

Operating manual for Sweeping Machine

Type K 100 / K 120

KE 100

KL 90 / KL 110



A prerequisite for working with the **KÖPPL** sweeping machine is that you read, understand and adhere to the instructions in the operating manual, as well as to the instructions in the operating manual of the **KÖPPL** 2-wheel tractor.

You may not use the machine before doing so.



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Keep for future reference!



KÖPPL

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Translation of the original operating manual

Foreword

Foreword

Before working with the **KÖPPEL** sweeping machine, it is imperative that you have **read and understood** the section on **intended use**, the operating manual and the safety-relevant instructions!

The warranty is void if the machine is not operated in accordance with its intended use!

Dear customer! You have made the right choice!

Although there is a wide selection on the market, you have decided to buy a **KÖPPEL** sweeping machine. We are very pleased about this fact and will do our best to make sure that you will enjoy working with the machine for years to come.

From now on, we hope you'll be our best advertisement.

The following points are characteristic of our product:

- The machine is well-balanced and easy to work with.
- Maintenance cost is therefore very low.
- The gears are easy to use.
- The supply of spare parts is guaranteed and quick.
- An optimal after-sales service is always at your disposal.

The **KÖPPEL** sweeping machine is the result of decades of experience and therefore practical and suitable for long-term use.

KÖPPEL Constantly strives to further develop all machines and devices. The right to changes to the scope of delivery concerning shape, technology and accessories is therefore reserved. We apologise that no claims can be deduced from the specifications and pictures contained in this booklet.

LET US KNOW YOUR SUGGESTIONS FOR IMPROVEMENT!

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Intended Use

1 Intended Use

The **Köppel** sweeping machine type K 100 / K 120 / KE 100 / KL 90 is constructed to be used for common grounds keeping tasks in summer and winter in combination with the appropriate original main unit in **front-mounted configuration for sweeping or snow brushing** (car parks, pavements, access roads). Any other use is deemed as not conforming to the machine's intended use!

- These works are only permissible as far as appropriate for engine capacity, tyres, and the condition of the surrounding area. Manufacturer is not liable for damages resulting from that; its exclusively owners risk
- The terms and conditions specified in the offer and in the order confirmation are authoritative. Any other use does not conform to the intended use of the machine.
- The work area must be free of obstacles.
- The **Köppel** sweeping machine may not be used on steep slopes!
- "Intended use" also includes the operator's adherence to the manufacturer's instructions on operation and maintenance.
- The **Köppel** sweeping machine may only be used, maintained and repaired by persons who are acquainted with the machine's workings and who have been informed of the hazards involved! Manufacturer is not liable for damages resulting from that; its exclusively owners risk
- Applicable accident prevention regulations and the otherwise generally accepted rules on safety technology, professional medicine and the highway code must be observed!
- The company cannot be held liable for damages brought about by unauthorised modifications made on the machine!



Important!

The instructions for operation, maintenance and repair contained in this operating manual for the **Köppel** sweeping machine are prerequisites for "intended use" and must be strictly observed.



Warning!

If the **Köppel** sweeping machine is used for anything other than the intended use specified above, or if it is driven with higher power than it is licensed for, the result may be:

- hazardous situations for people
- damage to assets.



Information

Improper and prohibited use of the machine are not known to the manufacturer. Improper mounting of accessory implements, or mounting of accessory implements and parts that were not purchased from **Köppel**, lead to the exclusion of any liability for the resulting damage.

2 Product Description

2.1 Configuration, Hazard Area

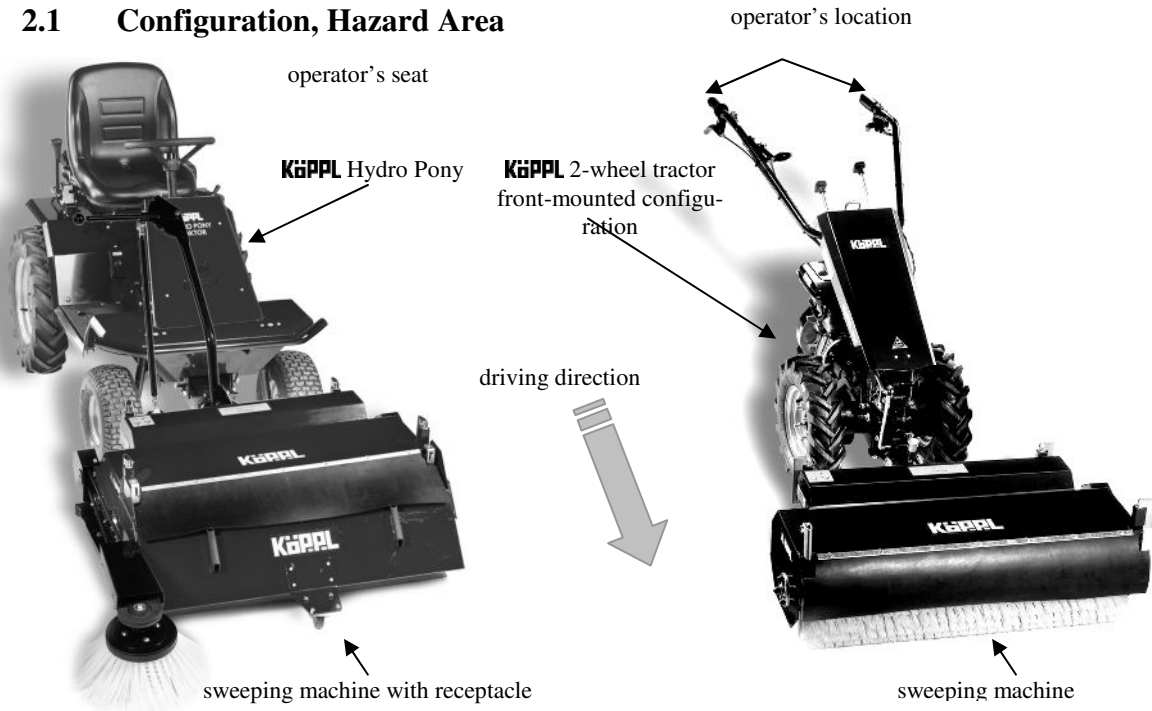
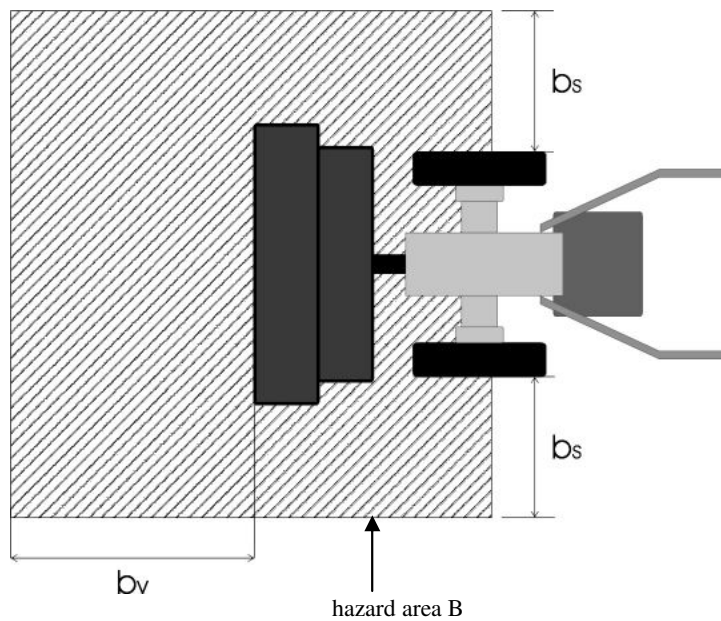


Fig.1: sweeping machine K 100 with **KÖPPL** Hydro Pony and KE 100 **KÖPPL** 2-wheel tractor 510.

You are not permitted to remain in the hazard area (B) during machine operation.

This area begins at the protective lid and extends forward and outward:



With

- Sweeping machine $bs=2,0\text{ m}$ $bv = 5,0\text{ m}$

Product Description

2.2 Functional Characteristics



The **Köppel** sweeping machine is constructed for sweeping or snow brushing in usual grounds keeping applications in summer and winter. It is **only** suitable for use on appropriate **Köppel** main units in front-mounted configuration.

The **Köppel** sweeping machine is connected to either the **Köppel** 2-wheel tractor or **Köppel** Pony tractor by way of a rapid-tool-change flange (see also chapter “*Operation*”).

The sweeping roller of the **Köppel** sweeping machine K 100/120 and KE 100 is driven by angular gears via a chain. The sweeping roller of the **Köppel** sweeping machine KL 90 is driven directly by angular gears.

The following points are characteristic of our product:

- The machine is very balanced and easy to work with.
- The **Köppel** sweeping machine is easily mounted due to the rapid-action coupling.
- An optimal after-sales service is always at your disposal.



Attention!

Please note that the power take-off must also be switched off when you change into neutral gear. Since the sweeping roller of the **Köppel** sweeping machine rotates, it is possible that the machine reverses when in neutral gear while the power take-off is switched on – danger of injury!

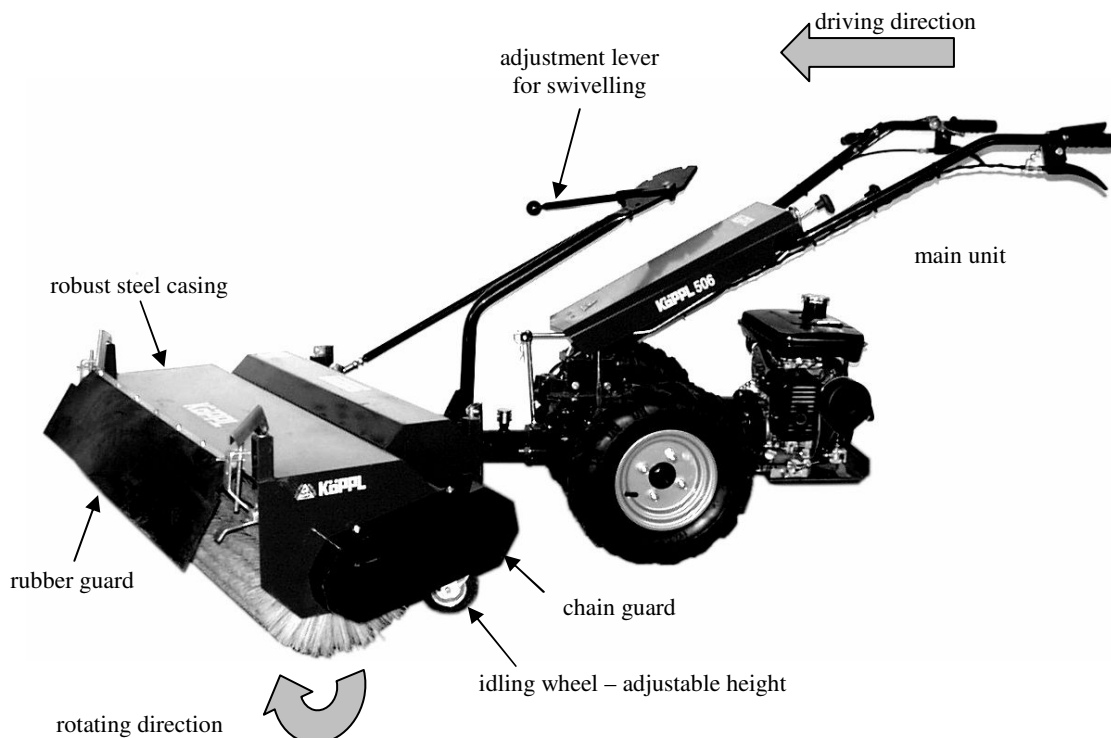


Fig. 2: sweeping machine K 100/120.

2.3 Technical Data

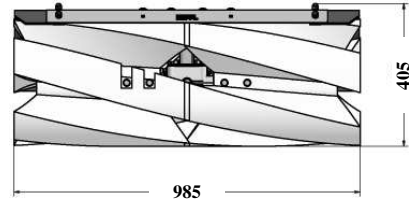
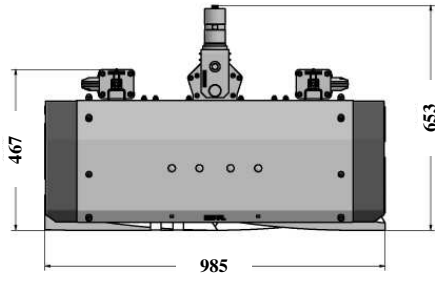
 Technical specifications of the **Köppel** sweeping machine

	K 100	K 120	KE 100	KL 90
Weight	62.0 kg	74.0 kg	55.0 kg	37.0 kg
Diameter sweeping roller	Ø 36	Ø 36	Ø 36	Ø 36
Working width in cm	100.0	120.0	100.0	90.0
Sweeping-broom engine speed at full throttle	approx. 165 min ⁻¹	approx. 165 min ⁻¹	approx. 165 min ⁻¹	approx. 200 min ⁻¹ at ½ throttle Do not operate broom at full throttle!
Swivelling – via shaft	as standard	as standard	no	no
Receptacle	as accessory	as accessory	as accessory	no
Snow-clearing roller	as accessory	as accessory	as accessory	
Side broom	as accessory	as accessory	as accessory	no
Depth control via adjustable idling wheels	yes	yes	yes	yes
Rapid-tool-change flange	required	required	required	required
Size of main unit	starting from type 505	starting from type 505	starting from type VR5	starting from type VR5
Chain drive of sweeping roller	as standard	as standard	as standard	no drive directly via angle gears
Chain length (61 chain links)	780 mm <i>excluding coupler link</i>	780 mm <i>excluding coupler link</i>	780 mm <i>excluding coupler link</i>	-
Chain wheel 1	25 sprockets	25 sprockets	25 sprockets	-
Chain wheel 2	14 sprockets	14 sprockets	14 sprockets	-
Drive oil SAE 80W90 / API GL 4/5	0.4 l	0.4 l	0.4 l	0.4 l
Angular gears	i = 3.25 : 1	i = 3.25 : 1	i = 3.25 : 1	i = 3.25 : 1

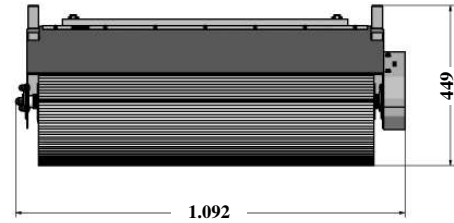
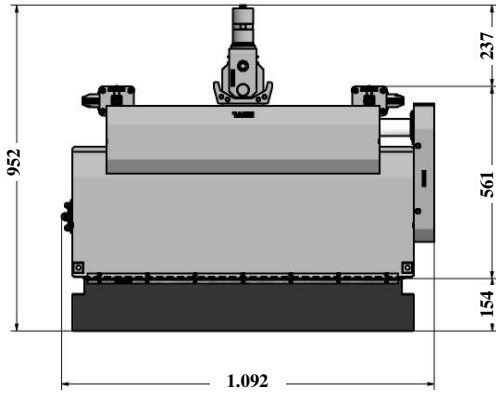
All measurements are approximations

Product Description

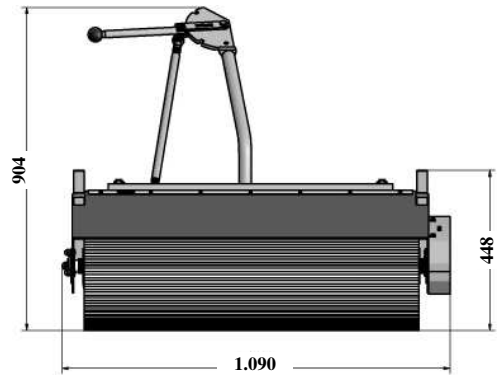
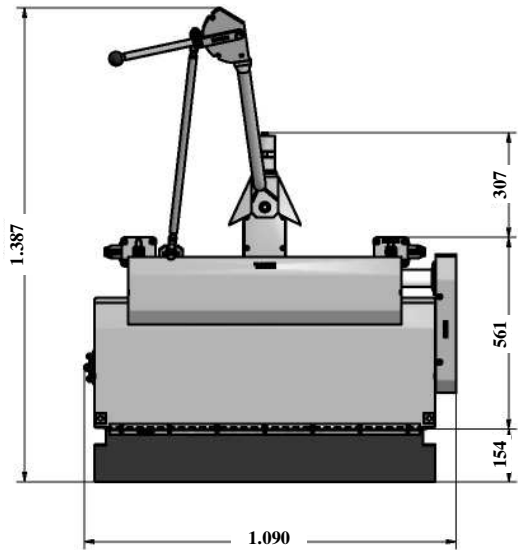
KL 90



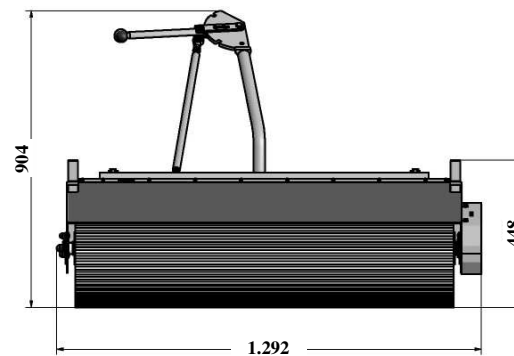
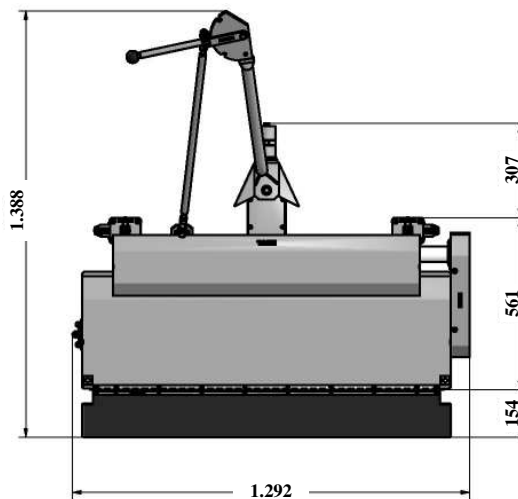
KE 100



KK 100

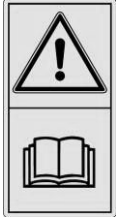


KK 120



3 General Safety Instructions

3.1 Operator's Obligation to Exercise Care and Diligence



The **Köppel** sweeping machine was constructed and built in compliance with a hazard analysis as well as carefully selected DIN standards and further technical specifications. It represents the latest in technology and guarantees a maximum of safety.

However, in practice this level of safety can only be achieved when all necessary measures have been put in place. It is part of the machine operator's obligation to exercise care and diligence to plan these measures and control their implementation.

In particular, the operator must ensure, that:

- the **Köppel** sweeping machine is used on **Köppel** 2-wheel tractor only in front-mounted configuration.
- the **Köppel** sweeping machine is only used in accordance with its intended use (see also chapter "Intended Use").
- the **Köppel** sweeping machine is only used in pristine, functional condition.
- the safety equipment is checked regularly for proper functioning.
- the required personal protective gear is made available to, and used by, operators, maintenance and repair personnel.
- the operating manual is always legible and available at the machine's work area.
- only qualified and authorised personnel operate, service and repair the machine.
- the relevant personnel are regularly given training in all applicable work safety and environmental issues and are knowledgeable of the operating manual and the safety instructions contained therein.
- none of the safety and warning labels on the machine are removed and that they remain legible at all times.

The **Köppel** sweeping machine is equipped with safety devices.

It has undergone safety checks and testing.

Misuse or abuse may lead to danger for

- the life and health of the operator,
- the **Köppel** sweeping machine itself and
- other assets belonging to the operator.



Warning!

Please note that the power take-off must also be switched off when you change into neutral gear. Since the sweeping roller of the **Köppel** sweeping machine rotates, it is possible that the machine reverses when in neutral gear while the power take-off is switched on – danger of injury!

This concerns your safety!

General Safety Instructions

3.2 Definition of Safety Symbols Used

The following symbols are used in this operating manual:



Warning!

Describes a potentially dangerous situation.
Not adhering to this warning may lead to severe injury.



Caution!

Describes a potentially dangerous situation.
Not adhering to this warning may lead to slight injury.



Important!

Describes safety tips and other useful information.



Attention!	Attention!	Attention!
Do not open or remove safety devices during operation.	Read operating manual and safety instructions before starting up.	Before doing any cleaning, repair or maintenance work, switch off the engine and pull out the spark plug!



Wear safety boots.	Wear hearing protection.	Wear safety gloves.	Wear protective goggles.

3.3 Basic Safety Measures



Warning!

To avoid danger, the operating manuals of the **Köppel** sweeping machine, the **Köppel** 2-wheel tractor / Pony tractor, as well as the general accident prevention and safety regulations must be followed.

3.4 General Safety Regulations



The **Köppel** sweeping machine is constructed for sweeping and snow brushing in combination with a **Köppel** 2-wheel tractor / Pony tractor.

- The terms and conditions detailed in the offer and in the order confirmation are authoritative. Any other use is deemed as not conforming to the intended use of the machine.
- Unauthorised modifications and alterations made to the **Köppel** sweeping machine are not permitted for safety reasons! The manufacturer cannot be held liable for damage resulting from such modifications; the operator bears the full risk.
- Acquaint yourself with all devices and operating elements and their functions, before starting work. During work it's too late.
- Ascertain that all safety devices have been attached properly.
- Mount the **Köppel** sweeping machine in accordance with regulations – special care must be taken – danger of injury!
- Externally actuated parts (e.g. hydraulics) have pinching and shearing components.
- Remaining in the hazard/work/turning/swivelling area of the **Köppel** sweeping machine is not permitted!
- The work area must be free of obstacles.
- Never work while persons, especially children, or animals are in the vicinity.
- Check your immediate surroundings before driving off (children)!
- You may not work with the **Köppel** sweeping machine on steep slopes – danger of tilting!
- Only work in good lighting conditions and visibility.
- The appropriate accident prevention regulations, as well as the other generally accepted safety-relevant regulations, as well as the highway code must be adhered to.
- In case of damage, immediately switch off the machine and have the damage repaired.
- Before doing any cleaning and maintenance work, switch off the engine and pull the spark plug – caution: moving parts will coast after the engine is switched off!
- After repair work has been completed, replace the safety devices – only then you may start working again.



Important!

The conditions for operation and maintenance contained in this operating manual must be strictly followed. The safety regulations in the operating manual of the **Köppel** 2-wheel tractor / Pony tractor must be strictly followed.

General Safety Instructions



Warning!

If the machine is used for anything other than the above intended use, or driven with higher power than it is licensed for, dangerous situations may arise for humans and damage to assets may result.



Important!

Any prohibited use, or use not in accordance with the machine's intended use are not known to the manufacturer. Improper mounting of accessory equipment or mounting accessory equipment that was not purchased from **Köppel** lead to the exclusion of any liability for the resulting damage.

The warning and notice signs must not be removed.
The safety devices must not be removed or bypassed.

3.5 Requirements for Operating Personnel



- Only authorised, trained persons may work with the **Köppel** sweeping machine.
- The minimum age for operators is 16.
- Never allow children or other persons not acquainted with the operating manual to use the machine.
- The operator is responsible for others in the work area.
- The responsibilities for the various tasks on the **Köppel** sweeping machine must be clearly assigned and adhered to.

Unclear competencies are a safety risk.

The operator is obliged to

- **give the user access to the operating manual and**
- **ensure that the user has read and understood it.**

3.6 Personal Protective Gear



For operation

Wear sturdy shoes.
 Wear tight-fitting clothing, long trousers.
 Do not operate the machine barefoot or while wearing light sandals.



For cleaning

Wear thick (leather) gloves.



For sharpening

Wear protective goggles for sharpening the hoeing knives.



If working with the **Köppel** sweeping machine for prolonged periods of time, wear hearing protection.

3.7 Safety Measures in the Work Area



Be careful when tools are running!!!

- Check the entire area in which the machine will be used, and remove all objects ejected by the machine.
- Before operation, you should always do a visual check for sweeping-roller wear and tear.
- When starting up the engine, the drive and equipment drive must be de-clutched – the safety-stop lever must be pressed.
- Never put your feet or hands underneath turning parts.
- The driving speed must always be adapted to the condition of the surroundings.
- When driving uphill, downhill or sideways to the slope, avoid making sudden turns.
- Always make sure that the machine stands firmly when working on a slope.
- Be especially careful when turning the machine, or when pulling it towards you.
- Disengage the differential lock when turning, if applicable.
- Driving uphill is only recommended while the sweeping brush drive is engaged.
- Never de-clutch and change gears when driving on a slope.
- Observe the allowed axle loads and total weight!
- Do not adjust the driving shaft while the machine is running!
- When driving outside the work area, the equipment drive (power take-off) must be switched off, and the **KÖPPEL** sweeping machine lifted into its transport position.
- While working, never leave the operator's workspace.



Warning:

- Never reach into the sweeping roller of the **KÖPPEL** sweeping machine. When moving the sweeping machine or the tractor, the sweeping roller may move too, which can result in serious injury - severe crush injuries.
- The operator's clothing should be tight-fitting. Avoid loose clothing. Wear sturdy shoes!
- When coupling and de-coupling accessory equipment onto and off the drive unit, special care must be exercised!
- **Never remove safety devices or bypass them by modifying the **KÖPPEL** sweeping machine.**



Always ensure that all nuts, pins and screws are tightened fast, to ensure the safe operating condition of the machine.

General Safety Instructions

3.8 Noise/vibration values



Noise information (sound power level EN ISO 3744) - emissions

Noise information (sound pressure level EN ISO 11201) - immissions

Vibrations (hand/arm vibrations DIN 45675 Part 8) - immissions

Version	Main unit	Sound power level [dB (A)]	Sound pressure level [dB (A)]	Vibrations [m/s ²]
K 100	506	101,5	87,2	4,7
K 100	510	101,2	86,9	4,5
K 100	512	102,5	87,5	4,9
K 100	505H	103,2	90,1	5,4
K 100	508H	102,9	88,6	4,2
K 100	512D	103,8	88,4	4,3
K 100	510 LS	101,5	87,2	4,7
K 100	512 LS	101,5	86,5	4,6
K 100	514 LS	102,5	87,5	4,9
K 100	508H LS	101,5	87,2	4,7
K 100	512D LS	101,5	86,5	4,6
K 100	512H LS	102,5	87,5	4,9
K 100	CL8	102,5	87,6	4,5
K 100	CL13	102,9	88,2	4,7
K 100	LHR10	101,8	87,7	4,6
K 100	LHR12	102,0	86,9	4,7
K 100	LHR14	103,8	88,2	5,6
K 100	LHR8H	102,6	87,1	5,3
K 100	HA1414	102,8	87,6	5,2
K 100	HA1416	102,3	88,9	4,4
K 100	HA1418	103,1	89,5	4,9
K 100	HA1420	103,5	88,9	5,0
K 100	HA1412H	102,9	88,1	4,6
K 120	506	103,4	89,6	5,1
K 120	510	102,9	88,1	4,9
K 120	512	103,4	88,9	5,3
K 120	505H	103,6	89,1	5,9
K 120	508H	103,7	88,4	3,8
K 120	512D	103,5	89,1	4,4
K 120	510 LS	103,4	89,6	5,1
K 120	512 LS	102,4	88,4	4,3
K 120	514 LS	103,4	88,9	5,3
K 120	508H LS	103,4	89,6	5,1
K 120	512D LS	102,4	88,4	4,3
K 120	512H LS	103,4	88,9	5,3
K 120	CL8	102,3	87,1	4,5
K 120	CL13	103,1	88,7	4,7
K 120	LHR10	103,1	89,5	4,9
K 120	LHR12	102,6	88,8	4,5
K 120	LHR14	102,3	88,9	4,4
K 120	LHR8H	103,8	88,2	5,6
K 120	HA1414	103,8	88,2	5,6
K 120	HA1416	101,8	87,7	4,6
K 120	HA1418	101,5	87,1	4,6
K 120	HA1420	103,6	88,7	5,1
K 120	HA1412H	103,2	91,1	4,8
KE 100	VR5	95,4	83,2	4,5
KE 100	VR6	96,2	83,8	4,3
KE 100	506	102,1	88,4	4,5
KE 100	510	101,8	87,6	4,7
KE 100	512	101,2	86,6	4,7
KE 100	505H	102,4	89,4	5,7
KE 100	508H	102,5	88,1	4,5
KE 100	512D	103,2	89,2	4,7
KE 100	510 LS	102,5	88,6	4,2
KE 100	512 LS	101,6	87,6	4,4
KE 100	514 LS	101,2	86,6	4,7
KE 100	508H LS	102,5	88,6	4,2
KE 100	512D LS	101,6	87,6	4,4
KE 100	512H LS	101,2	86,6	4,7
KE 100	LHR10	102,3	88,9	4,4

Version	Main unit	Sound power level [dB (A)]	Sound pressure level [dB (A)]	Vibrations [m/s ²]
KE 100	LHR12	101,5	87,1	4,6
KE 100	LHR14	102,0	86,9	4,7
KE 100	LHR8H	101,7	87,5	4,9
KL 90	VR5	95,5	83,4	4,5
KL 90	VR6	96,4	84,1	4,3



- Wear hearing protection

- The measurements were taken outdoors, based on EN ISO 3744 (sound power level) and EN ISO 11201 (sound pressure level).
- Measurement device used: sound level meter NOR 116, Norsonic, Norway, corresponds to standards IEC 651 and 804 Class 1
- Engine RPM 77%.

2. Vibrations – measurements carried out according to DIN 45675 part 8.

Measurement devices

- Vibration meter: CASTLE GA 2003 HARM

Operating conditions

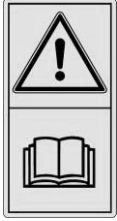
- Approx. 50% fuel level
- Steering shaft adjusted to operator's body height
- Machine is run-in and at operating temperature
- Engine RPM 77%.

3.9 Leaving the **Köppel** sweeping machine



- Switch off the engine
- Put in gear and assembly.
- Remove the ignition key, if applicable.
- Secure the **Köppel** 2-wheel tractor against rolling off (chocks and handbrake) and unauthorised use.
- Close the fuel valve of the **Köppel** 2-wheel tractor.

4 Transportation



To avoid damage to the machine or life-threatening injuries when transporting the machine, you must adhere to the following points: *(what follows are examples)*

- When transporting the machine on a trailer, always secure it against sliding and rolling off.
- When loading and unloading, use appropriate ramps.
- When driving on public roads, always comply with the highway code in its latest edition.
- The machine may only be transported by qualified personnel and under observance of the safety instructions.
- The machine may only be lifted at the appropriate lifting lugs.
- Also read the chapter “General Safety Instructions”.

5 Start-up



To prevent damage to the machine or life-threatening injuries during start-up, the following points must strictly be observed:

- Also read the chapter "General Safety Instructions".
- Read the operating manual of the engine manufacturer.
- Read the operating manual of the **Köppel** 2-wheel tractor.
- The machine may only be started up by **specially qualified persons** and under observance of the safety instructions.
- Before the first start-up, check that all tools and foreign bodies have been removed from the machine.
- Check that all safety devices are attached and operational.

You may not operate the **Köppel** 2-wheel tractor / Pony tractor with the **Köppel** sweeping machine prior to doing so.

5.1 Start-up



Before start-up, the following points must be checked:

- Check oil and fuel levels.
- Adjust the shaft to body height and application.
- Check the connection to the **Köppel** 2-wheel tractor, as well as its condition.
- All moving parts must be free (i.e. not intermeshed) and undamaged. All safety devices must be attached to the **Köppel** sweeping machine.
- Check all screws and operating elements of the **Köppel** sweeping machine for tightness.
- Remove any flammables in vicinity of the engine or exhaust pipe.
- Ascertain that there is no person, animal or car in the vicinity when starting the engine.
- Before every work phase, check that all levers work properly.
- Pay attention to unusual noises and excessive heat.



Warning!

Exhaust fumes contain carbon monoxide!
These are highly toxic when breathed in, and can lead to death!



Warning!

Rotating sweeping roller.
Can cause severe cut and crush injuries!
Only work on the **Köppel** 2-wheel tractor and the **Köppel** sweeping machine with the engine switched off.



Important!

During the first 20 operating hours (running-in period), do not drive the engine at peak power.
After approx. 3 operating hours, check all screws and operating elements of the basic and accessory equipment for tightness of fit.

Start-up

5.2 Coupling onto the Köppel 2-Wheel Tractor



Warning!

The Köppel sweeping machine may only be coupled onto the Köppel 2-wheel tractor in front-mounted configuration!

Only couple or decouple the Köppel sweeping machine when the engine and power take-off are switched off!



- 2 persons are required to couple the Köppel sweeping machine!
- Place a wooden block underneath the Köppel 2-wheel tractor – the dimensions depend on wheelbase and engine type.
- Secure the Köppel 2-wheel tractor against rolling off (e.g. by using chocks).
- The connection rod of the Köppel sweeping machine and the rapid-tool-change flange of the Köppel 2-wheel tractor must be greased with special long-life “EP2” grease (see appendix) prior to coupling.
- Unlock the fixing pin on the rapid-tool-change flange.
- Align the connection rod of the Köppel sweeping machine with the rapid-tool-change flange of the Köppel 2-wheel tractor.
- Now connect the Köppel sweeping machine with the main unit.
- The locking pin of the rapid-tool-change flange must snap noticeably into position.

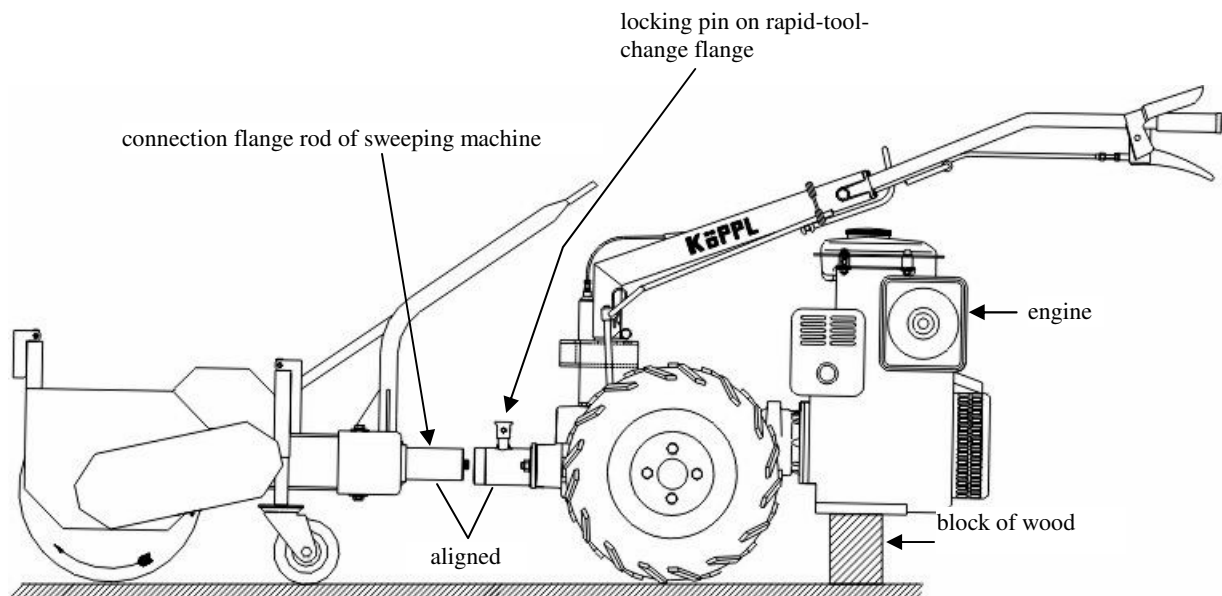


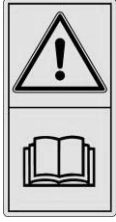
Fig.3: Köppel sweeping machine with main unit - coupling.

5.3 Coupling onto the Köppel Pony Tractor



Warning!

Only couple or decouple the Köppel sweeping machine when the engine and power take-off are switched off!



- 2 persons are required to couple the **Köppel** sweeping machine!
- Place a wooden block underneath the **Köppel** Pony tractor – the dimensions depend on wheelbase and engine type.
- Secure the **Köppel** Pony tractor against rolling off (by using chocks, handbrake).
- The connection rod of the **Köppel** sweeping machine and the rapid-tool-change flange of the **Köppel** Pony tractor must be greased with special long-life “EP2” grease (see appendix) prior to coupling.
- Unlock the fixing pin on the rapid-tool-change flange.
- Align the connection rod of the **Köppel** sweeping machine with the rapid-tool-change flange of the **Köppel** Pony tractor.
- Now connect the **Köppel** sweeping machine with the main unit.
- The locking pin of the rapid-tool-change flange must snap noticeably into position.

6 Operation



Warning!

To prevent damage to the machine and life-threatening injuries while the machine is running, the following points must always be observed:



- **The machine may only be used in accordance with its intended use.**
- **Before starting up the machine, inform yourself of the correct behaviour in the case of malfunctions.**
- **Before starting up the machine, run functional checks on the following units:**
 - ◆ protective devices,
 - ◆ shifting rails.
- Also read the chapter “General Safety Instructions”.
- Also read the operating manual of the engine manufacturer.
- When working in sunk-in areas, keep your safety distance!
- When transporting the machine, changing the work area and turning, switch off the power take-off drive.
- Please observe the aforementioned general safety and accident prevention regulations, as well as the regulations for the **KÖPPEL** 2-wheel tractor!
- Only use the machine outdoors (do not let the engine run indoors because of the danger of intoxication).
- The ramp gradient should not exceed 15° - this is to guarantee your safety.
- Drive at constant speeds, avoid starting, stopping and abrupt turning.
- Stay clear of rotating parts.
- Never tilt the machine while the sweeping roller is rotating.
- Move or turn the machine only when the sweeping roller has stopped coasting.
- When moving backwards, ascertain that there aren't any children or animals in the hazard area. They could otherwise be dragged into the machine.
- On a slope, never stand uphill from the machine, as you might slide underneath the machine.



Warning!

An actuated main and equipment drive may roll over you and cause severe injuries!!!
When starting up the engine, the main and equipment drives must be switched off. Do not place your feet in the vicinity of the coupled accessory equipment.

6.1 Setting the Working Height



Warning!

Rotating sweeping roller!

May cause severe crush injuries!

You may only set the working height when the power take-off is switched off and the sweeping roller of the sweeping machine has stopped coasting.



By turning the hand levers, the idling wheels on the left and right are moved upward or downward. In this way, you can set the working height individually.

When setting the working height, you should ensure that both idling wheels are set to the same height. The sweeping roller must be seated evenly on the ground – that is the prerequisite for a good sweeping performance.

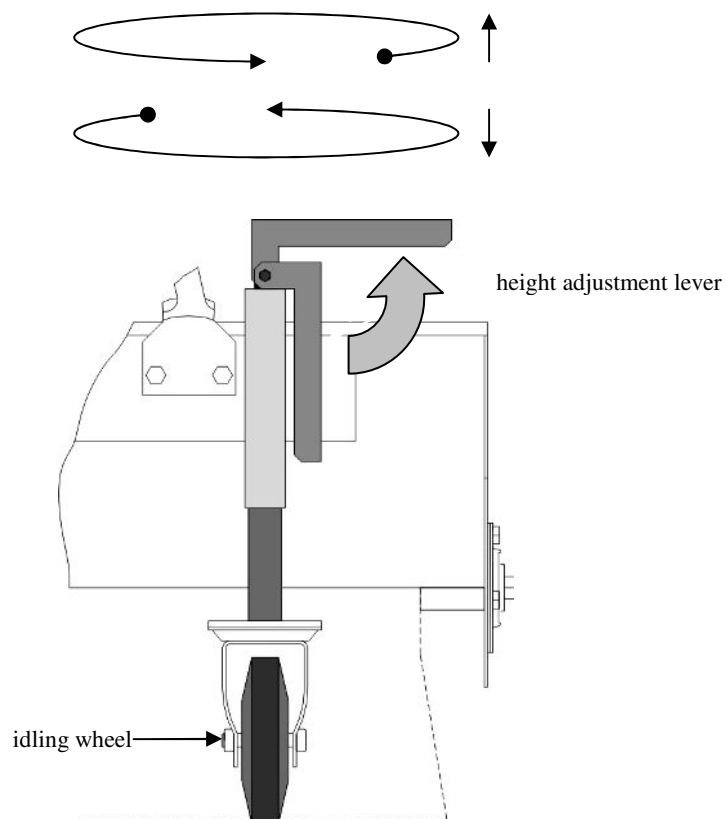


Fig. 4: height adjustment of the sweeping machine.

6.2 Swivelling



Warning!

Rotating sweeping roller!

The sweeping roller may only be swivelled when the main drive is standing still!

Operatio



By pulling out the ball head at the adjustment lever (K 100/120), the swivelling shaft is unlocked at the swivelling segment. If the ball head is pulled out, the swivelling linkage can be moved up or down. This swivels the **KÖPPEL** sweeping machine to the right and left. Subsequently, have the adjustment lever snap into place at the relevant locking mechanism. For the sweeping machine type KE 100, the pin at the rapid-tool-change flange is pulled out and the casing is swivelled by hand. The pin is locked in the corresponding hole with a pin.

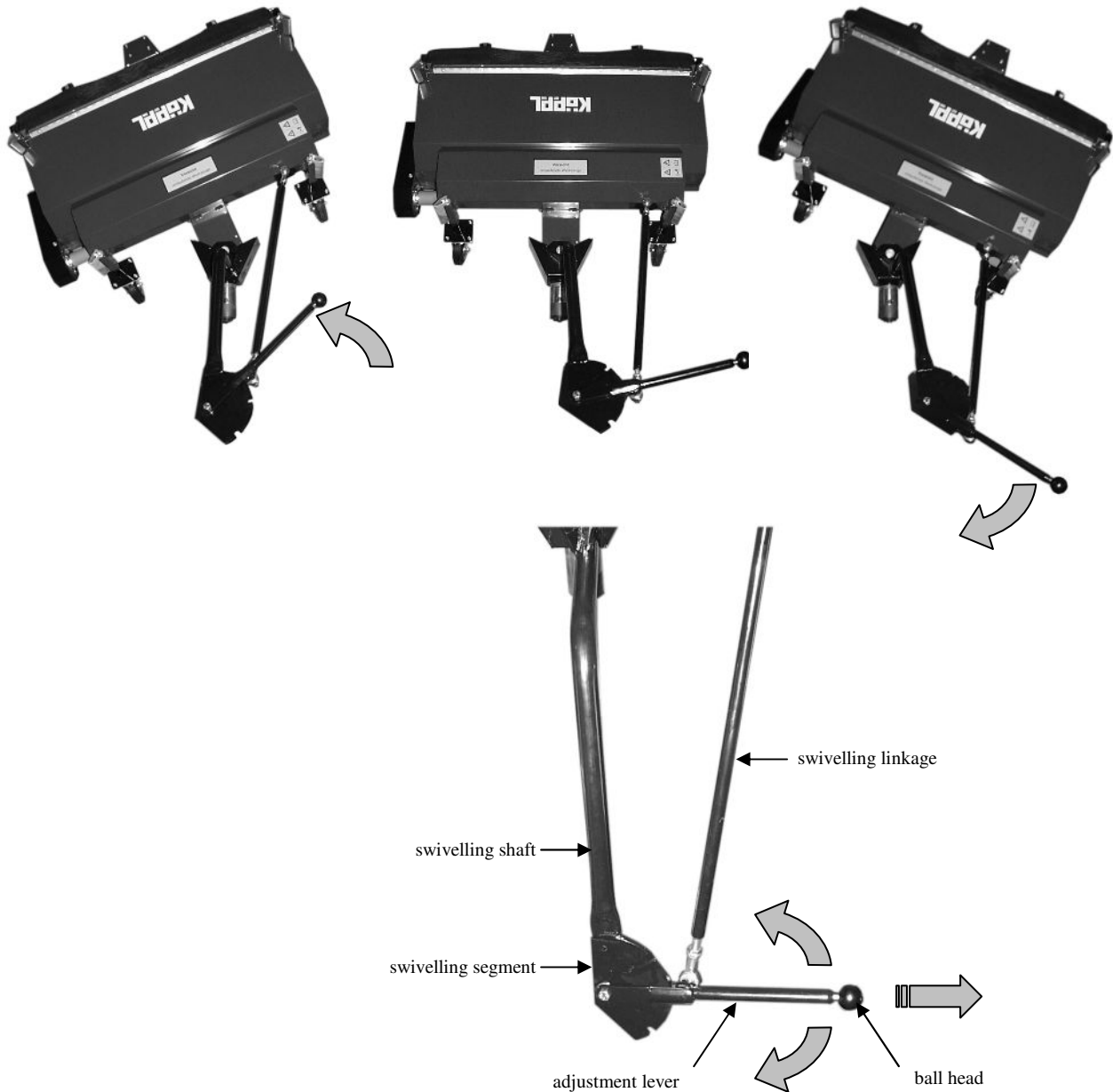


Fig. 5: swivelling the sweeping machine K 100/120.

6.3 Receptacle

Height adjustment



Warning!

Rotating sweeping roller!

May cause cut and crush injuries.

You are only permitted to change the height of the receptacle when the main drive is switched off and the sweeping roller has stopped coasting!



- By turning the hand lever, the mount is moved up or down. In this way, you can adjust the working height of the receptacle individually.
- When changing the working height, make sure that the receptacle is set to the same height on both sides. Only then you will achieve a good absorption performance.

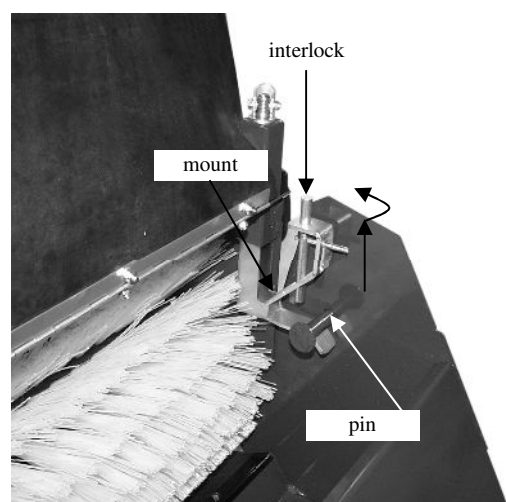
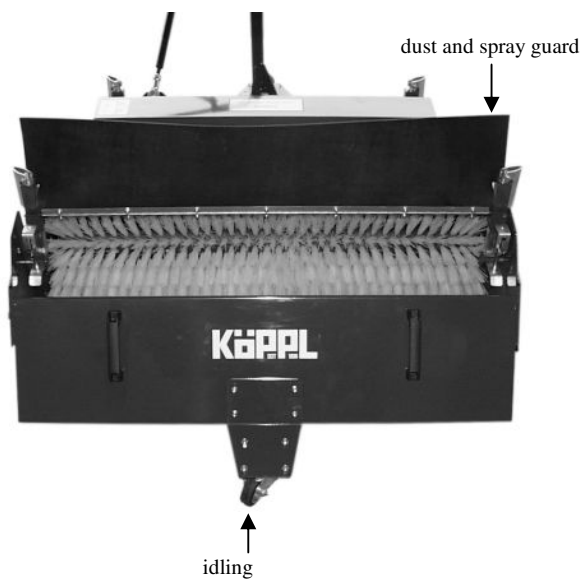
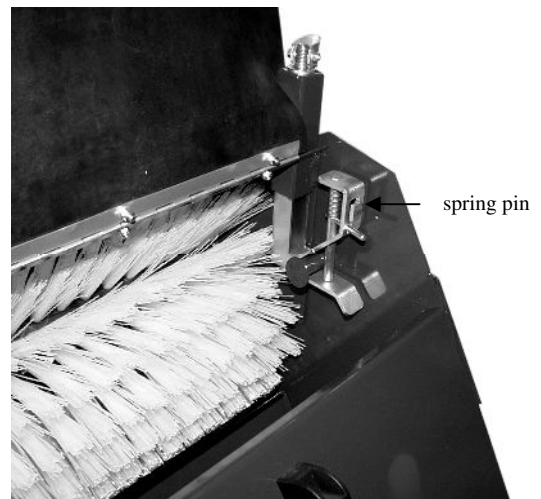
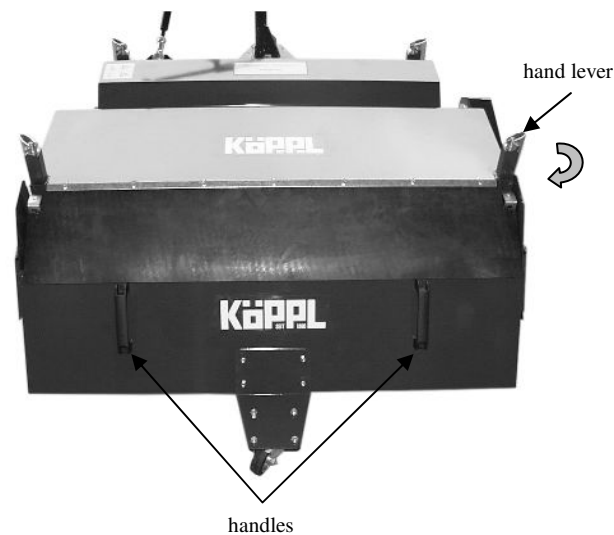


Fig. 6: receptacle.

Operatio

Emptying



Warning!

Rotating sweeping roller!

May cause cut and crush injuries!

You are only permitted to empty the receptacle when the main drive is switched off and the sweeping roller has stopped coasting!



- Tilt back the spray guard.
- Pull both spring pins of the locks upward and lock them in place.
- Pull out the receptacle from both mounts and empty it.
- After emptying, push the locking pins into the mounts and lock.
- Bring spray guard forward into protection position.

Tilting



Warning!

Rotating sweeping roller!

May cause cut and crush injuries!

You are only permitted to empty the receptacle when the main drive is switched off and the sweeping roller has stopped coasting!



- Tilt back the spray guard.
- Grip both handles and pull the receptacle upward.
- Tilt over the receptacle to remove its contents.
- Carefully bring the receptacle back into its initial position.
- Bring the spray guard forward into protection position.

6.4 Side Broom – as Accessory Equipment



Warning!

Rotating sweeping roller and broom!

May cause cut and crush injuries.

Do not reach into the hazard area while the sweeping machine is running!



Commissioning and decommissioning the broom is only permitted when the main engine is switched off and the sweeping roller is standing still!

- The broom is commissioned by folding it down the side.
- The working height can be adjusted using the adjustment screw – *fig. 7- (1)*.
- The V-belt tension can be adjusted using the adjustment screws (2).
- If the side broom is not used, it must be folded to the upright position and secured in the mount (4) using a rubber hood (3).

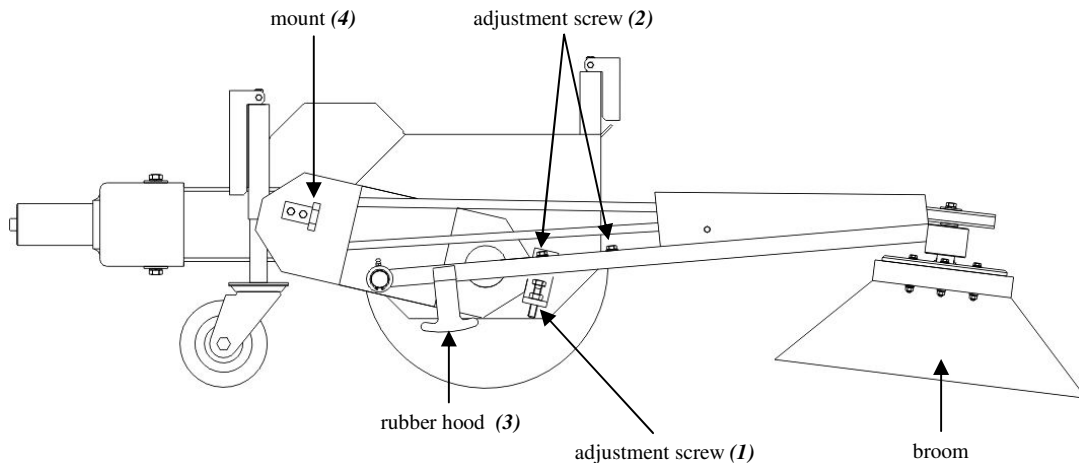


fig. 7: side broom.

6.5 Starting Sweeping



Warning!

Rotating sweeping roller and broom!

May cause cut and crush injuries.

Do not reach into the hazard area while the sweeping machine is running!

Parts may be ejected at high speeds!

Do not step into the hazard area!



The **Köppel** sweeping machine is used for sweeping cobbled and asphalted areas. The machine can sweep forward or sideways to the right or left. When using a receptacle, the sweeping machine should not be swivelled. An optimal sweeping performance can be achieved in the central setting, because this allows the machine to best take in the debris.

Before starting to sweep, the first working height must be set. The sweeping roller should be seated evenly on the floor along its entire length.



Warning!

Rotating sweeping roller and broom!

Height adjustment may only be done when the engine is switched off and the sweeping roller is standing still.



- Start up the **Köppel** 2-wheel tractor – refer to the operating manual of the **Köppel** 2-wheel tractor.
- Set the throttle control to approx. ¼.
- Pull the clutch and switch on the power take-off.
- If this is not possible, pull the clutch once again and let it out very slowly. At the same time, pull the power take-off lever backward.
- Accelerate to ½ throttle.
- Choose the working gear that best suits the working conditions.
- Now you may start sweeping.

Operatio

6.6 Checking or Cleaning the Machine during Operation



Warning!

Before checking or cleaning the machine, it is imperative that you switch off the engine and pull out the spark plug cable!

The sweeping roller and broom must be standing still!

6.7 After Machine Use



- Switch off the engine.
- For added safety, pull out the spark plug and shut the fuel lever of the engine, if applicable.
- Wait until the sweeping roller has stopped coasting.
- Check whether the machine is in proper working condition and all screws are tightened.
- Remove dirt from the sweeping roller and broom
- Thoroughly clean the protective cover and touch up any damaged paintwork.

7 Maintenance

7.1 Care and Maintenance

It is just as important to give the following instructions for maintenance and care the necessary attention, as it is to follow the operating instructions of the **KÖPPEL** sweeping machine!



Caution!

Only carry out maintenance and care work when the engine is switched off and the spark plug has been removed!

The sweeping roller must be standing still!

When working on the sweeping roller, wear protective gloves!



Caution!

Check for **fuel and oil leaks** and remove as necessary.

Regularly check nuts and screws for tightness of fit and re-tighten as necessary.

The KÖPPEL sweeping machine may only be repaired by specially trained personnel, and only using original parts.

All sliding and moving parts (e.g. control linkage joints, Bowden wires, etc.) should be smeared with a little grease or oil, especially after cleaning with a high-pressure cleaner!



To achieve a long lifespan with an excellent sweeping performance, it is necessary to adhere to the following points:

- Clean the sweeping machine after every use.
- Grease or oil the rapid-tool-change flange, the bearing points and bare metal parts.
- The sweeping roller must be undamaged.

7.2 Chain Drive



Warning!

Rotating shaft!

Crush injuries in the chain drive.

All maintenance work must be done with engine switched off, sweeping roller standing still and spark plug pulled!

Work especially carefully when changing the chain!



Check and grease chain drive after every 10 operating hours – using special chain grease. While doing so, clean the chain thoroughly.

Changing the chain – fig. 8

- Unscrew and remove chain guard.
- Loosen chain – push down on chain tensioner and lock between tensioning pin and slotted hole using an appropriate object.
- Remove coupler link and take out the chain.
- Install new chain, insert coupler link and close.

Maintenance

- Bring chain tensioner back into tensioning position.
- Replace chain guard and screw tight.

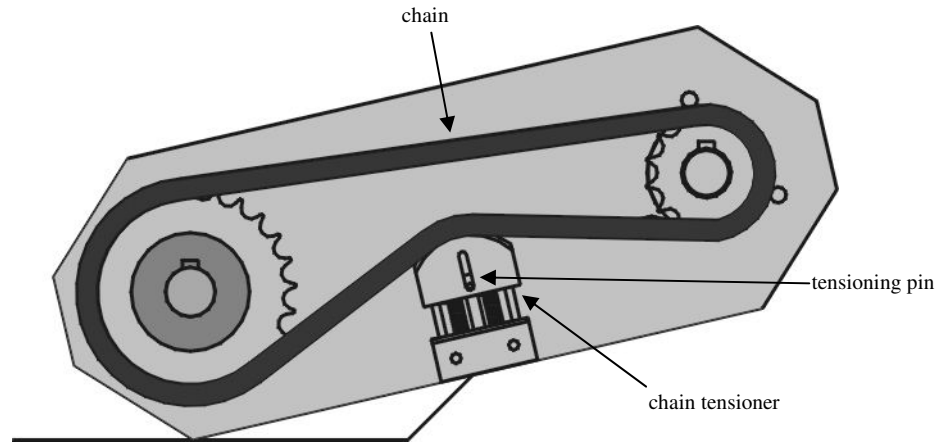


fig. 8: changing the chain.

7.3 Drive Maintenance



Important!

Protect the environment!

Use and disposal of mineral oils are governed by legal regulations.

Take your used oil to an authorised point of acceptance.

Do not spill drive oil!

Take measures to recuperate spilt oil – put out an oil-tight foil, use an oil receptacle.



The drive oil should be checked and changed every 100 operating hours or once a year by a trained professional (mechanic).

The following tasks must be carried out:

- Clean the oil filler screw and its surrounding area to prevent dirt from entering the drive.
- Any damage discovered must be repaired immediately.
- When the sweeping machine is in horizontal position, the oil level in the drive should be at the middle of the drive. To verify this, you should loosen the oil filler screw at the drive – there should be oil coming out.

Rapid-tool-change flange

The rapid-tool-change flange is equipped with a grease fitting – you should grease this every 3-4 operating hours using special long-life “EP2” grease (see appendix).

7.4 Cardan Shaft Maintenance



Warning!

Rotating Cardan shaft!

May cause severe injuries.

All maintenance work must be done with the engine switched off, the sweeping roller standing still and the spark plug pulled!



- swivel the sweeping machine to the left
- take off the side lid
- grease the Cardan shaft at the grease fitting
- put the lid back on

The Cardan shaft should be greased every 15 operating hours.

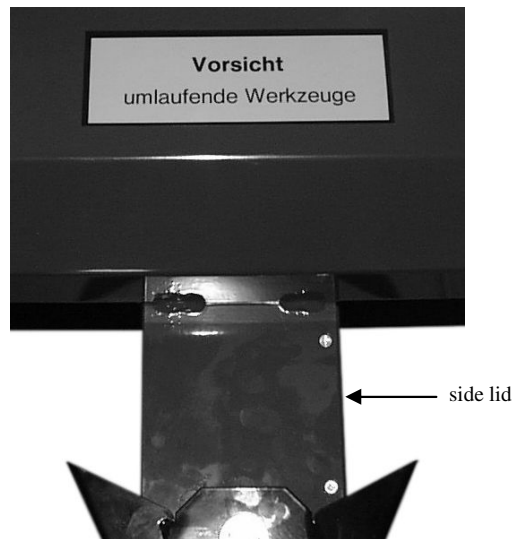


fig. 9: Cardan shaft

7.5 Changing the Sweeping Roller



Warning!

Rotating sweeping roller!

May cause severe cut and crush injuries.

All maintenance work must be done with the engine switched off, the sweeping roller standing still and the spark plug pulled!



It is necessary to change the sweeping roller, when the brushes are worn out or a snow brushing roller is to be installed.

These works may only be done by a professional or after-sales service staff,

Troubleshooting

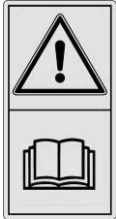
8 Troubleshooting



Warning!

Follow the safety instructions!

Malfunctions of the **Köppel** sweeping machine or the **Köppel** 2-wheel tractor that require substantial repair work should always be repaired by your nearest **Köppel** repair shop, which has the necessary tools. Improper repair work can only cause even more damage.



In order to prevent machine damage or life-threatening injuries when repairing the machine, the following points must be followed strictly:

- Only repair the machine if you have the indicated qualification for doing so.
- First, secure the machine against involuntary rolling-off by using chocks.
- Secure the moving machine parts' ranges.
- Also read chapter "General Safety Instructions".

8.1 Possible Malfunctions and their Remedies

Malfunction	Possible cause	Remedy
Sub-optimal sweeping performance	Sweeping roller is not evenly seated on the floor	Readjust sweeping roller
Sweeping performance diminishes	The brushes on the sweeping roller have worn out and are too short	Change the sweeping roller
Slack chain drive	Chain tension has become insufficient	Reduce the chain by 1 link, in case of heavy wear, replace chain
Sweeping roller is not actuated	Power take-off not properly switched on	Switch on the power take-off

9 Decommissioning



Warning!

In order to prevent machine damage or life-threatening injuries when decommissioning the machine, the following points must be fully adhered to:



- 2 persons are needed to de-couple the **KÖPPEL** sweeping machine.
- Secure the **KÖPPEL** 2-wheel tractor against rolling off (e.g. by using chocks).
- Place a block of wood underneath the **KÖPPEL** 2-wheel tractor to prevent it from tilting.
- Wear protective gloves when working!
- Dispose of the materials in an environmentally-friendly fashion
- Also read the chapter “General Safety Instructions”.

9.1 Temporary Decommissioning



Storage

Do not store the **KÖPPEL** sweeping machine in

- humid rooms,
 - rooms in which artificial fertiliser is stored,
 - stables or rooms adjacent to stables,
- as these areas strongly facilitate **corrosion**.

If the **KÖPPEL sweeping machine is not going to be used for a prolonged period of time:**

- clean the machine thoroughly.
- touch up the paintwork.
- spray anti-corrosion oil/wax onto bare parts.

9.2 Final Decommissioning / Disposal



Warning!

In order to prevent machine damage or life-threatening injuries when decommissioning the machine, the following points must be fully adhered to:



- Dispose of all parts in an environmentally-friendly way.
- The **KÖPPEL** sweeping machine is made of valuable raw materials and can be recycled.

Additional Information

10 Additional Information

10.1 Appendix



Lubricants / Glues

For the power take-off and the sweeping machine, use the prescribed lubricants.
For conservation, we recommend using anti-corrosives (do not use on paintwork; anti-corrosives can be applied with a brush or a spraying device).

When using glues (threadlocker) and sealing compounds, all glued and sealed areas must be clean and free of grease.




Caution!

Please read the package insert and follow the manufacturer's safety instructions!

Order number	Lubricants	Amount
EP 2	Special long-life grease (unleaded, lithium-base saponified grease with EP properties) <i>for rapid-tool-change flange</i>	Cartridge 400 g
LS 2	Grease	Cartridge 400 g
SP-GE	Drive oil SAE 80W90 / API GL 4/5	Bottle 1 litre
Order number	Anti-corrosives	Amount
BW 400	Protective wax	Bottle 300 ml
Order number	Threadlockers	Amount
OKS-90	OKS-90	Tube 10 g
Loctite 243	Loctite 243	Tube 50 ml
Order number	Sealing Compounds	Amount
170.05 J	Fluid - D	Tube 75 ml

EC Declaration of Conformity

The manufacturer:	 KöPPL MOTORGERÄTEFABRIK 94163 ENTSCHENREUTH ☎ (09907) 89 10-0 · Fax (09907) 10 42 Made in Germany
declares that the following machine:	KöPPL sweeping machine Type: <ul style="list-style-type: none"> <input type="checkbox"/> K 100 <input type="checkbox"/> K 120 <input type="checkbox"/> KE 100 <input type="checkbox"/> KL 90 <input type="checkbox"/> KL 110
complies with the health and safety requirements of the following EC directive:	EG-Richtlinie Maschinen 2006/42/EG

Harmonised standards applied:	EN ISO 12100-1, EN ISO 12100-2, EN 12733, EN ISO 13857, EN ISO 14121-1, EN 349, EN 1553
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National standards and technical specifications applied:	
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Modifications to the construction that affect the technical data contained in this operating manual and the intended use of the machine, thereby constituting a substantial change of the machine, invalidate this declaration of conformity!

Entschenreuth, 25.02.2010

 General Management
 Köppl, Karl sen.