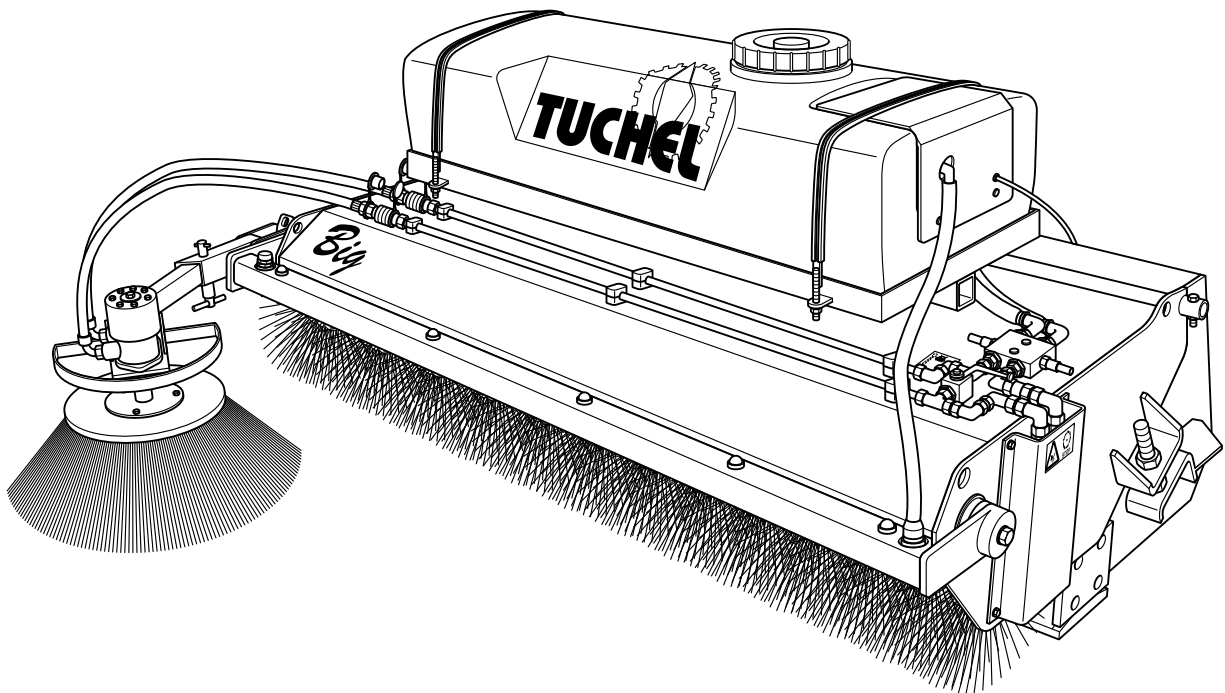




# Instruction manual

## *Big*



000050

# Sweeper shovel attachment

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## Foreword

Dear Customer,

The "Big"sweeper shovel attachment you have purchased has been manufactured to the highest quality standards. In order to eliminate any possibility of damage to persons or property, you must read and observe the respective safety and warning instructions in this manual and on the accessory equipment before using or servicing the accessory equipment.

Before placing the accessory equipment into operation, all machine operators must make themselves familiar with the handling of the accessory equipment using this operating manual. The safety regulations are to be strictly adhered to. Adherence to the valid safety regulations for your country is also obligatory.

# 1 General information about this operating manual

## A word about this operating manual

A professional operation and conscientious care and maintenance of the device are necessary in order to maintain the safety and utilisability of the accessory equipment. This operating manual will help you to use the accessory equipment for its intended purpose and to avoid damages to persons and property. The manual takes the necessary legal conditions and guidelines into account and contains important information.

The operating manual is part of the device and should be stored so that it is readily available at any time. If the operating manual becomes soiled or gets lost, a new replacement manual can be requested from Tuchel Maschinenbau GmbH at any time. If the device is sold, the operating manual must be transferred to the new owner.

The owner of the device bears the responsibility for the following points:

- Every operator must be of at least the legal minimum age and be physically as well as mentally fit to reliably fulfil the tasks assigned to them.
- Every person who operates or services the accessory equipment must have read and understood the operating manual beforehand.
- The accessory equipment may only be used for its intended purpose in accordance with regulations.
- The accessory equipment may not be improperly modified or altered.

The declaration of conformity of the Tuchel Maschinenbau GmbH expires if the owner allows safety-relevant modifications to be performed on the accessory equipment. The party performing the modifications must issue a new declaration of conformity. If you have questions concerning this, please contact Tuchel directly.

## **Declaration of conformity**

The "Big" sweeper shovel attachment satisfies the "essential health and safety requirements" of the machinery directive 98/37/EC and is authorised to carry the CE mark.

Furthermore, the harmonised European Norms DIN EN 12100, DIN EN 982, DIN EN 474-1/3/4, DIN EN 953, DIN EN 60204 and the regulations for the prevention of industrial accidents (UVV) were used for the development of the machine. These are documented in the EC declaration of conformity.

The manufacturer's address is located on the back side of the operating manual.



### **NOTE!**

The declaration of conformity is depicted on the following page.

EG-KONFORMITÄTSERKLÄRUNG  
entsprechend der EG-Richtlinie 98/37/EG

DÉCLARATION «CE» DE CONFORMITÉ  
Conforme à la directive de la 98/37/CE

EC DECLARATION OF CONFORMITY  
conforming to directive 98/37/EC



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We, Holsterfeld 15  
DE-48499 Salzbergen

erklären in alleiniger Verantwortung, dass das Produkt  
déclarons sous notre seule responsabilité que le produit  
declare in sole responsibility, that the product

Kehrschaufel Big

(Fabrikat, Typ / Marque, modèle / Fabricant / type)

(Serien-Nr. / No.)

auf das sich diese Erklärung bezieht, im Ausrüstungsumfang der Werksauslieferung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Richtlinie 98/37/EG entspricht.

Faisant l'objet de la déclaration est conforme aux prescriptions fondamentales en matière de sécurité et de santé stipulées dans la directive de la 98/37/CE.

To which this certificate applies, conforms to the basic safety and health requirements of EC-Declaration 98/37/EC.

Zur sachgemäßen Umsetzung der in den EG-Richtlinien genannten Sicherheits- und Gesundheitsanforderungen wurden insbesondere folgende Normen und technische Spezifikationen herangezogen:

Pour mettre en pratique dans les règles de l'art les prescriptions en matière de sécurité et de santé stipulées dans les Directives de la CE, il a été tenu compte des normes et des spécifications techniques suivantes:

To effect correct application of the safety and health requirements stated in EC-Directions. The following standards and /or technical specifications were consulted:

DIN EN ISO 12100  
EN 982

DIN EN 474-1/3/4  
EN 953

Unfallverhütungsvorschriften (UVV)  
EN 60204

(Titel und /oder Name sowie Ausgabedatum der Normen und der technischen Spezifikationen / Titre et/ou numéro et date de publication des normes et/ou spécifications techniques / Titel and/or number and date of issue of the other EC-Directions)

Salzbergen, den 06.11.2007

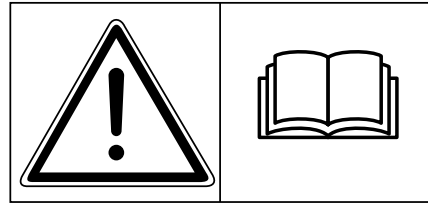
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Lieu et date /  
Plate and date of issue)

(Unterschrift des Befugten /  
Nom de la personne autorisée /  
name of authorized person)

## 2 Safety

### General safety information

Most accidents are caused by the disregard of the essential safety regulations. In order to prevent accidents and thus eliminate any possibility of damage to persons or property, you must have read and understood the respective safety and warning instructions in this manual and in the manual of the host vehicle before performing any work.



### Intended use

The accessory equipment is designed to be used solely for the purpose defined in chapter "Description / overview", *page 17* and in conjunction with the approved components.

Any other use does not comply with the regulations/requirements or intended use. The manufacturer cannot assume liability for any damages resulting from an unintended use. The user/owner alone bears the risk for this.

Follow the corresponding safety instructions and working steps from this operating manual and the manual of the host vehicle. These also pertain to the intended use.



### Safety instructions in the operating manual

In the operating manual at hand, the following signal words and signs are used to make the safety instructions recognisable as such at a glance:



This is the hazard warning. It warns you about the risk of injury.

- Comply with all activities labelled with the hazard warning in order to prevent injuries or death.



#### **DANGER! – Danger of death**

Identifies risks that can result in severe injuries to health or lead to death if the respective danger warning is not observed or is not observed sufficiently.



#### **WARNING! – Bodily injury**

Identifies risks that can cause physical injury if the respective warning is not observed or is not observed sufficiently.



#### **CAUTION! – Light injuries**

Identifies risks that can cause light bodily injury.



This is the caution warning. It warns you about the risk of property damage. It differs from the hazard warning since it warns about property damage and not about bodily injury.

- Comply with all activities labelled with the caution warning in order to prevent property damage and damage caused to the environment.



#### **ATTENTION! – Property damage**

Identifies solely the risk of possible property damage and damage caused to the environment.



#### **NOTE!**

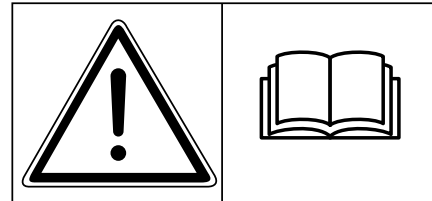
Identifies application tips and useful information.

## Safety stickers on the accessory equipment

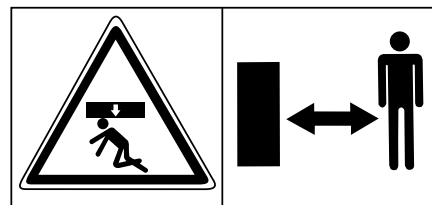
Information and symbols attached directly to the accessory equipment such as safety stickers must be observed without fail. They may not be removed and are to be kept in a completely legible condition.

The following information and symbols are attached to the accessory equipment:

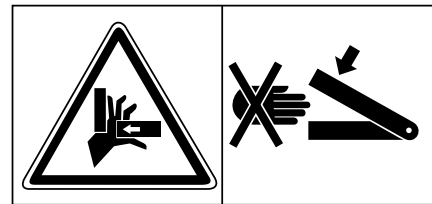
Read and observe the operating manual and safety instructions before placing into operation.



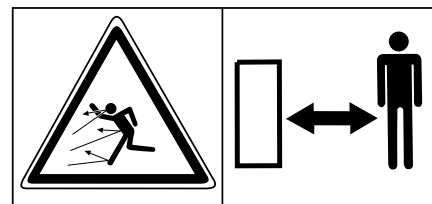
Do not stay in the area of a raised and unsecured load. Keep back a sufficient distance.



Do not reach into hazard areas where there is a danger of crushing as long as the parts in these areas are still able to move.



There is a risk of dirt being flung forward by the rotating sweeper cylinder. Keep back a sufficient distance.



Do not reach in to grasp rotating machine parts. Wait until the machine parts have come to a standstill.



### Safety regulations

You may only operate or perform maintenance work on the accessory equipment if you have been trained accordingly and are authorised to do so.

Observe all regulations, measures and safety instructions when operating or performing maintenance work on the accessory equipment.

When working together with other persons, discuss and agree to all the hand signals that you are planning to use amongst each other and designate a coordinating person beforehand.

### Safety devices

Ensure that all guards and covers are properly attached to the accessory equipment.

Make sure that damaged guards and covers are repaired.

Under no circumstances may any safety installations be removed such as e.g. the protective grating.

### Clothing

You may not wear loose-fitting clothing, jewellery or wear your hair open. These items could get caught in control elements or in moving or rotating parts and cause severe injuries.

Change clothing that is soiled with highly inflammable substances immediately.

Always wear the operationally required protective equipment e.g. hearing protection, protective glasses, safety shoes, dust mask or gloves when operating or performing maintenance work on the machine.

Make sure that no unauthorised person(s) are remaining in the hazard area.

### Modifications to the accessory equipment

Tuchel Maschinenbau GmbH assumes no liability for modifications that are made without the express permission of the manufacturer.

Tuchel Maschinenbau GmbH assumes no responsibility for injuries or damages caused by unapproved modifications.

## Before leaving the host vehicle

Lower the accessory equipment to the ground.  
Secure the working hydraulics by means of the null position.  
Activate the holding brake of the host vehicle and turn off the engine.  
Remove the ignition key from the host vehicle and keep it in safe custody.

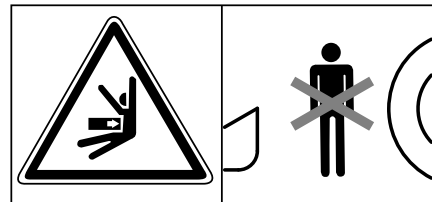
## Climbing on and off

When climbing on and off, use the handles on the host vehicle and the provided stepping surfaces on the accessory equipment.

## Protecting against injuries

Never stick body parts between moving parts e.g. between accessory equipment and host vehicle. Never place yourself in an endangered area.

When operating the quick-change unit, the free sizes change which can lead to serious injury.



### Operating the accessory equipment

#### When driving

Drive particularly slowly when driving on uneven terrain and ensure that the path of travel is free from obstacles.

#### When working

Ensure that no one stays near the accessory equipment or behind the host vehicle.

Perform work in the direction that the wind is blowing as much as possible to protect yourself from dust and limited visibility.

#### High visibility

When working in dark areas, provide additional lighting for the working area.

Stop working when visibility is poor e.g. during fog, rain or snow and wait until the visibility has improved enough to ensure that work can continue safely.

### Transporting

#### Loading and transporting

Lift the accessory equipment onto the loading space with the host vehicle or with a suitable hoisting device at the appropriate attachment points.

Place suitable cushioning material (rubber mats) underneath.

Follow the transporting instructions from the operating manual of the host vehicle.

Position the accessory equipment correctly onto the transporting vehicle and secure the accessory equipment onto the loading space using belts.

Inadequately secured accessory equipment can shift during transport and fall from the transporting vehicle. Secure the accessory equipment properly.

## Safety measures during maintenance

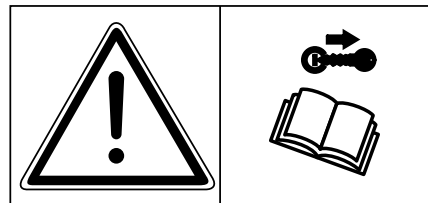
### Personnel

You may only perform service or repair work on the machine if you are a qualified specialist or if you have been carefully instructed about the work to be performed by a qualified specialist.

### Before performing maintenance work

Read and observe the operating manual and, in particular, the safety instructions when you perform maintenance work on the accessory equipment.

If maintenance work is being performed on the accessory equipment, the engine of the host vehicle may not be started and operating elements may also not be activated without prior consultation. This can lead to accidents with severe injuries.



### Tools

Use appropriate tools only. The use of damaged, poor quality, faulty or makeshift tools can lead to injuries.

## During the maintenance

### Keeping the accessory equipment clean

Always keep the accessory equipment clean.

Do not clean the accessory equipment with a high pressure cleaner.

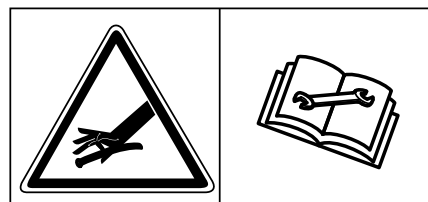
Never use fuel to rinse off or clean parts.

### High-pressure hoses

Do not kink the high-pressure hoses. Never hit against the high-pressure hoses with hard objects. Do not use hydraulic lines or hoses with cracks or kinks. They will burst under use.

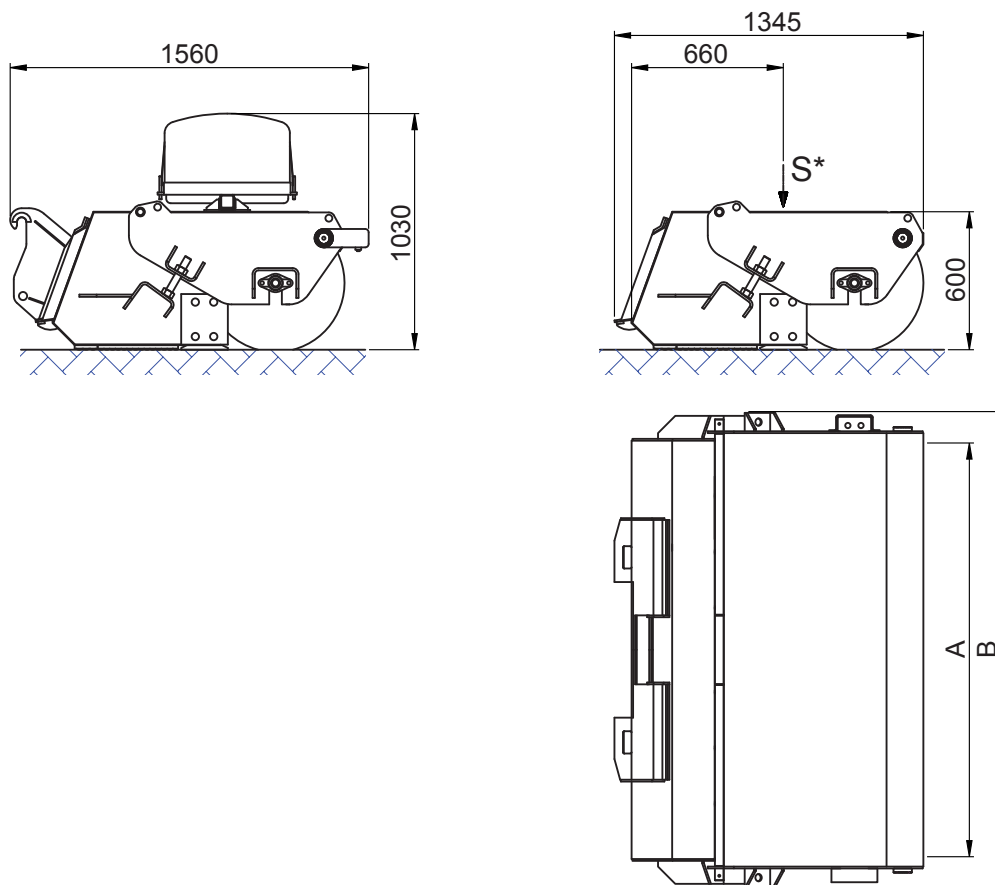
### Exposure to high pressure oil

Always remember that the hydraulic system is under high pressure. To depressurise the hydraulic circuits, follow the instructions in the separate operating manual of the host vehicle.



### 3 Technical data

#### Dimensions



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\* The centre of gravity changes depending on the equipment and when the sweeper shovel attachment is full

#### Work values

Type: "Big" sweeper shovel attachment		120	150	165	180	210
Working width "A"	[mm]	1200	1500	1650	1800	2100
Total width "B"	[mm]	1470	1770	1920	2070	2370
Kerb weight (standard)	[kg]	373	425	450	478	528
Kerb weight (profi)	[kg]	411	472	501	532	589
max. weight (profi, incl. water tank, side broom and filled with sweepings)	[kg]	1196	1507	1610	1717	1924
max. weight (profi, incl. water tank, side broom, without sweepings)	[kg]	596	757	786	817	874
Shovel compartment (capacity)	[l]	300	375	412	450	525
Sweeper cylinder (brush rings Ø)	[mm]	600	600	600	600	600
Sweeping power at 6 km/h driving speed	[m <sup>2</sup> /h]	7200	9000	9900	10800	12600

### Working hydraulics

Type: Big sweeper shovel attachment		<b>120</b>	<b>150</b>	<b>165</b>	<b>180</b>	<b>210</b>
Working hydraulics	Working pressure (max.) [bar]	160	160	160	160	160
	Required volume flow [l/min]	25	40	40	40	50
1x double-acting drive circuit						

### Attachment with mount

Compact loader mount	incl.
Quick-change adapter	for wheel loaders (option)

### Additional equipment (option)

Type: "Big" sweeper shovel attachment		<b>120</b>	<b>150</b>	<b>165</b>	<b>180</b>	<b>210</b>
Water spaying unit with water tank, incl. 12 V dry running pump and switching box						
Water tank (capacity)	[l]	100	100	100	100/200	100/200
Side broom (circular brush Ø)	[mm]	600	600	600	600	600



### 4 Description / overview

The "Big" sweeper shovel attachment is an accessory device for the sweeping and gathering of dirt.

The sweeper shovel attachment is suitable for the sweeping free, collecting and removing of dirt, sand and mud from streets, walkways and fixed surfaces of all sizes.

The sweeper shovel attachment is attached to compact loaders and wheel loaders by means of the quick-change unit.

The sweeper cylinder of the "Big" sweeper shovel attachment is driven hydraulically after connecting the hydraulic circuit to the host vehicle. An internal hydraulic motor rotates the sweeper cylinder. The sweeper cylinder can turn in both directions.

The speed of the sweeper cylinder is dependent on the flow of oil and on the equipment of the host vehicle.

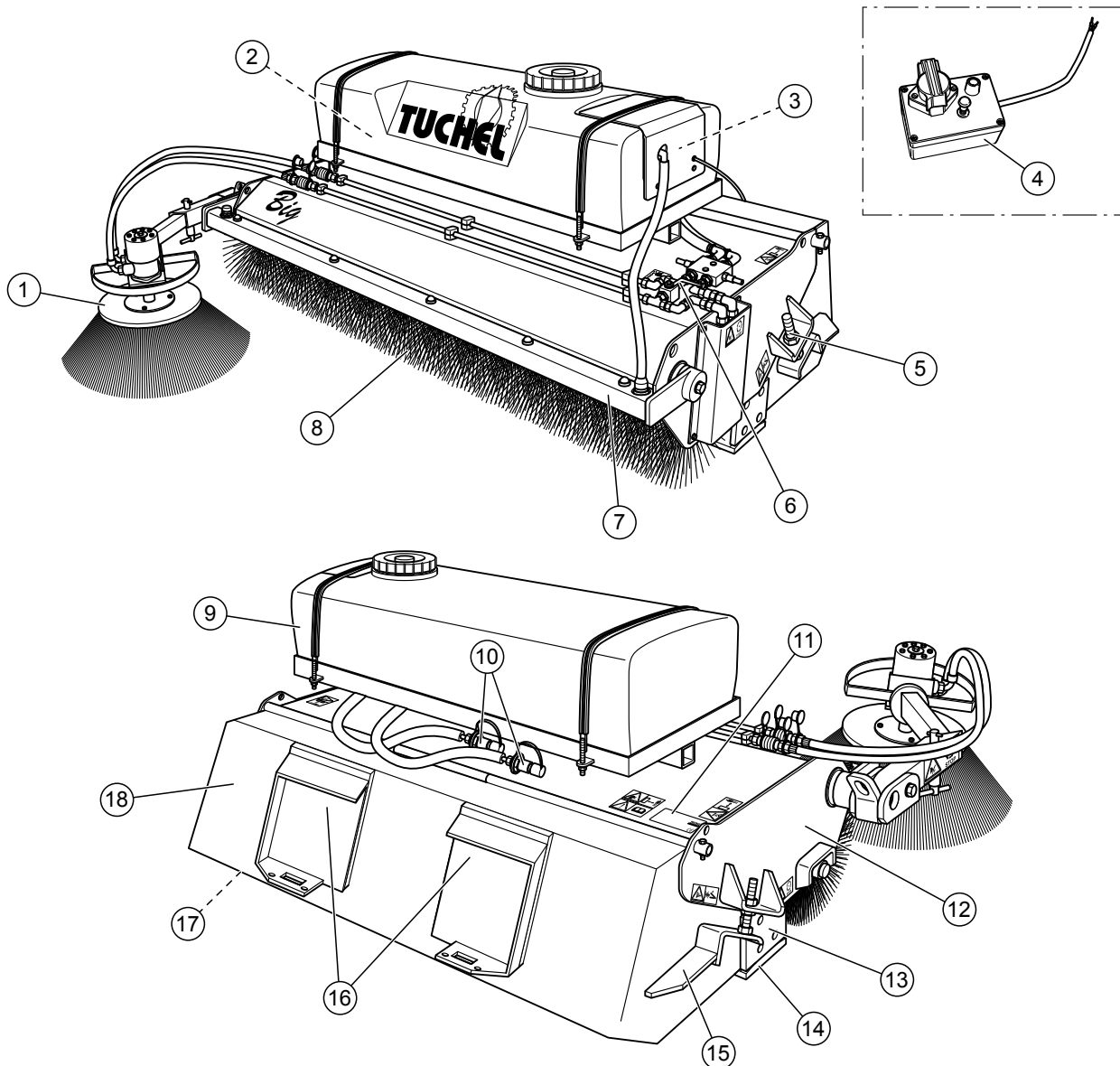
The contact pressure of the sweeper cylinder to the ground is adjusted using two set screws.

The sweeper cylinder is equipped as standard with a beeline attachment made of 100% PPN brush rings. The brush rings have a diameter of 600 mm.

The machine frame of the sweeper cylinder is made from a robust and distortion-free welded construction. The wear strips under the shovel increase the operating life and are attached along the entire length.

The "Big" sweeper shovel attachment can also be equipped with a spraying water unit for sweeping dust and with a side broom for flush edge sweeping allowing you to work in the most diverse of operating conditions.

General view



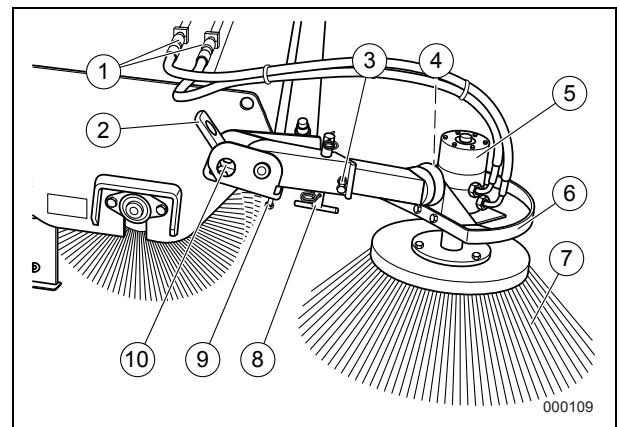
- |  |   |
|--|---|
| 1 Side broom (circular brush)  | 10 Hydraulic connections                        |
| 2 Water filter (internal)  | 11 Type plate                                   |
| 3 Water spraying unit pump   | 12 Sweeper shovel attachment frame (upper part) |
| 4 Switching box  | 13 Side blade *                                 |
| 5 Set screw for adjusting the contact pressure of the sweeper cylinder | 14 Blade *                                      |
| 6 Shut-off valve for side broom  | 15 Step   |
| 7 Water spraying unit  | 16 Quick-change unit                            |
| 8 Brush rings (sweeper cylinder)                                       | 17 Dimpled armor steel wear bars                |
| 9 Water tank   | 18 Sweeper shovel compartment (lower part)      |

\* (fixed-welded as standard, bolted on as option)

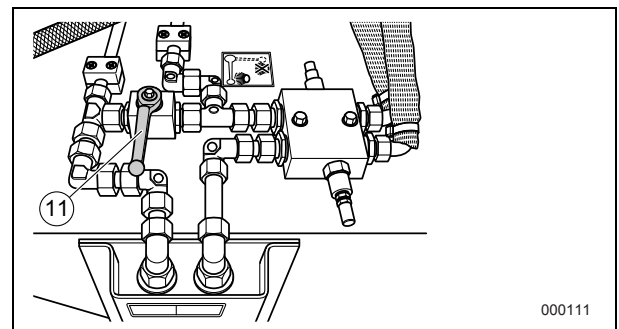
## Accessories (optional)

### Side broom

- 1 Hydraulic connections
- 2 Locking device for normal position
- 3 Swiveling range setting
- 4 Pressure angle setting
- 5 Hydraulic motor
- 6 Bumper
- 7 Circular brush
- 8 Location bolt
- 9 Inclination precision adjustment
- 10 Inclination presetting (position of the mount)

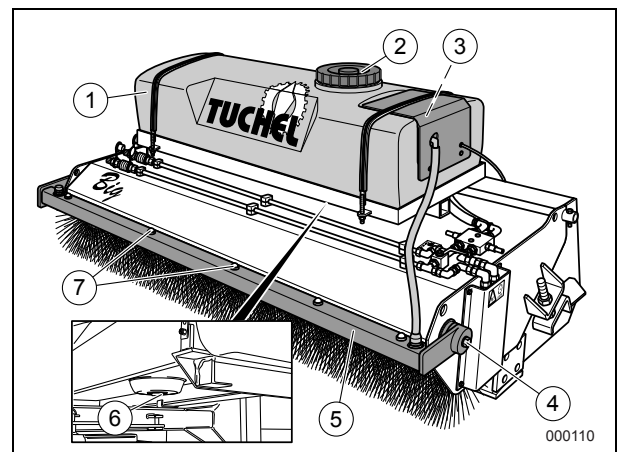


- 11 Shut-off valve



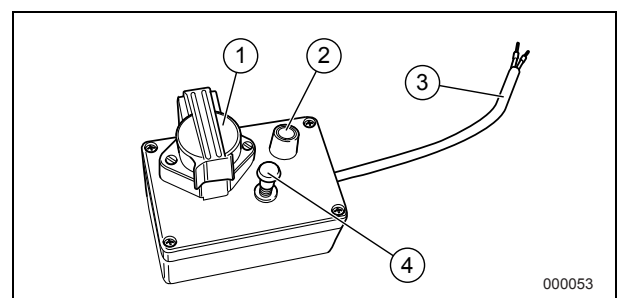
### Water spraying unit

- 1 Water tank  
available with 100 l and 200 l tank capacity
- 2 Tank cover
- 3 Dry running pump (12 V or 24 V) and internal water filter
- 4 Spray bar inclination setting
- 5 Spray bar
- 6 Tank bleed screw (only on the 200 l tank)
- 7 Spray nozzle



### Switching box

- 1 Dry running pump connection socket
- 2 Fuse
- 3 Host vehicle power supply connection cable
- 4 ON/OFF switch



Type plate

Model \_\_\_\_\_

Serial no. \_\_\_\_\_

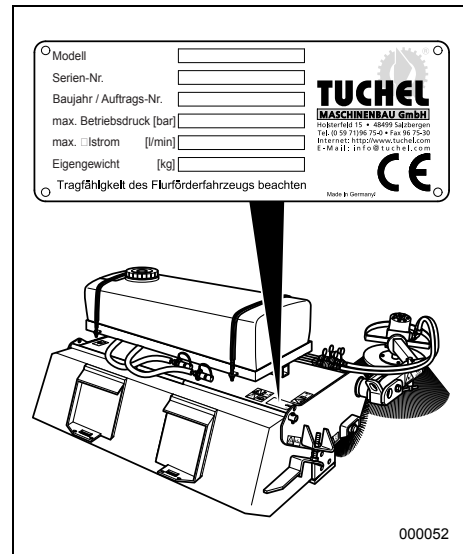
Year of manufacture / order no. \_\_\_\_\_

max. operating pressure [bar] \_\_\_\_\_

max. oil flow rate [l/min] \_\_\_\_\_

Unladen weight [kg] \_\_\_\_\_

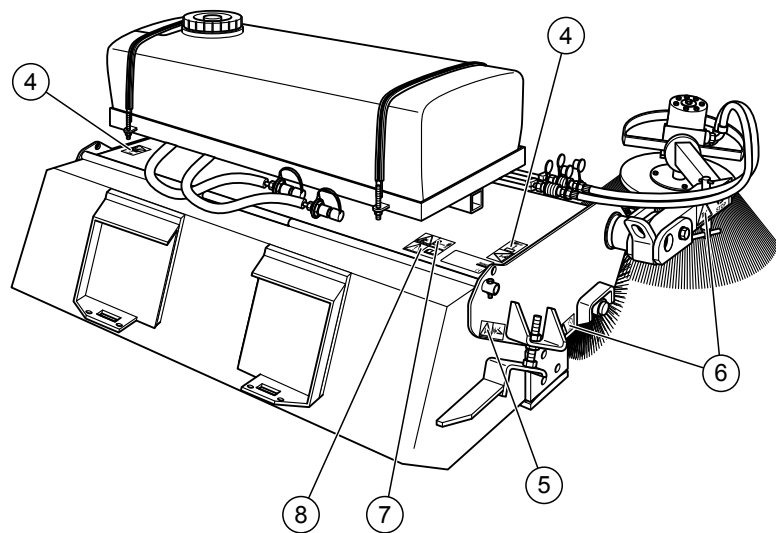
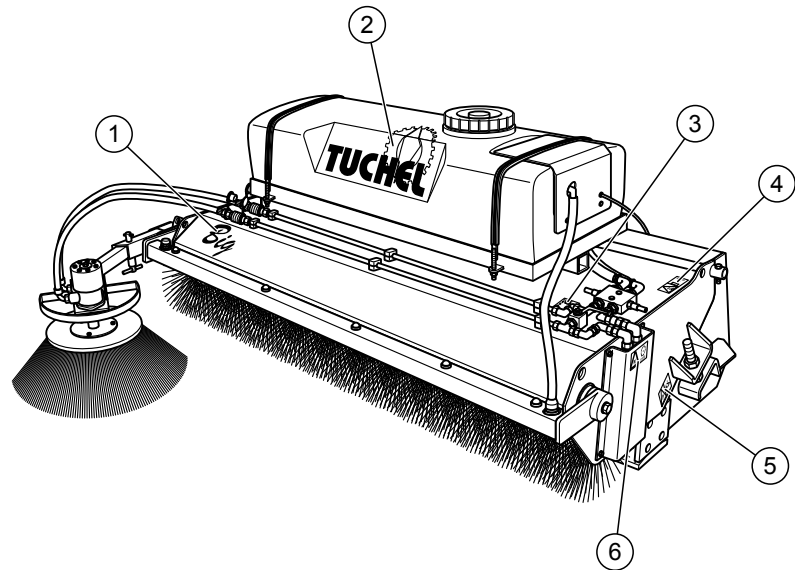
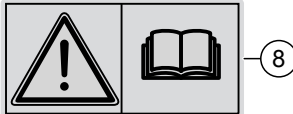
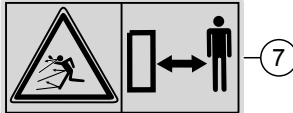
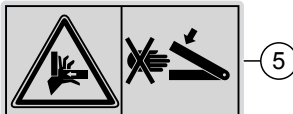
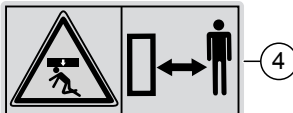
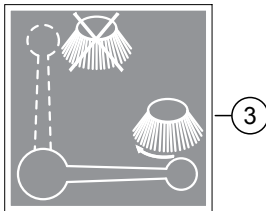
Enter the data here so that the specifications are readily available at any time.  
 The complete identification marking has the value of a certificate and may not be modified or made irrecognisable.  
 The identification marking must be replaced if it is damaged or has faults.



Identification marking locations

Big ①

TUCHEL ②



- 1 "Big" manufacturer nameplate
- 2 "Tuchel" manufacturer nameplate
- 3 "Side broom shut-off valve" sticker
- 4 Warning sticker "Do not stay underneath a raised load"
- 5 Warning sticker "Do not reach into crushing zone"

- 6 Warning sticker "Do not reach into rotating machine parts"
- 7 Warning sticker "Flying dirt particles"
- 8 Warning sticker "Read the operating manual before placing into operation"

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## 5 Operation

The "Operation" chapter contains the following descriptions that are required for the use of the accessory equipment:

- Placing into operation
- Safety regulations when working with accessory equipment
- Installing the accessory equipment
- Working methods
- Removing the accessory equipment
- Placing out of operation
- Storing over longer periods of time

The handling of the accessory equipment is described in the "Operation" chapter.

### Working with accessory equipment

#### Safety regulations when working with accessory equipment

- The accessory equipment may only be attached to a host vehicle that is equipped with a compatible quick-change unit. If you have questions, please contact your specialist dealer.
- Only host vehicles that are designed for use with the accessory equipment may be used.
  - Check the approved total weight, axle loads and transport dimensions with the manufacturer specifications of the host vehicle.
  - If a counterweight is required on the host vehicle, attach this according to the specifications of the manufacturer.
  - Observe the accessory equipment's centre of mass. The centre of mass changes depending on the material and the collected amount of sweepings.
- The attachment may not be improperly modified or altered.
- When attaching accessory equipment, the instructions in the operating manual of the host vehicle must be observed.
- The host vehicle and the accessory equipment must be on a level and solid ground for the mounting.
- The quick-release couplings must be depressurised before attaching the accessory equipment.
- Run the hydraulic lines so that they are not crushed, pinched or placed under tension.
- Check the accessory equipment for proper interlocking and functioning after every installation before you start to use it.
- Before leaving the host vehicle, always observe that the accessory equipment is sitting securely and that the holding brake of the host vehicle is activated.
- The maximum driving speed when sweeping is 6 km/h.

### Placing into operation

Before placing the machine into operation, every operator must have carefully read and understood the available operating manual as well as the operating manuals for the host vehicle and the accessory equipment.



#### **WARNING!**

Damage or defects on the sweeper shovel attachment or the host vehicle can lead to accidents.

- If defects are found during the following test, the sweeper shovel attachment may not be operated until it has been properly repaired.
- The sweeper shovel attachment may only be operated in a technically sound state and used for its intended purpose in accordance with regulations.

### Before placing into operation

*Only valid for sweeper shovel attachment with water spraying unit:*

Before using the sweeper shovel attachment for the first time, the switching box must be attached to the host vehicle.

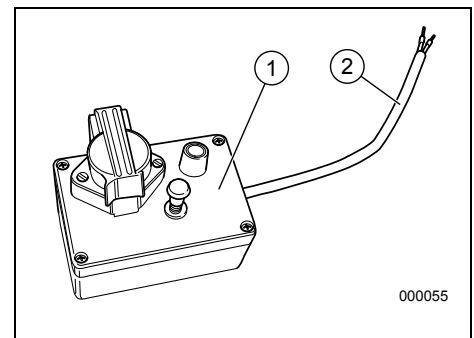
1. Attach the switching box (1) to the host vehicle at the appropriate position.



#### **WARNING!**

Live parts can lead to electric shock.

- Work on the electrical system may only be performed by qualified personnel.



2. Connect the electrical connection line (2) to the electrical power supply of the host vehicle.

### Checks before placing into operation

Check for yourself that the sweeper shovel attachment and the host vehicle are safe to operate before placing the sweeper shovel attachment into operation.

Perform the following checks:

- Visual walkabout inspection of the sweeper shovel attachment:
  - No outer components may be broken or deformed.
  - The hydraulic system may not exhibit any damages or leakages. Damaged hoses must be replaced.
  - The sweeper shovel attachment must be properly attached and securely interlocked. See also "Installing the sweeper shovel attachment", *page 25*.
  - The stepping surfaces must be clean.
  - Check that there is sufficient water in the tank.

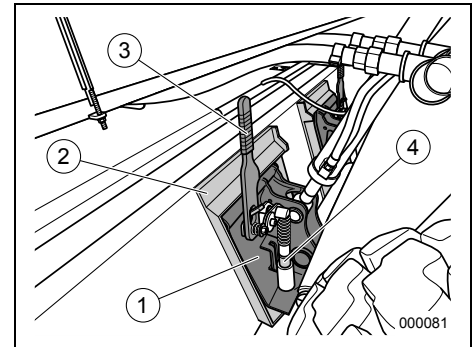


### Installing the sweeper shovel attachment

1. Clean the quick-change unit and the compact loader mount.
2. Drive the host vehicle to the sweeper shovel attachment so that the quick-change unit (1) catches exactly in the compact loader mount (2).

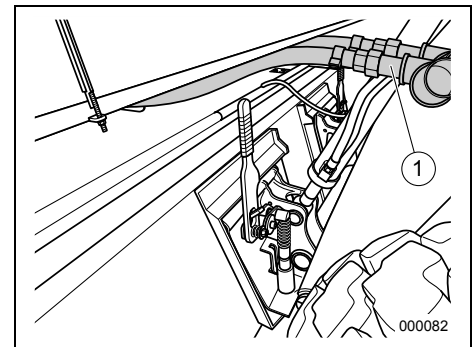
#### For manual interlocking:

3. Turn off the engine.
4. Activate the holding brake.
5. Activate the interlocking lever (3) on both sides so that the interlocking bolts (4) latch into the compact loader mount.
6. Ensure that the sweeper shovel attachment is securely interlocked.



#### For hydraulic interlocking:

3. Activate the control lever of the hydraulic system on the host vehicle so that the interlocking bolts latch into the compact loader mount, see the host vehicle operating manual.
4. Turn off the engine.
5. Activate the holding brake.
6. Ensure that the sweeper shovel attachment is securely interlocked.
7. Ensure that the hydraulic circuit is depressurised, see the operating manual of the host vehicle.
8. Connect the hydraulic hoses (1) to the quick-release couplings of the host vehicle.
9. Ensure that the hydraulic hoses are long enough and that they can move freely and are not crushed.
10. Check the proper functioning as follows:
  - Carefully raise the sweeper shovel attachment.
  - Activate the lifting and tilting function of the sweeper shovel attachment.
  - Activate the hydraulic control circuit for the sweeper cylinder and the side broom if present.



#### Water spraying unit (optional)

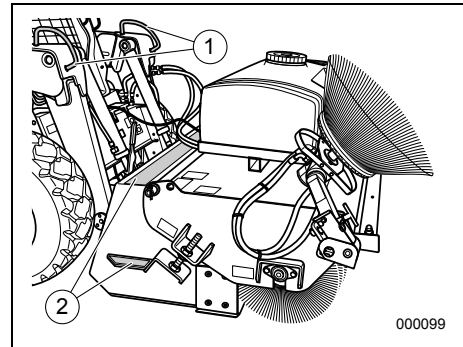
11. Plug the electrical power plug of the water pump into the socket of the switching box.

- ✓ The sweeper shovel attachment is ready for operation.

## Working with the sweeper shovel attachment

The adjustment and handling of the operating elements may vary from each other depending on the host vehicle used. Observe the operating manual of the respective host vehicle.

1. Use the grab handle (1) on the host vehicle and the non-skid stepping surfaces (2) on the sweeper shovel attachment for getting onto and off of the host vehicle.
2. Assume the proper sitting position in the host vehicle and fasten the seat belt.
3. Raise the sweeper shovel attachment from the ground.
4. Drive the host vehicle to the working site.



## Adjusting the sweeping profile

We recommend adjusting the sweeping profile as follows to achieve the best possible results:

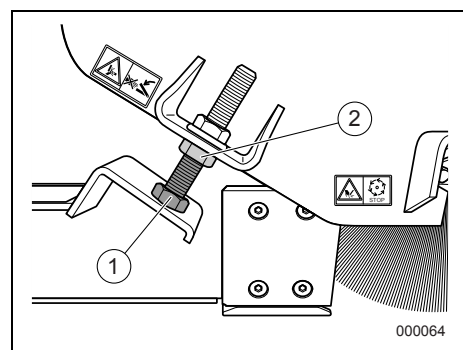
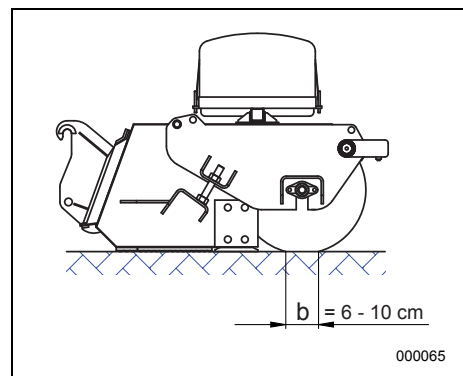
The contact surface between the sweeper cylinder and ground should have a width (b) of 6 – 10 cm.

1. Check the sweeping profile:
  - Place the sweeper shovel attachment on on level ground.
  - Allow the sweeper cylinder to rotate at the position.
  - Bring the sweeper cylinder to a standstill and raise the sweeper shovel attachment.
  - Measure the width (b) of the cleaned area.

If the width (b) is too small, increase the sweeper cylinder contact pressure to the ground:

The contact pressure adjustment is made using the set screw (1) and must be carried out evenly on both sides of the sweeper shovel attachment.

2. Loosen the counter nut (2).
3. Unscrew the set screw (1).  
Unscrewing the screw = reducing the contact pressure  
Screwing in the = increasing the contact pressure
4. Check the sweeping profile again as described in step 1.



### Adjusting the revolution speed

The speed of the sweeper cylinder is dependent on the power output of the host vehicle. If the engine speed is increased and thus the volume flow of the hydraulic oil, the speed of the sweeper cylinder is also increased.

### Sweeping and collection of sweepings

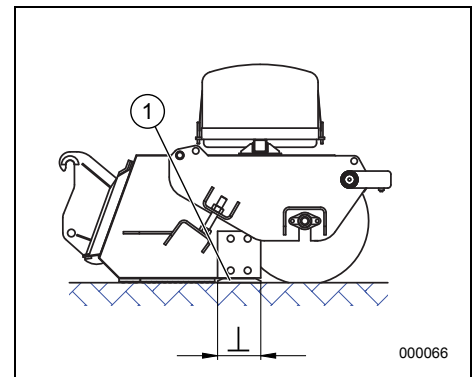
1. Carefully lower the sweeper shovel attachment to the ground so that the underside of the blade (1) is standing parallel to the working surface.



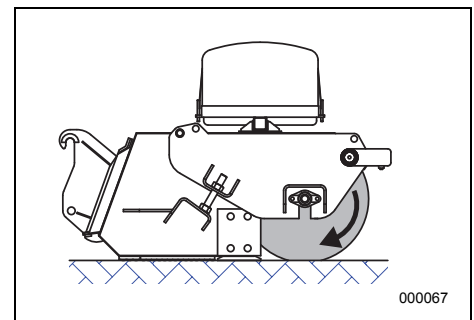
#### WARNING!

There is a risk of the sweepings being flung forward by the rotating sweeper cylinder.

- Persons standing nearby must maintain a safe distance of at least 5 m.



2. Allow the sweeper cylinder to turn.
  3. Observe the correct direction of rotation of the sweeper cylinder, see arrow.
  4. Drive forwards or backwards to clean the working surface.
- ✓ The sweepings are swept into and collected in the sweeper shovel compartment.



#### NOTE!

Depending on the intended use, the sweeper shovel attachment can be operated in both driving directions. You will usually achieve better results with backwards operation.



#### DANGER!

When driving backwards, persons and obstacles may not always be easy to see.

- Pay attention that no one is standing in the way behind the host vehicle.
- Ensure that path of travel behind the vehicle is free.
- Have a second person assist you if visibility conditions require it.

## Emptying the sweeper shovel attachment

1. Raise the sweeper shovel attachment up.



### DANGER!

There is a risk of accident when lowering the sweeper shovel attachment and swiveling the quick-change unit if there are people located below the lifting frame or the sweeper shovel attachment.

Furthermore, there is a risk of the sweepings being flung forward by the rotating sweeper cylinder.

- Persons standing nearby must maintain a safe distance of at least 5 m.

2. Tilt the quick-change unit forward far enough so that the sweepings fall out of it.

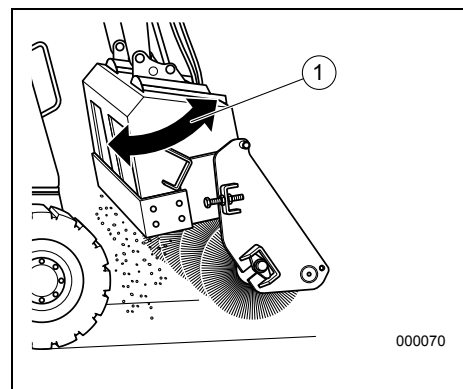


### NOTE!

To empty the shovel compartment more effectively, we recommend tilting the quick-change unit back and forth (1) a number of times so that the dirt is released.

This applies in particular when emptying wet sweepings.

- ✓ The sweeper shovel attachment is emptied.



### Free sweeping mode

Use the free sweeping mode to sweep together dirt and bulk materials. In this mode, the sweepings are not collected in the sweeper shovel compartment.

1. If present, the side broom must be brought into the normal position before commencing with the free sweeping, see "Swiveling the side broom to the operating/normal position", page 33.
2. Tilt the sweeper shovel attachment forwards so that the sweeper cylinder (1) touches the ground lightly.



#### ATTENTION!

Too high a ground contact pressure of the sweeper cylinder will lead to a premature wear or damage to the brush rings.

- If necessary, change the position of the quick-change unit or the lifting frame.

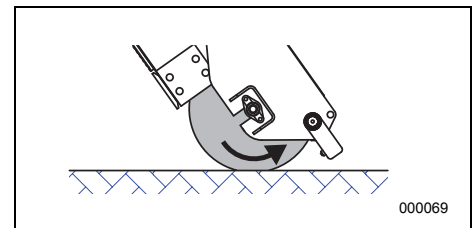
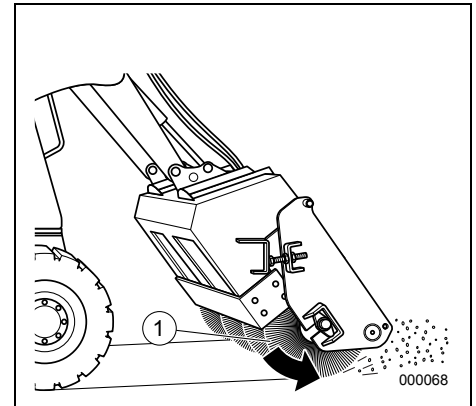


#### WARNING!

There is a risk of the sweepings being flung forward by the rotating sweeper cylinder.

- Persons standing nearby must maintain a safe distance of at least 5 m.

3. Allow the sweeper cylinder to turn.
  4. Observe the correct direction of rotation of the sweeper cylinder, see arrow.
  5. Adjust the tilt of the sweeper shovel attachment to the visibility conditions and ensure that the path of travel is free.
  6. Drive forwards.
- ✓ The sweepings are swept together.



## Removing the sweeper shovel attachment

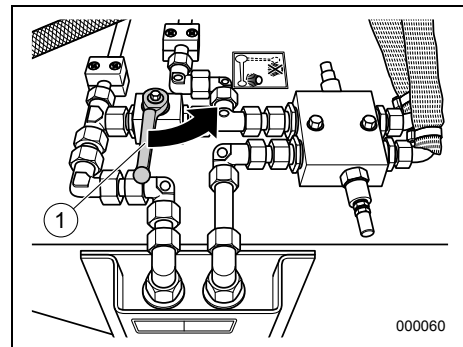
1. Empty the sweeper shovel attachment.
2. Park the host vehicle and the sweeper securely on level and solid ground. See "Maintenance preparation", page 40.

**i**

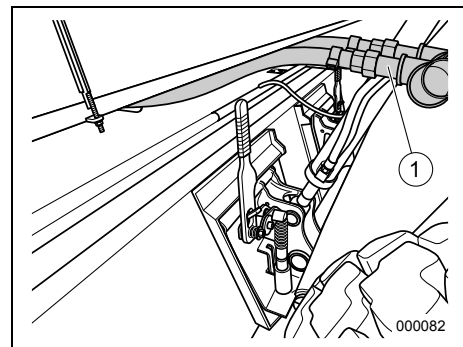
**NOTE!**

If the sweeper shovel attachment is not going to be used for a longer period of time, carry out the instructions in chapter "Storing the accessory equipment over longer periods of time".

3. If the side broom is present, close the shut-off valve (1) and bring the side broom to the normal position, see "Swiveling the side broom to the operating/normal position", page 33.
4. If a water spraying unit is present, unplug the power plug of the water pump from the switching box.
5. Lay the power cable of the water spraying unit over the sweeper shovel attachment.



6. Move all operating levers of the working hydraulics to both sides repeatedly.  
The hydraulic system is decompressed.
7. Disconnect the hydraulic hoses (1) from the quick-release couplings.
8. Seal the quick-release couplings with dust caps.
9. Lay the ends of the hydraulic hoses over the sweeper shovel attachment.



### Unlocking the compact loader mount

#### Manual unlocking:

- Unlock the compact loader mount by operating the interlocking lever (2).

#### Hydraulic unlocking:

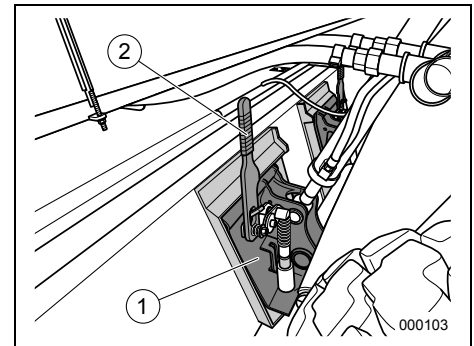
- Start the engine.
- Unlock the compact loader mount by operating the control lever in the host vehicle.
- Release the holding brake.

10. Lower the quick-change unit (1) down far enough so that the sweeper shovel attachment unhooks.

11. Ensure that path of travel behind the vehicle is free.

12. Drive the host vehicle backwards away from the sweeper shovel attachment.

✓ The sweeper shovel attachment is disconnected.



## Placing out of operation

### Turning off of the accessory equipment safely

1. Park the accessory equipment on level and solid ground.
  2. Operate the operating lever of the working hydraulics to lower the quick-change unit or the accessory equipment to the ground.
  3. Activate the holding brake.
  4. Place all operating levers of the working hydraulics in the null position.
  5. Shut off the engine of the host vehicle and keep the ignition key in safe custody so that the machine is secured against unauthorised starting.
- ✓ The machine is secured against unauthorised starting.

### Storing the accessory equipment over longer periods of time

The following measures must be carried out if the accessory equipment is to be placed out of service over a longer period of time:

#### Before placing out of service

- Thoroughly clean the entire accessory equipment and allow it to dry.
- Park the accessory equipment in a dry, clean and frost-free location.  
We suggest that you also cover the accessory equipment with a tarp to protect it against dust.
- Grease the accessory equipment.
- Empty the water tank, if present.
- Swivel the side broom to the normal position.

#### After placing out of service

- Grease the accessory equipment.
- Fill the water tank, if present.



## 6 Operation

The "Operation" chapter contains handling instructions that you must perform if you want to use the auxiliary equipment or if special working conditions exist.

In addition, the activities described are only relevant if the accessory equipment is equipped with the corresponding accessories.

### Side broom (option)

#### Swiveling the side broom to the operating/normal position

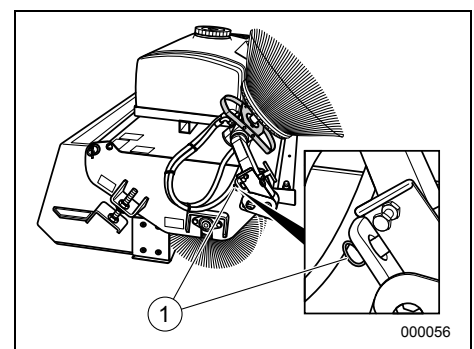
1. Pull the spring cotter (1).



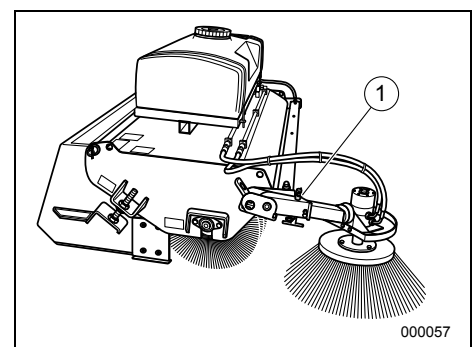
#### **WARNING!**

There is the risk of back injuries due to the unladen weight of the side broom when lifting it and also the risk of accident by the side broom falling down abruptly.

- Take the weight of the side broom into account.



2. Swivel the side broom down to the ground.
  3. Reinsert the spring cotter (1).
  4. Check whether the side broom is hydraulically connected and that the shut-off valve is set to flow, see "Hydraulic connection of the side broom", page 37.
- ✓ The side broom is ready for operation.

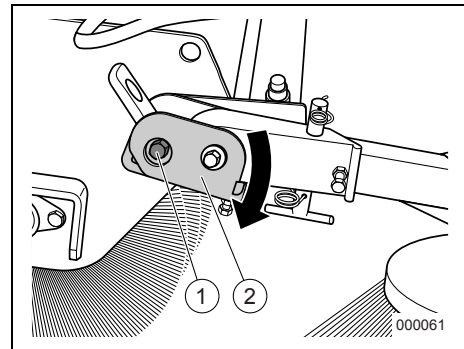


To bring the side broom into the normal position, proceed in the reverse order.

## Setting the inclination and contact of the side broom

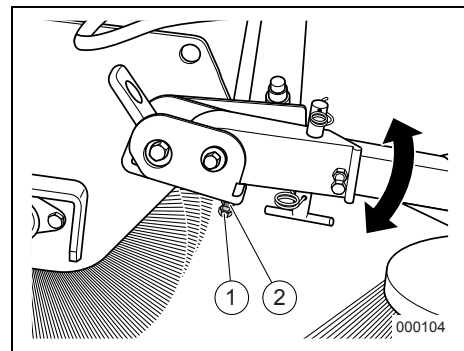
### Setting the inclination

1. Swivel the side broom to the operating position, see "Swiveling the side broom to the operating/normal position", page 33.
2. Loosen the clamping bolt (1).
3. Tilt the holder (2) forward far enough until the angle of inclination is appropriately set.
4. Tighten the clamping bolt (1) again.



### Precision adjustment of the inclination

1. Loosen the counter nut (2).
2. Turn the set screw (1) to change the contact surface and thus the contact pressure of the side broom.  
Unscrewing the bolt = increasing the contact pressure  
Screwing in the bolt = reducing the contact pressure
3. Tighten the counter nut (2) again.



### Setting of the pressure angle

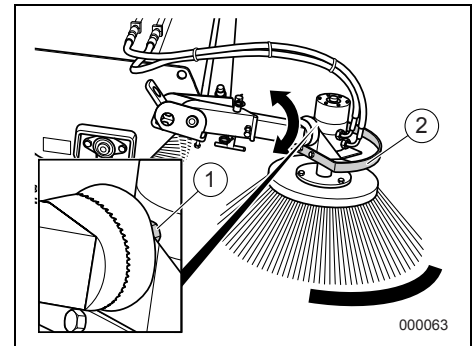
1. Loosen the clamping bolt (1).
2. Grab the handle (2) and tilt the side broom until the pressure angle is set appropriately.

**i**

#### NOTE!

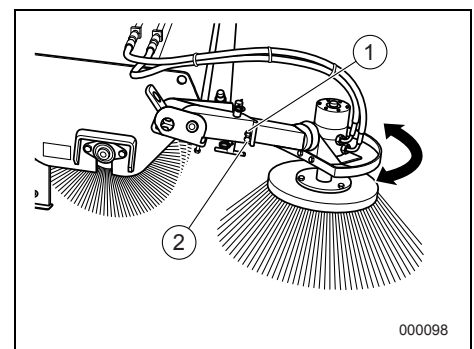
The pressure angle should be adjusted so that the contact surface of the side broom is equal to a quarter circle (3).

3. Tighten the clamping bolt (1) again.



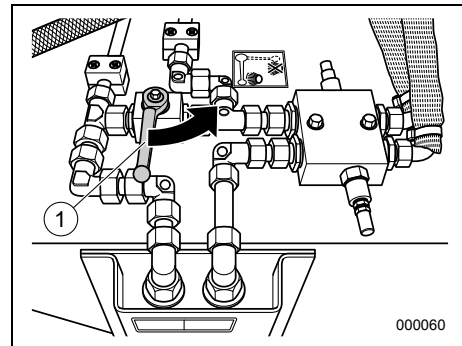
### Adjusting of the swiveling range

1. Loosen the counter nut (1).
2. Change the swiveling range by screwing the bolt (2) in or out.  
Unscrewing the bolt = increasing the swiveling range  
Screwing the bolt in = reducing the swiveling range
3. Tighten the counter nut (1) again.

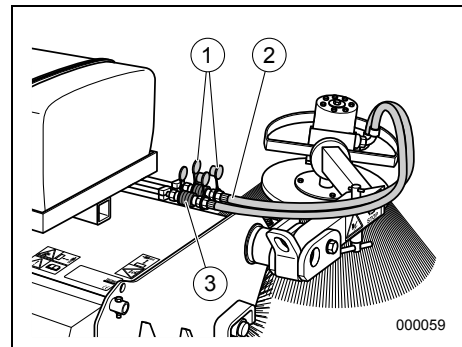


### Attaching and removing the side broom

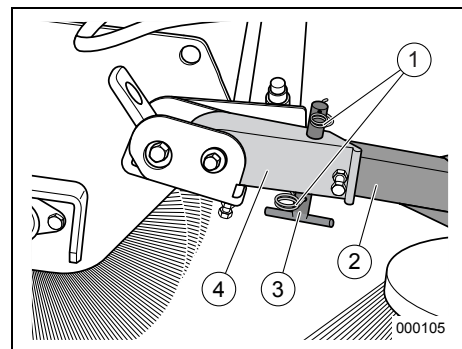
1. Close the shut-off valve (1).
2. Ensure that the hydraulic circuit is depressurised, see the operating manual of the host vehicle.



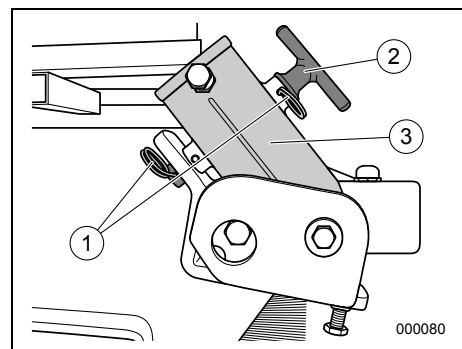
3. Disconnect the hydraulic hoses (2) from the quick-release couplings (3).
4. Seal the quick-release couplings (3) and hydraulic hoses (2) with dust caps (1).
5. Swivel the side broom to the operating position, see "Swiveling the side broom to the operating/normal position", page 33.



6. Pull the spring cotter pins (1).
7. Hold the extension arm (2) with one hand while you pull the bolt (3) with the other hand.
8. Remove the side broom from the mount (4).



9. Swivel the mount (3) back to the normal position.
10. Reinsert the spring bolt (2).
11. Secure the bolt with the spring cotter (1).



To attach, follow the reverse order of the removal.

### Hydraulic connection of the side broom

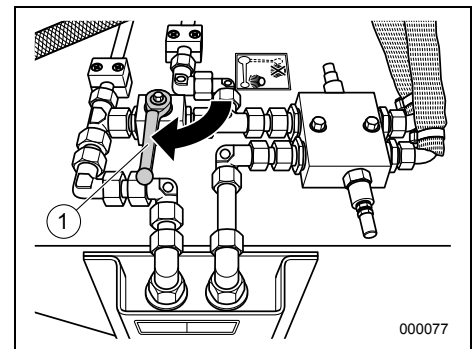
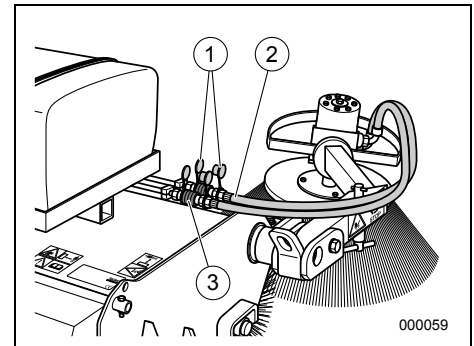
1. Ensure that the hydraulic circuit is depressurised, see the operating manual of the host vehicle.
2. Remove the dust caps (1) from the quick-release couplings (3) and the hydraulic hoses (2).
3. Connect the hydraulic hoses (2) to the quick-release couplings (3) of the drive circuit.



#### NOTE!

The quick-release couplings have confusion-proof plugs or sleeve sockets. This makes mixing up the lines impossible.

4. Set the shut-off valve (1) to flow.

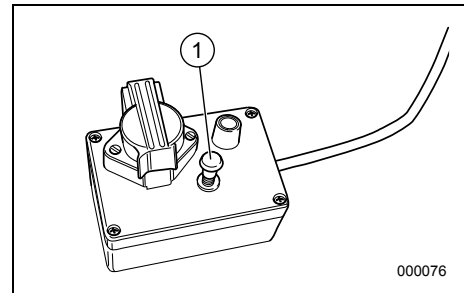


## Water spraying unit (option)

### Switching the water spraying unit pump on

The water spraying unit is used to bind dust or dirt particles.

1. Where needed, switch the water spraying unit on and off at the switch (1).



### Filling the water tank

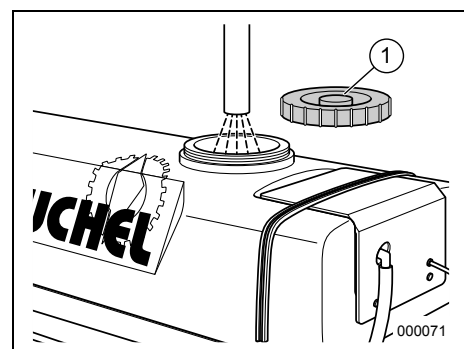
1. Open the tank cover (1).
2. Fill up the tank with water.



#### ATTENTION!

Damage to components of the water spraying unit through the use of additives in the spray water.

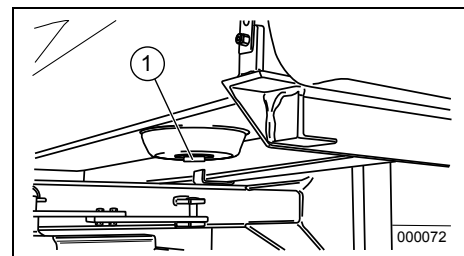
- Use water exclusively.



### Emptying the water tank

The water tank must be emptied when the sweeper shovel attachment is stored for a longer period of time, when specific maintenance work is performed and when there is a risk of frost.

1. For the 100 l tank, operate the water spraying unit until the tank is empty.  
For the 200 l tank, open the drain bolt (1).
2. If there is a risk of frost, switch the water spraying unit on and allow it to pump for 10 to 15 seconds until there is no residual water left in the line. See "Switching the water spraying unit pump on", page 38.



### Adjusting the spray bar

The inclination of the spray bar (1) can be adjusted via a clamping device on both sides of the sweeper shovel attachment.

1. If present, swivel the side broom to the working position, see "Swiveling the side broom to the operating/normal position", page 33.

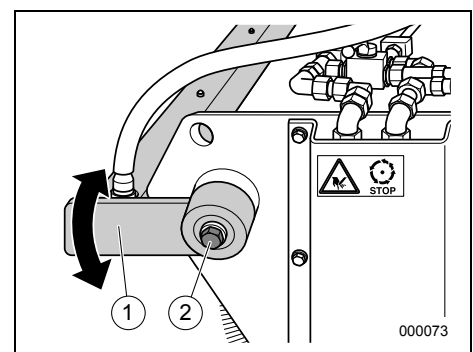
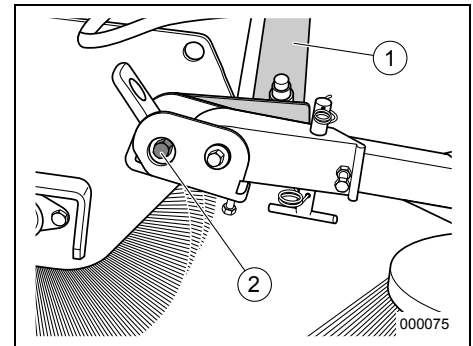


#### **WARNING!**

There is the risk of an accident by the side broom falling down unintentionally.

- Lower the side broom to the ground before you loosen the clamping bolts.

2. Loosen the clamping bolts (2) on both sides of the sweeper shovel attachment.
3. Tilt the spray bar (1) to the desired position.
4. Tighten the clamping bolts (2) on both sides of the sweeper shovel attachment again.



## 7 Maintenance

This chapter contains the scheduled maintenance that is to be performed by qualified personnel or the operator.

Perform the described maintenance work in the specified time intervals.

### Safety measures

- Observe the applicable regulations when handling fuels. This also applies to the storage and disposal.
- Observe the applicable provisions and safety regulations for the respective lubricant and consumable item.
  - Wear suitable protective clothing.
- All safety information from chapter "Safety" must be taken into account and applied.
- The industrial safety and accident prevention regulations of the relevant Employers' Liability Insurance Association are binding.

### Safety-relevant parts

- Damaged safety-relevant parts cause accidents. Replace damaged parts immediately.

The following parts in particular are safety-relevant parts:

  - Safety elements (e. g. spring cotter pins, locking pins, fastening bolts)
  - Hydraulic components (e. g. hoses, fittings, valves)
- The safety-relevant parts must be checked regularly by a specialist repair shop and replaced.

### Maintenance preparation

1. Park the host vehicle with the accessory equipment on level and solid ground.
2. Operate the operating lever of the working hydraulics to lower the quick-change unit or the accessory equipment to the ground.
3. Activate the holding brake.
4. Place all operating levers of the working hydraulics in the null position.
5. Shut off the engine of the host vehicle and keep the ignition key in safe custody so that the machine is secured against unauthorised starting.



## Lubricants and operating materials

	Lubricants and operating fluids	BI code designation	Quality classes	Temperature ranges	Viscosity classes	Fill volumes in litres approx.
Lubricating nipple	Multi-purpose lithium soap based grease	MPG-A	KP2N-20	–	NLGI 2	–

## Screw connections

1. Check the screw connections for tightness the first time after 5 operating hours, thereafter weekly or every 50 operating hours.
2. If necessary, tighten the bolts, see the following table.
3. Replace self-locking nuts after every removal.

Description	Bolt size*	Fastenin g torque
Fastener of the cover plate for the hydraulic hoses on the sweeper shovel attachment frame	M8	20 Nm
Safety bolts of the cap bearing bolt for sweeper shovel compartment / frame		
Fastener of the circular brush on the flange (side broom)	M10	30 Nm
Fastener of the middle bolt on the bearing side of the roller shaft	M10	50 Nm
Fastener of the holding plate on the roller shaft		
Fastener of the hydraulic motor bracket on the sweeper shovel attachment frame	M12	85 Nm
Fastener of the flange bearing on the sweeper shovel attachment frame	M14	135 Nm
Fastener of the adapter frame (wheel loader) in compact loader mount		
Fastener of the bottom bolt-on blade in the "Profi" design at the sweeper shovel attachment compartment		
Fastener of the spray bar on the sweeper shovel attachment frame	M16	210 Nm
Fastener / adjustment of the side broom on the sweeper shovel attachment frame		

\* Hexagon bolt with strength category 8.8

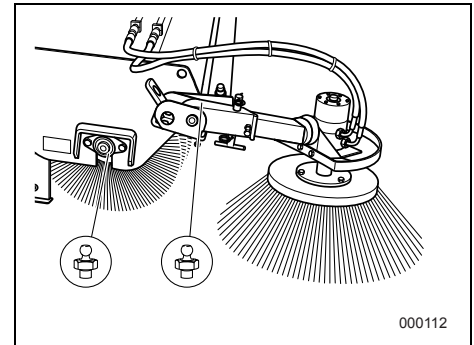
## Wearing parts / replacement parts

- Use only original replacement parts. Do not use any replacement parts from other manufacturers. No liability can be assumed for damages which arise from the use of unapproved replacement parts.
- Original replacement parts serve for your safety.
- Please provide the following information when ordering replacement parts:
  - Type designation
  - Serial no.
  - Year of manufacture of the machine

Pos.	Article no.	Article	Type				
			120	150	165	180	210
			Quantity				
<b>Beeline attachment</b>							
1	00.MA.00038	Brush rings	29	34	39	42	49
<b>Mixed attachment</b>							
2	00.ME.00001	Spacer	26	32	36	39	46
3	00.ME.00011	Brush ring PPN	15	19	20	22	25
4	00.ME.00010	Crimped wire brush ring	13	17	18	20	24
<b>Side broom</b>							
5	00.MD.00029	Circular brush	1	1	1	1	1
6	10 001 090	<b>Bottom bolt-on blade</b>	1				
7	10 001 091			1			
8	10 001 092				1		
9	10 001 093					1	
10	10 001 094						1
11	00.AA.00331	Countersink screw, DIN7991 M16x60 8.8	8	10	11	12	14
12	00.AC.00141	U-washer, DIN125 A17 140HV	8	10	11	12	14
13	00.AB.00104	Hexagon nut, DIN985-8 M16	8	10	11	12	14
14	10 001 101	<b>Blade (lateral)</b>	2	2	2	2	2
15	00.AA.00331	Countersink screw, DIN7991 M16x60 8.8	8	8	8	8	8
16	00.AC.00141	U-washer, DIN125 A17 140HV	8	8	8	8	8
17	00.AB.00104	Hexagon nut, DIN985-8 M16	8	8	8	8	8
18	00.DE.00010	<b>Flange bearing</b>	1	1	1	1	1
19	00.EK.00554	<b>Hydraulic motor gasket kit</b>	1	1	1	1	1

## Lubricating points

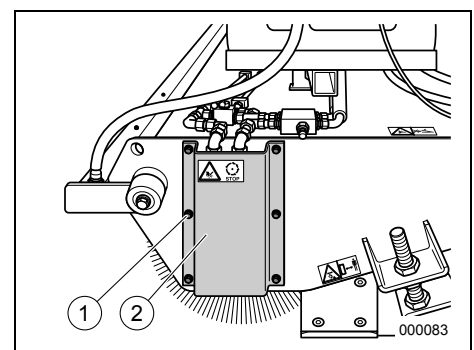
1. Grease the bearing points weekly or every 50 operating hours.  
Use the grease specified in the table "Lubricants and operating materials".



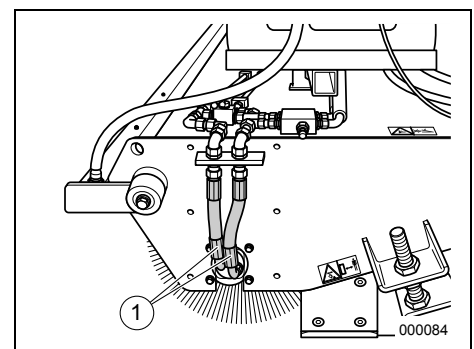
## Changing the brush rings

The sweeper shovel attachment must be attached to the host vehicle to replace the brush rings.

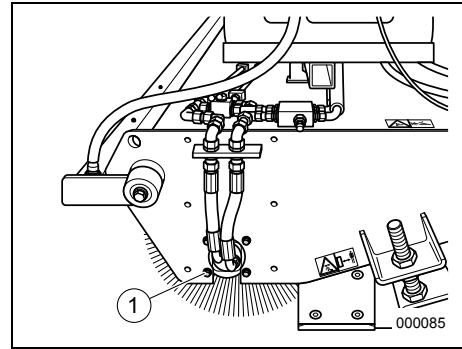
1. Park the host vehicle and the sweeper shovel attachment securely. See "Maintenance preparation", page 40.
2. Disconnect the hydraulic hoses from the quick-release couplings.
3. Seal the quick-release couplings with dust caps.
4. Lay the ends of the hydraulic hoses over the sweeper shovel attachment.
5. Loosen the six bolts (1) and remove the cover plate (2).



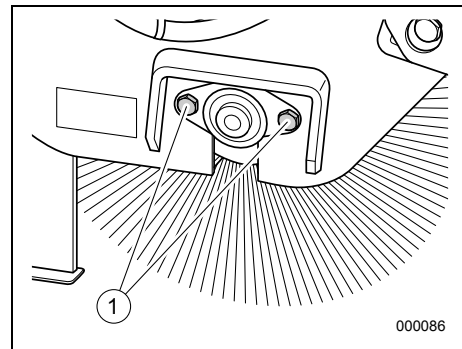
6. Disconnect the hydraulic hoses (1) from the hydraulic motor.
7. Catch any spilled oil carefully and dispose of it in an environmentally friendly manner.



8. Remove the four hydraulic motor mounting bolts (1).



9. Remove the two bearing mounting bolts (1).



10. If present, empty the water tank to reduce the weight, see "Emptying the water tank", page 38.



**DANGER!**

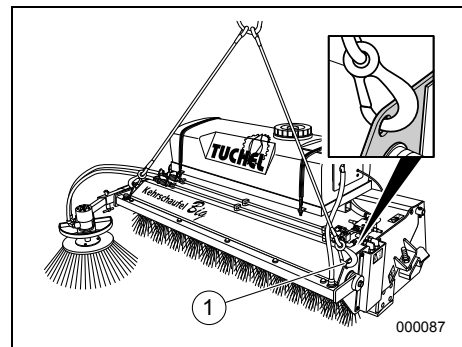
Risk of accident through falling load.

- Do not work underneath the sweeper shovel attachment and the lifting gear.

11. Lift the sweeper shovel attachment with a suitable lifting gear at the eyelets (1) high enough so that the sweeper cylinder can be removed from the sweeper shovel attachment frame.

12. Brace the sweeper shovel attachment so that it cannot fall down.

13. Pull the sweeper cylinder forward under the sweeper shovel attachment frame and out of the hazard area.



14. Mark the position of the motor bracket to the roller so that the hydraulic motor can be put back into the same position it was in before the removal.

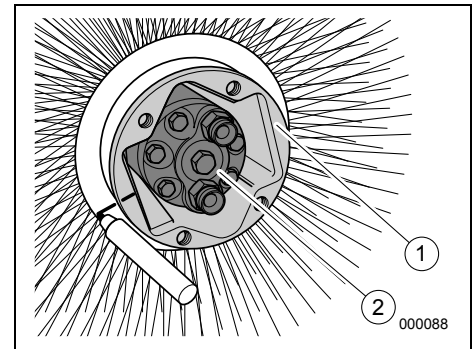
In this way, you will prevent the hydraulic motor from being inserted out of position by 90° or 180°.

15. Pull out the motor bracket (1) together with the hydraulic motor (2) out of the roller shaft.



### NOTE!

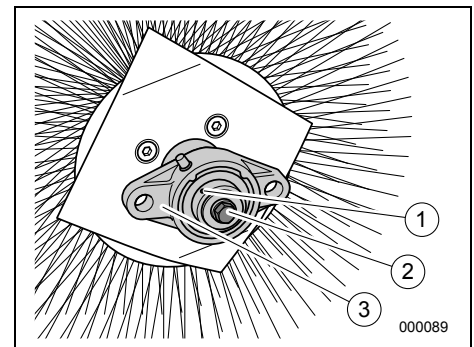
If the hydraulic motor is not in its original position, the length of the hydraulic hoses is not sufficient.



16. Unscrew the bolt (2).

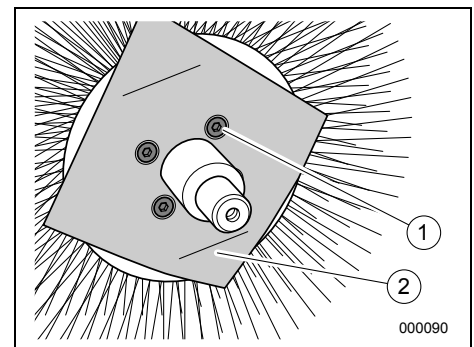
17. Loosen the grub screw (1).

18. Pull the bearing (3) off the roller shaft.



19. Unscrew the the four screws (1).

20. Remove the holding plate (2).



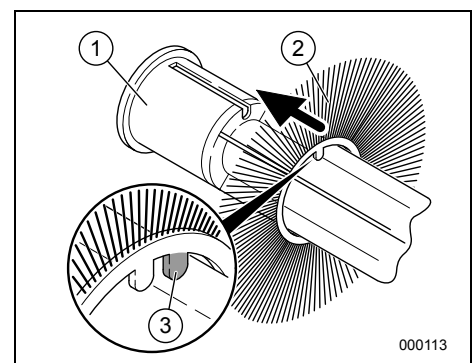
21. Replace the worn-out brush rings with new brush rings (2).

22. Using a file, remove one of the two tappets (3) from each brush ring that is to be pushed onto the roller shaft drum (1).

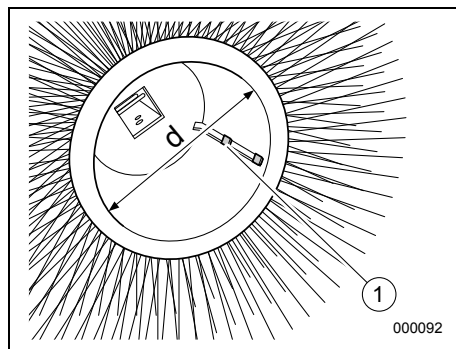
Refer to the wear and replacement parts list for the quantity and article number of the respective brush rings, see page 42.

The following brush attachments are possible:

- Beeline
- Mixed attachment (50% PP / 50% steel)



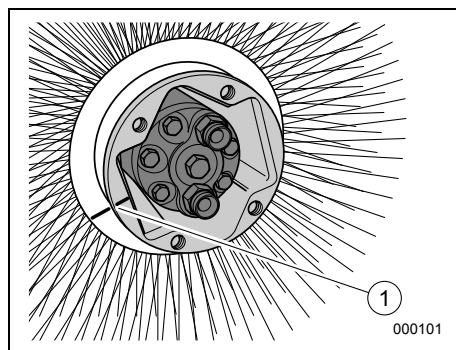
23. Adapt the remaining tappets (1) to the inner diameter (d) of the roller shaft drum.



24. Insert the motor bracket with the hydraulic motor into the roller shaft.

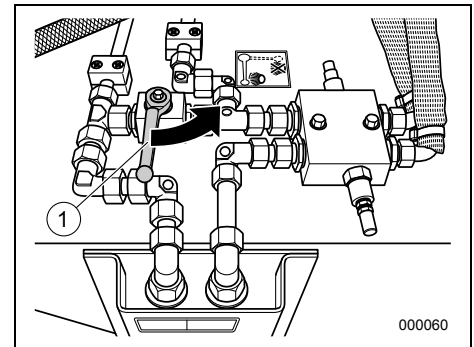
In doing so, observe the marking (1) that you made of the original position.

The further mounting of the brush shaft occurs in the reverse order of the removal.

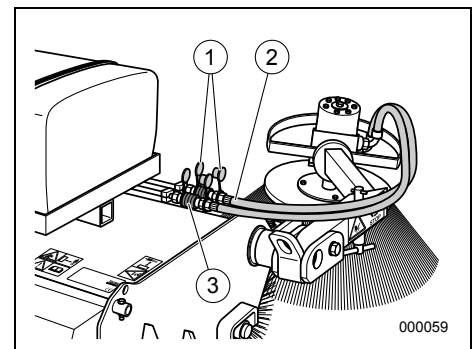


## Changing the circular brush (option)

1. Park the host vehicle and the sweeper securely. See "Maintenance preparation", page 40.
2. Swivel the side broom to the normal position, compare section "Swiveling the side broom to the operating/normal position", page 33.
3. Ensure that the hydraulic circuit is depressurised, see the operating manual of the host vehicle.
4. Close the shut-off valve (1).

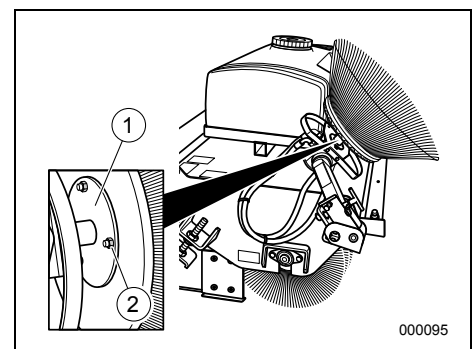


5. Disconnect the hydraulic hoses (2) from the quick-release couplings (3).
6. Seal the quick-release couplings (3) and hydraulic hoses (2) with dust caps (1).



7. Dismantle the circular brush.
  - Take the unladen weight of the circular brush into account.
  - Remove the three nuts (2) on the circular brush flange (1).
  - Remove the circular brush.
8. Bolt on the circular brush to the circular brush flange (1) using new self-locking nuts (2).

Readjust the side broom after replacing the circular brush, see "Setting the inclination and contact of the side broom", page 34.



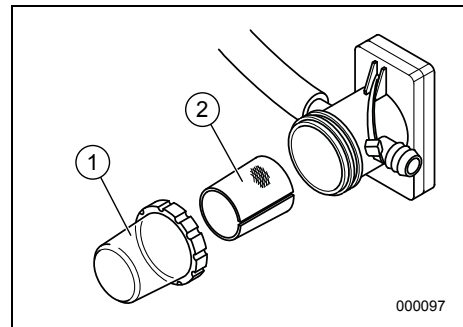
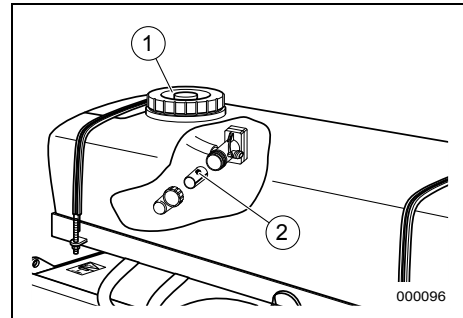
## Changing or cleaning the water filter (option)

On the 100 l tank, the water filter is screwed onto the pump directly. The pump is located directly under the water tank.

On the 200 l tank, the water filter (2) is attached on the inside of the water tank, see figure.

Both versions of the water filter are cleaned in the same way.

1. Check the condition of the filter every 50 operating hours or weekly.
  2. Open the tank cover (1); only for the 200 l tank.
  3. Unscrew the filter housing (1).
  4. Remove the filter (2).
  5. Check the condition of the filter.
    - Replace the filter if it is damaged or extremely dirty.
    - Clean the filter by rinsing out with water if it is only slightly dirty.
- To assemble, follow the reverse order of the dismantling.





### Changing the blade

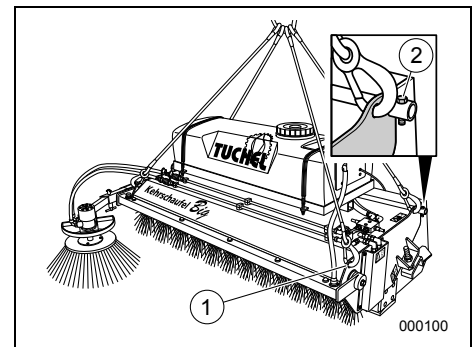


#### WARNING!

There is an increased risk of injury for persons who perform work for which they are neither qualified nor trained for.

- This maintenance work may only be performed by qualified personnel.

1. Empty the sweeper shovel attachment "Emptying the sweeper shovel attachment", *page 28*.
2. If present, empty the water tank to reduce the weight, see "Emptying the water tank", *page 38*.
3. Park the host vehicle and the sweeper securely. See "Maintenance preparation", *page 40*.
4. If present, swivel the side broom to the normal position, see "Swiveling the side broom to the operating/normal position", *page 33*.
5. Disconnect the hydraulic hoses from the host vehicle.
6. Disconnect the connection cable of the water spraying unit from the switching box in the host vehicle.
7. Lay the hydraulic hoses and the connection cable over the sweeper shovel attachment frame.
8. Use a 4-sling lifting gear and a suitable hoisting device (crane) to lift the sweeper shovel attachment frame.
9. Secure the transport belts to the four eyelets (1) so that the transport belts are tensioned slightly.
10. Remove the shaft mounting bolts (2) on both sides of the sweeper shovel attachment.
11. Pull the shaft out completely.



#### DANGER!

There is the risk of death for persons by the falling load.

- Ensure that no one is remaining under the hanging load.

12. Raise the sweeper shovel attachment frame carefully and place it down in a different location.

13. Start the host vehicle.

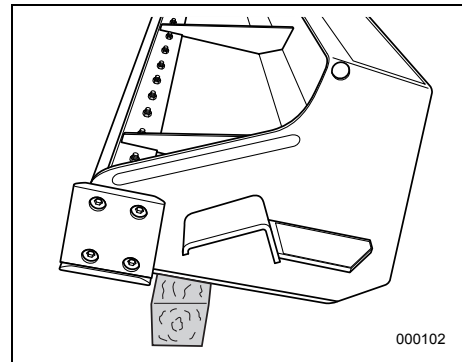
14. Place the sweeper shovel compartment (1) on a suitable base (e. g. timber beams, support brackets) so that the bottom blade is exposed and can be replaced.



**WARNING!**

There is the risk of accident by the tipping load.

- Secure the sweeper shovel compartment against falling down.
- Observe the load's centre of mass.



15. Stop the host vehicle again securely.

16. Remove the blades

There are two blade designs available. The standard blades are welded on, or bolted on as an option.

With the standard design, the blades must be separated and new blades welded on again. Take the valid safety regulations into account when doing this.

If the blades are bolted on, proceed as follows:

**Lower blade**

- Remove all bolts and nuts (1).

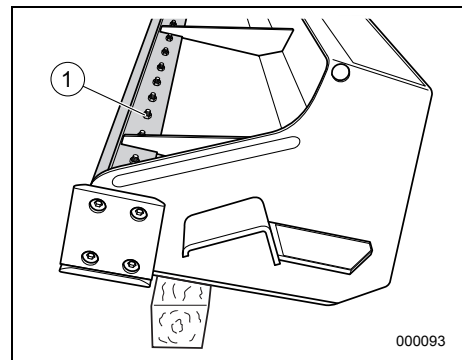


**WARNING!**

Risk of accident by the falling blade.

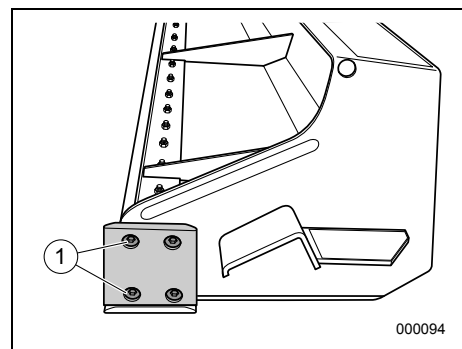
- Take the unladen weight of the blade into account.

- Depending on the wear, turn the blade over or replace it with a new one.



**Side blade**

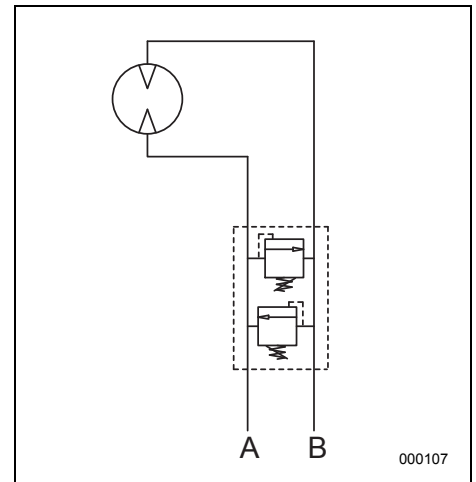
- Remove the bolts and nuts (1).
- Depending on the wear, turn the blade over or replace it with a new one.



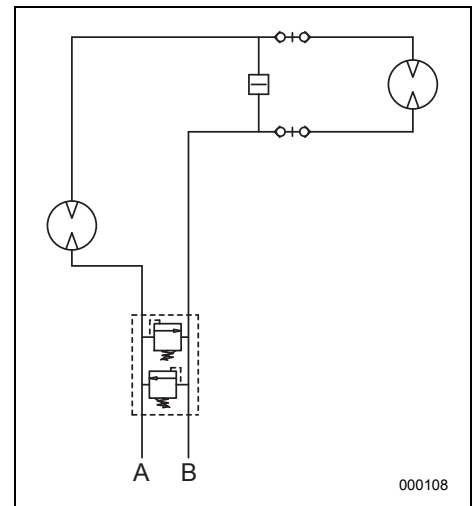
To attach, follow the reverse order of the removal.

## Hydraulic circuit diagrams

Sweeper shovel attachment



Sweeper shovel attachment with side broom (optional)



## 8 Troubleshooting

Malfunctions that are not listed below must be remedied in every case by the relevant dealer.

### Engine

<b>Malfunction</b>	<b>Cause</b>	<b>Remedy</b>
1. Sweeper cylinder does not turn.	Hydraulic lines are not properly connected.	Check the connections.
	Oil level in the hydraulic tank of the host vehicle too low.	Check oil fill level.
	Pressure or volume flow is too low.	Seek out a specialist repair shop.
	Hydraulic motor defective.	Seek out a specialist repair shop.
2. Water spraying unit not functioning.	Water tank is empty.	Fill up with water.
	Water filter is clogged.	Clean the water filter.
	Nozzles are clogged.	Clean the nozzles.
	Fuse in switching box is defective.	Replace fuse.
3. Side broom not functioning.	Feed line is closed.	Move the shut-off valve (2-way valve) lever.
	Hydraulic lines are not properly connected.	Check the connections.
	Hydraulic motor defective.	Seek out a specialist repair shop.
4. Sweeping results poor.	Setting of the brush not optimal.	Adjust the contact pressure of the sweeper cylinder.
	Worn out brush rings.	Replace brush rings.
	Setting of the side broom is not optimal.	Adjust the inclination and pressure angle.
	Worn out side broom (circular brush).	Replace circular brush.
	Rotational speed of the sweeper cylinder is too fast or too slow.	Adjust the rotational speed.

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