

# Type VL xxx/65, VS xxx/74

Snowplough



**Art.Nr.: 10040220**

**21.12.2012 | Version 1.0 | EN**

Kugelmann Maschinenbau e.K.  
Gewerbepark 1-5  
87675 Rettenbach a.A.  
GERMANY

[www.kugelmann.com](http://www.kugelmann.com)  
[office@kugelmann.com](mailto:office@kugelmann.com)  
+49 (0) 8860 | 9190-0

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Gewerbepark 1-5

D – 87675 Rettenbach a.A.

Tel.: +49 (0) 8860 / 9190-0

Fax: +49 (0) 8860 / 9190-19

Mail: [office@kugelmann.com](mailto:office@kugelmann.com)

Web: [www.kugelmann.com](http://www.kugelmann.com)

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We are constantly developing our products further to provide you with top comfort and convenience. We ask you to understand that the manual can therefore deviate from the product in some regards.

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# 1 General information

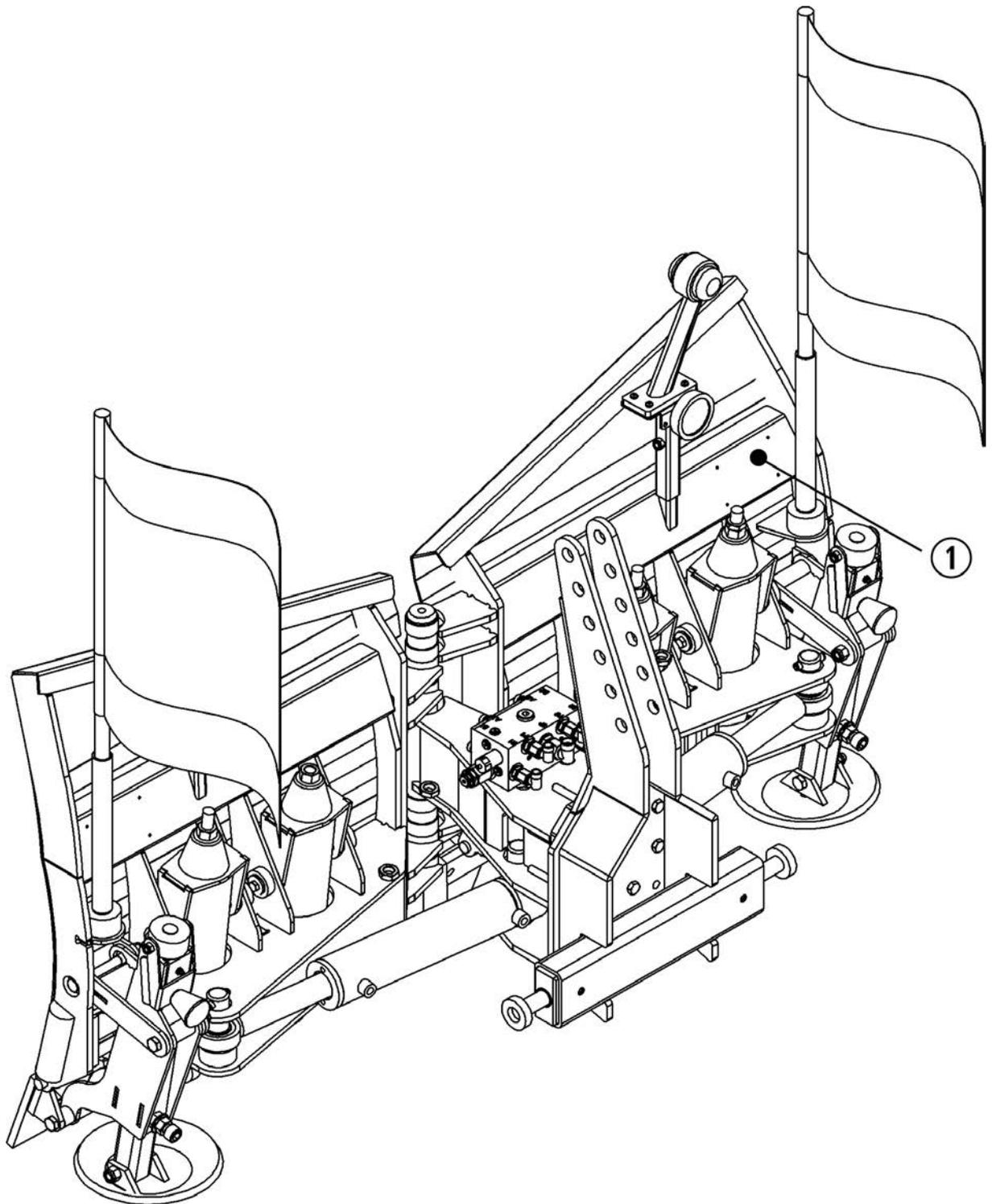
This chapter provides information on the following:

- Chapter 1.1 "Identification", page 5
- Chapter 1.2 "Service information", page 6
- Chapter 1.3 "EC Declaration of Conformity as defined by EC Machinery Directive 2006/42/EC", page 8

## 1.1 Identification

Type / type:	VL xxx/65
Fabr.-Nr. / serial no:	943
Art. / code:	
Baujahr / YOM:	2012
www.kugelmann.com D-87675 Rettenbach a. A. Made in Germany	
	

The type plate for identification of the snowplough is located on the upper right of the back side of the main blade.



Pos. no.	Function
1	Location of the type plate

## 1.2 Service information

Contact our customer service at:

Tel. ++49 (0) 8860 / 9190-90  
Fax ++49 (0) 8860 / 9190-19  
E-mail [service@kugelmann.com](mailto:service@kugelmann.com)

## 1.3 EC Declaration of Conformity as defined by EC Machinery Directive 2006/42/EC



We hereby declare that the machine designated below, on the basis of its design and construction, as well as the version that we have placed on the market, complies with the relevant basic health and safety requirements of the EC Machinery Directive.

This declaration becomes invalid if the machine is modified without our prior consent.

Designation: Variable snowplough

Machine type: VL xxx/65 / VS xxx/74

Relevant EC Directives:

EN 292-1/292-2/294/349/1050/1553

Rettenbach a. A., October 2012

Josef Kugelmann

## 2 User manual

This chapter provides information on the following:

- Chapter 2.1 "*Target group*", page 9
- Chapter 2.2 "*Application*", page 9
- Chapter 2.3 "*Conventions*", page 10
- Chapter 2.4 "*Change history*", page 10

### 2.1 Target group

This user manual is written for qualified persons who are responsible for the following tasks on the snowplough:

- Commissioning
- Control
- Operation
- Use
- Maintenance

All personnel must be instructed in the operation of the snowplough at least once a year in accordance with the guidelines in the employer's liability insurance. Untrained or unauthorized persons are not permitted to operate the snowplough.

### 2.2 Application

This user manual contains all data and information necessary for the safe control, operation, and maintenance of the snowplough.

Read this user manual carefully and entirely before starting up the snowplough for the first time.

The user manual is part of the product and has to be stored safely. In the event of the snowplough being sold or otherwise transferred to third parties, the manual has to be included with the snowplough.

All information, images, and technical data are correct and up to date at the time of publishing. We reserve the right to make technical changes without notice.

Make sure that all persons who operate, maintain or work in the vicinity of the snowplough are familiar with the operating and maintenance regulations as well as with the safety instructions in this user manual.

## 2.3 Conventions

This manual uses the following typographic conventions:

Symbol	Signal word	Meaning
	Danger	Describes an imminently hazardous situation. Death or serious injury could result.
	Warning	Describes a situation that could possibly be hazardous. Death or serious injury could result.
	Caution	Describes a situation that could possibly be hazardous. Minor injuries or material damage could result.
	Advice	Contains useful information on correct handling of and conduct around the machine.

## 2.4 Change history

Date	Version	Change
12/21/2012	1.0	First edition

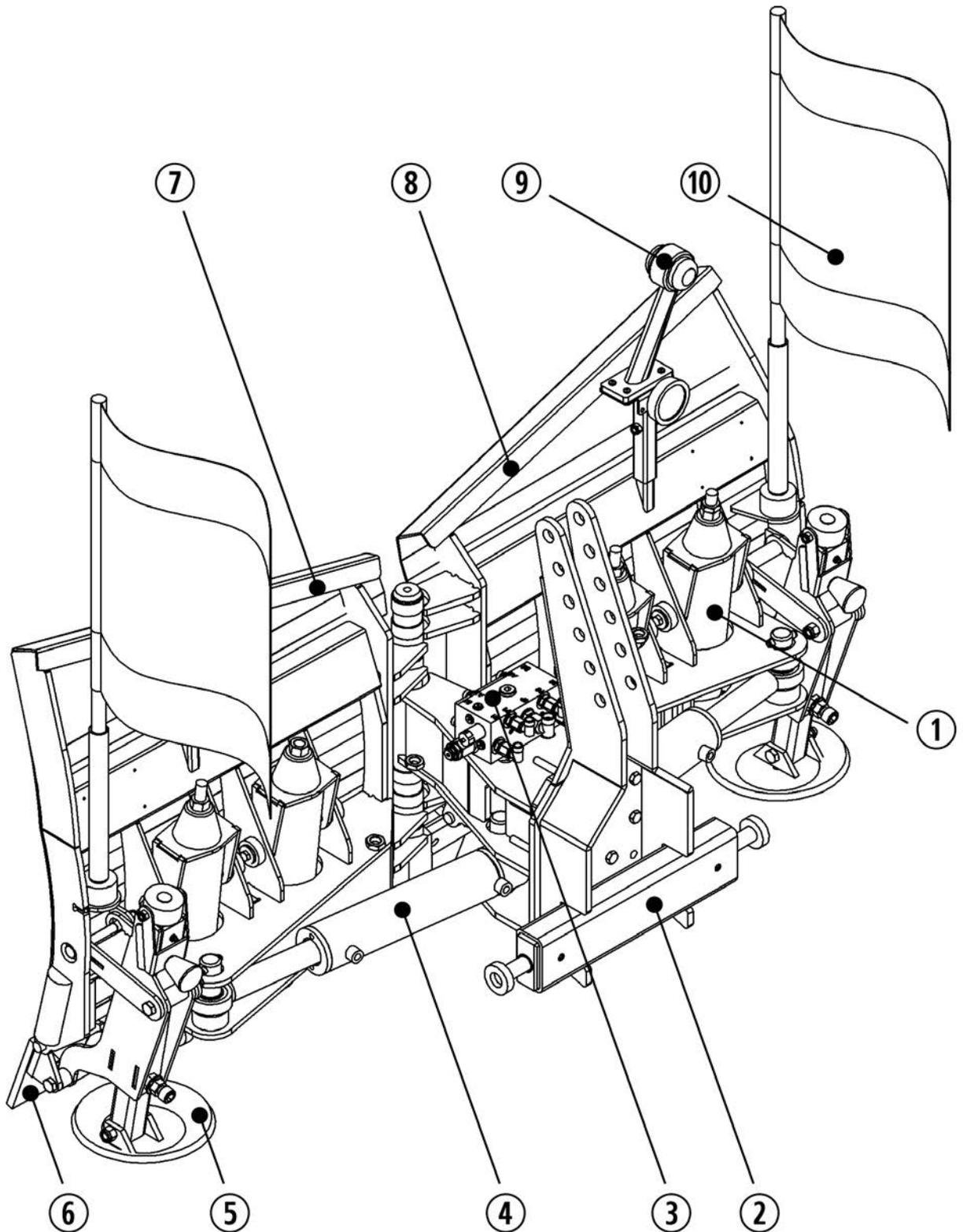
## 3 General description

This chapter provides information on the following:

- Chapter 3.1 "*Components*", page 11
- Chapter 3.2 "*Intended use*", page 15
- Chapter 3.3 "*Foreseeable misuse*", page 15

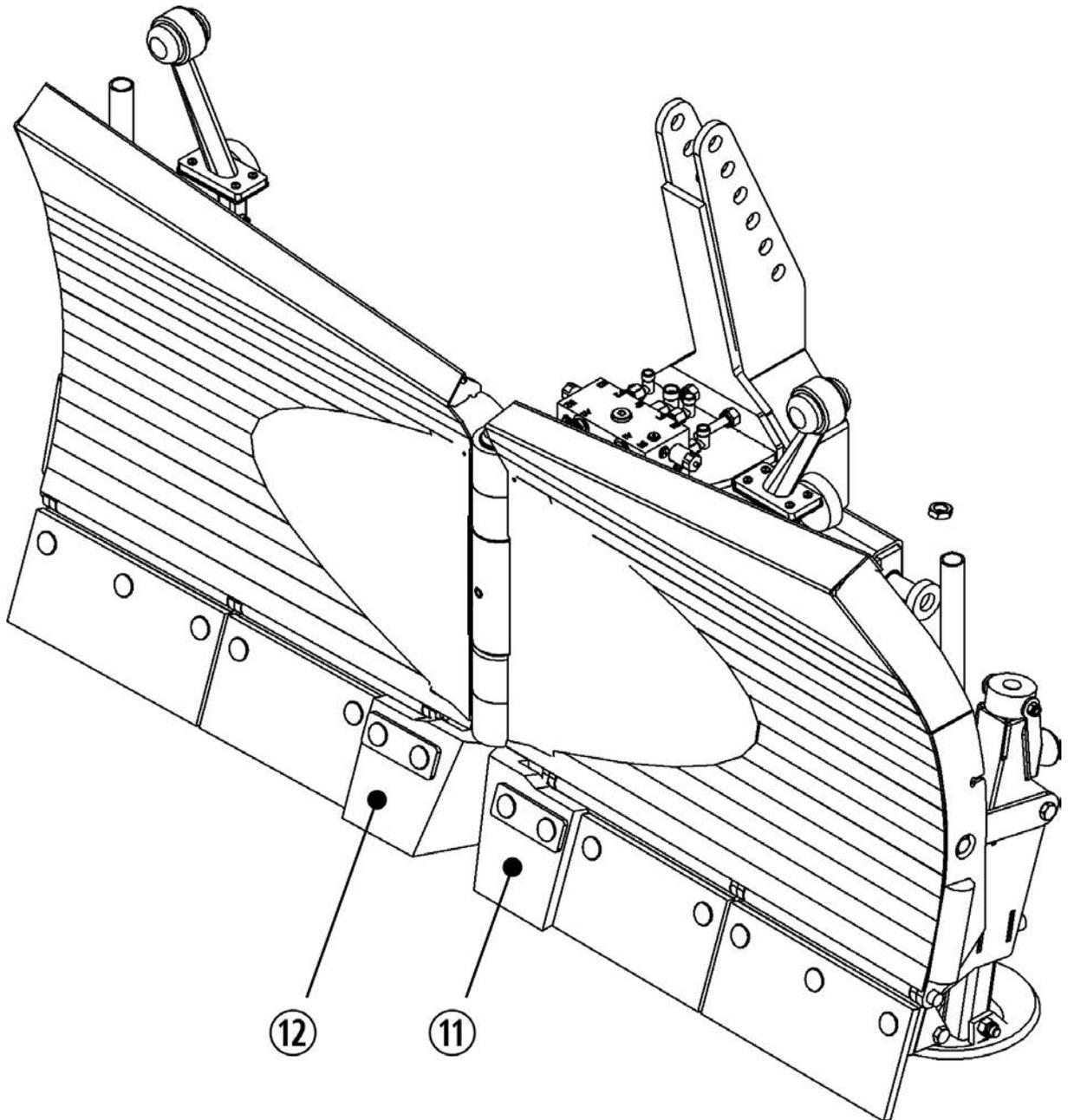
### 3.1 Components

The components of the snowplough can be found in the following illustrations:



Pos. no.	Function
1	Rubber spring
2	Hitch block (depends on the vehicle)
3	Hydraulic control unit

4	Hydraulic swivel unit
5	Slide pad
6	Scraper blade
7	Main blade L
8	Main blade R
9	Lighting (optional)
10	Blade guide flag (optional)



Pos. no.	Function
11	Center wedge L
12	Center wedge R

## 3.2 Intended use

Use the snowplough exclusively for ploughing snow.

Any other or additional use is to be considered non-intended use. The operator of the snowplough is liable for all damage resulting from non-intended use.

Only qualified, appropriately trained persons are permitted to operate, maintain, and repair the snowplough.

Intended use includes observance of the following:

- This user manual as well as all other supplied documentation
- Traffic rules
- Applicable accident prevention regulations
- The generally accepted regulations on safety and occupational health
- The user manual of the carrier vehicle.

## 3.3 Foreseeable misuse

The snowplough may not be used to transport persons or objects.

The snowplough may not be used as a lifting device.

## 4 Safety information

This chapter provides information on the following:

- Chapter 4.1 "Basic safety information", page 16
- Chapter 4.2 "Commissioning", page 17
- Chapter 4.3 "Use", page 18
- Chapter 4.4 "Maintenance", page 21
- Chapter 4.5 "Labeling", page 23

### 4.1 Basic safety information



#### Warning

Operation or maintenance of the snowplough by untrained persons.

Risk of serious injury.

- Ensure that any person who operates or performs maintenance on the snowplough has been trained in its handling and is therefore familiar with the safety instructions as well as the operation and maintenance instructions contained in this manual.
  - Ensure that all safety regulations are observed.
- 



#### Warning

Wearing loose clothing.

Risk of serious injury.

- Wear close-fitting clothes at all times.
- 



#### Warning

Disregarding instructions.

Risk of injury or death.

- Observe the accident prevention rules.
  - Observe the generally accepted regulations on occupational health and safety.
  - Observe the traffic rules.
  - Observe the general recommendations in this user manual.
-

**Caution**

Flammable residue.

Risk of injury or property damage.

- Keep the snowplough in a clean condition.
- 

**Caution**

Modifications of the snowplough.

Impairment of the function and risk of property damage.

- Do not make any modifications on the snowplough.
- 

## 4.2 Commissioning

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**Danger**

Movement of the carrier vehicle while hitching the snowplough.

Risk of serious injury or death.

- Before hitching the snowplough, engage the carrier vehicle's parking brake, turn off the engine, and remove the ignition key.
  - Never stand between the carrier vehicle and the snowplough during the hitching.
  - Use only the supplied hitch block designed for the vehicle.
  - Attach and secure all locking pins and screws on the carrier vehicle.
- 

**Warning**

Hitching the snowplough to a defective carrier vehicle.

Risk of serious injury or death.

- Make sure that the carrier vehicle is in a safe and fault-free condition.
  - Make sure that the carrier vehicle is equipped with a brake mechanism suitable for driving with a snowplough attached.
  - Make sure that the carrier vehicle is capable of carrying the snowplough, and that the snowplough can be hitched.
-



### **Warning**

Movement of the snowplough when making hydraulic connections.

Risk of serious injury.

- Be sure to depressurize the hydraulic circuits of the carrier vehicle and the snowplough before making hydraulic connections.



### **Caution**

Commissioning without training.

Risk of injury or property damage.

- Have the commissioning carried out by staff from the dealer or the manufacturer, or by a representative from the factory.



### **Caution**

Commissioning without ensuring proper operating condition.

Risk of injury or property damage.

- Check all important components before commissioning.
- Replace any defective parts.

## **4.3 Use**



### **Danger**

Carrying persons on the snowplough.

Risk of serious injury or death.

- Do not carry persons on the snowplough.



## Danger

Movement of the carrier vehicle while unhitching the snowplough.

Risk of serious injury or death.

- Before unhitching the snowplough, engage the carrier vehicle's parking brake, turn off the engine, and remove the ignition key.
- Never stand between the carrier vehicle and the snowplough during the unhitching.
- Make sure that the snowplough is resting on a level and firm surface.
- Make sure the hydraulics of both the carrier vehicle and the snowplough are depressurized before disconnecting hydraulic lines.



## Warning

Persons in the turning or working range of the snowplough.

Risk of serious injury or death.

- Do not stand in the turning or working range of the snowplough.



## Warning

Careless starting of the vehicle.

Risk of serious injury or death.

- Check the surrounding area before driving or operating the snowplough.
- Make sure that visibility is sufficient.
- Start driving only when no persons or objects are nearby.



## Warning

Altered driving and braking characteristics.

Risk of serious injury or death.

- Adjust your driving to the dimensions and additional weight of the snowplough.
- Adjust your speed to the road conditions, snow, and traffic.
- Raise the snowplough when driving in reverse.

**Caution**

Carrying objects on the snowplough.

Risk of property damage.

- Do not carry objects on the snowplough.
- 

**Caution**

Ignoring regulations on operating attachments on public roads.

Risk of injury or property damage.

- Observe the regulations for attachments (Germany: VkB1. 1990, p. 562).
  - Take precautions to compensate for limitations to the field of view.
- 

**Caution**

Ignoring traffic safety regulations.

Risk of injury or property damage.

- Make sure that the snowplough complies with applicable traffic safety regulations.
  - Mount the required lighting, warning, and safety equipment.
  - Observe all applicable rules regarding dimensions and weight, the maximum permitted axial load, tire load capacity, total weight as well as national speed limits.
- 

**Caution**

Operating the snowplough in spite of malfunctions.

Risk of injury or property damage.

- Stop the snowplough immediately in case of malfunctions.
  - Repair the fault immediately or have it repaired at a workshop.
- 

**Caution**

Leaving the snowplough in an unprotected area.

Risk of injury or property damage.

- Do not leave the snowplough in a heavily frequented area or an area that is accessible to children.
-

## 4.4 Maintenance

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### Warning

Ignoring safety regulations.

Risk of serious injury or death.

- Always observe the safety regulations during maintenance work.
- 



### Warning

Electric shock during maintenance work.

Risk of serious injury or death.

- Disconnect the power supply before working on an electrical device.
- 



### Caution

Ignoring maintenance intervals.

Risk of injury or property damage.

- Observe the indicated maintenance intervals.
- 



### Caution

Use of improper spare parts.

Risk of injury or property damage.

- Use only genuine parts for repairs.
- 



### Caution

Maintenance work without the necessary technical expertise or without suitable tools.

Risk of injury or property damage.

- Carry out maintenance work only if you have the necessary technical expertise and suitable tools.
-



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### Caution

Careless handling of oil or lubricants.

Risk of injury.

- Prevent oil and lubricants from coming into contact with skin.
  - Protect your skin with hand lotions or oil-proof gloves.
  - Never use oil or lubricants to clean your hands.
  - Replace soiled or oily clothing as soon as possible.
- 



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### Caution

Oil leaking from the hydraulic system.

Risk of injury or property damage.

- Inspect all pipes, hoses, couplings, and fittings for leaks and external damage.
  - Use only suitable tools for testing.
  - Repair any defects immediately.
  - Replace hydraulic hoses every three years.
- 



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### Caution

Cleaning with a high-pressure cleaner.

Risk of property damage.

- Clean bearings, plastic parts, and hydraulic hoses at low pressure only.
- 



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### Caution

Cleaning of metal surfaces.

Risk of property damage caused by detergents.

- Do not use aggressive detergents for cleaning.
- 



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### Caution

Welding work on the electrical wiring.

Risk of property damage.

- Disconnect the battery of the carrier vehicle before carrying out any welding work on the attached snowplough.
-



**Caution**

Loose bolt connections.

Risk of property damage.

- Retighten loose bolt connections after any cleaning or maintenance work.

## 4.5 Labeling

Marking	Description
	<p>Never open the bladder accumulator!                      There is a high pressure hazard.                      Only the manufacturer may repair a defective bladder accumulator.</p>

## 5 Commissioning

This chapter provides information on the following:

- Chapter 5.1 *"Hitching the snowplough"*, page 24
- Chapter 5.2 *"Wiring diagram"*, page 26
- Chapter 5.3 *"Setting the work position"*, page 28
- Chapter 5.4 *"Setting the attack angle of the scraper blade"*, page 29
- Chapter 5.5 *"Setting the slide pads"*, page 30

### 5.1 Hitching the snowplough

The precise procedure for hitching the snowplough depends on the carrier vehicle. Refer to the user manual of the carrier vehicle.

Also observe the following:

- Connect the hydraulic lines of the hydraulic swivel unit to the carrier vehicle.
- Connect the electrical cable of the control unit (see chapter 5.2 *"Wiring diagram"*, page 26).
- If existing: Connect the lighting.



#### **Danger**

Movement of the carrier vehicle while hitching the snowplough.

Risk of serious injury or death.

- Before hitching the snowplough, engage the carrier vehicle's parking brake, turn off the engine, and remove the ignition key.
  - Never stand between the carrier vehicle and the snowplough during the hitching.
  - Use only the supplied hitch block designed for the vehicle.
  - Attach and secure all locking pins and screws on the carrier vehicle.
-



## Warning

Hitching the snowplough to a defective carrier vehicle.

Risk of serious injury or death.

- Make sure that the carrier vehicle is in a safe and fault-free condition.
- Make sure that the carrier vehicle is equipped with a brake mechanism suitable for driving with a snowplough attached.
- Make sure that the carrier vehicle is capable of carrying the snowplough, and that the snowplough can be hitched.

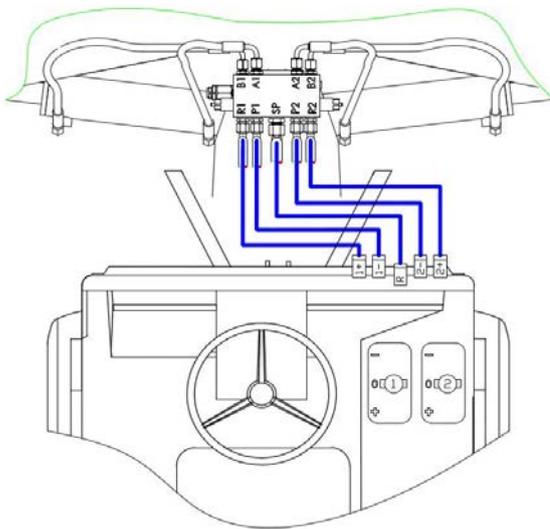
## 5.2 Wiring diagram

The wiring diagram depends on how the variable snowplough is controlled at the carrier vehicle.

There are two different types:

- Carrier vehicle with two double-acting controllers
- Carrier vehicle with one double-acting controller and one electrical switchover valve

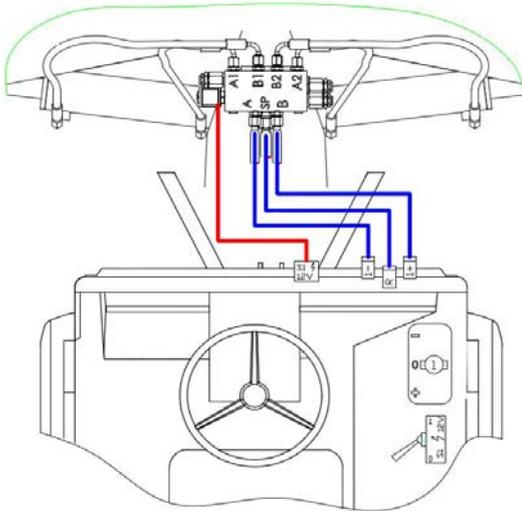
Wiring diagram for variable snowplough on carrier vehicle with two double-acting controllers:



### Hinweis

If the carrier vehicle is not equipped with a pressureless return line, be sure to use a bladder accumulator (see chapter 12.2 "Bladder accumulator for carrier vehicles without pressureless return line", page 43).

Wiring diagram for variable snowplough on carrier vehicle with one double-acting controller and one electric switchover valve:



### Hinweis

If the carrier vehicle is not equipped with a pressureless return line, be sure to use a bladder accumulator (see chapter 12.2 "Bladder accumulator for carrier vehicles without pressureless return line", page 43).

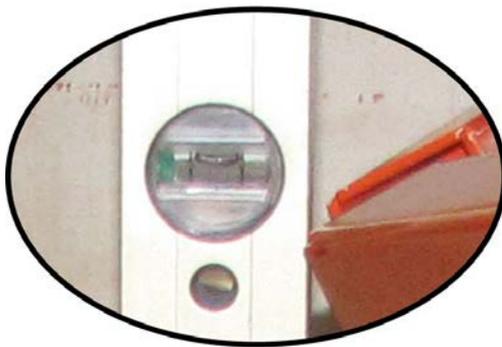
## 5.3 Setting the work position

To operate the snowplough, set the swivel axis of the hydraulic swivel unit to the work position.

How to set the work position:

1. Drive the carrier vehicle with the attached snowplough onto a level and horizontal surface.
2. Lower the snowplough to the ground.
3. Adjust the work position by changing the length of the top link at the carrier vehicle.
4. Use a spirit level to set the work position so that the swivel axis is exactly vertical.

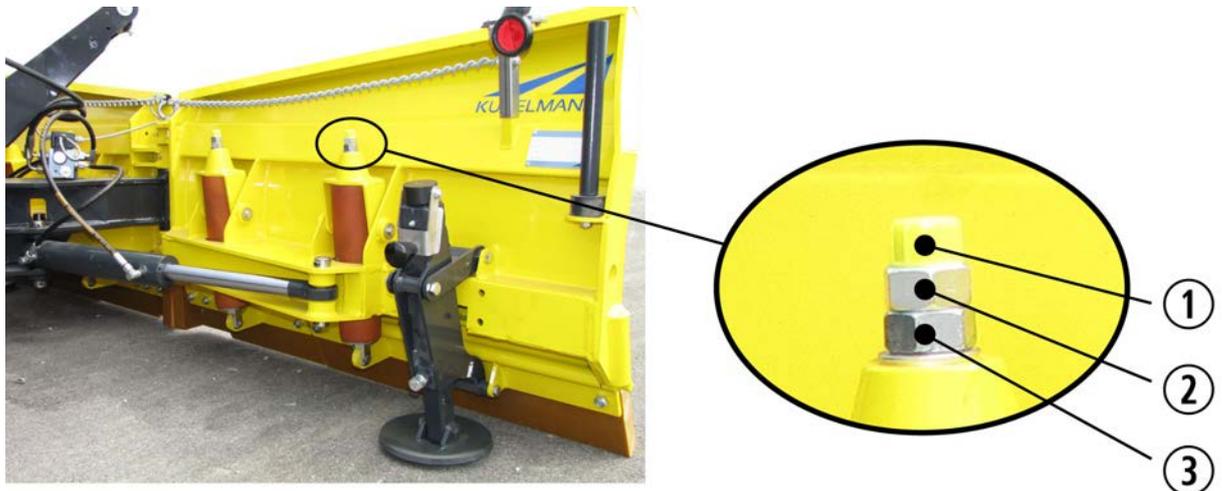
If you have the roller guide option for wheel loaders, use the roller guide to set the work position (see chapter 12.1 "Roller guide for wheel loaders", page 41).



## 5.4 Setting the attack angle of the scraper blade

Set the attack angle of the scraper blade by changing the length of the tensioning spindle. Make sure that center wedges seal without interference in all plough positions.

How to adjust the length of the tensioning spindle:



Pos. no.	Function
1	Tensioning spindle
2	Counter nut
3	Tensioning nut

1. Loosen the counter nut (pos. 2).
2. Adjust the desired length with the tensioning nut (pos. 3).
3. Retighten the counter nut (pos. 2).

## 5.5 Setting the slide pads

Set the slide pads so that the scraper blade and slide pads touch the ground.



## 6 Use

This chapter provides information on the following:

- Chapter 6.1 *"Checks before every use"*, page 31
- Chapter 6.2 *"Functional drawing"*, page 31
- Chapter 6.3 *"Work speed and safety"*, page 34
- Chapter 6.4 *"Parking the snowplough"*, page 34

### 6.1 Checks before every use

Check before every use of the snowplough whether the scraper blades and the slide pads are intact and firmly attached. Immediately replace worn scraper blades or slide pads.

Check before every use of the snowplough whether the hydraulic lines are intact and not leaking. Immediately replace defective hydraulic lines.

### 6.2 Functional drawing

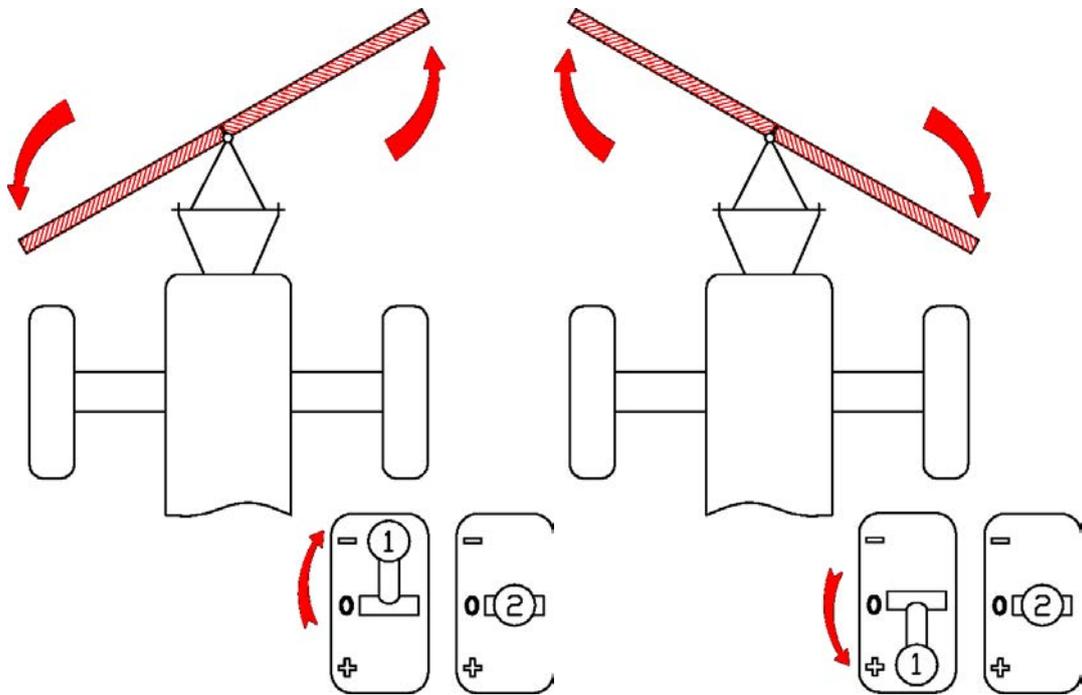
The functional principle depends on how the variable snowplough is controlled at the carrier vehicle.

There are two different types:

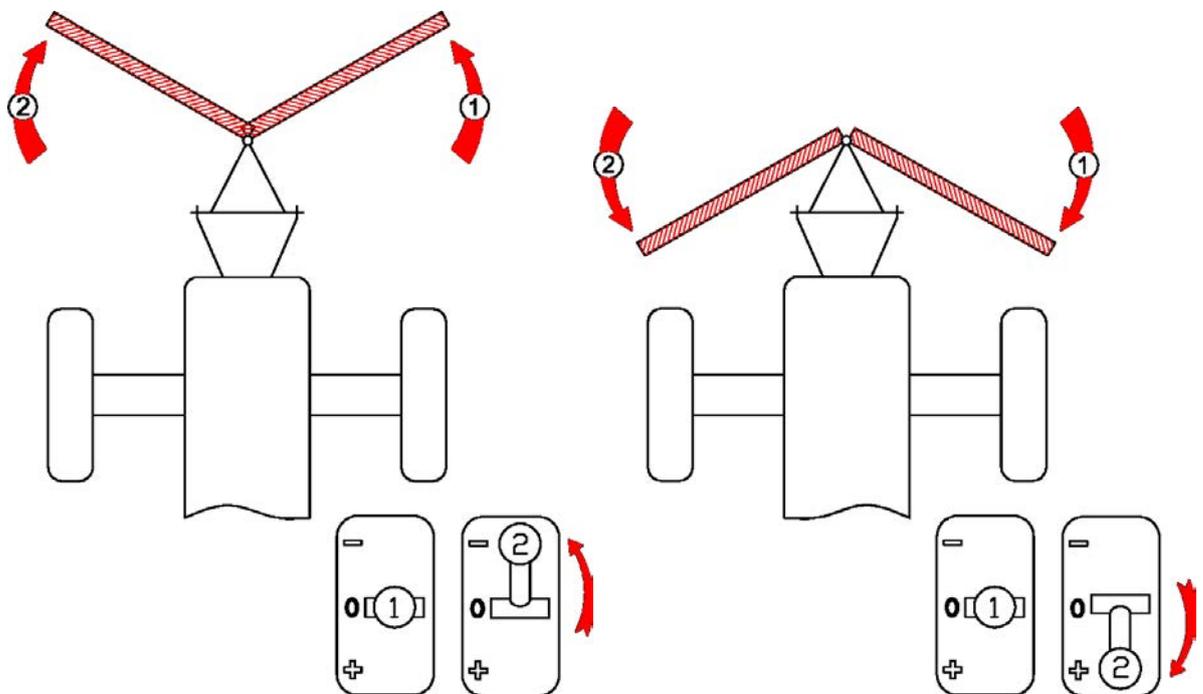
- Carrier vehicle with two double-acting controllers
- Carrier vehicle with one double-acting controller and one electrical switchover valve

Functional drawing for variable snowplough on carrier vehicle with two double-acting controllers:

Controller 1: Synchronized swiveling of both main blades in the same direction.

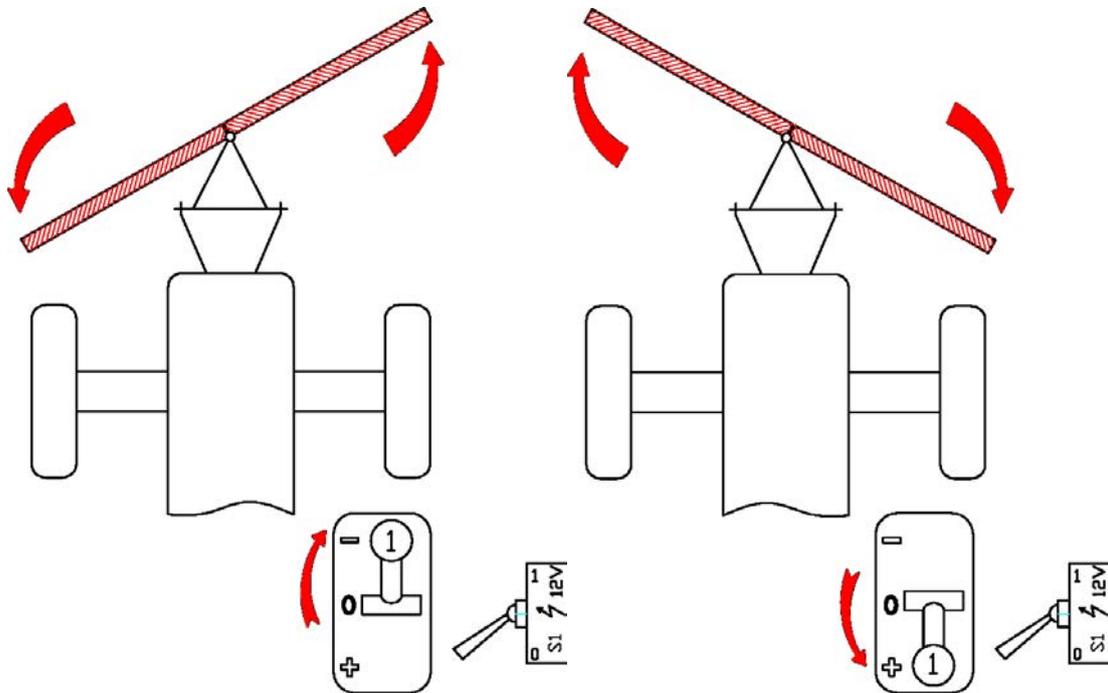


Controller 2: The right main blade swivels to the stop; the left main blade follows in the opposite direction.

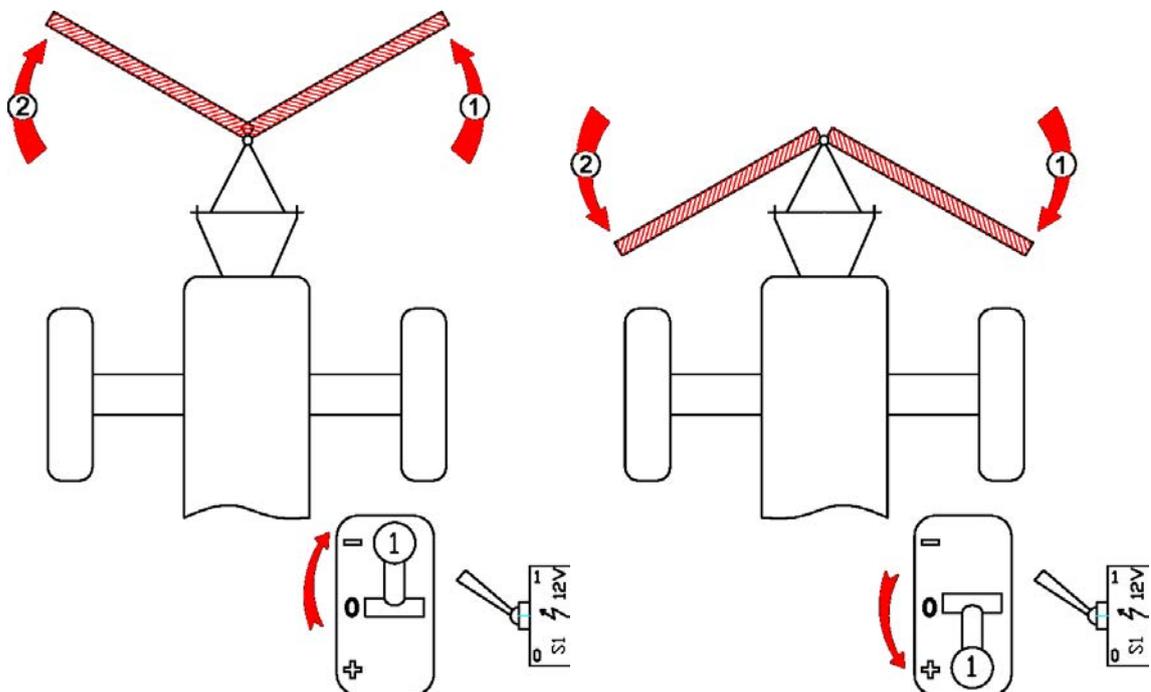


Functional drawing for variable snowplough on carrier vehicle with one double-acting controller and one electric switchover valve:

Switchover valve at 0: Synchronized swiveling of both main blades in the same direction.



Switchover valve at 1: The right main blade swivels to the stop; the left main blade follows in the opposite direction.



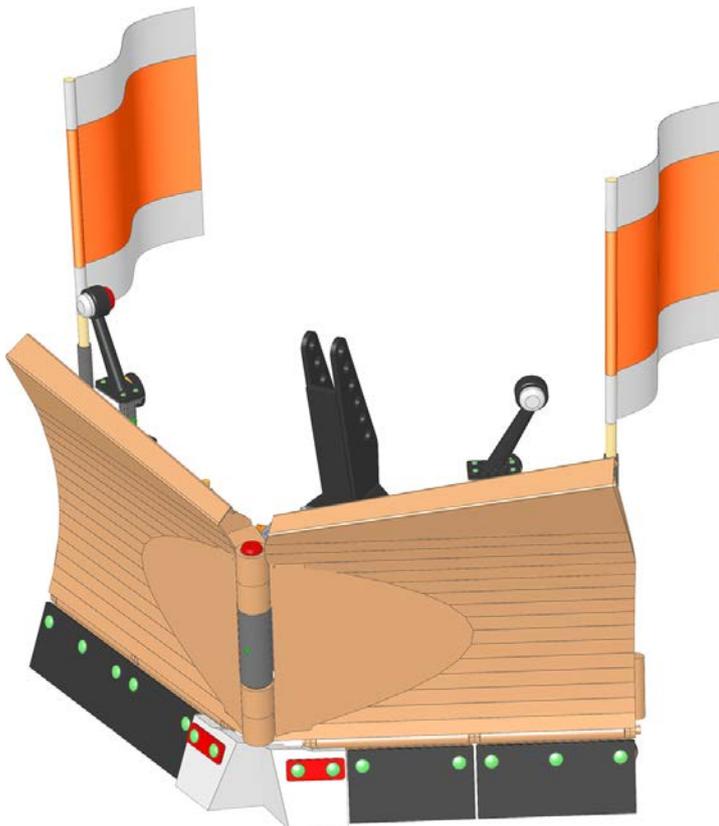
## 6.3 Work speed and safety

Observe the safety instructions for operation when using the snowplough (see chapter 4.3 "Use", page 18)!

## 6.4 Parking the snowplough

Observe the following when parking the snowplough:

- Clean the snowplough thoroughly and remove salt deposits.
- Apply a rust-proofing agent to protect all uncoated parts on the swivel cylinders against corrosion.
- Make sure the snowplough is on a firm surface when unhitching it.
- Always unhitch the snowplough in the wedge position.





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### Caution

Leaving the snowplough in an unprotected area.

Risk of injury or property damage.

- Do not leave the snowplough in a heavily frequented area or an area that is accessible to children.
-

## 7 Maintenance

This chapter provides information on the following:

- Chapter 7.1 "Maintenance intervals", page 36
- Chapter 7.2 "Safety", page 36

### 7.1 Maintenance intervals

Perform the following maintenance tasks at the specified intervals:

Interval	Task
Before every use	Check scraper blades. Replace worn scraper blades immediately.
	Check slide pads. Replace worn slide pads immediately.
	Check hydraulic lines.
	If existing: Check lighting.
	If existing: Check blade guide flags.
Monthly	Lubricate the height adjustment mechanism of the slide pads.

### 7.2 Safety

Observe the following for any service and maintenance work:

- Depressurize the hydraulic lines.
- Switch off the carrier vehicle's engine and remove the ignition key.
- Unhitch the carrier vehicle if possible.
- Make sure that both the snowplough and the carrier vehicle are on a firm and level surface. Attach braces if necessary.
- Do not use any parts of the snowplough as a ladder.

Also observe the safety instructions for maintenance (see chapter 4.4 "Maintenance", page 21)!

## 8 Storage

Carry out the following tasks when putting the snowplough in storage at the end of the season:

- Clean the snowplough thoroughly.
- Repair paint any damage.
- Lubricate all moving parts thoroughly.
- Treat all surfaces with protective coatings, e.g. with protective wax or anti-rust spray.
- Protect the snowplough from sunlight.

## **9 Transport**

Use only suitable, approved lifting and transport devices when transporting the snowplough.

Make sure that the snowplough does not slide or tip over during transport.

## 10 Decommissioning

The snowplough must be disposed of according to applicable local and national regulations. Properly dispose of all materials according to their waste classification (regular waste, hazardous waste, recycling). Kugelmann Maschinenbau e.K. does not offer a disposal service.

# 11 Technical data

Type VL xxx/65

Model	Clearing width [cm]	Width [cm]	Height [cm]	Item no.	Scraper blades		Three-point hitch cat.	Weight [kg]
					Steel	Vulkollan		
VL 140/65	120	140	65	10023230	10029783	10029777	0	140
VL 150/65	130	150	65	10023231	10029785	10029779	0	150
VL 160/65	137	160	65	10023232	10029786	10029780	0	160
VL 170/65	145	170	65	10023233	10029787	10029781	0	170

1 At maximum angle

Type VS xxx/74

Model	Clearing width [cm]	Width [cm]	Height [cm]	Item no.	Scraper blades		Three-point hitch cat.	Weight [kg]
					Steel	Vulkollan		
VS 140/74	120	140	74	10023234	10029789	10029648	0 or 1	200
VS 150/74	130	150	74	10023235	10029791	10029650	0 or 1	215
VS 160/74	137	160	74	10023236	10029792	10029651	0 or 1	230
VS 170/74	145	170	74	10023237	10029793	10029652	0 or 1	245
VS 180/74	155	180	74	10023238	10029794	10029653	0 or 1	260
VS 200/74	175	200	74	10023239	10029795	10029654	0 or 1	280
VS 220/74	190	220	74	10023240	10029796	10029655	0 or 1	300
VS 240/74	205	240	74	10023241	10029797	10029656	0 or 1	320

1 At maximum angle

## 12 Additional accessories

The snowplough can be expanded with additional components.

This chapter provides information on the following:

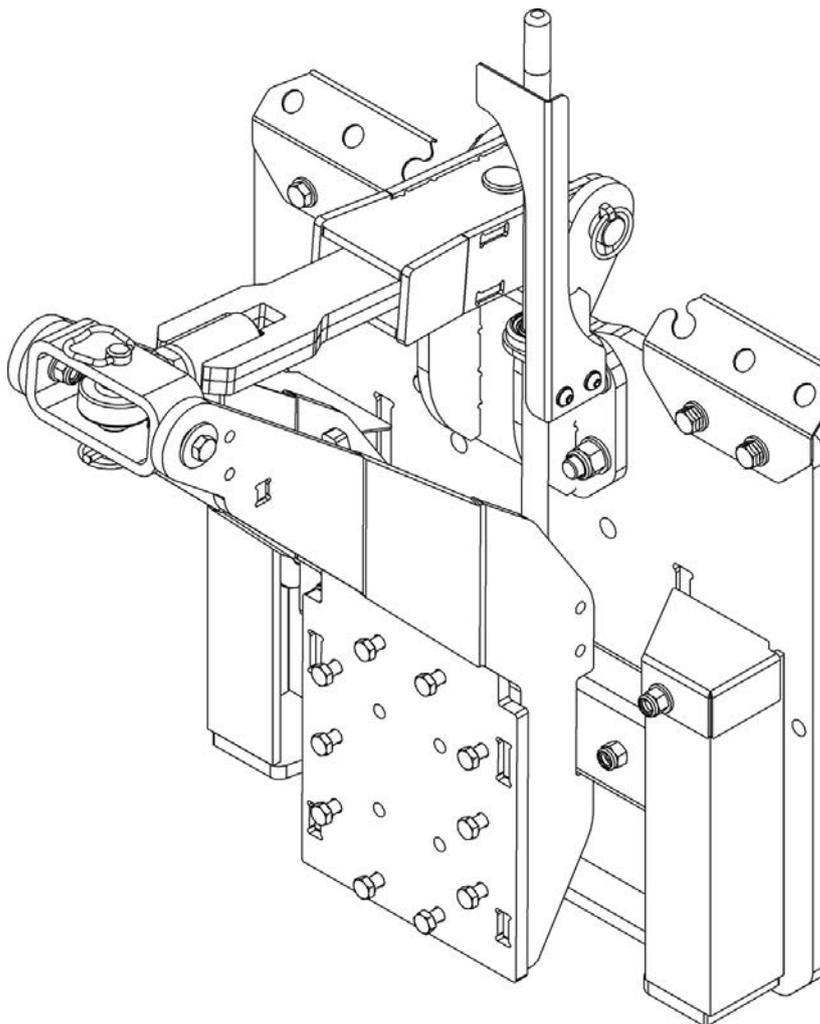
- Chapter 12.1 "Roller guide for wheel loaders", page 41
- Chapter 12.2 "Bladder accumulator for carrier vehicles without pressureless return line", page 43

### 12.1 Roller guide for wheel loaders

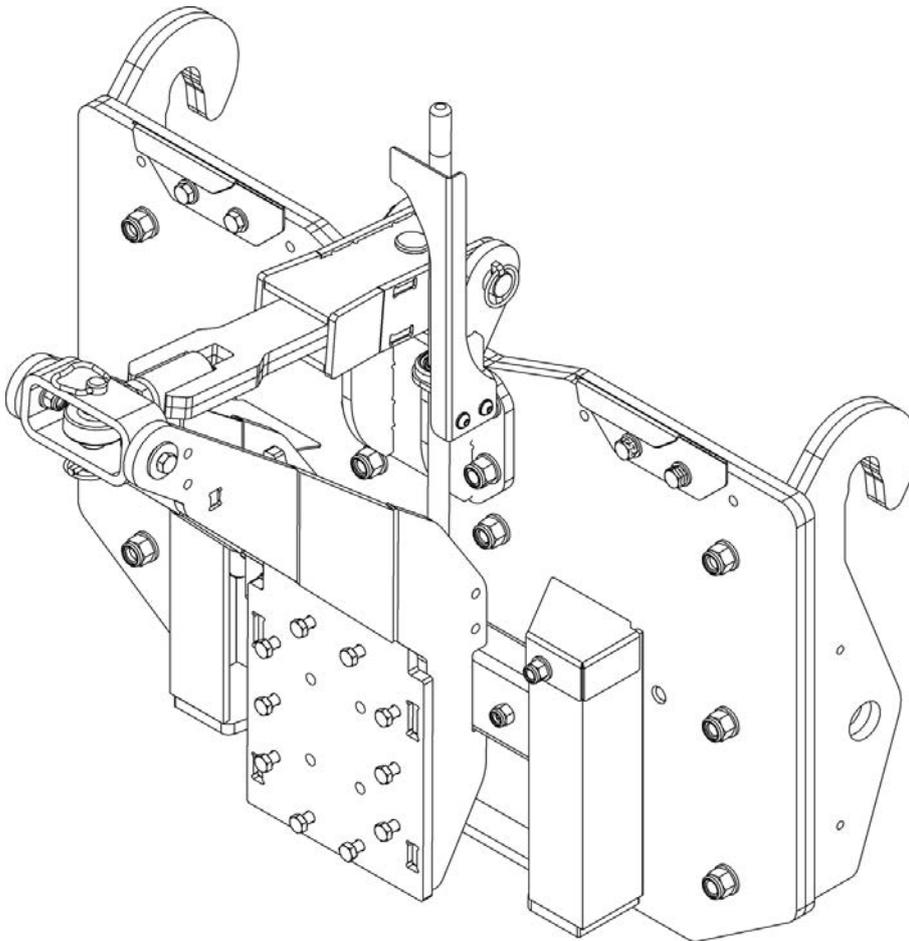
The roller guide makes it possible for the snowplough to follow the contours of the ground to be cleared. The roller guide is part of the hitch block.

The roller guide is available in two different sizes for the variable snowplough.

Small roller guide:



Large roller guide:



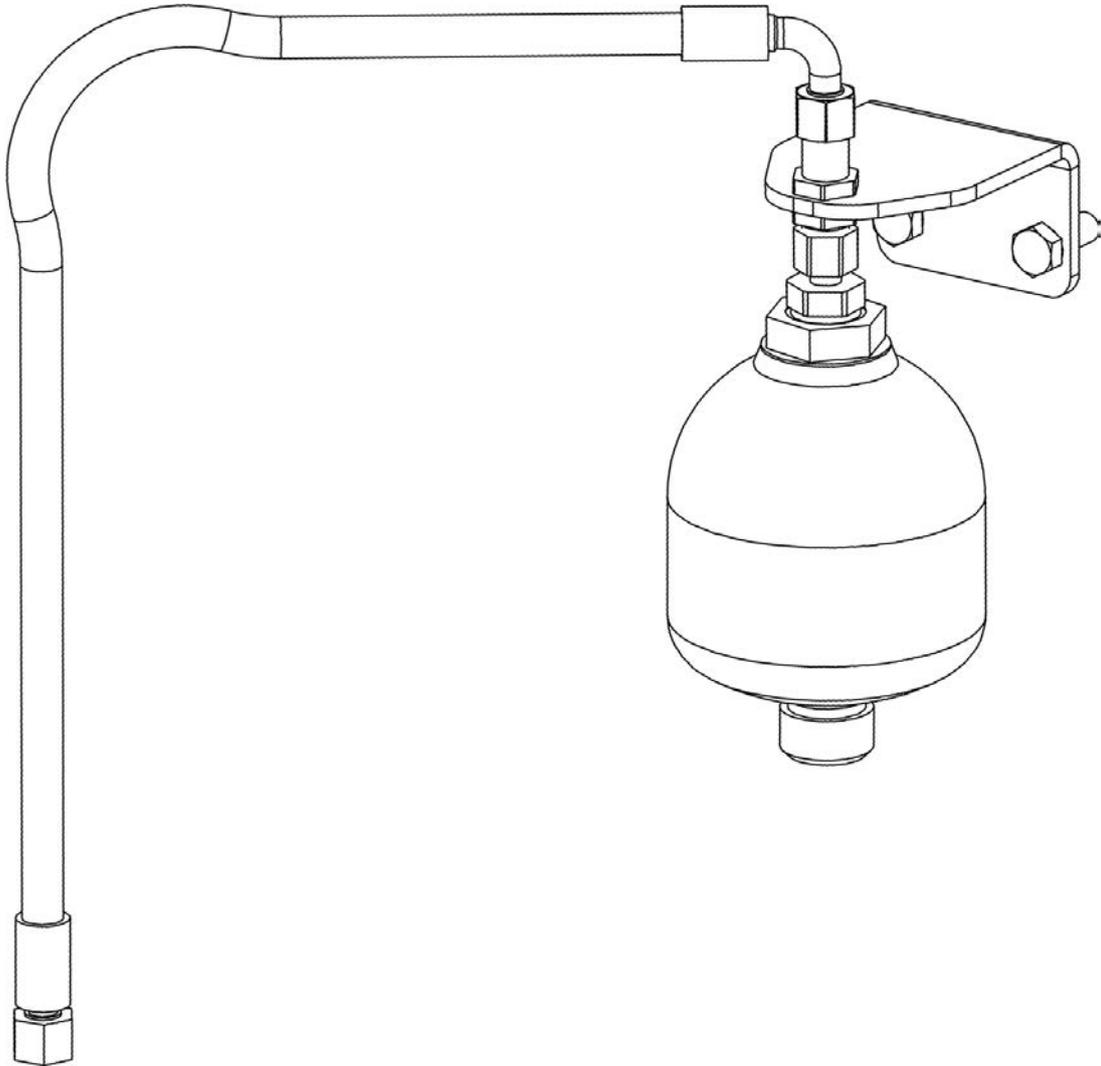
When the roller guide option is installed, adjust the snowplough's work position using the lifting device of the wheel loader.

How to set the work position:

1. Drive the carrier vehicle with the attached snowplough onto a level and horizontal surface.
2. Lower the snowplough to the ground.
3. Make sure that the roller guide is positioned in the middle of the compensation path. The red-marked eyepiece indicates the position of the roller guide.
4. Adjust the snowplough's work position using the lifting device of the wheel loader.
5. Set the work position so that the swivel axis of the hydraulic swivel unit is exactly at right angles to the ground.

## 12.2 Bladder accumulator for carrier vehicles without pressureless return line

If the carrier vehicle is not equipped with a pressureless return line, be sure to use this bladder accumulator.



How to connect the bladder accumulator:

1. Connect the hose line of the bladder accumulator to the "SP" port of the hydraulic control unit.
2. Attach the bladder accumulator to the hitch block using the mounting bracket.

Marking	Description
 <p><b>Nicht Öffnen - hoher Druck</b> <b>Do not open - high pressure</b></p> <p><b>Instruction</b> pay attention</p>  <p><b>Betriebs-</b> <b>anleitung</b> <b>beachten</b></p> <p>Fa. S.Kugelmann, 87675 Rettenbach</p>	<p>Never open the bladder accumulator! There is a high pressure hazard. Only the manufacturer may repair a defective bladder accumulator.</p>

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# Guarantee

Kugelmann Maschinenbau e.K., 87675 Rettenbach a.A., warrants its machines to be free from defects in material and workmanship and undertakes to replace free of charge all parts ex works which have been purchased by relevant Kugelmann dealers and have been acknowledged as defective after having been checked by Kugelmann. The warranty expressly given shall be limited to a period of 12 months from the date of delivery of the machine to purchaser. All further claims by the customer shall be excluded.

Wear parts are excluded from the guarantee.

The manufacturing company does not provide any guarantee for any products manufactured by third parties; however, the manufacturer shall cede to the buyer any claims it might have against sub-suppliers. Furthermore no guarantee is provided for used, second-hand, modified or converted machines.



## Hinweis

Fill in your guarantee card immediately and return it to the manufacturing company. Claims have to be made immediately after occurrence of the damage, at the latest 30 days thereafter, in the form of a written guarantee claim application.

----- ✂

<i>Company</i>	Device type:	.....
<i>Kugelmann Maschinenbau e.K.</i>	Serial no.:	.....
<i>Gewerbepark 1-5</i>	Chassis no.:	.....
<i>87675 Rettenbach a.A.</i>	Year of manufacture:	.....
<i>Germany</i>	Address of the dealer:	.....
		.....
		.....
	Address of the operator/owner:	.....
		.....
		.....

I have read the operating instructions.  
Signature of the operator: .....  
The guarantee card has to be sent to the manufacturer immediately.  
ATTENTION: Warranty claims are only accepted with the warranty card of Kugelmann Maschinenbau e.K.

----- ✂

