

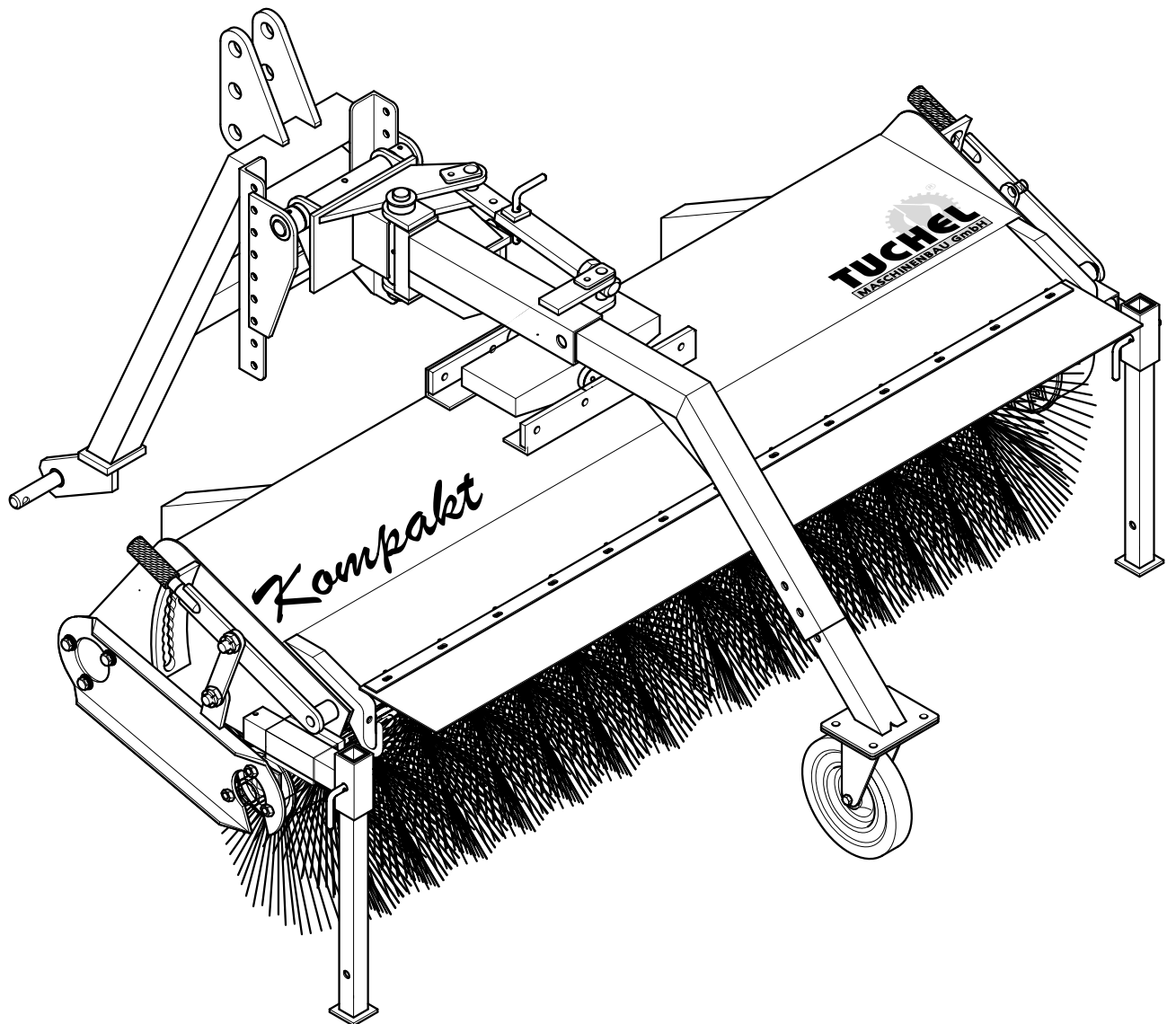
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# TUCHEL

MASCHINENBAU GmbH

## Operating Manual



*Kompakt* **Sweeping Machine**

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## Preface

Dear Customer,

with the Kompakt sweeping machine, you have purchased a product that has been manufactured according to the highest quality standards.

This operating manual contains information and notes that are necessary, important and useful for the operational safety and reliability of your Kompakt sweeping machine as well as for maintaining its value.



Read the operating manual and adhere to the safety notices before start-up.

Its contents familiarise with the use of the machine and its service and maintenance. The manual also helps you to avoid dangers and damage.

We wish you optimum results with your Kompakt sweeping machine.

Tuchel Maschinenbau GmbH

This operating manual is current as of February 2006

**NOTE**

Our continuous efforts towards an improvement of the Kompakt sweeping machine may lead to changes in detail. The introduction of improvements does not, however, oblige us to carry out these improvements on a Kompakt sweeping machine already delivered.

**NOTE**

If the improvements lead to minor changes, they are not covered by the operating manual. Thus, no claims may be derived from this manual.



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# **1 General**

## **1.1 Purpose**

The Kompakt sweeping machine is designed especially for frontal attachment and is intended for the following series:

MK / HK => attachment via coupling triangle;

MD / HD => attachment via 3-point linkage;

HH => attachment to yard loader;

Because of its robust construction and the various operating widths, this sweeping machine is suitable for the use on streets, cycle tracks and squares.

The attachment of the Kompakt sweeping machine is accomplished via drive-in insertion into the coupling triangle, attachment to the 3-point linkage, attachment plate for local government vehicles or yard loader receptacle.

Through hydraulic opening of the large-volume dirt collection vessel, the Kompakt sweeping machine may also be used as an open sweeping machine to sweep large sealed surfaces.

Various optional equipment allows for the Kompakt sweeping machine to be adapted to different working environments. This optional equipment includes, e.g., the water spraying device to bind dust, a side broom to sweep close to edges, a hydraulic side adjustment to ease the work, or reinforced castors, etc.

## **1.2 Product Specifications**

### **1.2.1 General**

This operating manual applies to the series =>

Kompakt MK 400 / MK 520 - Kompakt HK 400 / HK 520

Kompakt MD 400 / MD 520 - Kompakt HD 400 / HD 520

Kompakt HH 400 / HH 520

### **1.2.2 Manufacturing Address**

Tuchel Maschinenbau GmbH

Holsterfeld 15

D-48499 Salzbergen

Phone: +49 (0) 5971 9675 0

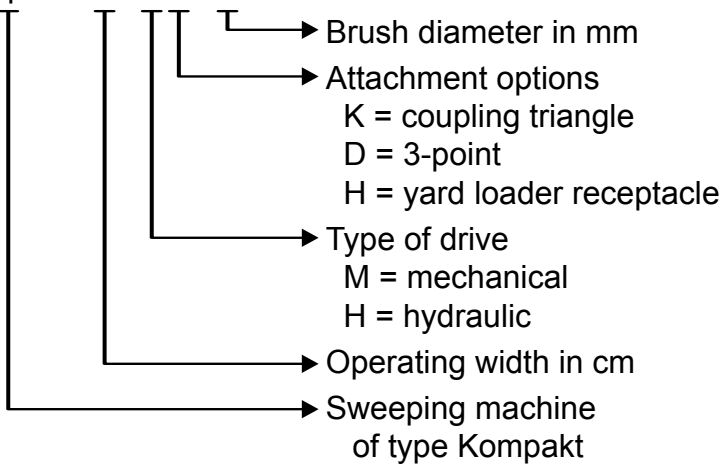
Fax: +49 (0) 5971 9675 -30

Spare parts: [service@tuchel.com](mailto:service@tuchel.com)

# General

## 1.2.3 Type Label

An example for the Kompakt 200 MK 520 is shown below.  
Kompakt 200 MK 520



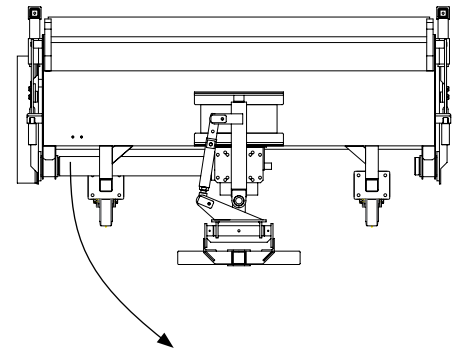
## 1.2.4 Labelling

This information is found on the type label.

**NOTE** Enter the data of your sweeping machine here to have them ready at any time.

Model	<input type="text"/>
Serial no.	<input type="text"/>
Year of construction / order no.	<input type="text"/>
Maximum oil pressure [bar]	<input type="text"/>
Maximum oil flow [l/min]	<input type="text"/>
Net weight [kg]	<input type="text"/>

**ATTENTION** The entire labelling (type label, safety label, etc.) constitutes a certificate and must not be altered or made illegible. It must be replaced if it is damaged or missing.



Modell / TYP	<input type="text"/>
Serien-Nr.	<input type="text"/>
Baujahr / Auftrags-Nr.	<input type="text"/>
max. Öldruck [bar]	<input type="text"/>
max. Ölstrom [l/min]	<input type="text"/>
Eigengewicht [kg]	<input type="text"/>
Tragfähigkeit des Flurförderfahrzeugs beachten	

**TUCHEL**  
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CE  
Made in Germany

## 1.2.5 Notes regarding the declaration of conformity

The compliance of this attachable sweeper with the "basic safety and health requirements" of the machine directive 98/37/EWG entitles it to bear the CE label. In the development of the attachable sweeper, the harmonised European Standards EN ISO 12100 Part 1 and Part 2 (Safety of Machinery), EN 982 (Safety of Machinery - Hydraulics) and EN 1553 (Agricultural Machinery - Common Safety Requirements) were also applied. This is documented in the EU declaration of conformity.

### 1.2.6 Specifications for enquiries and orders

**NOTE**

When ordering spare parts or accessories, please specify the type label, serial number and the year of construction.

**ATTENTION**

The use of accessories / spare parts of other manufacturers is not permitted.

Original parts are to be used for safety reasons. The use of other parts invalidates the liability for the consequences thereof.

### 1.2.7 Connections

Hydraulic connectors required in the following configurations of the Kompakt sweeping machine:

- hydraulic inclination  
=> one double-acting control circuit

for **Type of drive: power take-off shaft:**

- hydraulic vessel emptying  
=> one double-acting control circuit
- hydr. vessel emptying and side broom  
=> one double-acting control circuit

for **Hydraulic drive:**

- hydraulic drive  
=> one single-acting control circuit
- hydr. drive and vessel emptying  
=> one double-acting control circuit
- hydr. drive, vessel emptying and side broom  
=> one double-acting control circuit

# General

---

## 1.2.8 Energy consumption

Drive type:	<b>Power take-off shaft</b>
RPM:	540 / 1000 / >2000 1/min (depending on carrier vehicle)
Performance:	9 - 18 kW

Type of drive:	<b>hydraulic</b>
Type of oil:	hydraulic oil according to ISO VG 46 DIN 51524 (e.g., Vitam GF 46, manufactured by Aral)

## 1.2.9 Description of the product and accessories

The sweeping machine is designed for both pickup and open sweeping usage. Open sweeping is achieved by turning over a tap on the machine's roof without having to unmount the dirt collection vessel.

The opening and closing of the dirt collection vessel is accomplished from the carrier vehicle. The vessel is operated via a hydraulic cylinder.

The sweeping drum is suspended in the frame using a raster lever system. The sweeping drum is adjusted via the raster levers. The adjustments ensure a continuously good sweeping result.

The standard brush fitted to the sweep drum is a honeycomb-shaped brush made from 100% PP. The brush is 520 mm in diameter.

The frame of the Kompakt sweeping machine is made of a robust and torsion-free welded construction.

With the mechanical or hydraulic side adjustment, the sweeping machine may be rotated by 20° to the right or to the left.

The Kompakt sweeping machine is equipped with a direct attachment option that matches the carrier vehicle. The respective attachment type is connected to the machine frame via a swivel construction.

The level compensation between machine frame and swivel console ensures optimal sideway compensation on highly uneven ground.

The pendulum joint between swivel console and receptacle ensures an optimal compensation on very uneven ground.

**Accessories**

- dirt collection vessel with Vulkollan rail and integrated third support wheel.
- high-level filling flap for the extension of the filling volume of the vessel.
- hydraulic side broom for sweeping close to edges with rpm regulation
- hydraulic side adjustment, inclination using a hydraulic cylinder. This requires a double-acting control valve on the carrier vehicle.
- hydraulic drive of the sweeping drum.
- 3. support wheel for even ground guidance, for sweeping machines without collector vessel only (open sweeping)
- water spraying device for dust suppression and 100 litre water tank (rear storage via 3-point linkage) using a 12 / 24 V dry-running pump
- reinforced durable castors in various designs.
- Equipment for legal operation on public roads (in the Federal Republic of Germany according to the StVZO), consisting of contour illumination lamps

**1.2.10 Intended usage**

You may attach and operate the Kompakt sweeping machine only if you:

- have carefully read and understood the operating manual
- have the respective technical training
- are authorised by your employer to do this.

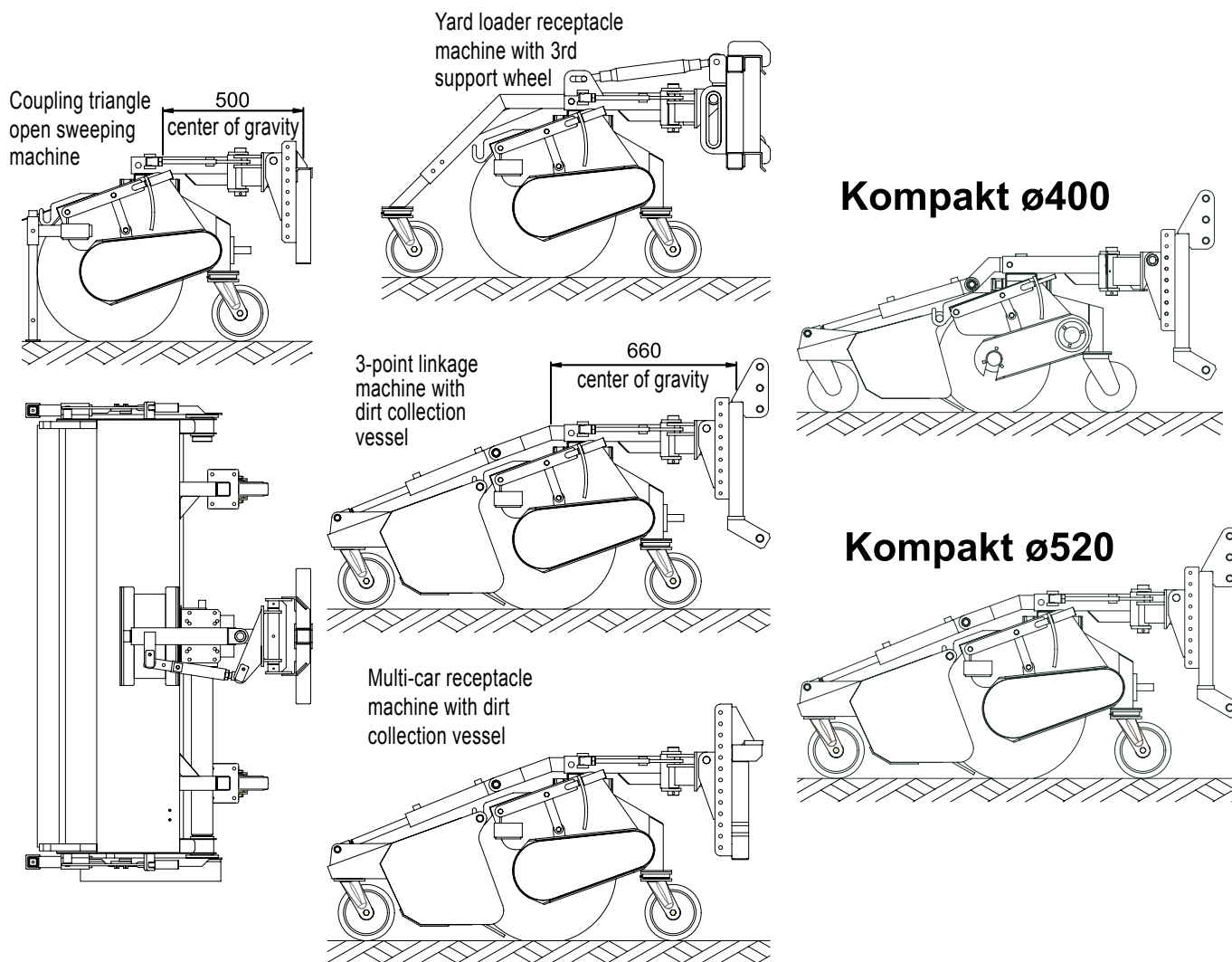
The Kompakt sweeping machine is used for cleaning sealed surfaces (such as roads, paths, parking areas, and yards) with normal soiling.

Proper usage includes the observance of the operating, maintenance and repair conditions that we prescribe.

If the machine is used for a purpose different from the one above, we, as the manufacturer, do not take any responsibility for the safety; the risk in this respect rests entirely with the user.

# General

## 1.2.11 Technical data sheet



Technical data	Kompakt	120	135	150	175	200
Operating width	mm	1200	1350	1500	1750	2000
Operating width if positioned at an angle of 20°	mm	1130	1270	1410	1645	1880
total width	mm	1410	1560	1710	1960	2210
weight of basic machine	kg	135	140	160	172	185
weight of Kompakt machine with collector vessel	kg	175	185	210	227	245
Volume of dirt collection vessel	l	85	95	145	170	190
Sweeping capacity at 6 km/h max.	m <sup>2</sup> /h	7200	8100	9000	10500	12000
diameter of sweeping drum	mm	400		520		
diameter of side broom	mm	500		600		
Hydraulic drive:						
volume current required	l/min	20		25		
Maximum operating pressure at continuous load	bar	175				

**ATTENTION** Use the weights to check compliance with the maximum allowed axle load of the carrier vehicle!

**NOTE** Weights are approximate values and vary depending on the machine configuration, receptacle is excluded.

**NOTE** We reserve the right to incorporate changes resulting from further technical development.

## 2 Safety

This operating manual contains fundamental instructions that must be followed during the attachment, operation and maintenance. Thus, the personnel must read this operating manual under all circumstances before operation and commissioning. The personnel must always have access to the manual.

### 2.1 Labelling of warning signs in the operating manual

The safety notices in this operating manual whose nonobservance is hazardous for persons are highlighted with a general danger symbol



safety sign according to ISO 11684

when warning about injuries resulting from squashing.



when warning about injuries resulting from cuts.



Safety notices whose nonobservance is hazardous for the machine and its functions, have the word

**ATTENTION**

attached.

Notices are labelled as follows:

**NOTE**

Notes that are directly attached to the machine must definitely be adhered to and must be kept in a fully legible state.

### 2.2 Qualification and training of personnel

The Kompakt sweeping machine must only be used, serviced and maintained by persons that are familiar with the machine and are informed about its dangers.

The area of responsibility, competence and the supervision of the personnel must be directed in detail by the operator.

If the personnel does not have the necessary knowledge, it must be trained and instructed.

The operator must ensure that the personnel fully understands the contents of the operating manual.

Maintenance work that is not described in this operating manual must only be conducted by authorised qualified workshops.

## 2.3 Dangers in the case of nonobservance of the safety notices

The nonobservance of the safety notes will cause hazards for both persons and the environment as well as the machine. The nonobservance of the safety notices results in the loss of all claims for damage whatsoever.

In detail, nonobservance, **for example**, leads to the following hazards:

- failure of important machine functions
- hazards to persons due to mechanical and chemical influences
- hazards to the environment due to leakage of hydraulic oil

## 2.4 Safety-oriented work

The

- safety notices listed in this operating manual,
  - current national accident avoidance regulations as well as
  - company-internal regulations governing work, operation, and safety
- that apply must be followed

The safety notices of the vehicle manufacturer must be followed. Note the permitted axle loads.

The accident insurance regulations governing safety at work and accident avoidance are binding.

When operating on public roads, the appropriate legal regulations (in the Federal Republic of Germany the StVZO and StVO) must be complied with.



## 2.5 Safety notes for the operator/user

Before starting work, familiarise yourself with all equipment, operating elements and their functions.

Your clothing must fit tightly.

Observe permitted axle load, gross weight, and transport dimensions.

Illuminate the working area properly when working at night or in bad visibility.



Before starting operation, familiarise yourself with the current version of the bulletin for accessory equipment issued by the Bundesministerium für Verkehr, Bau und Wohnungswesen (German ministry for transport, construction and housing).

### Attachment

Check attachment receptacle and its interlocking mechanism for damage prior to attachment. Have all damage repaired immediately.

Before start-up, check the attachment receptacle of the sweeping machine and its interlocking mechanisms for firm seating.

During attachment, put the supports into their respective position.

Attach the Kompakt sweeping machine only if the power take-off / hydraulic drive is switched off.

Check the shield of the drive shaft and replace it in case of damage before attachment.

During the attachment, follow the operating manual of the carrier vehicle! Only one example is described and shown here for each case.

# Safety

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## Transport trips

### NOTE

Transport is defined as trips with lifted sweeping machine!

Check and attach or replace transport equipment at the carrier vehicle - such as, e.g., additional illumination, warning equipment and possible protective equipment.

If lighting that is part of the standard carrier vehicle is obscured in the transport position of the sweeping machine, you must attach additional illumination to the carrier vehicle.

No passengers may be carried on the sweeping machine during transport trips.

For the transport, the power take-off shaft / hydraulic equipment for operating and lowering the sweeping machine must be secured against accidental operation.

Your Kompakt sweeping machine changes the driving behaviour and influences steering and braking. Take this into account when transporting the machine.

## Operation

Start the Kompakt sweeping machine only if all safety equipment is attached and in protection position.

No person may be present in the area of operation. Check the immediate area before starting to drive and before start-up (children). Ensure that there is sufficient visibility.

No passengers may be carried on the machine during operation.

Never leave the driving seat during driving.

Pay attention to the influence of your sweeping machine on driving behaviour and steering and braking ability.

Adapt the driving speed to suit the respective road and traffic conditions. Avoid sudden turns during uphill and downhill driving and when driving parallel to a slope.

---

**Conversion**

Carry out modifications on the sweeping machine only if the power take-off / hydraulic drive is switched off. Pull the ignition key and secure the carrier vehicle against unintended restart and movement!

Start the Kompakt sweeping machine only if all safety equipment is re-attached and in protection position.

**Detachment**

Before leaving the carrier vehicle, lower the sweeping machine to the ground, pull the ignition key and secure the carrier vehicle against unintended start-up and rolling away!

During detachment, the supports must be put into their respective position.

After switching off the device there is danger due to the continued movement of the centrifugal mass. Wait until all parts have come to a standstill.

**For hydraulic components only**

Only connect the hydraulic hoses if the vehicle hydraulics are depressurized. Wear protective gloves when disconnecting the hoses as the hydraulic connectors can become extremely hot and there is a risk of burns!

Before start-up, check the positioning of the hydraulic hoses, as damages occur easily if hydraulic hoses get entangled or squashed.

Replace hydraulic hoses no later than after 6 years of usage (including storage time of at most 2 years).

Regularly check the hydraulic hoses with suitable devices and replace them in case of damage and ageing.

Liquids (hydraulic oil) escaping under high pressure penetrate the skin and cause severe injuries. In case of injury, visit a doctor immediately. Danger of infection!

The replacement hoses must comply with the technical requirements of the manufacturer.

Leakages represent a danger to the environment and must be removed immediately.

# Safety

---

If your sweeping machine is equipped with a hydraulic cylinder for inclination, operate the cylinder only if no persons are present in the area of rotation. Squashing and shear points are present on hydraulically operated parts.

## 2.6 Basic safety instructions for drive shaft operation

The operator must ensure that the user of the machine has familiarised himself with the hazards of handling drive shafts through detailed study of the drive shaft manufacturer's operating manual.

Only operate the working machine with original drive shafts that are designed for this specific use due to their length, size, type of overload or overriding# clutch and accident prevention measures. A non-intended use of drive shaft and overload or overriding clutch is not permitted.

Check before each use whether all accident prevention devices have been attached properly at the drive shaft, tractor and machine and whether they are functional. Replace or properly retrofit any damaged or missing parts with original parts before beginning drive shaft operation.

Before work, check whether the drive shaft is already firmly connected to the tractor and the working machine.

For your safety, you must not wear loose clothing, straps or other loose items. In case of touch, there is an increased accident risk.

The maximum pull-out length must never be reached during driving and work. Under all operating conditions, the profile tubes must overlap for at least 1/3 of their length.

Work with small and continuous angles. Turn off the power take-off shaft if the joint angles exceed 35°.

Always switch off the engine and pull the ignition key before entering the work area or commencing maintenance work.

Carry out maintenance and modifications on the Kompakt sweeping machine only if the power take-off drive is switched off. Pull the ignition key and secure the carrier vehicle against unintended restart and movement!

---

## **2.7 Special safety notes for attachment**

The Kompakt sweeping machine must be attached to or coupled to the intended carrier vehicle using the supplied attachment device

The attachment device itself must not be changed or modified.

The permitted support loads, axle relief, axle loads, gross weight and transport dimensions must be taken from the manufacturer's information about the carrier vehicle and must be checked before start-up.

If a ballast weight is required, attach it as prescribed to the intended attachment points of the carrier vehicle before attaching the sweeping machine.

During attachment or coupling, special caution must be exercised.

Carry out maintenance and modifications on the Kompakt sweeping machine only if the power take-off / hydraulic drive is switched off. Pull the ignition key and secure the carrier vehicle against unintended restart and movement!

During the attachment, follow the operating manual of the carrier vehicle! Only one example is described and shown here for each case.

Verify the correct attachment and its safeguards.

The positioning of the electric connection and the hydraulic hoses must be checked, as damage occurs easily if they get entangled or squashed.

Damaged hydraulic hoses must be replaced immediately.

## **2.8 Safety notices for carrying out service, inspection and installation work**

The operator must ensure that all service, inspection and assembly work is carried out by authorised and qualified personnel that has sufficiently informed itself through detailed study of the operating manual.

Carry out maintenance and modifications on the Kompakt sweeping machine only if the power take-off / hydraulic drive is switched off. Pull the ignition key and secure the carrier vehicle against unintended restart and movement!

When carrying out maintenance on the lifted device, always secure it with suitable supports.

Use suitable tools and gloves when exchanging the sweeping drum and sweeping rail.

Lawfully dispose of oil and grease.

Directly after finishing work, all safety and protection equipment must be reattached or made functional.

Before restarting, the points listed in the sections on start-up must be adhered to.

## **2.9 Unauthorised conversion and spare parts manufacturing**

Conversion of or changes to the machine are only permitted after consultation with the manufacturer. Original spare parts and accessories authorised by the manufacturer provide safety. The use of other parts invalidates the liability for the consequences thereof.

## **2.10 Modes of operation that are not permitted**

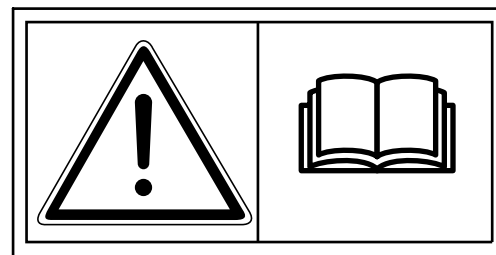
The operational safety of the machine supplied is only warranted if used as intended according to Chapter 1 - General – of the operating manual. The limits specified in the data sheets must not be exceeded under any circumstances.

## 2.11 Warning images on the machine according to ISO 11684

**NOTE**

The following texts serve as an explanation for the warning signs.

Read the operating manual and adhere to the safety notices before start-up.



00.KC.00100

Only touch engine parts when they have come to a complete standstill.

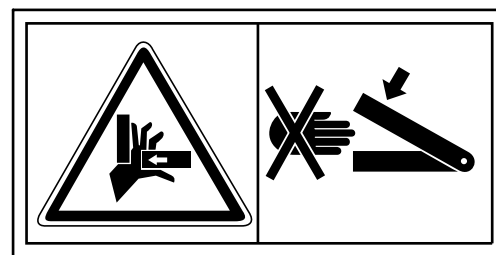
- drum shaft
- side broom



00.KC.00102

Never reach into the squashing hazard area as long parts may move.

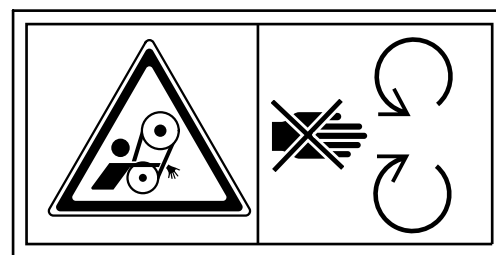
- dirt collection vessel open /close
- pendulum compensation at the carrier vehicle receptacle



00.KC.00101

Never open or remove protective equipment while the motor is running.

- Chain case at the side of the sweeping machine

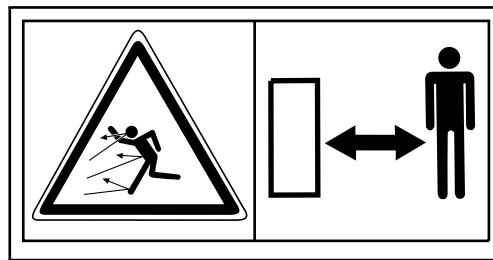


00.KC.001XX

## Safety

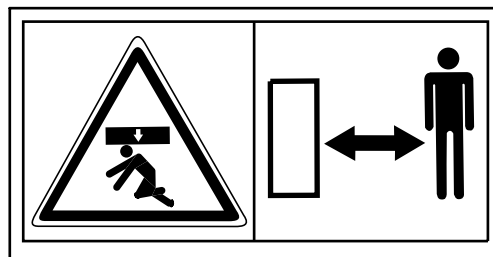
Danger of parts flinging away while engine is running - keep a sufficient and safe distance.

- for open sweeping machine
- for open sweeping use of the Kompakt sweeping machine



00.KC.00104

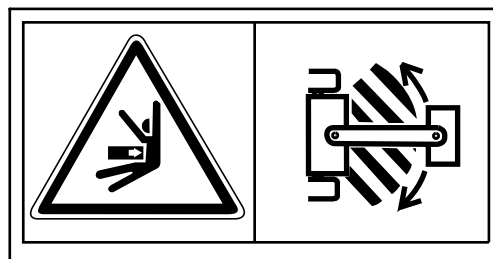
When lowering the Kompakt sweeping machine, keep sufficient distance. Do not stand in the area of the lifted sweeping machine.



00.KC.001XX

Do not stand in the rotation area of the sweeping machine during operation.

- hydraulic tilting to place the Kompakt sweeping machine at an angle



00.KC.00104

**ATTENTION** The notice signs attached to the machine must be kept in a clearly legible state. Replace notice signs that are no longer legible.

**NOTE** When ordering new notice signs, specify the article number listed.



### 3 Storage



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the described task sequence.

#### NOTE

The deinstallation of the Kompakt sweeping machine is described in Chapter 6 - Deinstallation!

#### NOTE

Consider the components' weights.

#### General storage

- Store sweeping machine on a firm and level surface in a dry and clean place.
- Ensure a secure standing of the sweeping machine.
- Clean the sweeping machine. Dirt attracts humidity and leads to the formation of rust. If necessary, repair paint damage.
- Lubricate the sweeping machine.

#### NOTE

Chapter 7.12 Lubrication plan describes the lubricating points of the Kompakt sweeping machine!

#### Storage of brush rings

- Pull the hand grips (1) of the drum shaft adjustment's raster lever system backwards and let them engage in the top position (2).

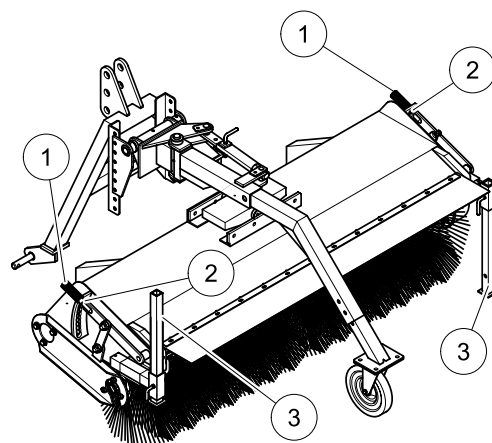


Danger of getting squashed! The palm of the hand must point towards the middle of the sweeping machine (castor wheels).

- Carry out the setting evenly on both sides.

#### Storage without collector vessel

- Insert and secure the bolt of the two supports in the top hole (3). (The sweeping drum no longer touches the ground)



# Storage

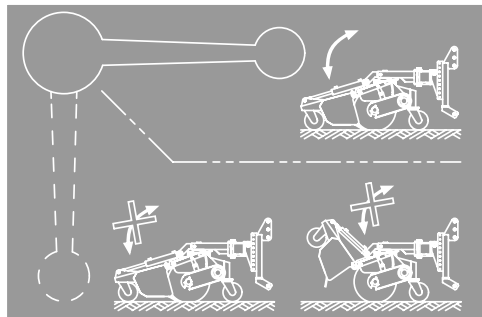
## Storage of the water spraying device

- Ensure that the water tank is empty when storing the sweeping machine.
- If there is danger of frosts, activate the pump of the water spraying device for 10 to 15 sec. until no more residual water remains in the hoses.

## Storage with collector vessel

- Close the tap to the hydraulic cylinder of the collection vessel emptying mechanism.

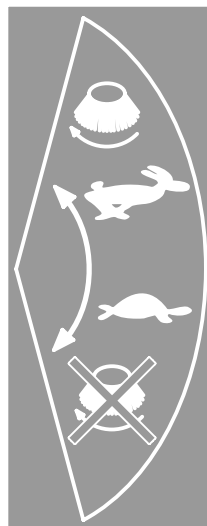
**NOTE** See label on the machine roof.



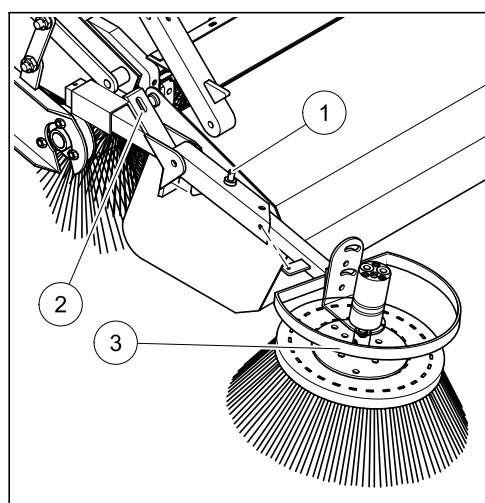
## Storage of the side broom

- Turn off/close the adjustment wheel of the hydraulic valve for the side broom.

**NOTE** See label on the hydraulic valve.



- Tilt the side broom (3) upwards and secure with it the spring plug (1) behind the stopper (2).



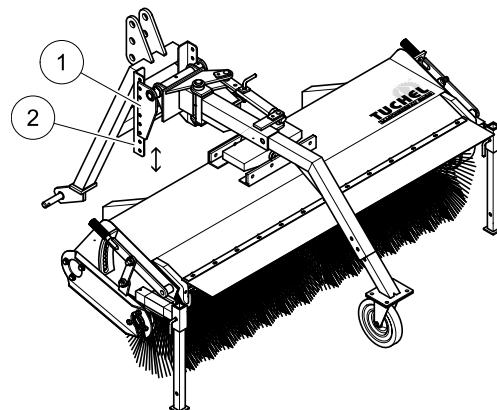
## 4 Attachment

### 4.1 Initial attachment



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- Compare the interface height of the carrier vehicle's receptacle with the receptacle of the sweeping machine.
- Unscrew screws (1) on both sides to shift the receptacle.
- Use the screws and new locknuts to re-secure the receptacle at the appropriate height on the perforated rail (2).



#### NOTE

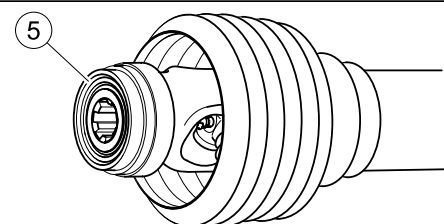
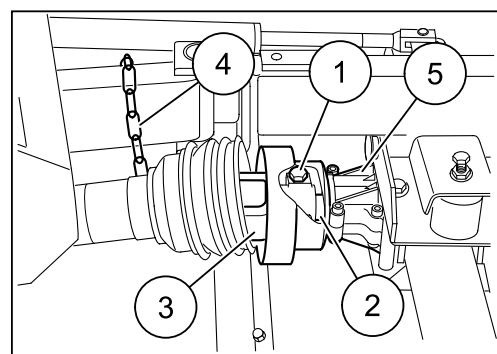
When attaching the yard loader receptacle for the first time, no adjustment is required.

### Drive shaft



The shortening of the drive shaft must be carried out according to the drive shaft manufacturer's specifications (see operating manual of the drive shaft).

- Slide the fork of the joint (3) onto the drive shaft (2) of the gear (5) and secure it with the locking screw (1) (Sweeping machine with brush  $\varnothing 520$  drive shaft with pull-back cover (5)). See the drive shaft manufacturer's operating manual.
- Hook the chain (4) of the anti-twist device into a suitable location.

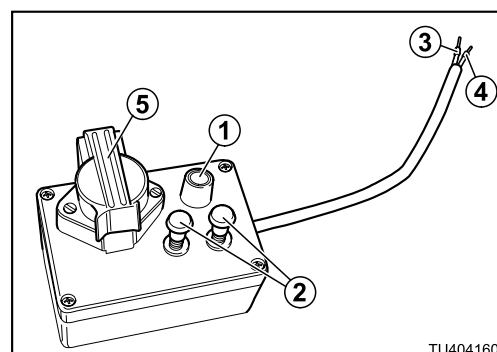


### Water spraying device or illumination system

#### NOTE

For the Kompakt sweeping machine with water spraying device or illumination devices, the switchbox must be mounted at a suitable position in the carrier vehicle.

- Connect cable (3) to the battery (-).
- Connect cable (4) to the parking light terminal.
- Socket (5) for the electric connection of the Kompakt sweeping machine.
- (1) Fuse.
- (2) Off - On switch.



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# Attachment

## 4.2 Attachment - coupling triangle



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

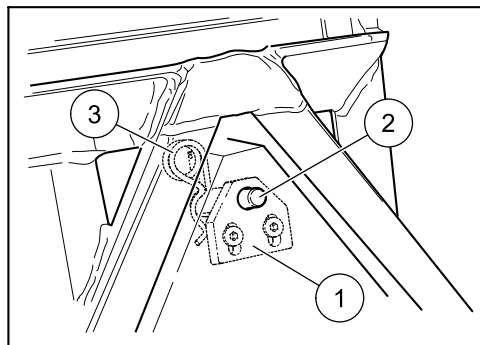
- Check coupling triangle and opposing triangle for soiling, and clean if necessary.
- Insert front receptacle into the coupling triangle and lock it.
- Verify the correct seating of the attachment receptacle.
- Mount the drive shaft on the tractor's side and hook the chain of the anti-twist device into a suitable location.
- Connect the hydraulic lines, if present, according to the instructions of the vehicle manufacturer.
- Lift the sweeping machine and carry out a functionality check.
- Lower the sweeping machine until the two (or three) castor wheels touch the ground.

### NOTE

The receptacle structure must be perpendicular to the ground.

### Securing via plug bolt

- Pull out the spring plug (3).
- Slide the plug bolt (2) through the bolt bushings (1) and secure it by pushing the spring plug (3) through the respective hole part (1) and (2).



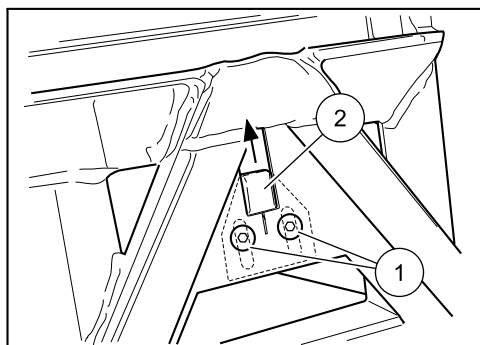
### Securing via locking tongue

- The device is secured automatically as the locking tongue engages.

### NOTE

Wear and tear of the locking tongue (2) can be compensated for at the attachment receptacle.

- Loosen the screw connections (1).
- Adjust the vertical position of the locking tongue (2).
- Tighten the screw connections (1).



### NOTE

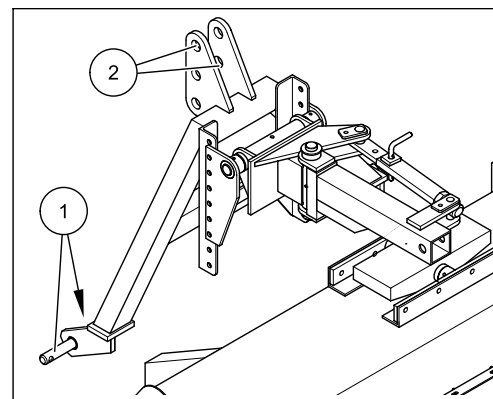
After it is worn out, replace it with a new handle (Part. no. 00.CA.00006).

### 4.3 Frontal attachment with 3-point linkage



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- Check the receptacle for soiling. Clean if necessary.
- Drive the carrier vehicle towards the sweeping machine.
- Select the bolt diameter (1) according to the attachment category, hook and lock the draft link hook rods.
- Select the holes (2) for the upper hook bolt according to the attachment category and attach and secure the upper hook and the upper hook bolt.
- Adjust the upper hook so that the attachment receptacle is perpendicular to the ground (see also the operating manual for the carrier vehicle).
- Verify the correct seating of the attachment receptacle.
- Mount the drive shaft on the tractor's side and hook the chain of the anti-twist device into a suitable location.
- If present, connect the hydraulic lines according to the instructions of the vehicle manufacturer.
- Lift the sweeping machine and carry out a functionality check.
- Lower the sweeping machine until the two (or three) castor wheels touch the ground.



#### NOTE

The receptacle structure must be perpendicular to the ground.

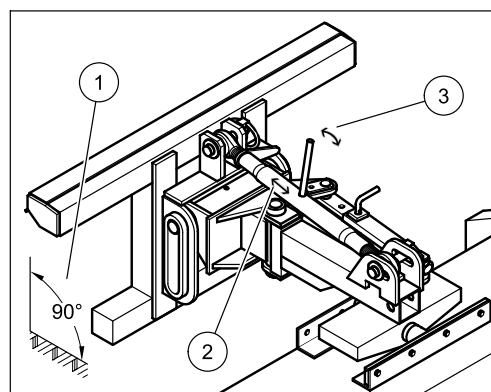
# Attachment

## 4.4 Attachment - yard loader



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- Check the receptacle for soiling. Clean if necessary.
- Lower the receptacle of the carrier vehicle below the receptacle opening of the Kompakt sweeping machine.
- Insert the receptacle of the carrier vehicle into the receptacle and lock it as described in the operating manual of the carrier vehicle.
- Verify the correct seating of the receptacle and its lock.
- The receptacle structure must be perpendicular (1) to the ground.
- Adjust the angle by shifting the upper hook (2). By turning the lever (3), the upper hook is shortened or lengthened.
- Connect the hydraulic lines, if present, according to the instructions of the vehicle manufacturer.
- Lift the sweeping machine and carry out a functionality check.
- Lower the sweeping machine until the two (or three) castor wheels touch the ground.



### NOTE

The receptacle structure must be perpendicular to the ground.

## 4.5 Attachment to other carrier vehicles



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

### ATTENTION

The attachment to other vehicles not described here (wheel loader / local government vehicle) is carried out as detailed in the carrier vehicle's operating manual.

- Following attachment, lift the sweeping machine and carry out a functionality check.
- Lower the sweeping machine until the two (or three) castor wheels touch the ground.

## 5 Operation

### 5.1 Transport trips



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- For **open sweeping** you must first put the machine into a straight position.

**NOTE**

See chapter 5.7 Inclination for open sweeping.

- Make transport trips only with **empty collector vessel**.

**NOTE**

See Chapter 5.5 Emptying dirt collection vessel.

- Transport trips with **side broom**, carry out the following tasks:

- Turn off/close the adjustment wheel of the hydraulic valve for the side broom.

**NOTE**

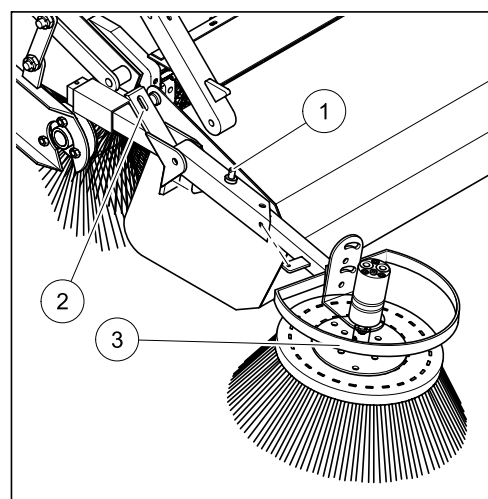
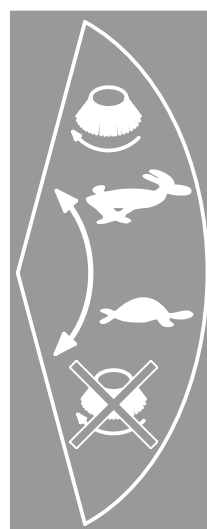
See label on the hydraulic valve.

- Tilt the side broom (3) upwards and secure with it the spring plug (1) behind the stopper (2).

- Lift out sweeping machine and secure the operating levers for the sweeping machine at the carrier vehicle against unintentional operation.

**NOTE**

For trips on public roads, the respective regulations apply (e.g., the StVZO and StVO in the Federal Republic of Germany).



# Operation

## 5.2 Start-up



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

### NOTE

The attachment of the Kompakt sweeping machine is described in Chapter 4!

- The maximum driving and sweeping speed is 6 km/h.

### ATTENTION

The maximum speed is part of the operating requirements described in Chapter 1.2.10 Intended usage!

### Sweeping drums / brush rings

- When operating the Kompakt sweeping machine, a sweeping profile of 6 - 10 cm appears
- After storage, shift brush down.

### NOTE

The adjustment of the sweeping profile is described in Chapter 5.8!

### Start-up without collector vessel

- Shift the two supports (1) upwards and secure them.

### Start-up with collector vessel

- Open the tap of the hydraulic cylinder of the vessel emptying mechanism (see label on the machine's cover).

### Start-up of side broom

- Pull out spring plug (2) and tilt the side broom downwards (3).
- Insert spring plug again (1).

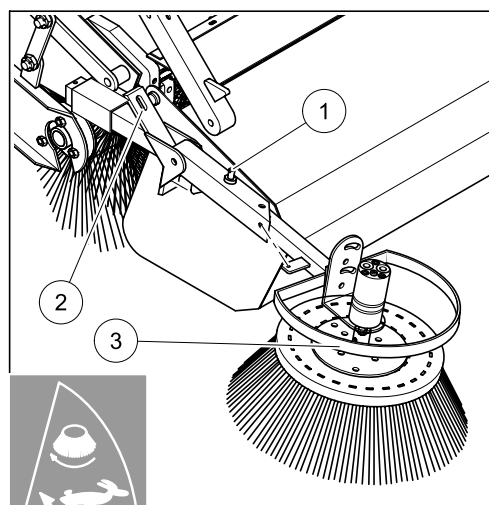
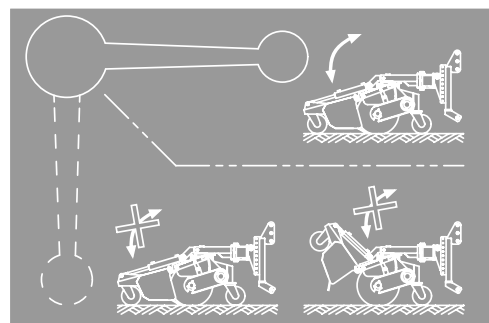
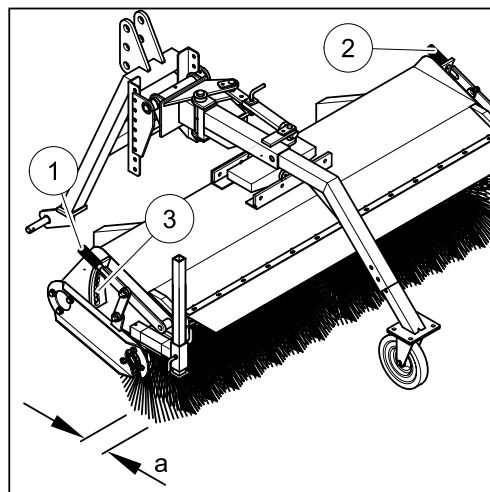


Take the side broom's own weight into account.

- Turn on the hydraulic valve's adjustment wheel for the side broom (see label on the hydraulic valve).

### NOTE

The adjustment of the side broom's sweeping profile is described in Chapter 5.3!





## 5.3 Side broom adjustment



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

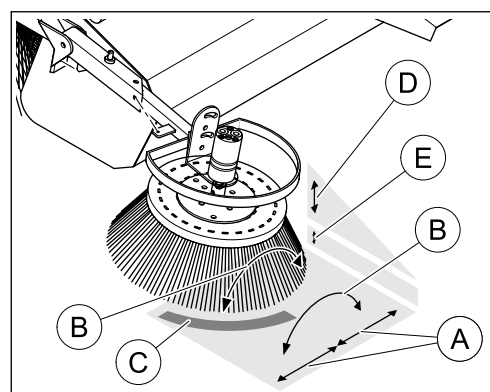
- Tilt the side broom into operating position before beginning with the adjustment!



For the adjustment, take the side broom's own weight into account.

### Adjust operating width (A)

- Loosen the screw connection (4) and turn the hexagonal screw inwards for smaller operating widths and outwards for larger operating widths.
- Do not fully remove the screw (4) from the insertion tube.
- After adjustment, secure hexagonal screw with locknut.

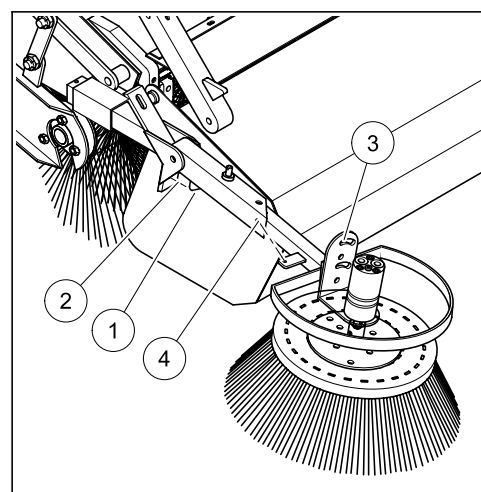


### Adjust side support point (B) for area of impact (C)

- When operating the sweeping machine, the side broom should sweep the side margin between a 12 o'clock and 3 o'clock position, see arc (C).
- Loosen screw connection (3) and turn the side broom until the optimum support point (12-3 o'clock) (C) is reached.
- Firmly tighten the screw connection.

### Adjust the inclination (D) for height of impact

- The stopper (1) meets the screw (2), if the sweeping machine is positioned 3 - 6 cm above ground and the side broom just touches the ground.
- ADJUSTMENT: Turn hexagonal screw inwards and the plate broom moves closer to the ground. Turn outwards and the ground clearance increases.
- Once turning the hexagonal screw becomes insufficient to adjust the ground clearance, the side broom must be readjusted.



#### NOTE

See Chapter 7.2 for readjustment of the side broom

# Operation

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## 5.4 RPM adjustment

### Adjusting the rpm of the brush shaft

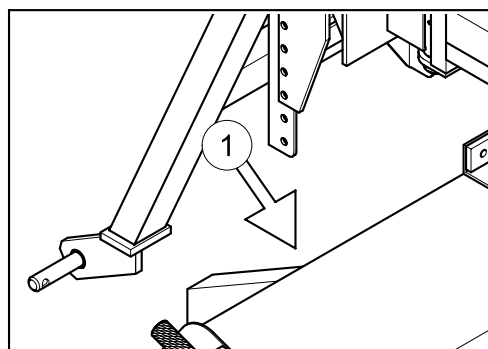
For the Kompakt machine with mechanic or hydraulic drive, the rpm is solely determined by the carrier vehicle.

### Side broom rpm adjustment

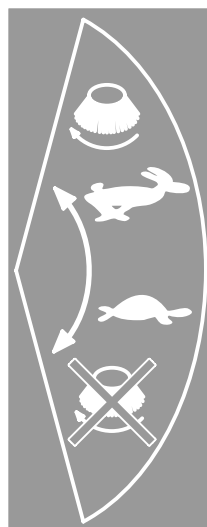


Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- The adjustment is carried out on the adjustment screw (1) of the flow control valve.



- This diagram shows the functioning of the hydraulic valve.
- Turning towards the rabbit increases the rpm, and turning towards the turtle decreases the rpm.
- If the adjustment wheel is closed completely, the side broom comes to a halt.



## 5.5 Emptying the dirt collection vessel



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- The dirt collection vessel is opened via a hydraulic cylinder. The tap for the emptying cylinder must be open.
- Dirt collection vessel with high-level filling flap (optional). During emptying of the dirt collection vessel, the high-level filling flap swings away from the dumping area.

**NOTE**

The high-level filling flap permits the collector vessel to be filled to a higher level.

- Lift the sweeping machine.



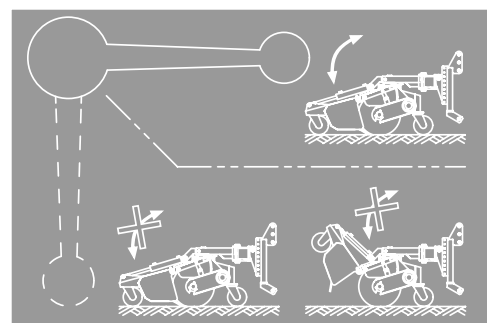
No person must be present below the machine during emptying.

- Flip the respective control lever for the sweeping machine hydraulics in the carrier vehicle. The direction of flow changes and the collector vessel opens.
- Close collector vessel by flipping back the previously mentioned control lever in the carrier vehicle. (flow direction changed again)

**NOTE**

If the swept material is wet, it may be useful to operate the control lever briefly several times to facilitate emptying.

- Set down the sweeping machine and continue sweeping.



# Operation

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## 5.6 Open sweeping



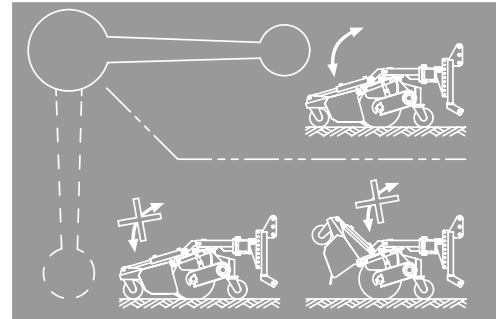
Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- Lift the sweeping machine and keep it close to the ground.
- Flip the respective control lever for the sweeping machine hydraulics in the carrier vehicle. This changes the direction of flow.
- Fully open the dirt collection vessel.
- Lower the sweeping machine until the two rear castor wheels touch the ground.
- The receptacle must be positioned perpendicular to the ground and the sweeping machine roof must be parallel to the area to be cleaned.



Carry out maintenance and modifications on the Kompakt sweeping machine only if the hydraulic drive is switched off. Pull the ignition key and secure the carrier vehicle against unintended restart and movement!

- Close the tap to the hydraulic cylinder of the collector vessel (see label on the machine's cover).



### NOTE

Swivel the side broom away from the operating area, see Chapter 3 Storage.

- Perform functionality check.

## 5.7 Inclination for open sweeping

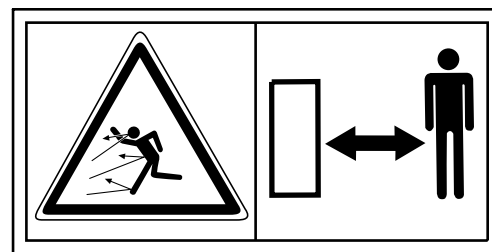


Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- When used as an open sweeping machine, a side adjustment in relation to the side of the road must be carried out.
- Via the sweeping angle, you determine whether the material is swept to the left or right.



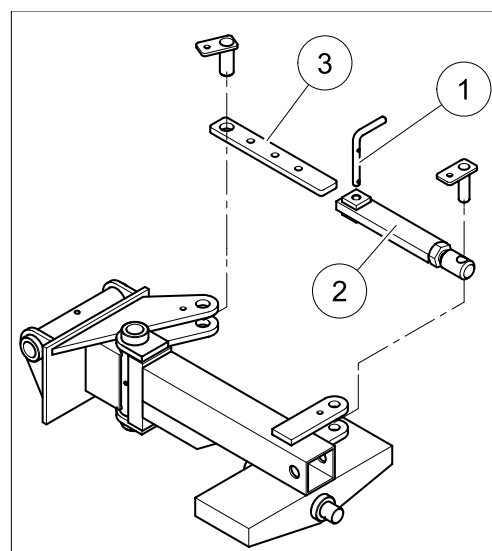
Danger of parts flinging away while engine is running - keep a sufficient and safe distance.



### Inclination, mechanical

The inclination is carried out via a pitch rod.

- Lift the sweeping machine and keep it close to the ground.
- Remove spring plug and bolt (1).
- Tilt the sweeping machine into the desired direction. (material swept to the left or right)
- Insert the bolt (1) into the pitch rod (2) and the respective hole (3) and secure using the spring plug.
- Lower the sweeping machine.



### Hydraulic swivelling

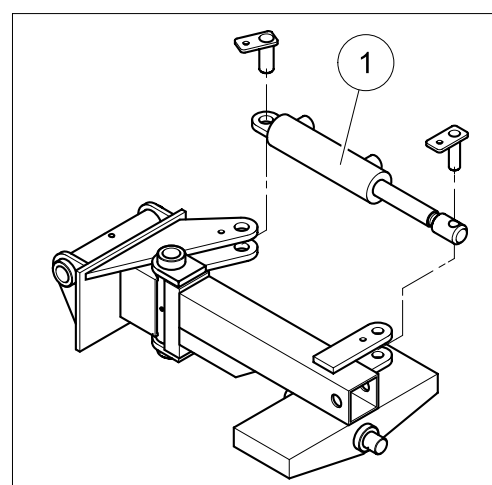
The swivelling is carried out via a hydraulic cylinder (1).

- The second hydraulic circuit of the carrier vehicle is used to operate the pitch control cylinder.
- Lift the sweeping machine and keep it close to the ground.
- Operate the control lever in the carrier vehicle and the sweeping machine swivels to the left or right.



While the sweeping machine is swivelled, no person must be present close to the machine.

- Lower the sweeping machine.
- Secure control circuit of the vehicle hydraulics against unintended operation.



# Operation

## 5.8 Sweeping profile adjustment



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- When operating the Kompakt sweeping machine, a sweeping profile of  $a = 6 - 10$  cm width should appear. (When lifting the sweeping machine, the swept area should have a width of 6 - 10 cm).
- Check the sweeping profile on even ground.

If the width is no longer sufficient or the pressure of the sweeping drum onto the ground is too low, the suspension of the sweeping drum must be readjusted evenly on both sides (1) + (2) via the raster lever system (1).

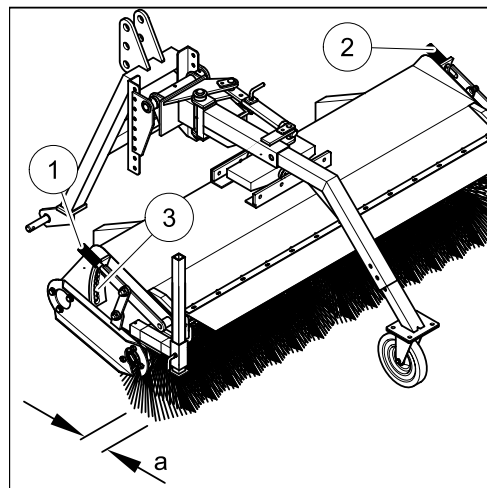


Take into account the sweeping drum's weight when adjusting the levers!



Danger of getting squashed! The palm must always point towards the centre of the machine when operating the raster levers.

- Pull the raster lever (1) of the raster setting backwards.
- Latch the raster level into the desired position on the adjustment raster (3).
- Carry out the raster setting of the sweeping drum evenly on both sides.
- Check that the width of the sweeping profile is  $a = 6 - 10$  cm.



## 6 Detachment

### 6.1 Deinstallation in general



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also familiarise yourself with the task sequence described.

- Detach the sweeping machine with the dirt collection vessel closed and empty. Close tap.
- For the open sweeping Kompakt sweeping machine, shift the two supports (1) downwards and secure them.



Accident hazard! Ensure a secure standing of the sweeping machine. Exercise special caution during detachment / decoupling.

- Park sweeping machine on a firm and level surface in a dry and clean place.
- Lower the Kompakt sweeping machine until all castor wheels touch the ground.
- Support wheels must point towards the attachment / receptacle.



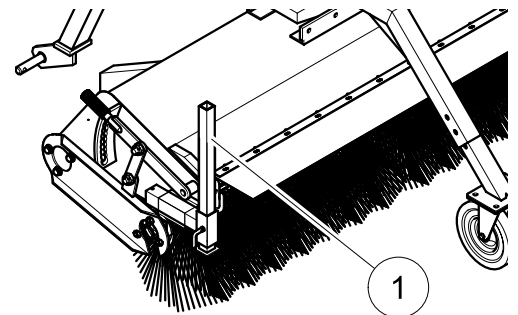
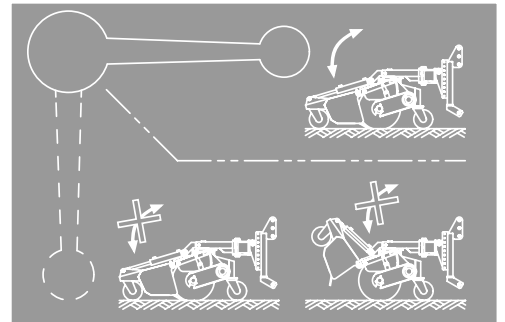
Carry out work on the Kompakt sweeping machine only the drive is switched off. Pull the ignition key and secure the carrier vehicle against restart and movement!

- Unmount the drive shaft on the tractor's side and detach the anti-twist chain.

**NOTE** Protect drive shaft connection from soiling.

- If present: disconnect hydraulic hoses and electrical leads at the vehicle and put them onto the sweeping machine.
- Close the hydraulic connector with the dust cap. Soiling leads to damage on the hydraulic system.

Put the drive shaft and hydraulic hoses across the sweeping machine. They constitute a tripping hazard if placed on the ground.



# Detachment

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## 6.2 Detachment - coupling triangle



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- Unlock the lock of the coupling triangle and lower the coupling triangle from the carrier vehicle.
- Drive vehicle backwards.

## 6.3 Detachment - 3-point linkage



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- Remove the 3-point linkage rods from the carrier vehicle at the 3-point linkage of the sweeping machine.
- Drive carrier vehicle backwards.

## 6.4 Detachment - yard loader



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- Unlock the receptacle as described in the carrier vehicle's operating manual.
- Lower the receptacle of the carrier vehicle and drive back vehicle.

## 6.4 Detachment - other carrier vehicles



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

- Unlock the receptacle as described in the carrier vehicle's operating manual.
- Lower the receptacle of the carrier vehicle and drive back vehicle.



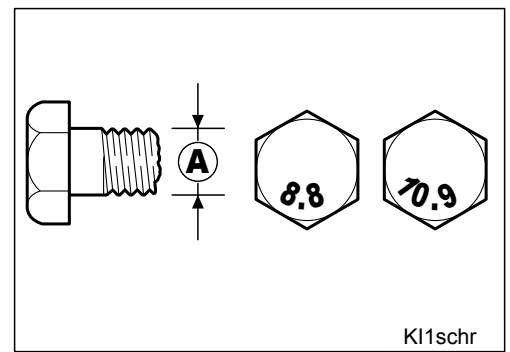
## 7 Service and maintenance

### 7.1 General



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also familiarise yourself with the task sequence described.

Check screws and nuts for firm seating after the first 5 operating hours and then at regular intervals (about every 50 operating hours), and tighten if necessary.



A ø	3.6	5.6	6.8	8.8	10.9	12.9
	M <sub>A</sub> (Nm)					
M 6	3.43	4.51	8.73	10.3	14.71	17.65
M 7	5.59	7.45	14.22	17.16	24.52	28.44
M 8	8.24	10.79	21.57	25.50	35.30	42.17
M 10	16.67	21.57	42.17	50.01	70.61	85.32
M 12	28.44	38.25	73.55	87.28	122.58	147.10
M 14	45.11	60.8	116.7	135.27	194.17	235.36
M 16	69.63	93.16	178.46	210.84	299.1	357.94
M 18	95.13	127.40	245.17	289.3	411.88	490.34
M 20	135.33	180.44	348.14	411.88	576.50	669.26
M 22	162.4	245.17	470.72	558.98	784.45	941.44
M 24	230.46	308.91	598.21	710.99	1000.28	1196.42

A = thread size (property class on screw head)




Replace self-locking nuts after each unscrewing.

All torques M<sub>A</sub> ARE APPROXIMATE VALUES FOR METRIC STANDARD THREADS ACCORDING TO DIN13. FRICTION COEFFICIENT 0.14 - NEW SCREW, NOT LUBRICATED. THESE VALUES HAVE BEEN RECOMMENDED AS APPROXIMATE VALUES BY VARIOUS SCREW MANUFACTURERS. WE DO NOT ACCEPT LIABILITY FOR THEIR APPLICATION.

- Regularly check the hydraulic hoses.
- Hydraulic hoses must be replaced no later than after 6 years of usage (including storage time of at most 2 years).
- Replace hydraulic hoses that are damaged or aged.
- The replacement hoses must meet the technical requirements of the manufacturer.

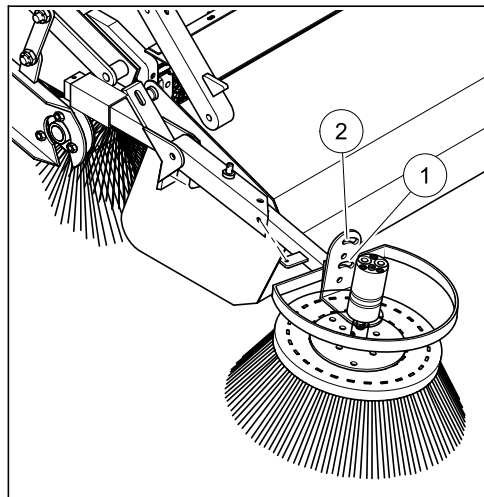
## Service and maintenance

### 7.2 Side broom readjustment


 Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also familiarise yourself with the task sequence described.


Following obvious wear, shift the plate broom down.


- Remove the screws of the motor bearer (1).
- Pull the motor bearer from the joint arm and slide it back into the upper receptacles / holes (2).
- Re-secure screw connections. Replace locknuts.
- Perform functionality check.




### 7.3 Replacement of the Vulkollan rail

 Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.


 Replace the Vulkollan rail only when the sweeping machine is attached to the carrier vehicle and lifted.

 Do not move underneath the lifted machine.

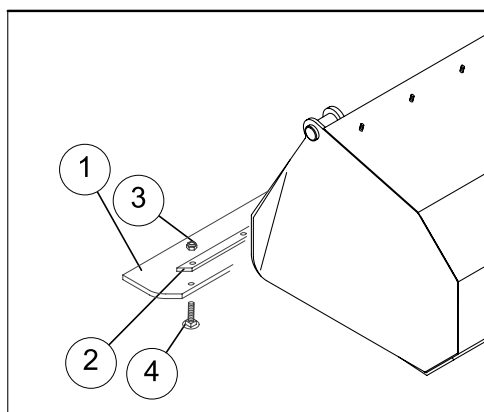
 Secure sweeping machine and carrier vehicle against unintended restart, sagging and movement! Pull the ignition key.

**NOTE** The dirt collection vessel must be empty and completely open.

- Unscrew the attachment screws (2) with the locking tooth nuts (4) along the entire length of the Vulkollan rail (1) and remove the old Vulkollan rail (1) and the impact rail (3).

 Take into account the weight of the impact rail and the Vulkollan rail.

- Attach the Vulkollan rail (1). The installation is carried out in the opposite order.



## 7.4 Replacing the plate broom



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also familiarise yourself with the task sequence described.

- Tilt side broom upwards and secure it as described in Chapter 3.2 Storage.

**ATTENTION** Secure plate broom against sagging.

- Remove the screws (1) or (2). (The screws are inserted in one of the two hole patterns, depending on the configuration of the side broom.)

**NOTE** Take the plate broom's own weight into account.

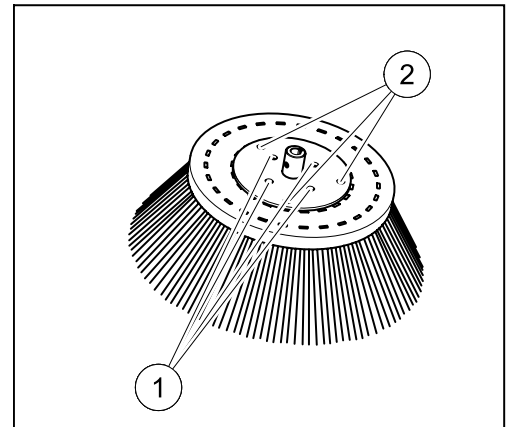
- Remove the old plate broom.
- Drill a hole through the new plate broom to suit the flange (1) or (2).

**NOTE** If the plate broom has a mixed configuration, an additional cover sheet is mounted between plate broom and flange (hexagonal screws are used as spacers between broom and cover sheet).

- Mount new plate broom using new self-securing nuts.

**ATTENTION** Swing the side broom into work position and readjust as described in Chapter 5.3.

**ATTENTION** Screw the readjusted side broom back, following the reverse order of the description in Chapter 7.2 Sidebroom readjustment.



## Service and maintenance

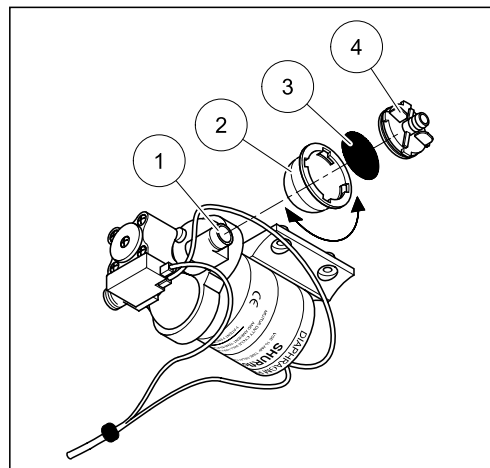
### 7.5 Water spraying device



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

**ATTENTION** The state of the filter sieve must be checked every 50 operating hours and cleaned if necessary.

- The water filter (2) (3) (4) is located on intake hose of the water pump (1) below the water tank.
- Screw off the water filter (2) (3) (4) from the water pump (1).
- Screw off the filter lid (4) from the housing (2) and remove the filter sieve (3).
- Clean the filter sieve (3) with water.
- Re-insert sieve (3) into the casing (2) and screw on filter lid (4).
- Screw water filter (2) (3) (4) on intake hose of the water pump (1) below the water tank.



### 7.6 Tightening the chain

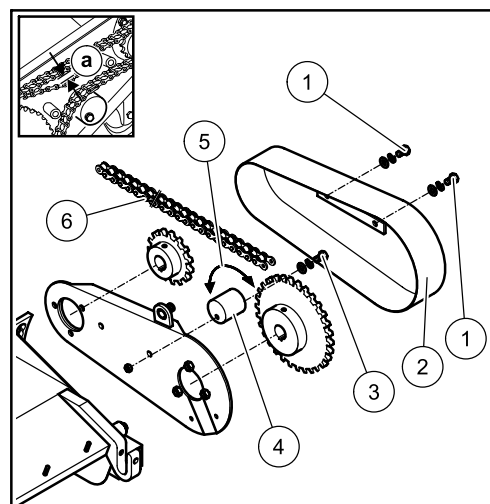


Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also familiarise yourself with the task sequence described.

- Unscrew attachment screws (1).
- Remove chain guard (2).

**NOTE** Check the chain (6) tension and re-tighten, if necessary (a max. 1 cm).

- Unscrew locking screw (3).
- Adjust (5) the chain adjuster (4) using the mounting lever.
- Check chain tension (6). Measure a = max. 1 cm.
- Tighten locking screw (3).
- Attach chain guard (2) again and mount with screws (1).



## 7.7 Replacement of the overload protection

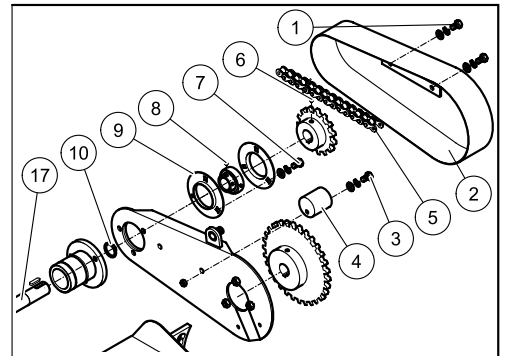


Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also familiarise yourself with the task sequence described.

The drive shaft of the chain drive has an elastic coupling with a spring pin as overload protection.

If the spring pin has shorn off, the drive shaft must be dismantled and the spring pin at the clutch claws must be replaced (as described in the following tasks).

- Unscrew screws (1) and remove chain case (2).
- Unscrew screws (3) of chain adjuster (4).
- Open chain joint (5).
- Remove chain from rear chain wheel.
- Loosen headless screw (6) and remove chain wheel.
- Remove screws (7) from the bearing shell.
- Loosen headless screw (8) in the bearing insert.
- Remove bearing (insert and shell).



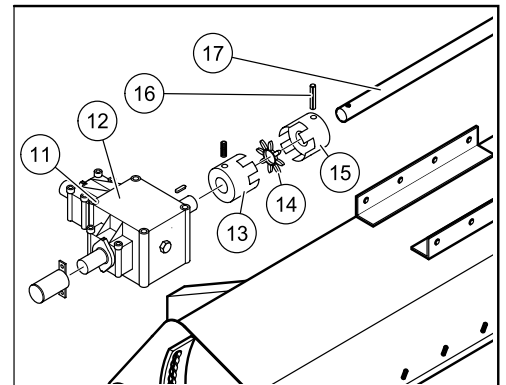
**ATTENTION** Secure gear against sagging.

- Unscrew screws (11) at gear (12) and remove.



Take the side gear's own weight into account.

- Detach gear (12) and coupling parts (13-14-15).
- Pull out drive shaft (17).
- Remove old spring pin from drive shaft (17) and clutch claws (15).
- Insert new spring pin (16) through gear (15) and drive shaft (17) and reassemble all parts in reverse order.



**NOTE**

The chain wheels must be mounted in such a way that the cogs align.

**NOTE**

The chain joint must be closed in the running direction of the chain.

**NOTE**

Adjustment of chain tension: see Chapter 7.5 Tightening chain.

# Service and maintenance

## 7.8 Replacing sweeping drum for Kompakt ø 400



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.



Replace sweeping drums only when the sweeping machine is attached to the carrier vehicle.



Secure sweeping machine and carrier vehicle against unintended restart, sagging and movement! Pull the ignition key.

### NOTE

Open and secure the dirt collection vessel as described in Chapter 5.6 Open sweeping.

### NOTE

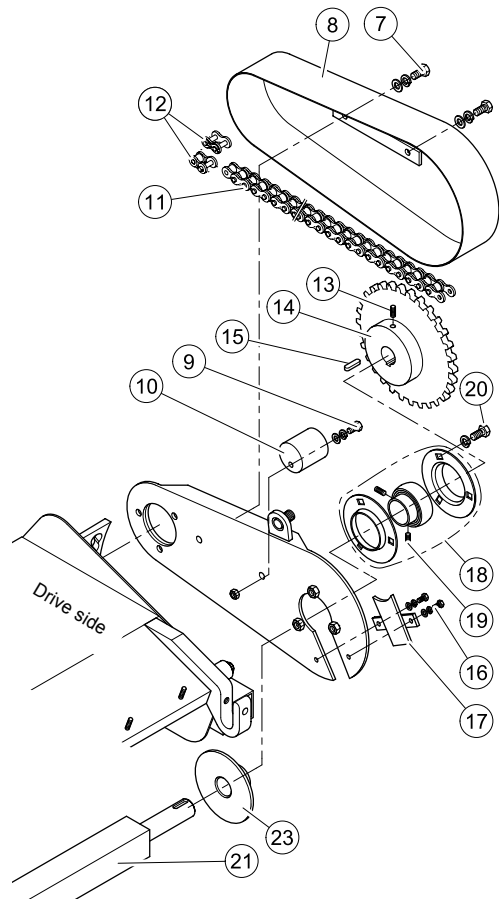
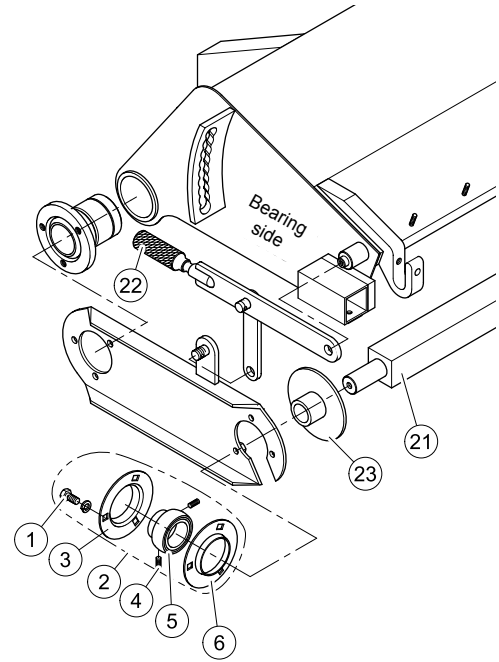
Swivel the side broom away from the operating area, see Chapter 3 Storage.

### Disassembly on the bearing side

- Unscrew attachment screws (1) from the flange bearing (2) and remove together with the bearing shell (3).
- Unscrew threaded bolts (4), pull off bearing insert (5) with bearing shell (6) so that the brush shaft (21) is exposed.

### Disassembly on the drive side / chain case

- Unscrew attachment screws (7) at the chain case (8) and remove with the chain case.
- Unscrew locking screw (9) of the chain tightener (10).
- Open chain (11) at the chain joint (12) and put it down.
- Remove threaded bolt (13) in the cog (14) and pull off together with the cog. Take feather key (15) out and put everything to the side.
- Unscrew attachment screws (16) from dust protection (17) and place on the side, too.
- In the flange bearing (18), unscrew the threaded bolts (19).
- Unscrew attachment screws (20) from flange bearing (18) and put to the side.
- Pull flange bearing (18) off the brush shaft (21).



- Adjust raster lever system (22) upwards on both sides.

**NOTE** The brush shaft (21) remains on the ground.

- Lift the sweeping machine until the brush shaft (21) with the old sweeping drums is exposed.



Do not work underneath the lifted sweeping machine.

- Drive carrier vehicle backwards. Lower the sweeping machine frame onto the rear support rollers and park the vehicle.



Secure the carrier vehicle against unintended restart and movement!

- Unmount / pull off the pressure flange (23).
- Remove worn-out sweeping drums.
- Push the new sweeping drums (24) onto the brush shaft (21).
- Before assembly, clean all parts and replace if necessary.

**NOTE** When ordering spare parts, please specify the type label, serial number and the year of construction of the machine. For article numbers refer to the list of spare parts.

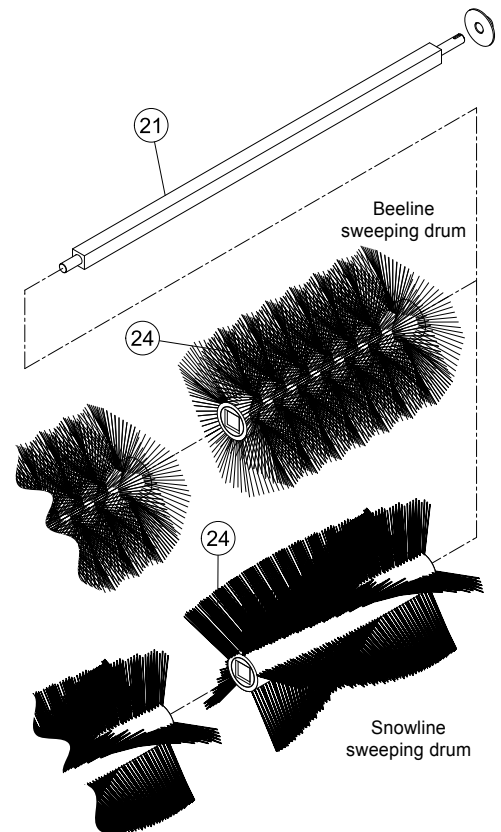
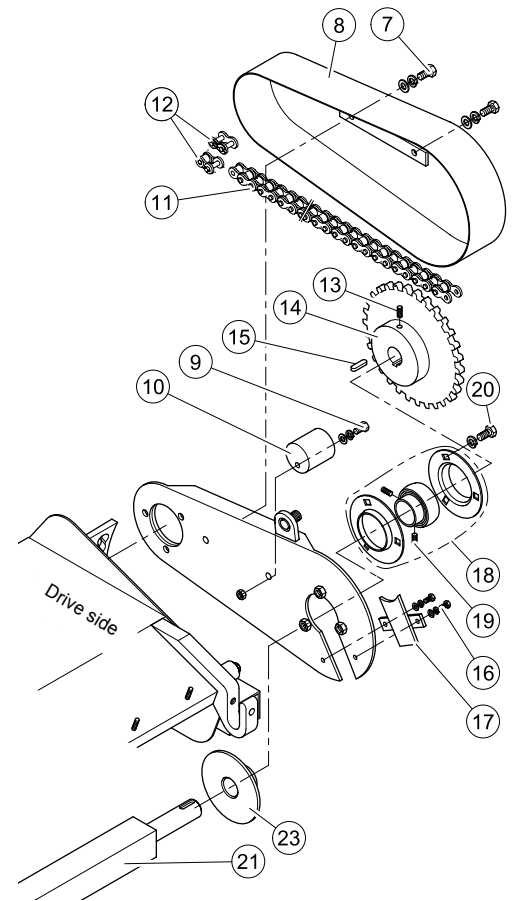
- The assembly of the brush shaft is carried out in the opposite order to the disassembly.

**NOTE** The chain wheels must be mounted in such a way that the cogs align.

**ATTENTION** The chain joint must be closed in the running direction of the chain.

**ATTENTION** Adjustment of chain tension: see Chapter 7.5 Tightening chain.

**NOTE** See Chapter 5.8 for adjustment of the sweeping profile



# Service and maintenance

## 7.9 Replacing sweeping drum for Kompakt ø 400



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.



Replace sweeping drums only when the sweeping machine is attached to the carrier vehicle.



Secure sweeping machine and carrier vehicle against unintended restart, sagging and movement! Pull the ignition key.

### NOTE

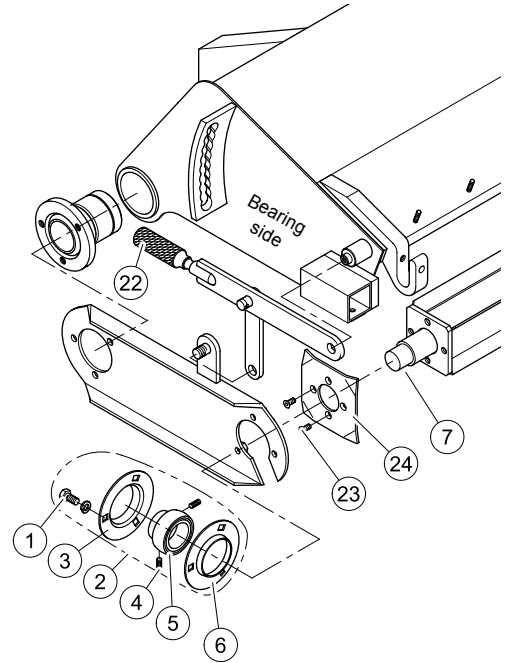
Open and secure the dirt collection vessel as described in Chapter 5.6 Open sweeping.

### NOTE

Swivel the side broom away from the operating area, see Chapter 3 Storage.

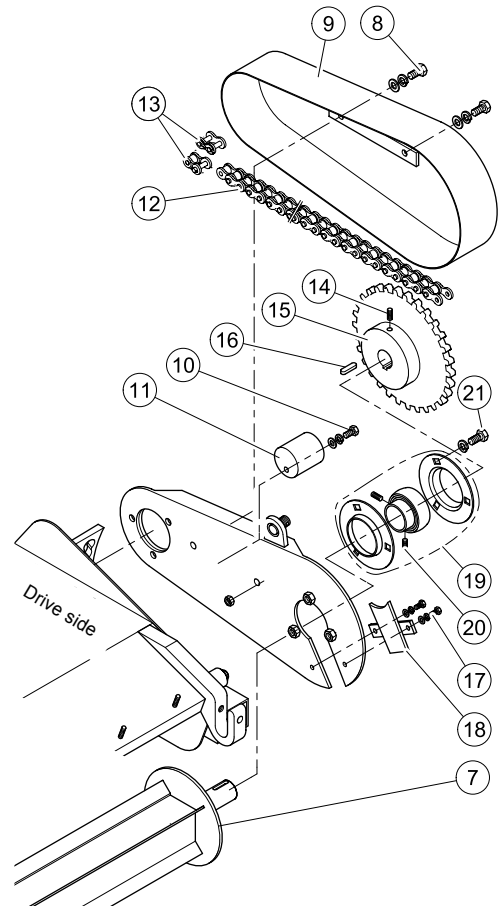
### Disassembly on the bearing side

- Unscrew attachment screws (1) from the flange bearing (2) and remove together with the bearing shell (3).
- Unscrew threaded bolts (4), pull off bearing insert (5) with bearing shell (6) so that the drum shaft (7) is exposed.



### Disassembly on the drive side / chain case

- Unscrew attachment screws (8) at the chain case (9) and remove with the chain case.
- Unscrew locking screw (10) of the chain tightener (11).
- Open chain (12) at the chain joint (13) and put it down.
- Loosen threaded bolt (14) at the cog (15) and pull it off together with the cog. Take feather key (16) out and put everything to the side.
- Unscrew attachment screws (17) from dust protection (18) and place on the side, too.
- In the flange bearing (19), unscrew the threaded bolts (20).
- Unscrew attachment screws (21) from flange bearing (19) and put to the side.
- Pull flange bearing (19) off the drum shaft (7).
- Adjust raster lever system (22) upwards on both sides.



### NOTE

The drum shaft (7) remains on the ground.

- Lift the sweeping machine until the drum shaft (7) with the old brush rings is exposed.





Do not work underneath the lifted sweeping machine.

- Drive carrier vehicle backwards. Lower the sweeping machine frame onto the rear support rollers and park the vehicle.



Secure the carrier vehicle against unintended restart and movement!

- Unscrew the four countersink screws (23) and place them on the side, together with the holding plate (24).
- Pull off worn-out brush rings.

## Beeline brush rings

- Slide the new brush rings (25) onto the drum shaft (7), such that a honeycomb-like structure appears.
- The brush rings must be pushed onto the drum shaft (7) in such a way that the groove (26) sits on the drivers (27).

## Sunline brush rings

- Push the new brush rings alternately onto the brush shaft (7) (corrugated wire (28), spacer (29), plastic (30), spacer (29), corrugated wire (28), ...)
- The brush rings must be pushed onto the drum shaft (7) in such a way that the groove (31) sits on the driver (27).

- Before assembly, clean all parts and replace if necessary.

### NOTE

When ordering spare parts, please specify the type label, serial number and the year of construction of the machine. For article numbers refer to the list of spare parts.

- The assembly of the drum shaft is carried out in the opposite order to the disassembly.

### NOTE

The chain wheels must be mounted in such a way that the cogs align.

### ATTENTION

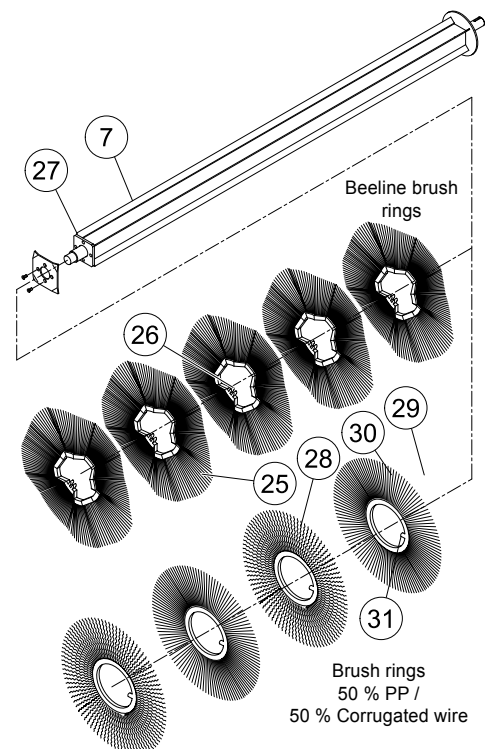
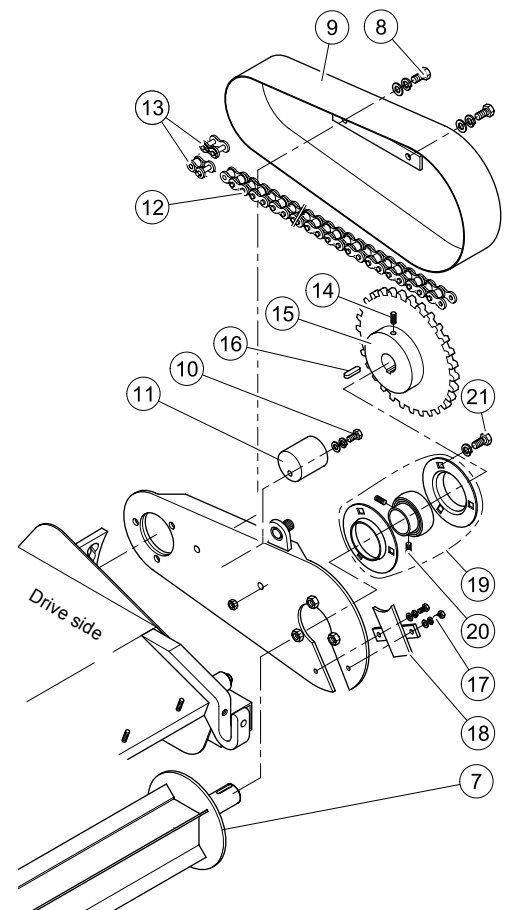
The chain joint must be closed in the running direction of the chain.

### ATTENTION

Adjustment of chain tension: see Chapter 7.5 Tightening chain.

### NOTE

See Chapter 5.8 for adjustment of the sweeping profile



# Service and maintenance

## 7.10 Replacing sweeping drum for Kompakt ø 520



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.



Replace sweeping drums only when the sweeping machine is attached to the carrier vehicle.



Secure sweeping machine and carrier vehicle against unintended restart, sagging and movement! Pull the ignition key.

### NOTE

Open and secure the dirt collection vessel as described in Chapter 5.6 Open sweeping.

### NOTE

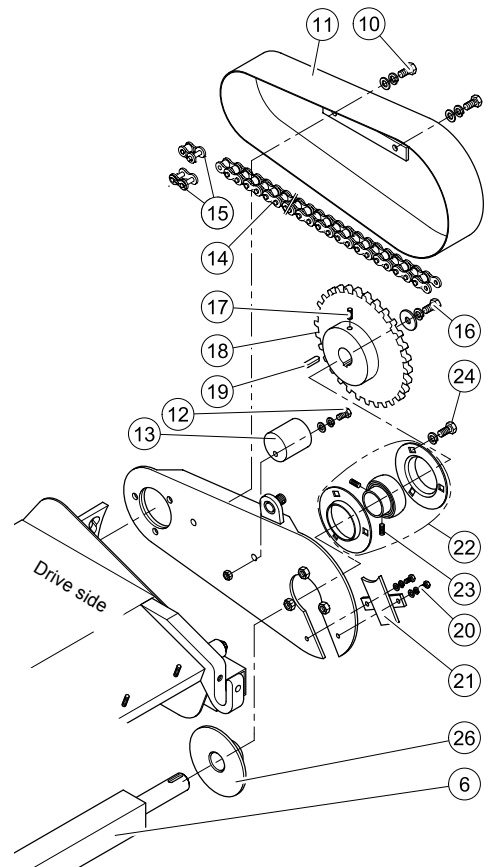
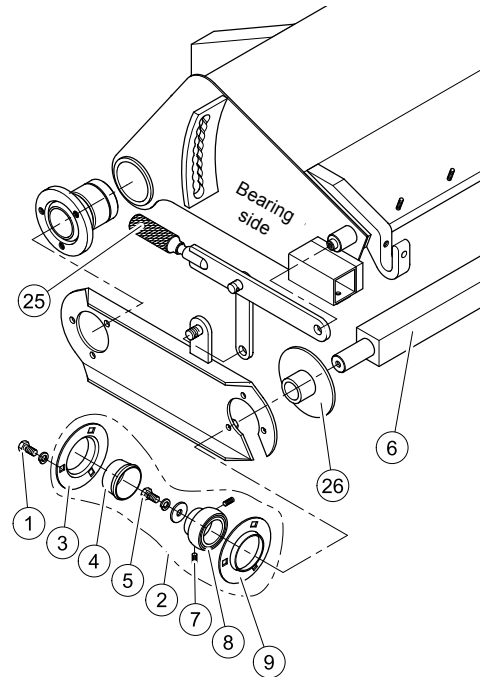
Swivel the side broom away from the operating area, see Chapter 3 Storage.

### Disassembly on the bearing side

- Unscrew attachment screws (1) from the flange bearing (2) and remove together with the bearing shell (3).
- Remove protective cap (4) in the bearing shell (3).
- Unmount attachment screw (5) with U-washers in the brush shaft (6).
- Unscrew threaded bolts (7), pull off bearing insert (8) with bearing shell (9) so that the brush shaft (6) is exposed.

### Disassembly on the drive side / chain case

- Unscrew attachment screws (10) at the chain case (11) and remove with the chain case.
- Unscrew locking screw (12) of the chain tightener (13).
- Open chain (14) at the chain joint (15) and put it down.
- Unmount attachment screw (16) with U-washers in the brush shaft (6).
- Remove threaded bolt (17) in the cog (18) and pull off together with the cog. Take feather key (19) out and put everything to the side.
- Unscrew attachment screws (20) from dust protection (21) and place on the side, too.
- In the flange bearing (22), unscrew the threaded bolts (23).
- Unscrew attachment screws (24) from flange bearing (22) and put to the side.
- Pull flange bearing (22) off the brush shaft (6).



- Adjust raster lever system (25) upwards on both sides.

**NOTE** The brush shaft (6) remains on the ground.

- Lift the sweeping machine until the brush shaft (6) with the old sweeping drums is exposed.



Do not work underneath the lifted sweeping machine.

- Drive carrier vehicle backwards. Lower the sweeping machine frame onto the rear support rollers and park the vehicle.



Secure the carrier vehicle against unintended restart and movement!

- Unmount / pull off the pressure flange (26).
- Remove worn-out sweeping drums.
- Push the new sweeping drums (27) onto the brush shaft (6).
- Before assembly, clean all parts and replace if necessary.

**NOTE** When ordering spare parts, please specify the type label, serial number and the year of construction of the machine. For article numbers refer to the list of spare parts.

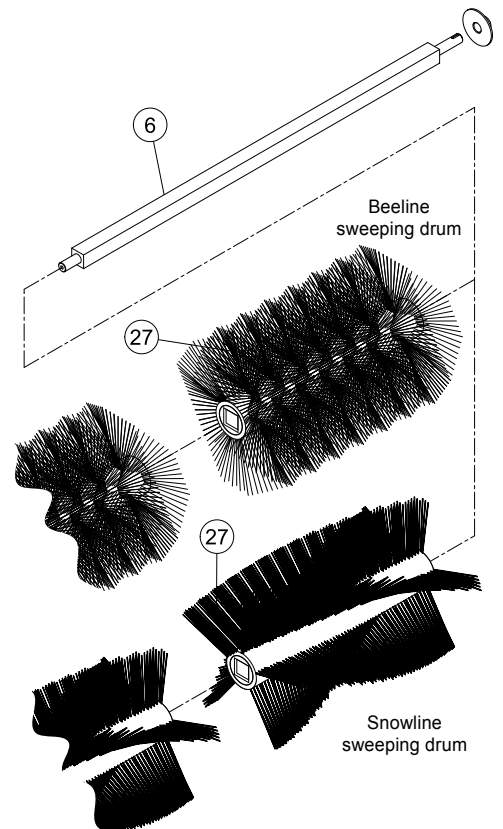
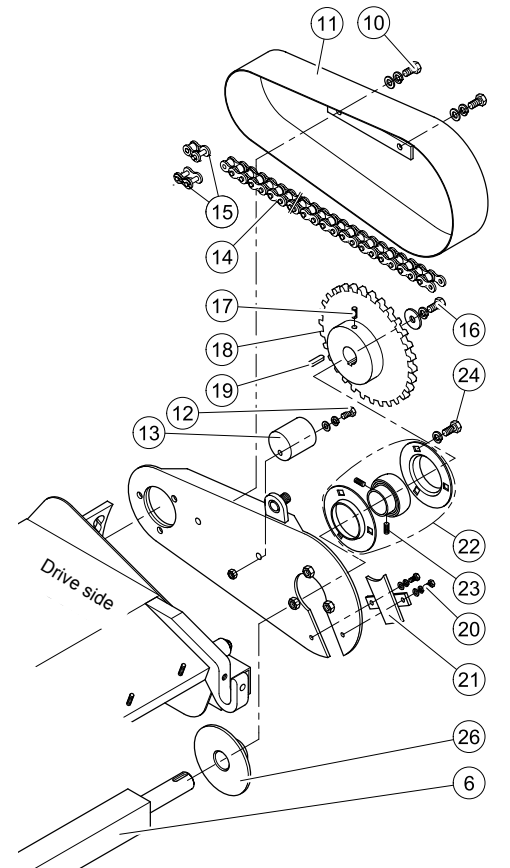
- The assembly of the brush shaft is carried out in the opposite order to the disassembly.

**NOTE** The chain wheels must be mounted in such a way that the cogs align.

**ATTENTION** The chain joint must be closed in the running direction of the chain.

**ATTENTION** Adjustment of chain tension: see Chapter 7.5 Tightening chain.

**NOTE** See Chapter 5.8 for adjustment of the sweeping profile



# Service and maintenance

## 7.11 Replacing sweeping drum for Kompakt ø 520



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.



Replace sweeping drums only when the sweeping machine is attached to the carrier vehicle.



Secure sweeping machine and carrier vehicle against unintended restart, sagging and movement! Pull the ignition key.

### NOTE

Open and secure the dirt collection vessel as described in Chapter 5.6 Open sweeping.

### NOTE

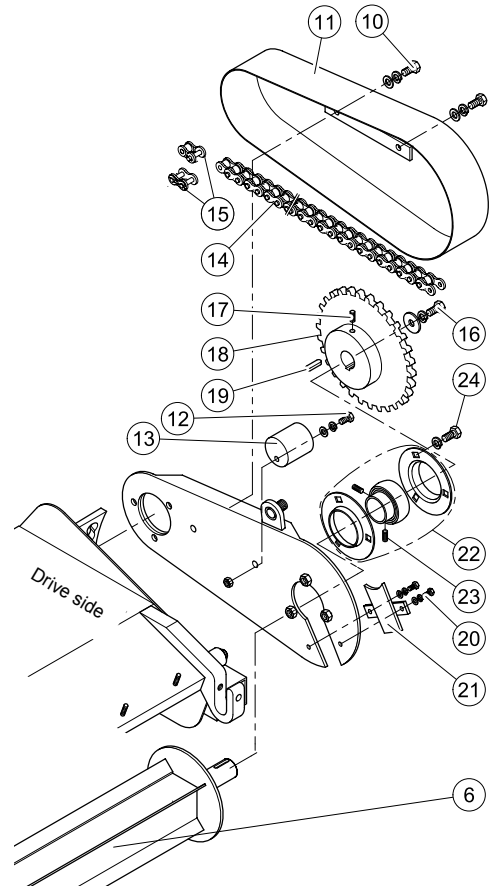
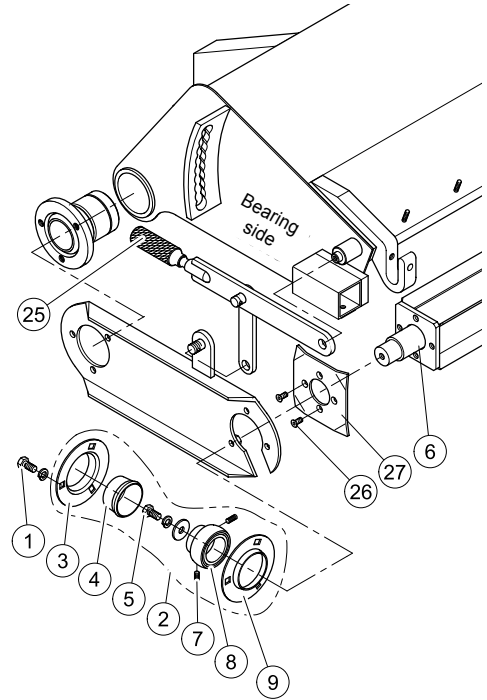
Swivel the side broom away from the operating area, see Chapter 3 Storage.

### Disassembly on the bearing side

- Unscrew attachment screws (1) from the flange bearing (2) and remove together with the bearing shell (3).
- Remove protective cap (4) in the bearing shell (3).
- Unmount attachment screw (5) with U-washers in the drum shaft (6).
- Unscrew threaded bolts (7), pull off bearing insert (8) with bearing shell (9), so that the brush shaft is exposed.

### Disassembly on the drive side / chain case

- Unscrew attachment screws (10) at the chain case (11) and remove with the chain case.
- Unscrew locking screw (12) of the chain tightener (13).
- Open chain (14) at the chain joint (15) and put it down.
- Unmount attachment screw (16) with U-washers in the drum shaft (6).
- Remove threaded bolt (17) at the cog (18) and pull off together with the cog. Take feather key (19) out and put everything to the side.
- Unscrew attachment screws (20) from dust protection (21) and place on the side, too.
- In the flange bearing (22), unscrew the threaded bolts (23).



- Unscrew attachment screws (24) from flange bearing (22) and put to the side.
- Pull flange bearing (22) off the drum shaft (6).
- Adjust raster lever system (25) upwards on both sides.

**NOTE** The drum shaft (6) remains on the ground.

- Lift the sweeping machine until the drum shaft (6) with the old brush rings is exposed.



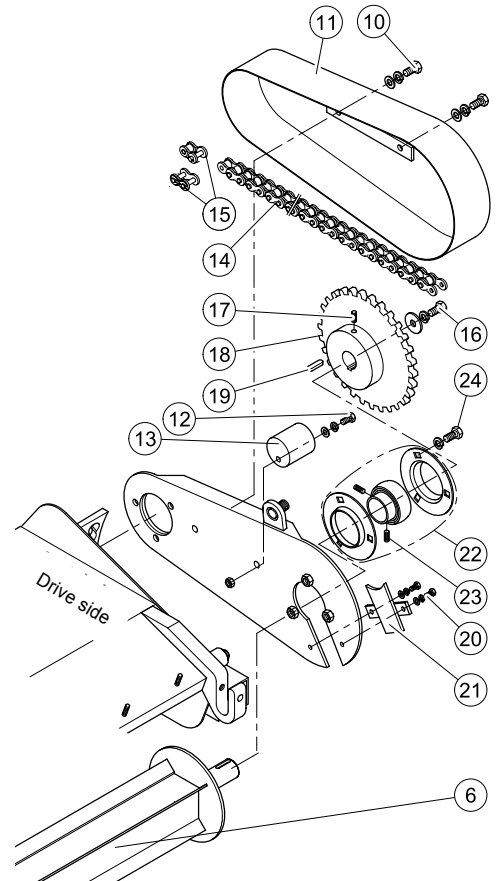
Do not work underneath the lifted sweeping machine.

- Drive carrier vehicle backwards. Lower the sweeping machine frame onto the rear support rollers and park the vehicle.



Secure the carrier vehicle against unintended restart and movement!

- Unscrew the four countersink screws (26) and place them on the side, together with the holding plate (27).
- Pull off worn-out brush rings.



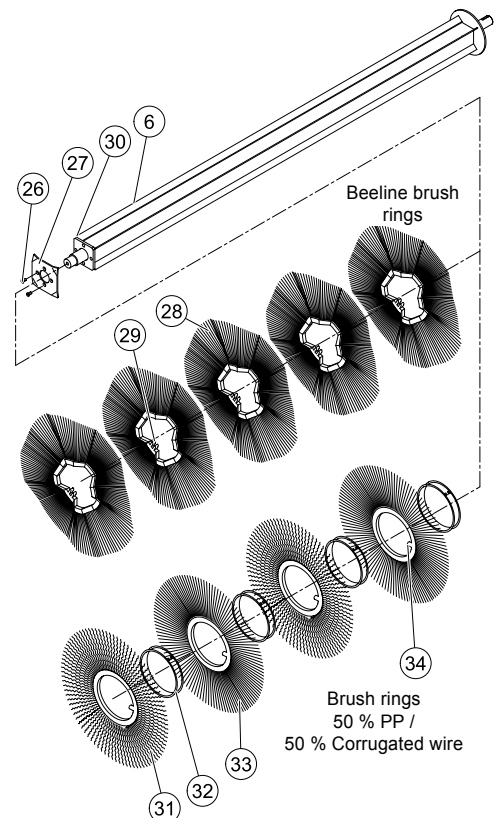
## Beeline brush rings

- Slide the new brush rings (28) onto the drum shaft (6), such that a honeycomb-like structure appears.
- The brush rings must be pushed onto the drum shaft (6) in such a way that the groove (29) sits on the drivers (30).

## Sunline brush rings

- Push the new brush rings alternately onto the brush shaft (6) (corrugated wire (31), spacer (32), plastic (33), spacer (32), corrugated wire (31), ...).
- The brush rings must be pushed onto the drum shaft (6) in such a way that the catch (34) sits on the driver (30).
- Before assembly, clean all parts and replace if necessary.

**NOTE** When ordering spare parts, please specify the type label, serial number and the year of construction of the machine. For article numbers refer to the list of spare parts.



>> Continue reading on next page. >>

## Service and maintenance

- The assembly of the drum shaft is carried out in the opposite order to the disassembly.

**NOTE** The chain wheels must be mounted in such a way that the cogs align.

**ATTENTION** The chain joint must be closed in the running direction of the chain.

**ATTENTION** Adjustment of chain tension: see Chapter 7.5 Tightening chain.

**NOTE** See Chapter 5.8 for adjustment of the sweeping profile

### 7.12 Lubrication plan



Before carrying out the following tasks first read the safety instructions in Chapter 2 - Safety. Also, familiarise yourself with the task sequence described.

**ATTENTION** Grease the bearings weekly. Use grease according to DIN 51502 (e.g., Gresalit 2 by Westfalen).



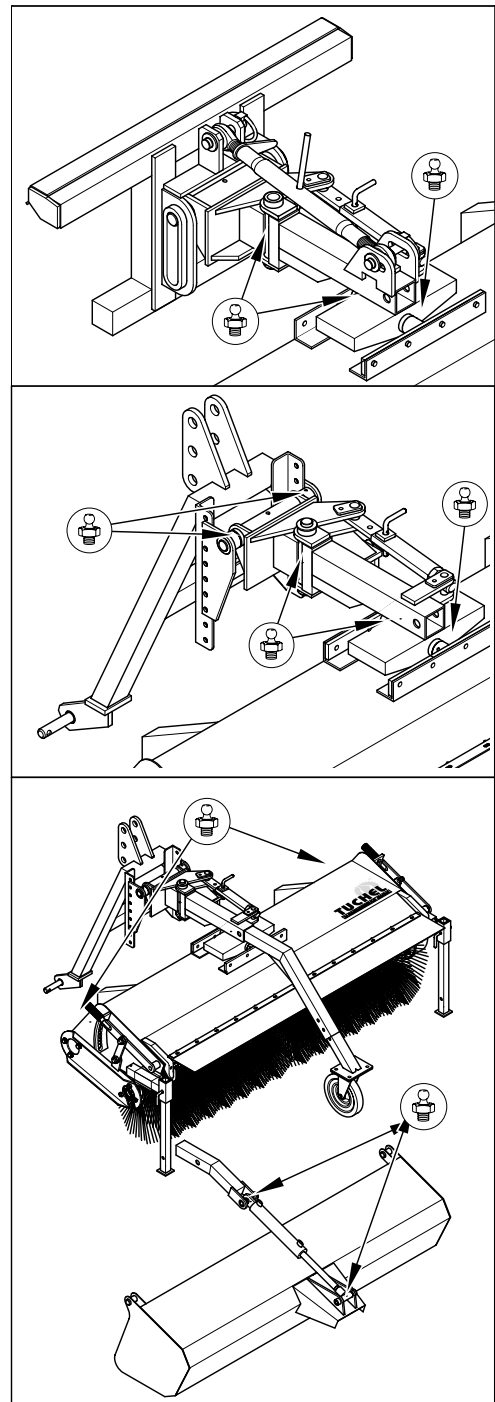
Grease weekly!

#### Lubricating points - sweeping machine

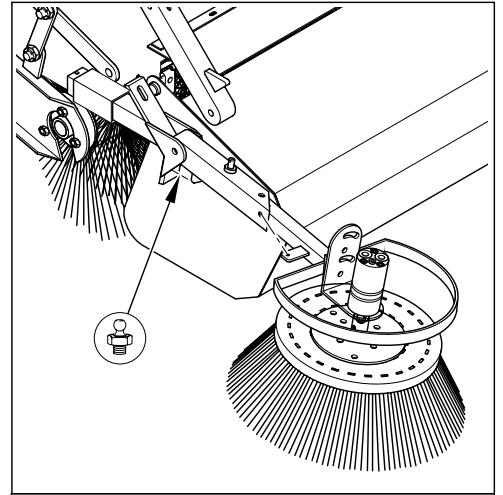
- On the pendulum bolt receptacle, left and right
- On the central swivel bolt, on the side in the middle
- Machine frame at the holder for the drive shaft and on the opposite side
- Level compensation, on the machine frame, left and right

#### Lubricating points - optional

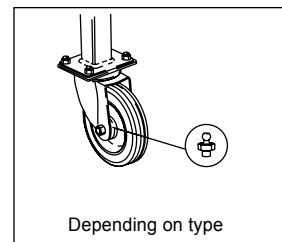
- At the lug of the hydraulic cylinder used for emptying the collection vessel, at the machine frame
- At the threaded joint of the hydraulic cylinder for emptying the collection vessel, at the collector vessel



- At the swivel arm of the side broom



- Support wheels, depending on type (for reinforced wheels)

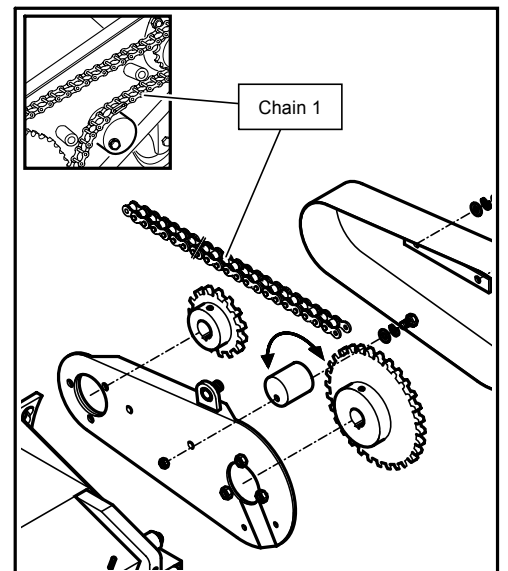


## Lubricating the chain

- Lubricate drive chain regularly.

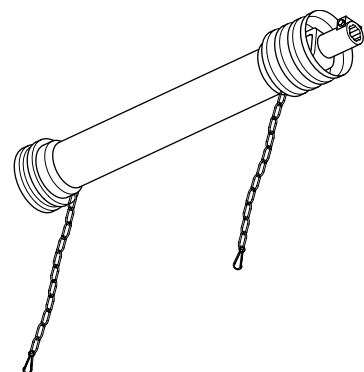
### NOTE

With a regularly lubricated chain, you achieve a considerably prolonged standing period compared to chains lubricated once only.



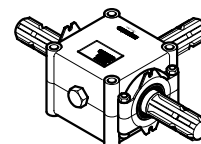
## Lubricating the drive shaft

- The lubricating points on the drive shaft are described in the drive shaft manufacturer's operating manual. Observe the notes for winter operation.



## Gearbox lubricant

- The lubricant SAE 90 EP must be replaced after approximately 50 operating hours or after the first season. The new gearbox lubricant must meet the performance class specified above. An oil quantity of 1.1 litres is required.



## Service and maintenance

### 7.13 Malfunctions; causes and rectification

Malfunction	Cause	Rectification
1. Sweeping drum does not turn (mechanical drive)	<ul style="list-style-type: none"> <li>- Power take-off shaft is not turned on</li> <li>- Shear pin shorn off</li> <li>- Chain has come off or is broken</li> </ul>	<ul style="list-style-type: none"> <li>- Turn on power take-off shaft</li> <li>- Replace shear pin</li> <li>- Tighten or replace chain</li> </ul>
1. Sweeping drum does not turn (hydraulic drive)	<ul style="list-style-type: none"> <li>- Hydraulic connections not correct</li> <li>- Hydraulic motor defective</li> <li>- Pressure or volume flow too low</li> <li>- Chain has come off or is broken</li> </ul>	<ul style="list-style-type: none"> <li>- Check connections</li> <li>- Ask a qualified workshop</li> <li>- Ask a qualified workshop</li> <li>- Tighten or replace chain</li> </ul>
3. Dirt collection vessel does not tilt upwards	<ul style="list-style-type: none"> <li>- Hydraulic connections not correct</li> <li>- Hydraulic cylinder defective</li> <li>- Intake hose closed</li> </ul>	<ul style="list-style-type: none"> <li>- Check connections</li> <li>- Ask a qualified workshop</li> <li>- Turn the 2-way-tap</li> </ul>
4. Water spraying device defective	<ul style="list-style-type: none"> <li>- Water tank empty</li> <li>- Fuse in the cabinet defective</li> <li>- Water filter clogged</li> <li>- Nozzles clogged</li> </ul>	<ul style="list-style-type: none"> <li>- Top up water</li> <li>- Replace fuse</li> <li>- Clean water filter</li> <li>- Clean nozzles</li> </ul>
5. Side broom does not move	<ul style="list-style-type: none"> <li>- Intake hose closed</li> <li>- Hydraulic connections not correct</li> <li>- One-way restrictor</li> <li>- Hydraulic motor defective</li> </ul>	<ul style="list-style-type: none"> <li>- Open flow control valve</li> <li>- Check connections</li> <li>- One-way restrictor adjust or close</li> <li>- Ask a qualified workshop</li> </ul>
6. Sweeping result unsatisfactory	<ul style="list-style-type: none"> <li>- Broom adjustment</li> <li>- Brush worn out</li> <li>- Broom rotation too fast/slow</li> </ul>	<ul style="list-style-type: none"> <li>- Adjust the broom via the raster lever system</li> <li>- Replace brush</li> <li>- Adjustment via carrier vehicle only</li> </ul>
7. Hydraulic side adjustment without functionality	<ul style="list-style-type: none"> <li>- Hydraulic connections not correct</li> <li>- Pressure or volume flow too low</li> <li>- Hydraulic cylinder defective</li> </ul>	<ul style="list-style-type: none"> <li>- Check connections</li> <li>- Ask a qualified workshop</li> <li>- Ask a qualified workshop</li> </ul>

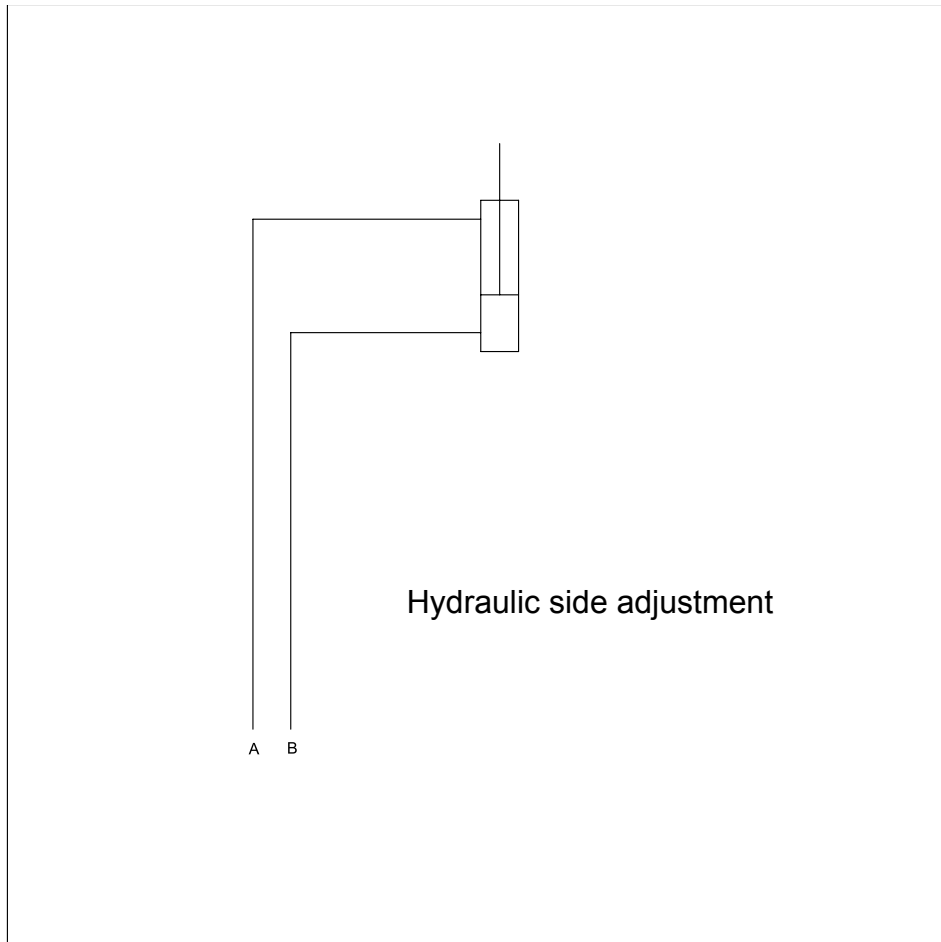


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## Appendix

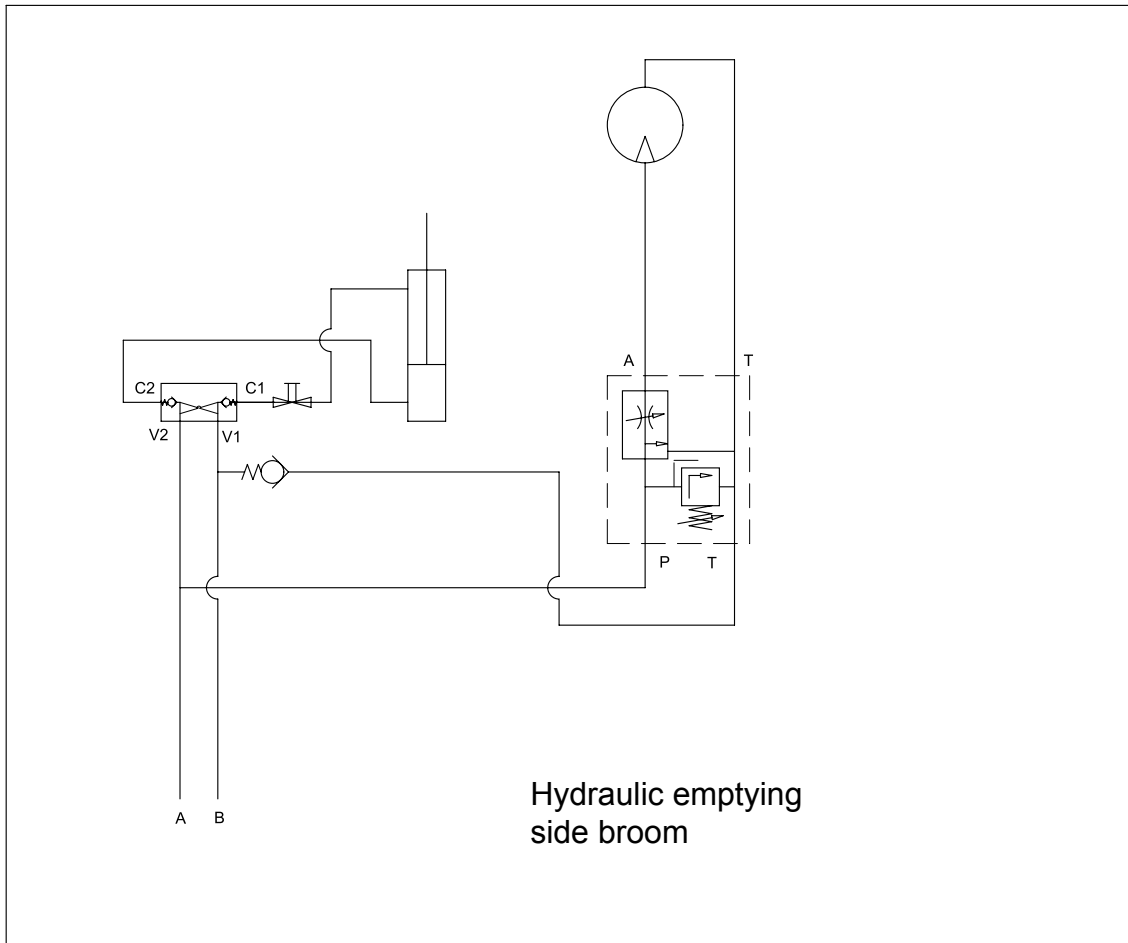
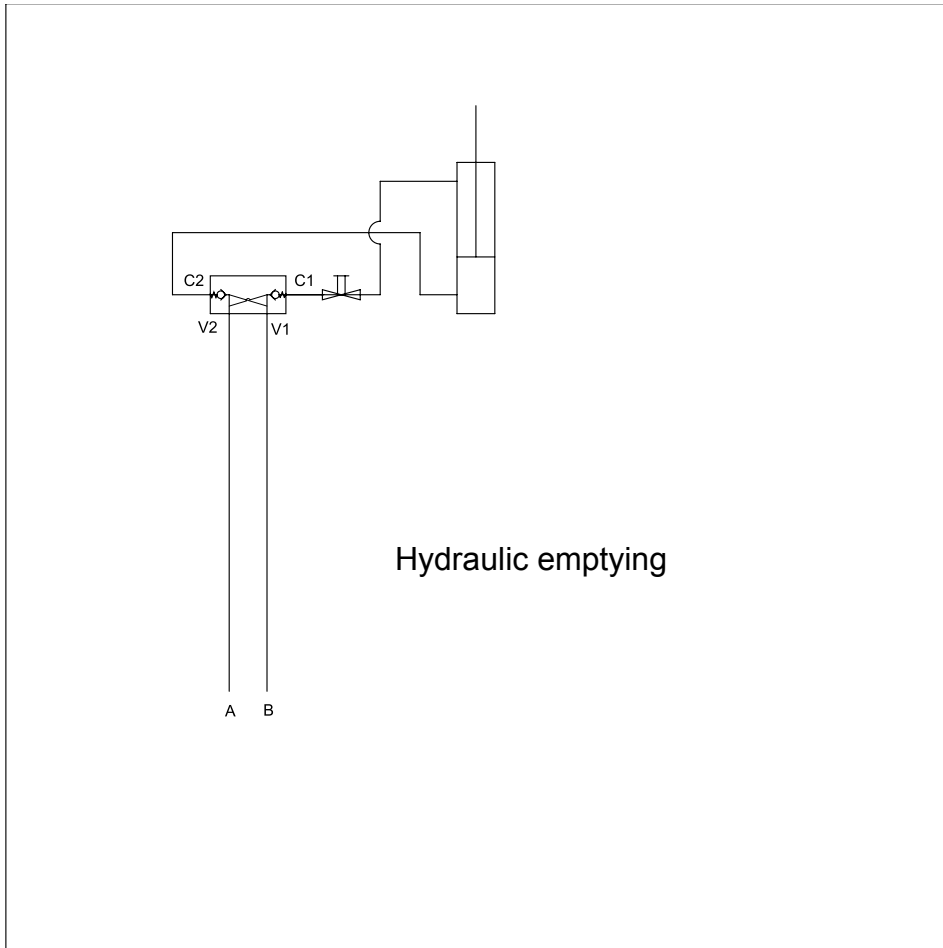
### Hydraulic circuit diagrams

#### Circuit diagram for additional control circuit

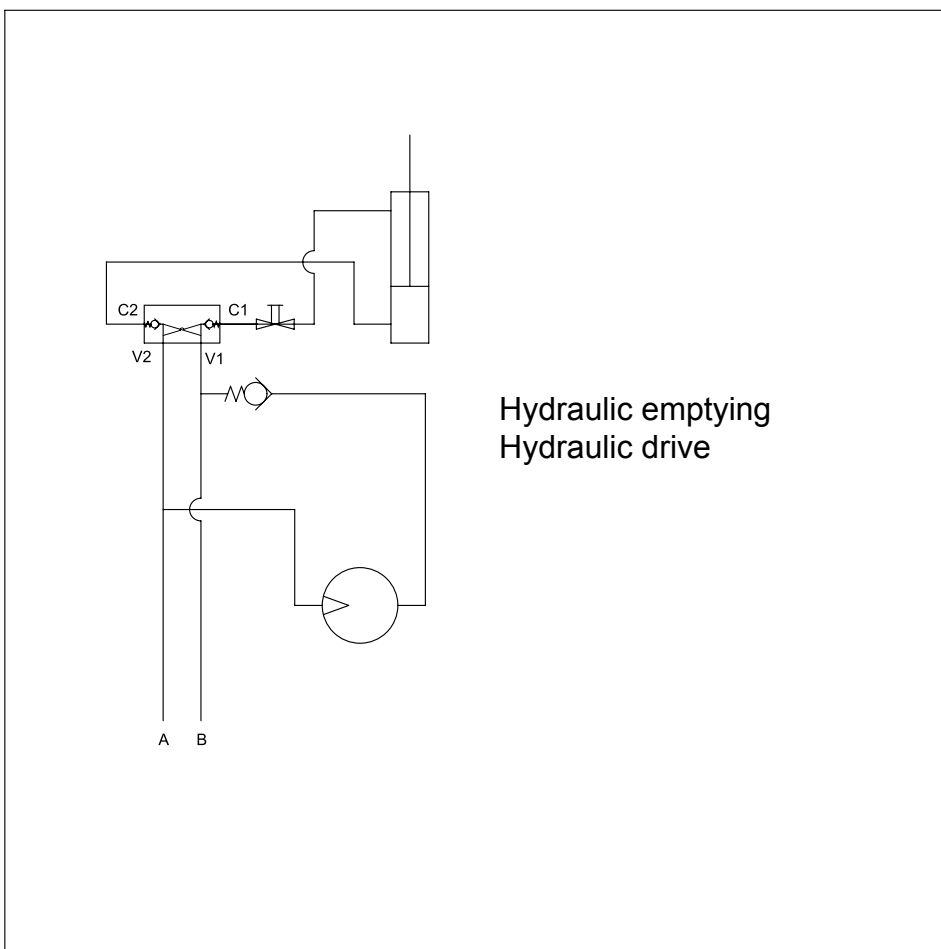
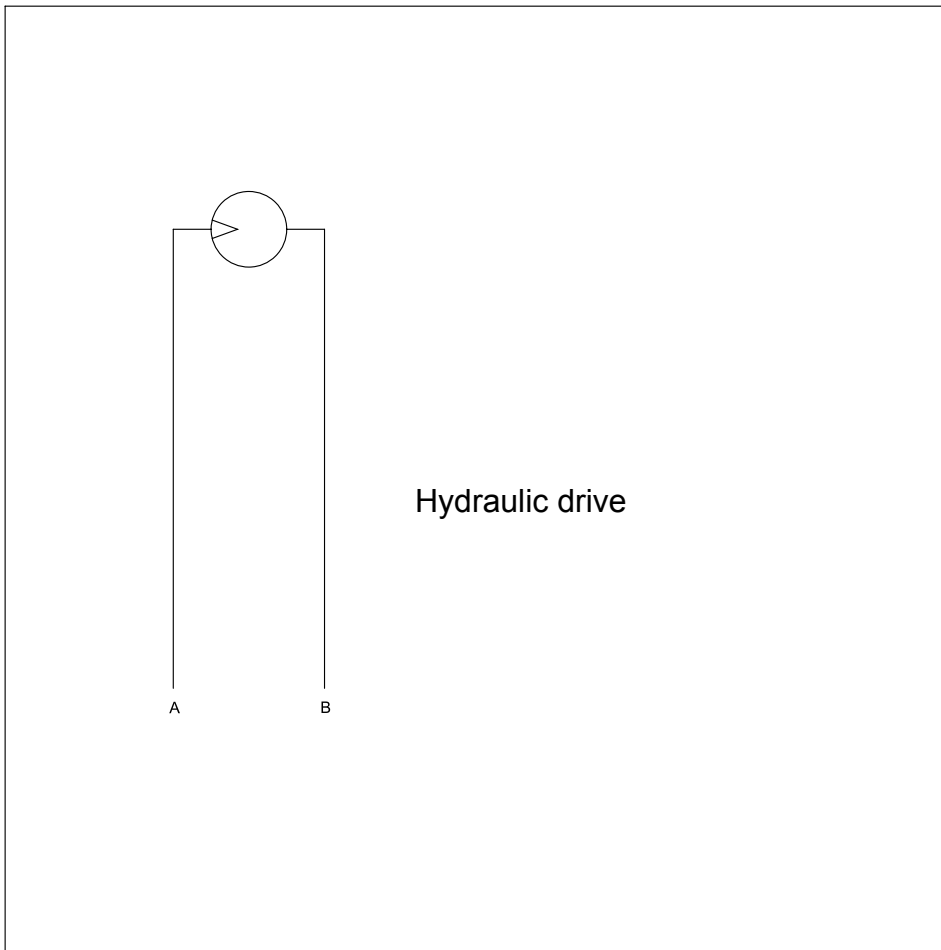


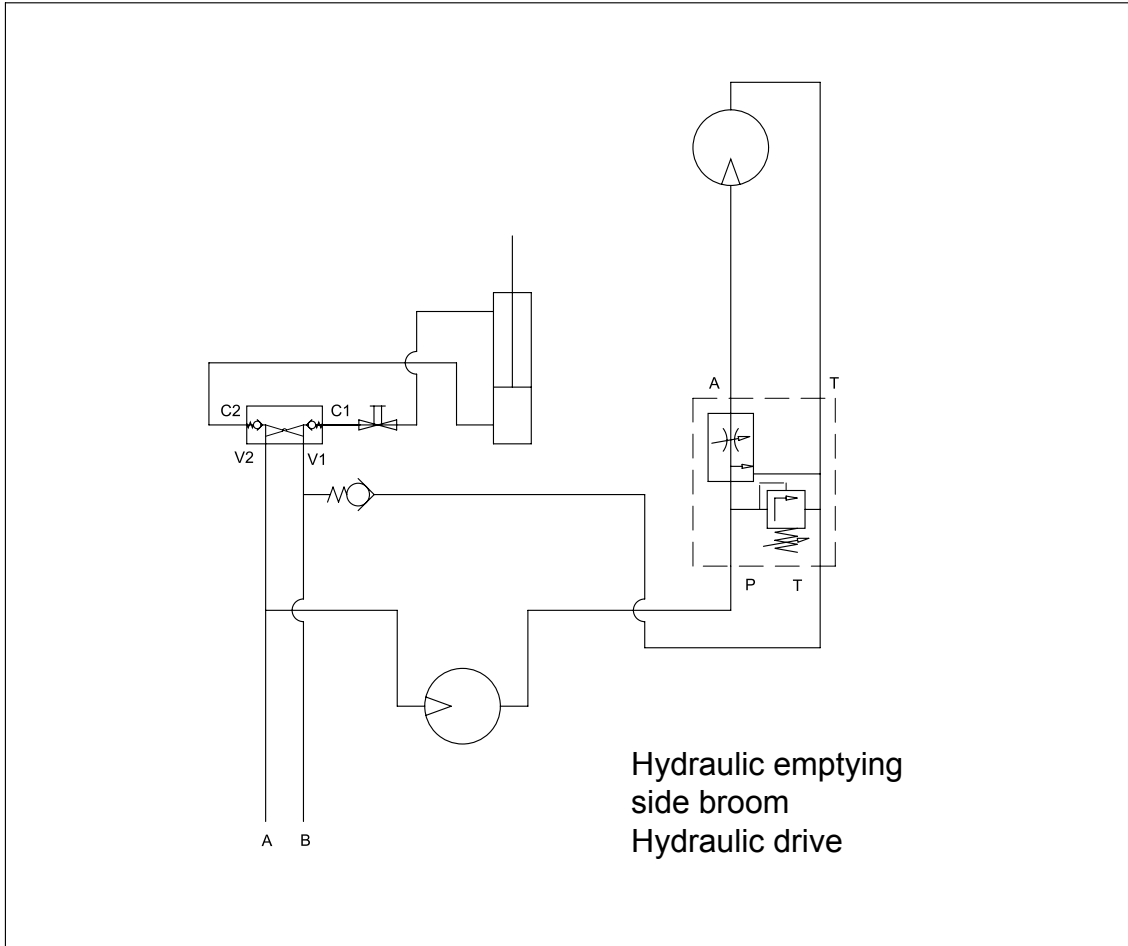
# Appendix

## Circuit diagrams for power take-off drive



Circuit diagrams for hydraulic operation





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