dimensions and weights	2-brush sweeping system
Length	950 mm 37.40 in.
Width	1250 mm 49.21 in.
Height	750 mm 29.53 in.
Weight (transport weight)	115 kg 253.5 lbs.

Dimensions and weights	3-brush sweeping system
Length	1800 mm 70.87 in.
Width	1250 mm 49.21 in.
Height	850 mm 33.46 in.
Weight (transport weight)	285 kg 628.3 lbs.

7 Manual suction hose³⁰ (factory-fitted)

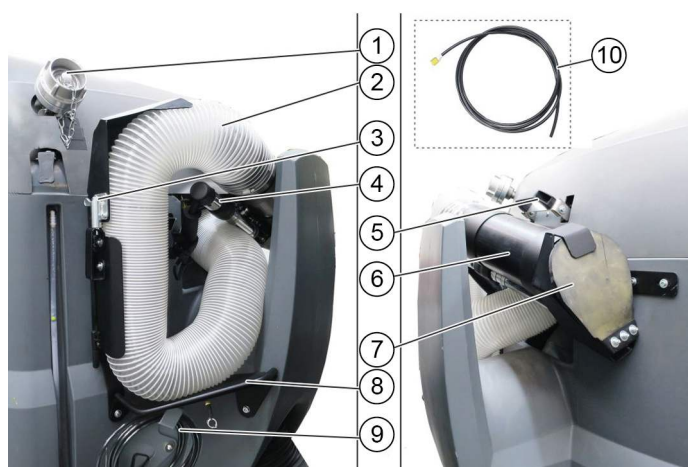
If you configured your vehicle with a manual suction hose when you purchased it, it will already be fitted when your vehicle is delivered.

7.1 Intended use of the manual suction hose

The hand-held suction hose in conjunction with the manual suction pipe can be used to clean hard-to-reach areas, such as e.g. niches, corners, areas under park benches, etc. that are otherwise inaccessible to the attached sweeping system.

The specifications for the materials and substances that can be sucked in are identical to those that apply to the sweeping system.

7.2 Working with the manual suction hose



Components of the manual suction hose

- 1 Filler neck, water reservoir
- 2 Suction hose (d = 125 mm | 4.92 in.)
- 3 Lock
- 4 Handle (adjustable)
- 5 Changeover lever:
pulled out: [Vacuuming with the manual suction hose]
pressed in: [Work in sweeping mode]
- 6 Manual suction pipe
- 7 Cover
- 8 Suction hose bracket
- 9 Water hose stowage compartment
- 10 Water hose

³⁰ option

Preparing for working with the manual suction hose

1. Park the vehicle and secure it against rolling away.
2. Switch off the engine.
3. Open the lock (3).
4. Remove the manual suction hose from the suction hose holder (8).
5. As necessary: Connect the water hose provided (10) and open the stop cock lever on the handle (4).
6. Close the dosing buttons in the driver cabin so that no spray water is applied to the suction mouth and brush nozzles.
There will otherwise be none of this water when working with the manual suction hose.
7. Pull out the switch lever(5) into the [Vacuum with manual suction hose] position.

Vacuuming with the manual suction hose

1. Start the engine with the travel direction selector switch in the neutral position (middle position).
2. Switch on the **PTO** working hydraulics via the control panel in the arm rest.
3. Switch on the blower in the waste container.
4. As necessary: Switch on the water pumps on the control panel in the arm rest.
5. Select the engine speed.
ADVICE The suction performance depends on the engine speed selected:
 - 1600 rpm - for light waste
 - 2200 rpm- - for normal waste
 - 2500 rpm - for strong, heavy waste
6. Hold the manual suction pipe (6) by the adjustable handle (4) and begin vacuuming.

Finishing work and storing the manual suction hose

1. Set the engine speed to 2200 min in order to stow the manual suction hose.
2. If you have used the water hose (10): Close the shut-off lever on the handle (4).
Switch off the water pump, disconnect the water hose (10) from the connections and stow it back in its storage compartment (9).
3. Insert the manual suction pipe (6) with handle (4), press it against the cover (7) and secure it.
ADVICE The vacuum pulls the manual suction pipe (6) against the cover (7) and the suction hose (2) contracts.
This is necessary to allow it to be stowed in the hose holder (8).
4. Press the remaining suction hose (2) into the holders.
5. Close the flap again with the lock (3).
6. Switch off the blower in the waste container.
7. Press in the switch lever into the [Work in sweeping mode] position.

8 High-pressure cleaner (factory-fitted)

If you configured your vehicle with a high-pressure cleaner when you purchased it, it will already be fitted when your vehicle is delivered.

ADVICE If the high-pressure cleaner is purchased at a later date, it must be installed by an authorised Customer Service agent. Contact your service partner for this.

8.1 Safety instructions for the high-pressure cleaner

WARNING



Health hazard due to backflow of contaminated water into the drinking water network if the high-pressure cleaner is connected directly to the drinking water network.

- Observe the regulations of your water supply company.
- According to applicable regulations, the appliance must never be used with the drinking water network without a system separator. Use a system separator from KÄRCHER or a system separator as per EN 12729 Type BA.
- Water that has flowed through a system separator is classified as undrinkable.
- Always connect the system separator to the water supply and never directly to the water connection on the device.

WARNING



Risk of burns from hot surfaces.

When operating the high-pressure cleaner, components become hot and skin contact can cause burns.

- Do not touch the spray pipe of the spray lance directly after working with the high-pressure jet.
- Allow the high-pressure cleaner to cool down before carrying out any maintenance and care work or troubleshooting.

WARNING



Risk of injury from high-pressure jet.

- Do not direct the high-pressure jet at people or animals.
- Do not aim the jet at yourself or others to clean clothes or shoes.
- Use only nozzles of the sizes listed in the technical data.

NOTICE

Risk of damage to tyres from high-pressure cleaners.

This can lead to tyre damage that cannot be seen with the naked eye. There is a risk of damage to the vehicle due to the sudden detachment of tyre components or the bursting of a tyre while driving.

- Be careful not to point the water jet directly at the tyres when cleaning the vehicle with a high-pressure cleaner.

NOTICE

Risk of damage from high-pressure jet.

- Do not point the high-pressure jet at joints, tyres, radiator fins, hydraulic hoses and valves, seals, electrical and electronic components.

NOTICE

Danger to the environment from oil in waste water.

- Only clean engines and other components and objects that have come into contact with oil in areas where the waste water is collected by an oil separator.

NOTICE

Risk of damage to the high-pressure cleaner due to incorrect nozzle size.

- Only nozzles of the sizes listed in the technical data for the high-pressure cleaner may be used.
-
- Repairs may only be carried out by authorised Customer Service centres or by qualified staff in this field who are familiar with all relevant safety instructions.
 - Pay attention to the safety inspection for mobile devices for industrial use in accordance with the locally applicable regulations (in Germany: VDE 0701).
 - The screw connections of all connection hoses must be leak-tight.
 - The high-pressure hose must not be damaged. A damaged high-pressure hose must be replaced immediately. Only those hoses and connections recommended by the manufacturer may be used.
 - Check that the high-pressure cleaner and work equipment is safe and working correctly prior to each use. Do not use the high-pressure cleaner if a connection line or important parts of the high-pressure cleaner are damaged, e.g. safety devices, high-pressure hoses, spray lances.
 - Never allow high-pressure cleaners to suck in liquids containing solvents, undiluted acids or solvents. These include, e.g. petrol, paint thinner or heating oil. The spray mist is highly flammable, explosive and toxic. Do not use acetone, undiluted acids or solvents, as they would attack the materials used on the device.
 - Adhere to the respective safety regulations when using the high-pressure cleaner in danger zones (e.g. petrol stations). Operation in explosive spaces is prohibited.
 - All live parts in the work area must be protected against water jets.
-
- The lever of the spray lance must not be clamped tight during operation.
 - Suitable protective clothing must be worn to protect against backsplash if necessary.
 - High-pressure jets can be dangerous if used improperly. The high-pressure jet must not be pointed at people, animals, live electrical equipment or at the high-pressure cleaner itself.
 - Do not aim the jet at yourself or others for cleaning clothes or shoes.
 - Vehicle tyres/tyre valves may only be cleaned at a minimum spray distance of 30 cm (11.8 in.). Otherwise the vehicle tyres/tyre valves can be damaged by the high-pressure jet. The first sign of damage is discolouration of the tyre. Damaged vehicle tyres are a source of danger.
 - Materials containing asbestos and other materials containing harmful substances must not be sprayed down.
 - Do not open the hood of the pressure washer with the engine.
 - The operator must use the high-pressure cleaner as intended. He/she must take the local conditions into account and beware of third parties, in particular children, when working with the high-pressure cleaner.

- Never leave the high-pressure cleaner unattended while it is in operation.
- The high-pressure cleaner must only be operated by persons who have been instructed with regard to its use, or those who have demonstrated their ability to operate it and have been expressly authorised to do so. The high-pressure cleaner must not be operated by children or adolescents.
- The high-pressure cleaner is not intended for use by persons with restricted physical, sensory or mental abilities or those lacking in experience and / or lacking in knowledge.
- Do not use the high-pressure cleaner when other people are within range unless they are wearing protective clothing.
- Children must be supervised to prevent them from playing with the high-pressure cleaner.
- Always wear suitable gloves when carrying out work on the high-pressure cleaner.
- A recoil force will arise due to the water stream ejecting from the spray lance. An angular spray lance produces a force that acts in upward direction. Hold the spray lance firmly.
- When driving, the high-pressure gun and high-pressure hose must be fastened securely in storage.
- Switch off the high-pressure cleaner and remove the ignition key if necessary before cleaning and servicing the high-pressure cleaner, replacing parts or changing to another function.

8.2 Safety devices

CAUTION Safety devices protect the user and may not be disabled or functionally circumvented.

- The overflow valve and safety valve are set and sealed by the manufacturer.
- Adjustments may only be performed by an authorised Customer Service.

Overflow valve

When the water quantity is reduced via the pressure and quantity regulator on the trigger gun, the overflow valve opens and part of the water flows back to the suction side of the pump.

Safety valve

The safety valve opens when the permissible operating pressure is exceeded and the water flows back to the suction side of the pump.

8.3 Intended use of the high-pressure cleaner

Use the high-pressure cleaner only for the following activities:

- For cleaning using a high-pressure jet without detergent (e.g. façades, park benches, garden paths.).
- Only operate the high-pressure cleaner with the flat jet nozzle provided.
- This high-pressure cleaner is intended and tested for the exclusive use with the sweeper vacuum MC 150.

8.4 High-pressure cleaner symbols

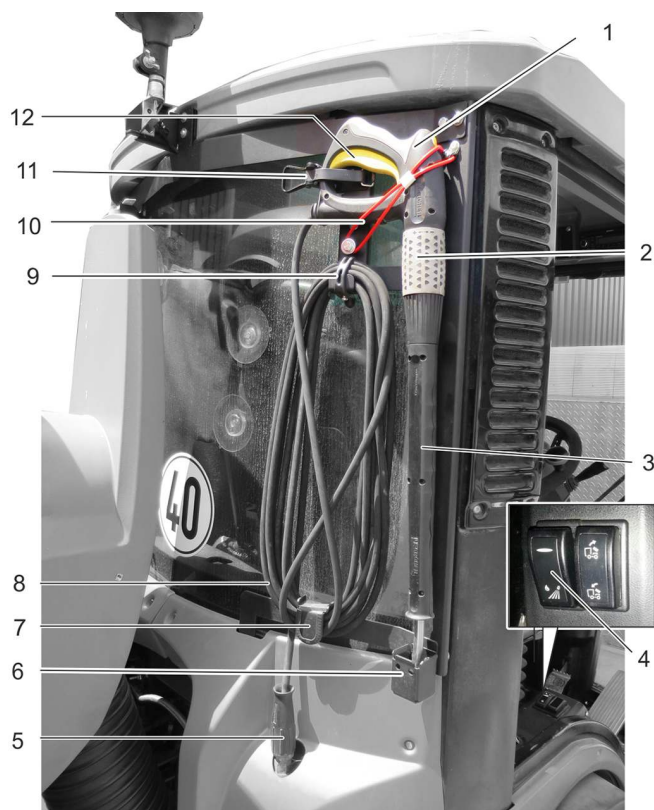
Symbols on the high-pressure cleaner

	Do not point the high-pressure jet at people, animals, live electrical equipment or at the device itself. Protect the device against frost.
	The device may not be connected to the public drinking water network.

Symbols in the multifunction display

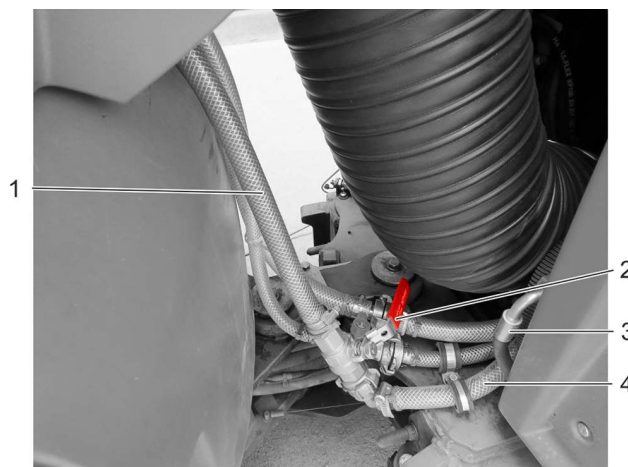
	High-pressure cleaner active
	High-pressure cleaner inactive

8.5 Overview of the device



General view on the vehicle

- 1 Spray lance
- 2 Pressure/quantity regulation
- 3 Spray lance
- 4 Switch for high-pressure cleaner (switch on/off)
- 5 High-pressure hose connection
- 6 Nozzle holder
- 7 High-pressure hose storage compartment
- 8 High-pressure hose
- 9 Fastening high-pressure hose
- 10 Spray lance fastener
- 11 Spray lance fastener
- 12 Spray lance lever



Water connection

- 1 Water inlet from water reservoir
- 2 Stop cock
- 3 High-pressure cleaner hydraulic connection
- 4 Water inlet for high-pressure pump

8.6 Operation

ADVICE When starting up for the first time or if the water tank was empty, you must bleed the high-pressure cleaner before starting work.

To do this, operate the high-pressure cleaner without the nozzle until no more air escapes from the spray lance. Then refit the nozzle.

Commencing work with the high-pressure cleaner

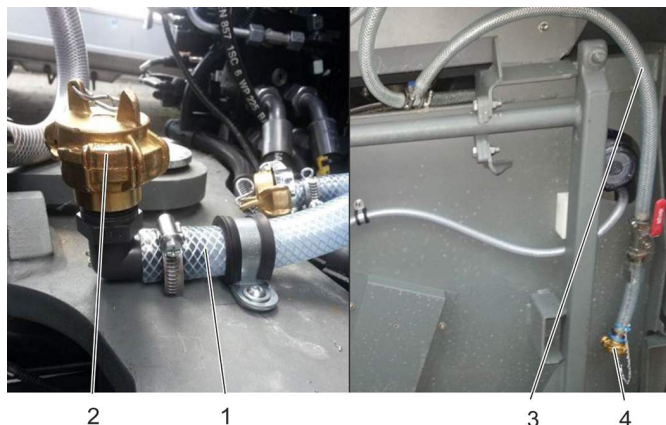
1. Check that the high-pressure hose and the spray tube are correctly connected to the spray lance.
2. Check that the water inlet hose is connected correctly.
3. Check the water filling level.
If the water filling level is too low, top up the vehicle's fresh water tank, see "Filling the fresh water tank", page 75.
4. Open the shut-off valve on the water inlet.
5. Set the travel direction selector switch in the neutral position (middle position) and start the engine.
ADVICE The high- pressure cleaner may be operated only at an engine speed of 1600 rpm and only in work mode.
6. Remove the high-pressure hose and the spray lance from their holders.
7. Switch on the **PTO** work hydraulics.
8. Bypass the seat contact switch with the [F4] button on the display, see chapter "Bypassing the seat contact switch" in the vehicle operating instructions.
9. Switch on the high -pressure cleaner via the [High-pressure cleaner] switch on the right of the driver's seat.
The engine speed automatically increases to 1600 rpm and the [High-pressure cleaner active] symbol lights up in orange on the display.
10. Unlock the lever on the spray lance handle.
11. Press the lever on the spray lance handle and start cleaning.
The water jet is interrupted as soon as you release the lever on the handle,.

Finishing work with the high-pressure cleaner

1. Release the lever on the spray lance handle.
2. Switch off the high-pressure cleaner via the [High-pressure cleaner] switch on the right of the driver's seat.
The engine speed decreases and the [High-pressure cleaner active] symbol disappears from the display.
3. Switch off the **PTO** work hydraulics.
4. Activate the seat contact switch with the [F4] button on the display.
5. Operate the lever on the spray lance handle until the high-pressure cleaner is depressurised.
6. Lock the lever on the spray lance handle.
7. Close the shut-off valve on the water inlet.
8. Fasten and secure the high-pressure hose and the spray lance in their holders.

8.7 Storing the high-pressure cleaner when not in use

If you do not need the high-pressure cleaner, e.g. because you are using the vehicle to spread road salt in winter, proceed as described below.



High pressure cleaner connections

- 1 Water supply hose for high-pressure pump
- 2 Lock
- 3 Water supply hose from water reservoir
- 4 Fixing the water supply hose

1. Blow out the high-pressure pump, the supply hose, the water filter and the high-pressure hose with compressed air to remove any remaining moisture.
2. Remove the spray lance and high-pressure hose from the vehicle.
3. Open the 3 quick-release fasteners on the cover of the high-pressure cleaner and remove the cover.
4. Close the high-pressure outlet with the protective part provided for this purpose.
5. Disconnect the water inlet at the GEKA connection.
6. Close the water inlet of the high-pressure pump (1) with the cap (2).
7. Stow the water inlet hose from the water tank (3) under the waste container and secure it there (4).

8.8 Frost protection

NOTICE

Risk of destruction of the high-pressure cleaner due to frost.

Devices that are not completely emptied can be irreparably destroyed by frost.

- If there is a risk of low temperatures or frost, drain the high-pressure cleaner and all associated components completely.
- Protect the device high-pressure cleaner frost.
- If you want to store the high-pressure cleaner, make sure it is in a dry room protected from frost.

If frost-free storage is not possible:

1. Close the water supply.
2. Let the high-pressure cleaner run for approx. 1 minute until the pump and pipes are empty.
3. Blow out the high-pressure pump, the supply hose, the water filter and the high-pressure hose with compressed air to remove any remaining moisture.

8.9 Maintenance, cleaning and care

Before each use

1. Clean any dirt from the hydraulic connections.
2. Check the hydraulic connections for leaks.
Have any leaks checked and, if necessary, repaired by an authorised Customer Service.
3. Check the high-pressure hose for damage.
Replace a damaged high-pressure hose immediately because this presents a danger of bursting.
4. Check the pump of the high-pressure cleaner for leaks.
Up to 3 drops of water per minute on the bottom of the device are permissible.
In the case of more severe leakage, contact an authorised Customer Service or your service partner.

Weekly maintenance and care work

Check the oil level of the high-pressure cleaner and top up if necessary

1. Park the vehicle with the high-pressure cleaner on a level surface and secure it against rolling away.
The high-pressure cleaner must be in a horizontal position in order to be able to read the oil level correctly.
2. Open the 3 quick-release fasteners on the cover of the high-pressure cleaner and remove the cover.
3. Check the oil level at the oil sight glass.
The oil level must be in the middle of the sight glass.
4. If the oil level is too low, top up the oil until the oil level is in the middle of the sight glass again.
For the oil specification see "Technical data", page 94.
5. If you notice milky oil through the sight glass, this indicates water is present in the oil. Contact an authorised Customer Service immediately to determine the cause and have it rectified.

Cleaning the water filter in the water connection

1. Park the vehicle with the high-pressure cleaner on a level surface and secure it against rolling away.
2. Depressurise the high-pressure cleaner, see chapter "Operation" and the section "Ending work with the high-pressure cleaner".
3. Open the 3 quick-release fasteners on the cover of the high-pressure cleaner and remove the cover.
4. Unscrew the cover with the water filter.
5. Clean the water filter under running water or blow it out with compressed air from the inside to the outside.
6. Screw the cover and the cleaned water filter back on.

Annual maintenance and care work or after 500 operating hours, ³¹

Oil change

1. Have the oil change on the high-pressure cleaner carried out by an authorised specialist workshop.

8.10 Troubleshooting guide

DANGER



Risk of injury from electric shock due to inadvertent start-up of the high-pressure cleaner.

- Switch off the vehicle's engine and remove the ignition key from the lock before carrying out any work on the high-pressure cleaner.
- Have electrical components checked and repaired only by an authorised Customer Service.
- In the event of malfunctions not mentioned in this chapter, consult an authorised Customer Service if in doubt and if expressly indicated.

WARNING



Risk of burns from hot surfaces.

When operating the high-pressure cleaner, components become hot and skin contact can cause burns.

- Do not touch the spray pipe of the spray lance directly after working with the high-pressure jet.
- Allow the high-pressure cleaner to cool down before carrying out any maintenance and care work or troubleshooting.

³¹ whichever comes first.

Error	Cause	Remedy
High-pressure cleaner does not start up.	PTO working hydraulics are switched off.	Switch on the PTO work hydraulics.
	The high-pressure cleaner is not switched on.	Switch on the [High-pressure cleaner] switch.
High-pressure cleaner does not build up pressure.	Fresh water tank empty.	Fill the fresh water tank. Thereafter bleed air from the high-pressure cleaner.
	Water inlet blocked and/or water filter dirty.	Check water inlet for blockage and remove if necessary. Clean the water filter.
	Spray lance nozzle defective.	Check the nozzle and replace if necessary.
Pump leaking.	Up to 3 drops of water per minute are permissible.	In the case of more severe leakage, have the pump checked by an authorised Customer Service and replaced if necessary.
Pump is knocking.	Water inlet leaking.	Check the water supply line for leaks. In the case of leaks, visit an authorised Customer Service.
	Air in the system.	Bleed air from the high-pressure cleaner.
	Cause unknown.	Visit an authorised Customer Service.

8.11 Technical data

Hydraulic connection	
Supply from the hydraulic system of the vehicle MC 150.	
Power rating	4.5 kW
Water connection	
Water supply from the fresh water tank of the vehicle MC 150.	
Maximum inlet temperature	60 °C 140 °F
Performance data of the high-pressure cleaner	
Working pressure	7 - 15 MPa 1015.3 - 2175.6 lbf./in. ²
Nozzle size	036
Maximum operating overpressure	19 MPa 2755.7 lbf./in. ²
Flow rate	10 l/min 2.2 imp. gal./min. 2.6 us. gal./min.
Maximum recoil force of the spray lance	30 N
Determined values in acc. with EN 60335-2-79	
Sound pressure level K _{pA}	75 dB(A)
Uncertainty K _{pA}	3 dB(A)
Sound power level L _{WA} + Uncertainty K _{WA}	97 dB(A)
Hand-arm vibration value	1,6 m/s ² 5.25 ft./s ²
K uncertainty	0,7 m/s ² 2.3 ft./s ²
Operating materials	
Oil volume	0.4 l 14.08 imp. fl. oz. 13.53 us. fl. oz.
Types of oil	SAE 15W-40

9 Front power lift (attachment kit)

You can attach a front power lift to your vehicle, which can be used to attach various attachments with a 3-point holder of type CAT0 or CATI.

The front power lift (article no. 2.851-844.0) from Kärcher Municipal GmbH is designed for use on the MC 150 vehicle.

Technical data	
Length approx.	1156 mm 45.51 in.
Width approx.	866 mm 34.09 in.
Height approx.	540 mm 21.26 in.
Maximum weight	120 kg 264.6 lbs.

Changing carriage

For attaching and removing the front power lift, we recommend the changing carriage (article no. 2.852-067.0), available from Kärcher Municipal GmbH.

The following descriptions are based on the use of this changing carriage.

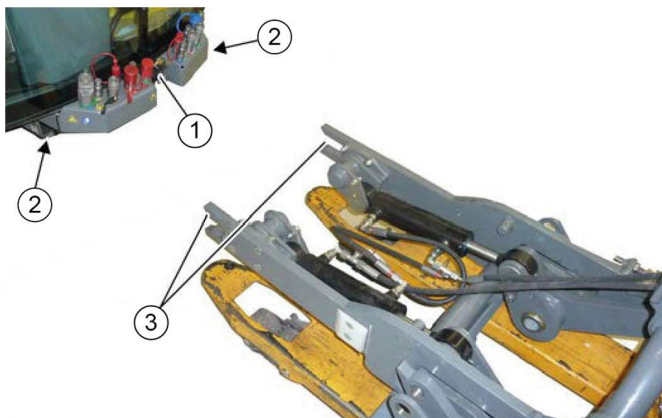
9.1 Intended use of the front power lift

- The front power lift is used for picking up small and medium-sized attachments, such as e.g. snow plough blades that have a 3-point attachment.
- The front power lift with attached attachments must not lead to overloading of the front axle, e.g. when clearing snow.

Please refer to the vehicle operating instructions for the permissible axle loads.

- No persons may be lifted or transported with the front power lift.
- The front power lift must not be used as a working platform.

9.2 Installing the front power lift



Attaching/removing the front power lift

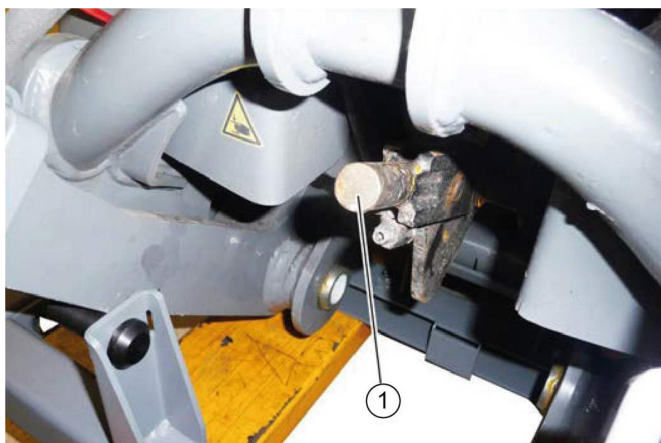
- 1 Locking lever
- 2 Vehicle mounting frame
- 3 Front power lift mount

1. When attaching the front power lift for the first time, lift it with a suitable lifting device and appropriate load handling attachments and position it on the changing carriage.
2. Remove any lifting gear attached to the front power lift.
3. Park the vehicle on level, solid ground and secure it against rolling away.
4. Switch off the engine.
5. Move the locking lever (1) upwards, see "Locking of the front attachments", page 30.



Attaching/removing the front power lift

6. Using a lift truck (customer property), position the changing carriage with the front power lift resting on it in the centre in front of the vehicle.
7. Use the lift truck to drive the front power lift mounts into the respective mounting frame on the vehicle on both sides as far as they will go.
8. Check that the mounts on the front power lift engage correctly in the respective mounting points on the vehicle on both sides.

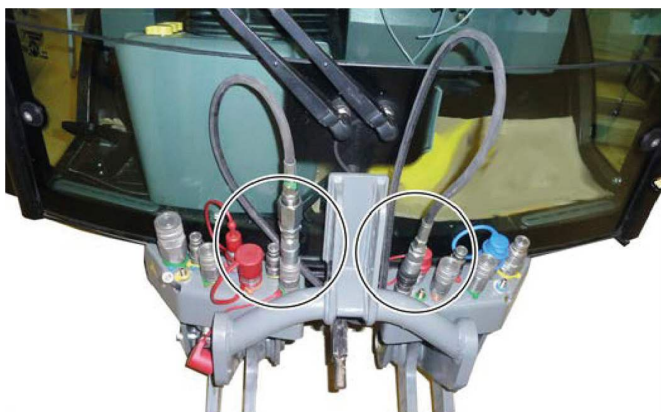


Attaching/removing the front power lift

1 Locking lever

9. Move the locking lever (1) downwards.
10. Check that the lock is correctly engaged, see "Locking of the front attachments", page 30.
11. Lower the lift truck with the changing carriage on it and move it out again.
12. Secure the front power lift mechanically against uncontrolled lowering.

⚠ WARNING Risk of injury due to unexpected lowering of the front power lift during hydraulic coupling.

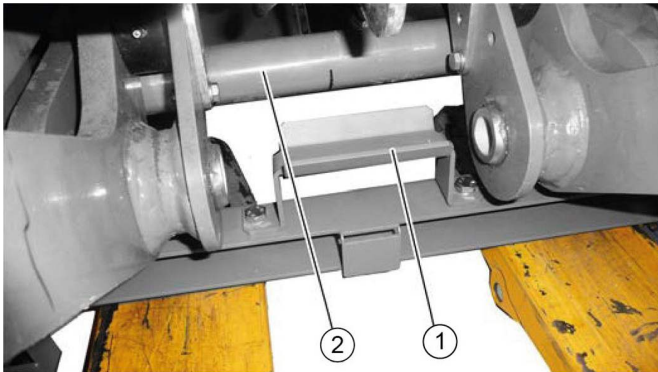


Attaching/removing the front power lift

13. Switch on the vehicle's engine.
14. Depressurise the hydraulics, see chapter "Depressurising the hydraulic system (pressure relief)" in the operating instructions for the vehicle.
15. Connect the hydraulic hoses to the hydraulic couplings.
16. Operate the front power lift with the left joystick in the control console on the arm rest next to the driver's seat.
 - Left joystick forwards = lower front power lift.
 - Left joystick backwards = raise front power lift.

9.3 Removing the front power lift

1. Park the vehicle on level, solid ground and secure it against rolling away.
2. Raise the front power lift to the end position.
3. Switch off the engine.



Attaching/removing the front power lift

- 1 Holder for supporting the front power lift
 - 2 Front power lift frame
4. Use a lift truck (customer property) to move the changing carriage under the front power lift.
 5. Carefully lift the changing carriage with the lift truck.
 6. Ensure that the holder (1) for the front power lift support is securely seated in the frame (2) of the front power lift.
 7. Depressurise the hydraulics, see chapter "Depressurising the hydraulic system (pressure relief)" in the operating instructions for the vehicle.
 8. Disconnect the hydraulic hoses from the hydraulic couplings.
 9. Fasten the hydraulic hoses to the front power lift with cable ties.
 10. Move the locking lever upwards to unlock the front power lift, see "Locking of the front attachments", page 30.
The front power lift now rests on the changing carriage.
 11. Use a lift truck to move the front power lift forwards and out of the vehicle mounting frame.
 12. If you do not want to attach any other attachment to the vehicle at this point, close the locks again.
 13. Store the removed front power lift on the changing carriage in a dry, well-ventilated place.

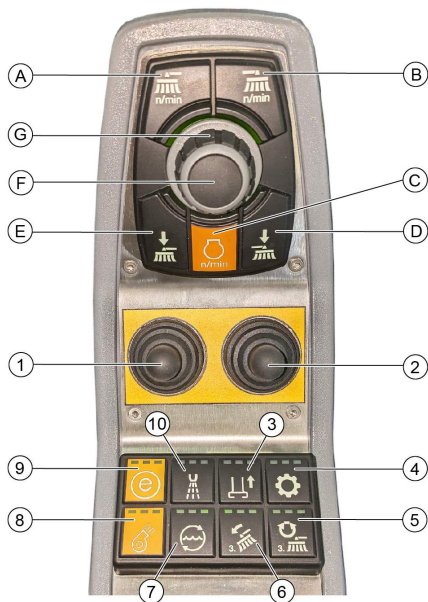
10 Controls and operation of the attachments

10.1 Control panel: Assignments as equipment carrier



Active functions are indicated by illuminated symbols.

- The symbols in the switches and buttons light up when the respective function is switched on.



A PTO front

- 0 l/min
(0 imp. gal./minute | 0 us. gal./minute)
- 80 l/min
(17.6 imp. gal./minute | 21.13 us. gal./minute)

B Rear PTO

- 0 l/min
(0 imp. gal./minute | 0 us. gal./minute)

C Button for adjusting the engine speed.

The speed can be adjusted in steps of 100 rpm.

D Not used

E Front power lift device pressure relief

F Press the button to save set values or programs and open submenus.

G Rotary knob for changing values and selecting programs.

Control panel assignment

1 Front power lift joystick

- Back: Raise front power lift and front **PTO** off
- Forwards: Lower front power lift and front **PTO** on
- Right/left: Operate **AUX 1**
- Forwards: Switch on front power lift floating position
- Back: Switch off front power lift floating position

2 **AUX 2** and **AUX 3** joystick

- Forwards/backwards: Operate **AUX 2**
- Right: Operate **AUX 3**

3 Not used

4 Switch the **PTO** hydraulic system on/off

5 Front electrical **AUX 1**

6 Front electrical **AUX 2**

7 Rear electrical **AUX 1**

8 Rear **PTO**

- 40 l/min
(8.8 imp. gal./minute | 10.57 us. gal./minute)

9 ECO function: Switch on the complete work programme with the last values and settings used (only for the sweeping systems offered by Kärcher Municipal GmbH).

10 Front electrical **AUX 2**

10.2 Controls for waste container³² or mounting frame³³

The switch for raising and lowering an attached waste container or attachment frame is located next to the driver's seat.



Waste container controls

- 1 Additional socket 12 V
- 2 Switch position [Lower waste container/attachment frame]
- 3 Switch position [Raise waste container / attachment frame]

1. Actuate the switch at position (3) to raise the waste container or attachment frame.
2. Actuate the switch at position (2) to lower the waste container or attachment frame.

³² option

³³ option

10.3 Spraying controls (with attached brush sweeping system³⁴)

The controls for dosing the spray function when the brush sweeping system is fitted are located to the side of the steering column.



Dosing knobs for spraying

- 1 Left side brush spray
- 2 Right side brush spray
- 3 Suction mouth spray

1. Switch on the water pumps on the control panel in the arm rest.
The corresponding button is only assigned the [Switch water pump on/off] function when the brush sweeping system is fitted.
2. Turn the corresponding dosing knobs (1) to (3) to set the amount of spray water:
 - Turn left (anti-clockwise): Spray water volume increases.
 - Turn right (clockwise): Spray water volume decreases.

³⁴ option

10.4 Depressurise the hydraulic system (pressure relief)

⚠ CAUTION



Risk of injury due to attachment lowering.

Relieving pressure with a raised attachment can lead to injuries and crushing due to the sudden lowering of the attachment.

- Always lower lifted attachments before depressurising.

NOTICE

Risk of damage due to attachment lowering.

Depressurising with a raised attachment can lead to material damage to the vehicle and the attachment due to the sudden lowering of the attachment.

- Always lower lifted attachments before depressurising.

The hydraulic system must be depressurised before disconnecting the hydraulic hoses from the hydraulic connections.

1. Unplug the signal plug for attachment device detection (front).
2. Switch on the ignition (do not start the engine).
3. Switch on the **PTO** working hydraulics on the control console in the arm rest.
4. Press function button [F10] on the multifunction display.
5. Then press the [F6] function key.
The rear hydraulic system is now depressurised.
6. Press function button [F1].
The front hydraulic system is now depressurised.
7. Disconnect the hydraulic hoses.
8. You can now remove the attachment.

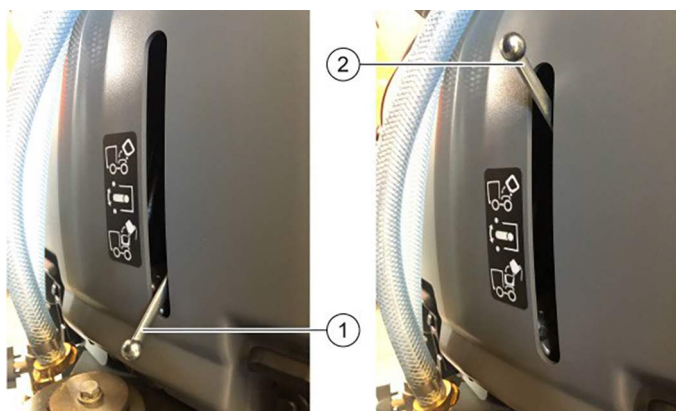
10.5 Waste container/attachment frame changeover

The switch lever is located at the front of the rear carriage, above the articulated joint.

There are two different versions of the switch lever depending on the version of the vehicle.

The switch lever is used to operate the changeover valve, which switches the hydraulics between an attached waste container and a tiltable attachment frame.

ADVICE The waste container and attachment frame are electronically monitored. Both functions cannot be activated simultaneously.



Waste container/attachment frame changeover

- 1 Switch lever in lower position: Waste container
- 2 Switch lever in upper position: Attachment frame

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13 Glossary

AUX	Auxiliary valve
	Auxiliary valve
HV	High Voltage
	High voltage (high voltage)
PPE	Personal Protective Equipment
	Personal protective gear
PSA	Personal protective gear
	Personal protective gear
PTO	Power Take Off
	Working hydraulics (hydraulic power output).
	Take-off point for hydraulic power output for the constant drive of an attachment.

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