



Renovator

Manual_Renovator_EN_2301

RV160-200

EC DECLARATION OF CONFORMITY CONCERNING MACHINES
According to Directive 2006/42/EG, annex 2, point 1, A

GKB Machines B.V.
Middelweg 1
2992 SP Barendrecht
Nederland

hereby declares that the

GKB Renovator

Type: RV160 - RV200

to which this declaration relates are in conformity with the provisions of:

- Directive 2006/42/EC Machinery Directive

At Barendrecht, 30/01/2023



T.J.W. Kraaijeveld

UKCA DECLARATION OF CONFORMITY CONCERNING MACHINES
According to Machinery (Safety) Regulations 2008

Manufacturer:
GKB Machines B.V.
Middelweg 1
2992 SP Barendrecht
Nederland

UKCA Delegate
GKB Machines Ltd.
Warwick House, Ermine Buseniss Park, Spitfire Close
Huntingdon PE29 6XY
United Kingdom

hereby declares that the

GKB Renovator

Type: RV160 - RV200

to which this declaration relates are in conformity with the provisions of:

- Machinery (Safety) Regulations 2008

At Barendrecht, 30/01/2023



T.J.W. Kraaijeveld

TABLE OF CONTENTS

1.	FOREWORD.....	5
2.	INTRODUCTION	5
3.	CONTACT	5
4.	WARRANTY	6
5.	SAFETY	6
5.1.	General	6
5.2.	Safety instructions	7
5.3.	Product specifications Renovator	8
6.	CONSTRUCTION OF THE RENOVATOR	9
6.1.	The frame	9
6.2.	The drive-unit	9
6.3.	The result.....	9
7.	OPERATION RENOVATOR	10
7.1.	Connecting and disconnecting the machine.....	10
7.2.	Start with fraising	11
7.3.	Transport and storage.....	11
8.	MAINTENANCE	12
8.1.	Maintenance schedule	12
8.2.	Lubrication scheme	13
8.3.	Performing maintenance	14
9.	FAILURES.....	15
10.	END OF LIFE	15
	ANNEX I TIGHTENING TORQUE	16
	BIJLAGE II RISK ANALYSIS.....	17
	ANNEX III SAFETY STICKERS.....	18

1. FOREWORD

The information contained within these operating instructions covers the necessary use, safety, operation, and maintenance of the machines mentioned in the CE declaration. Before operating anyone of the machinery has to read this operating manual in its entirety. The manufacturer will not be held liable for an injury or damage which occurs from improper use.

It is the goal of the manufacturer to create excellent products, therefore we hold the right to make changes at any time and will not be held under obligation to previously delivered machines. Certain aspects, such as weight and dimensions, may change at any time without notice. Images are also not bound to interim changes.

All rights reserved.

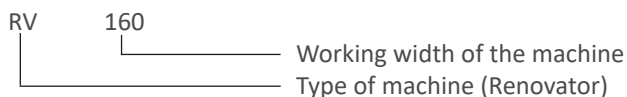
2. INTRODUCTION

The Renovator is designed to brush the infill material from artificial grass fields. With this machine a hard grass field and drainage issues are prevented. The infill material is worked outwards the grass field with rotating brushes so that the infill material rests on the fibres. The infill material can be removed or spread across the field again. The default brushes can be replaced by feather teeth. These can be applied for eliminating sand in hybrid fields, or moss and weed from natural grass fields.

Every machine is marked with a code, as seen in the image below.

Example:

Model 'RV160':



The manufacturer shall not be held liable for any damage resulting from unintentional use.

3. CONTACT

Manufacturer:

GKB Machines B.V.
Middelweg 1
2992 SP Barendrecht
NETHERLANDS
info@gkbmachines.com
www.gkbmachines.com

Productnumber Manual: See footer/ front page

Your personal Dealer:

Your GKB dealer:

4. WARRANTY

The statutory warranty period of two years from the invoice date applies to the machines. Warranty repairs or product replacements do not extend the warranty period of the machine or parts. The guarantee does not apply to items arising from normal wear and tear or ageing.

A warranty procedure starts with an investigation to determine whether the problem is covered by the warranty. Your cooperation is required to verify that the warranty conditions have been met. To this end, keep a record of the maintenance and repairs carried out in a maintenance logbook.

If the manufacturer receives a warranty notification, it will be determined whether the defect is covered by the warranty. If this is the case, a suitable solution will be found in consultation with the customer. In all cases, consult with the dealer before you try to solve the problem yourself. Warranty can only be given if the machine is in its original condition.

The manufacturer's written permission is required to ensure that the machine does not deviate in any way from the aforementioned purpose of use. Use other than as described will lead to the loss of product liability and warranty.

Product liability obliges the manufacturer and the dealer, when selling machines, to provide a manual and to instruct the user on the operating, safety and maintenance instructions.

The manufacturer is not responsible for any (unintended) damages to grass or sport fields.

Caution! The operating instructions must also be supplied if the machine is subsequently exchanged or resold by the user. Also inform the new user of the regulations.

5. SAFETY

5.1. General

The safest operation requires these machines are operated exactly according to these instructions. In addition, there are also safety warnings on the machines to warn of potential dangers and instructions on how to handle them. The only way to 100% guarantee no property damage or personal injury occurs is to follow these instructions. While using this machine, keep this handbook nearby and always ensure that safety markings on the machines are visible.

Any local safety regulations, including road traffic regulations, must be observed at all times.

The warranty, CE marking, and product liability automatically expire upon changes being made to the machine without consultation of the manufacturer.

The machine is equipped with several safety stickers, to instruct the user how to handle the machine with care. An example of a safety sticker is shown next.

Annex III describes every type of safety sticker. Read them carefully before using the machine.



5.2. Safety instructions

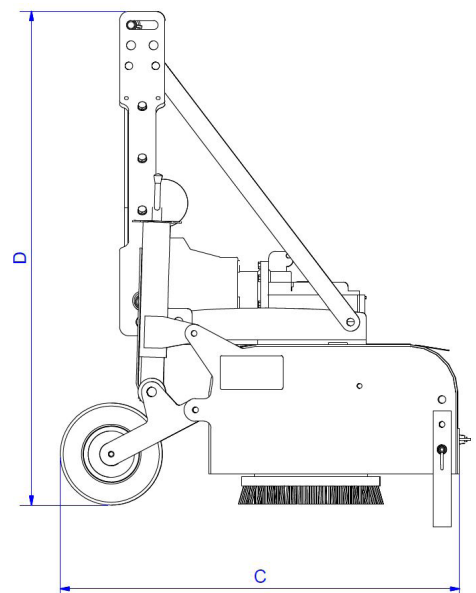
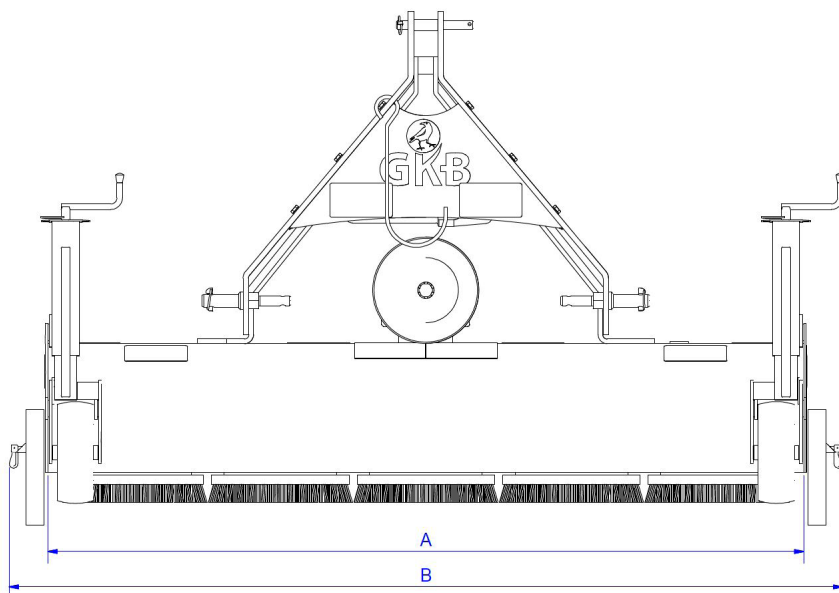
1. These operating instructions must be read and understood by everyone who works, checks or maintains the machine in order to avoid risks and to avert dangers.
2. Pass on all safety and operating instructions to all users.
3. The machine may only be used for the intended work.
4. For optimum performance, the surface to be worked on must be flat and free of obstacles.
5. Only use parts and accessories specified by GKB. The installation and/or use of non-original parts and accessories may change or impair the specific characteristics of the machine. GKB is excluded from any liability for damage resulting from the use of non-original parts and accessories.
6. Before working with the machine, it is necessary to become familiar with all control components, their functions, safety aspects and risks. The machine may therefore only be operated and maintained by qualified personnel.
7. Maintenance must be carried out in accordance with the instructions in the manual. The maintenance carried out must be recorded. Never come under the machine in any situation!
8. Before commissioning, the safety of operation and transport must be checked. The inspection includes, but is not limited to, the correct functioning of the mechanical, hydraulic and electrical components.
9. If leaks are suspected, stop the entire hydraulic system and allow it to cool down before carrying out maintenance.
10. Before use, check that there are no persons and/or obstacles within the working area of the tractor and the machine.
11. There are several warning labels on the machine. These stickers contain important instructions for safe use and must always be clean and visible.
12. All safety devices must be attached to the machinery and be in good working order. Timely replacement of worn and damaged protective equipment is required. This also applies to the warning labels. Fixed guards must always be present during operation.
13. The operator's clothing must be close-fitting. If necessary, wear head and hearing protection.
14. Driving on the machine during work and transport is not permitted.
15. When using the machine on public roads, the (local) traffic regulations of the respective country apply. Observe the markings, lighting and safety devices applied. Only drive if all required permits and approvals have been obtained.
16. Maintain an adjusted speed when the machine is hanging behind the tractor. Especially when driving over thresholds or poor road conditions. Always place the topline in the round hole!
17. The driver is responsible for ensuring that the tractor and the machine are on public roads in accordance with the regulations. Permitted axle loads and weights must be considered.
18. If the driver is unable to oversee the carriageway immediately behind him, he must be instructed when reversing. Instructors must be within the driver's field of vision only and never between the tractor and the machine.
19. Connect the machine with the tractor according to prescribed tools.
20. When connecting and disconnecting, parking or storing the machine, it must be prevented that the machine moves unintentionally. Depending on the machine, this can be prevented by applying the brakes, using the parking position or locking the wheels by placing wedges.
21. During use, transport or storage on a sloping slope or during maintenance, one should be aware of the risk of tipping over.
22. Prevent burns by careful use of hot components such as oil lines and engines. When carrying out maintenance work, allow the system to cool down completely.
23. It is not allowed to drive or maintain the machine under the influence of medication, drugs or alcohol.
24. Using headphones or hearing protection with music or radio is not permitted.
25. Smoking and open fire is prohibited in and around the machine.

5.3. Product specifications Renovator

		Unit	RV160	RV200
Dimensions				
Working width	A	cm	160	200
Total width	B	cm	185	215
Length	C	cm	90	90
height	D	cm	110	110
General specifications				
Working depth		cm	0-5	0-5
Empty weight		kg	275	300
Max. noise*		dB(A)	40	40
Outgoing shaft speed		rpm	540	540
Specifications towing vehicle				
Power**		pk	15-30	35-50

* When using personal protective equipment, bear in mind that in many cases the sound of the machine is drowned out by the towing/powering vehicle.

** Low gear shift needed.



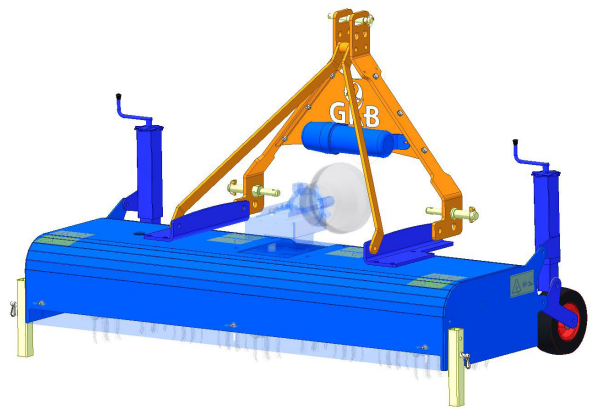
6. CONSTRUCTION OF THE RENOVATOR

A Renovator has many different components and parts. This chapter will describe each of them.

6.1. The frame

The frame of the Renovator forms the basis for the different components of the machine. The three-point hitch connects the machine with the towing vehicle.

On the rear side of the machine one can find two adjustable support wheels. In combination with the top bar of the towing vehicle the machine requires a horizontal setup. For the purpose of storage two fixed support legs are positioned on the front side.



6.2. The drive-unit

In the heart of the Renovator one can find a brush rotor. From the PTO shaft multiple brushes are driven. This number varies per machine type. The brushes rotate against each other's directions, so that all infill material is milled upwards.

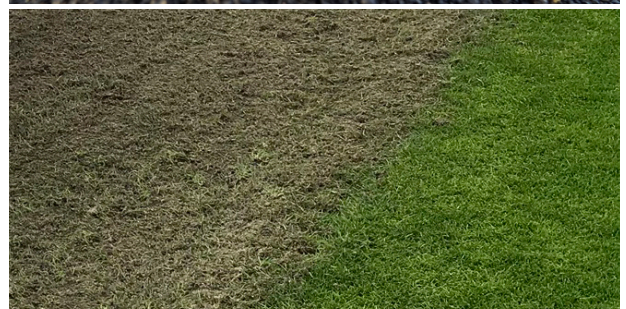
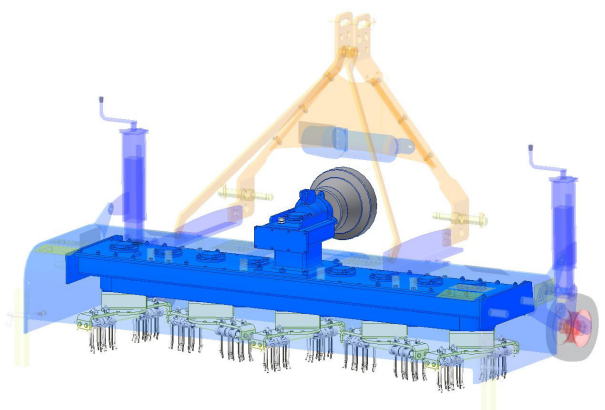
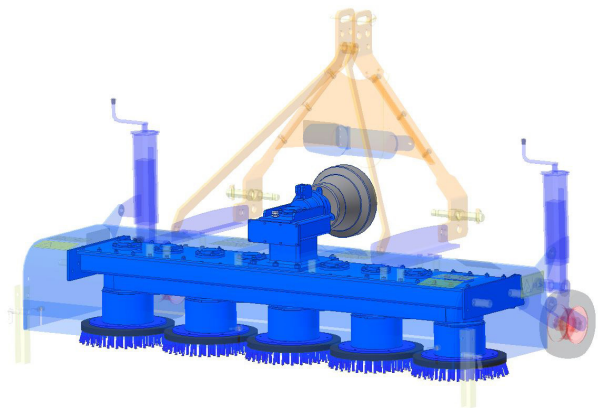
The brushes can be replaced by rotating feather teeth. These can be applied for removing sand from hybrid fields, or moss and weed from natural grass fields.

Between the towing vehicle and machine one finds a PTO shaft. This is in direct connection with the gearbox.

6.3. The result

The result of the artificial grass field is optimized by removing the milled infill material, or by sweeping the field again.

The result of a natural grass field is a worked field, with the milled material lying loose on the field. Remove the loose material to prevent unwanted pollution in the grass.



7. OPERATION RENOVATOR

7.1. Connecting and disconnecting the machine

The following steps describe how to connect and disconnect the Renovator.

Connecting:

1	Make sure that the tractor and machine are placed horizontal;
2	<p>Connect the machine to the three-point hitch of the tractor and secure the attachment points with the locking pins;</p> <p>Attach the top link in the round hole of the hitch to lift the machine;</p> <p>Connect the PTO-shaft.</p>
3	Lift the machine and check if the distance between the machine and ground is equal on the left and right side. If necessary, change the positions of the adjustable stabilizer arm;



 See risk analysis: Transmission/ machine environment



Disconnecting:

1	<p>Make sure that the tractor and machine are placed horizontal;</p> <p>Make sure that the machine is free of infill material before leaving the field.</p>
2	<p>Lower the machine slowly until it completely rests on the field;</p> <p>Disconnect the PTO-shaft;</p> <p>Disconnect the tree-point hitch and move the tractor away from the machine.</p>



 See risk analysis: Transmission/ machine environment

7.2. Start with fraising

1	<p>Lower the machine until it completely rests on the support wheels;</p> <p>Position the height of the machine by adjusting the spindles at the front;</p> <p>Place the coverplate at the desired height.</p> <p>Adjust the toplink to position the machine horizontal;</p> <p><i>Always ensure that the machine can't move and is switched off.</i></p>	
2	<p>Switch on the PTO shaft (540 tpm);</p> <p>Start driving, lower the machine and start brushing for a couple meters;</p>	
2	<p>Stop fraising and stop the machine. Check if the desired depth is reached and if the entire surface is brushed equally. If not, change the height by adjusting the spindles, toplink or stabilizer arm.</p> <p><i>Pay attention, never come under the machine!</i></p>	



Zie risicoanalyse: Zandstrooier/ omgeving machine

7.3. Transport and storage

Transport:

When transporting the machine, a suitable means of transport must be selected. Make sure that the machine is secured against rolling away and tipping over. If you don't have sufficient knowledge for a transport, carry it out by a specialised transport company. Provide at least four attachment points on the transporting vehicle.

Storage:

The following points must be taken care when storing the machine:

1. Before storage, clean the machine in such a way that no sand or other impurities are left behind;
2. Store the machine at a dry place;
3. Check if the machine is positioned right with the support legs or place wheel chocks in front and behind the wheels;
4. Never put the machine away on the brake (if applicable);
5. Empty the tanks of the machine if they are filled with water;
6. To prevent corrosion of uncoated parts, apply a protective oil layer;

If the machine is to be used again after storage, all maintenance points must be gone through. Before use, make sure that all components are working properly.

Lifting:

There are fastening eyes provided at the machine for safe lifting. It's recommended to hoist the machine with lifting straps. Use at least two straps in all cases. The lifting points are indicated in the figure. Before lifting, make sure that the machine is free from loose materials like seeds or infill materials etc.



8. MAINTENANCE

8.1. Maintenance schedule

To maintain machine quality, adhere to the following diagram. The list of spare parts will show the correct parts to replace. See chapter 7.3 for safe execution of the maintenance points.

Always ensure that the machine is switched off, cannot move and has cooled down completely.

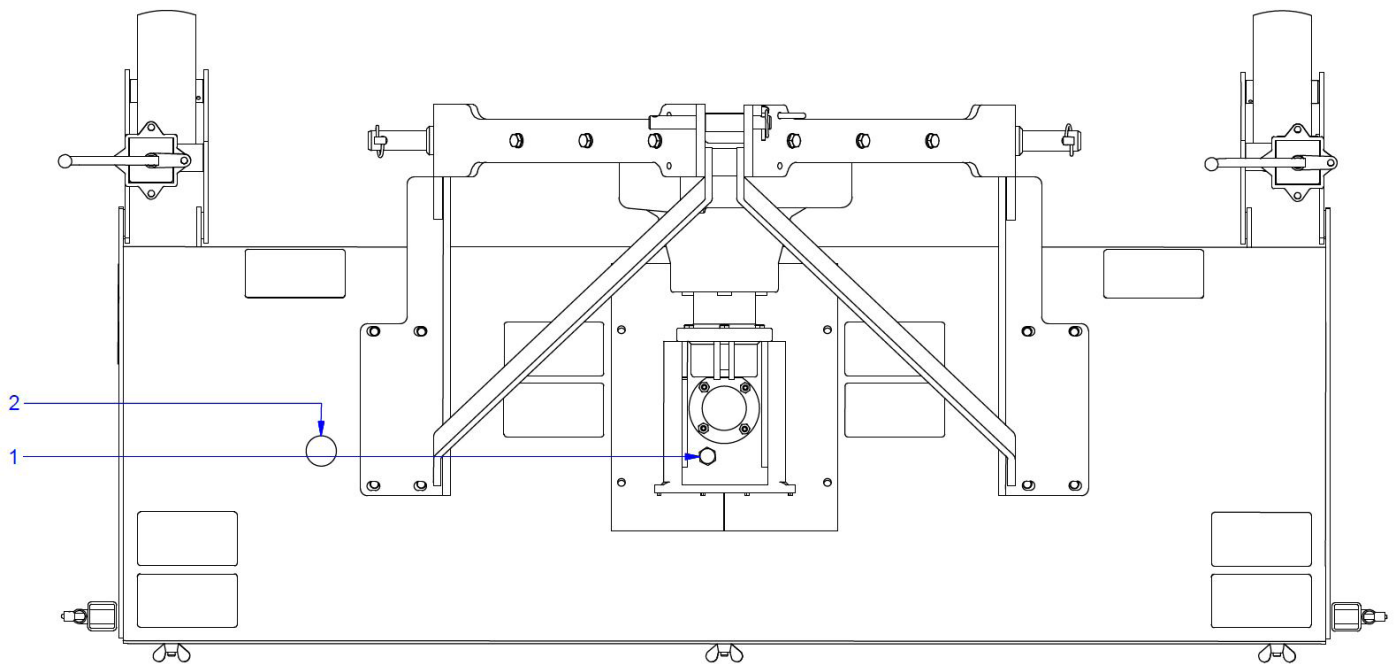
		Operating hours					
		Before use	50 h	250 h	500 h	1000 h	Annually
General	Outside cleaning of the machine- Inspection of wearance of brushes/ tooth set	x					
	Check if all safety stickers are on the machine	x					
	Check for oil stains/ traces	x					
	Check state of wearing parts for broken pieces or deformation	x					
Others	Check locking pins	x					
	Tighten bolted connections of rotating parts		x				
	Tighten bolted connections of fixed parts			x			

8.2. Lubrication scheme

For optimum machine performance, please refer to the plan below for lubrication of the maintenance points.

		Operating hours					
		Before use	50 h	250 h	500 h	1000 h	Annually
SAE90 oil	1 Check oil level of the gearbox	x					
	1 Change oil of the gearbox		x(1 ^{ste})		x		x
EP2 grease	2 Lubricate the drive-unit			x			

* Take a look at the supplied manual of the transmission.



8.3. Performing maintenance

Always make sure that the machine is switched off, cannot move and has cooled down completely.

Brush replacement:

- The brushes are placed in a plastic plate which is connected to the frame;
- Disconnect the bolts, replace the brushplate and connect it again to the frame.



Tooth rakes replacement:

- The toothrakes are connected to the frame with locking pins;
- Disconnect the locking pins and slide the little shafts out the connectionplate;
- Replace the tooth rakes. Pay attention that the rakes are placed in the right direction.



9. FAILURES

If a failure is detected, please go through the following points before contacting your dealer.

Result		
<i>Symptom</i>	<i>Cause</i>	<i>Solution</i>
Too much infill is left behind in the field	The driving speed is too high	Decrease the driving speed
	De brushes rotates too slow	Increase the speed of the rotor (Until max. permitted speed)
	The hairs are worn out	Replace the brushes
	The machine is positioned wrong	Lower the machine
The result isn't equal everywhere	The machine isn't positioned horizontal	Adjust the machine with the spindles
	Inequalities in the field	The field isn't equal

10. END OF LIFE

To dispose of a machine, follow all local regulations. Practice appropriate safety measures.

Follow these steps:

1. Decommission the machine and shut it down hydraulically;
2. Drain and recycle all consumables;
3. Dispose of the machine in accordance with the local regulations.

ANNEX I TIGHTENING TORQUE

When tightening bolts, observe the following maximum torques (ISO898/1).

The following types of bolts are used in the machine:

- Bolts for wear parts (chisels, etc.): 10.9
- Other bolts: 8.8

Tightening torque [Nm]				
		Bold strength:	8.8	10.9
Metric	M5		6	8,5
	M6		10,3	14,7
	M8		25,5	35,3
	M10		50	70,6
	M12		87,3	122,6
	M14		138,3	194,2
	M16		210,8	299,1
	M20		411,9	578,6
	M24		711	1000


ANNEX II RISK ANALYSIS

Based on risk analyses, measures were taken during the development of the machines to ensure the safety of users and bystanders. These results include, but are not limited to, the following measures:

Item	Risk	When	Risk reduction
Transmission	Crushing injuries by the transmission	If a bodypart or clothing comes in contact with the pto or one of the transmissions	Fixed shieldings placed Safety stickers placed Safety instructions in manual
Support wheels	Crushing injuries by moving parts	If a bodypart or clothing comes in contact with the support wheel and frame	Safety stickers placed Safety instructions in manual
Machine environment	Being run over by the machine and/or tractor, resulting in serious injury	If the person is between the machine and the tractor and the combination is moving (unintentionally)	Safety stickers placed Safety instructions in manual
		During transport on public roads.	
	Tilt risk of instability resulting in bruising / pinching injury	If the person is next to or under the machine during maintenance.	Safety stickers placed Safety instructions in manual
		If the person is on a slope next to the machine.	
	Injuries to the body caused by the ejection of material	If the person is behind the machine during operation.	Safety stickers placed Safety instructions in manual
	Breathing difficulties	Danger of breathing difficulties due to dust generation during use of the machine	
Hearing loss	Danger of hearing damage if someone is near the machine.		
Hydraulic system	Poisoning by hydraulic injection	If, in general or during maintenance, the person is in the immediate area of the hazard.	Hydraulic circuits equipped with components that comply with "EN 875". Inspection of hydraulic components
	Serious general injuries to unprotected parts of the body from exploding or escaping hoses		
Electrostatic shocks	Getting a shock from static charging of the machine due to friction of the brushes on the artificial grass	When someone touches the machine	Safety instructions in manual

ANNEX III SAFETY STICKERS

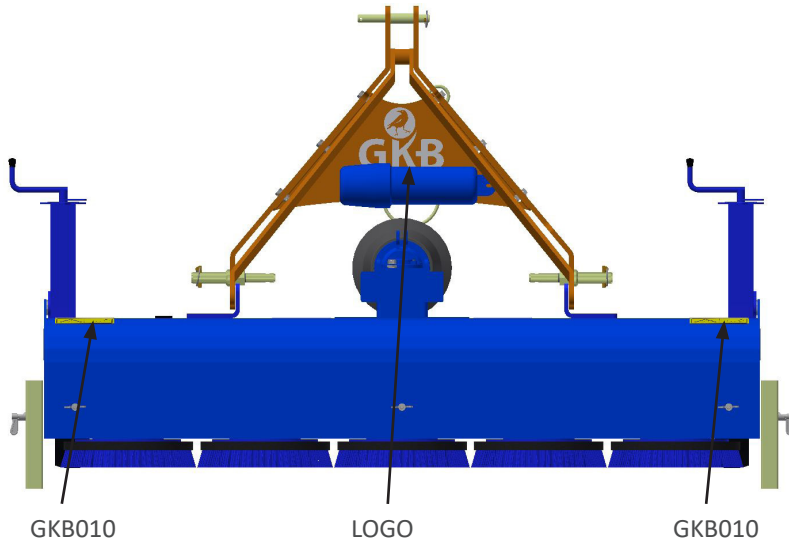
To promote safe practices and proper handling reminders, safety stickers are adhered to all machines. If a sticker cannot be read or found, it should be replaced immediately. The following page shows an overview of all the stickers and their positions.

GKB001	Comply with all maintenance instructions		GKB002	Refer to the owner's manual. It contains useful information about the use, safety and maintenance	
GKB003	Regular lubrication		GKB004	Switch off the power take-off before lifting the implement	
GKB005	Risk of retraction due to rotating parts		GKB006	Risk of finger cutting due to rotating parts	
GKB007	Danger of rotating parts		GKB008	Risk of retraction due to rotating parts	
GKB009	Risk of crushing		GKB010	Keeps distance when the machine is in operation due to swinging parts	
GKB011	Keep a distance when the machine is in operation due to flying parts.		GKB012	Risk of crushing between tractor and implement	
GKB013	Danger of retraction when opening the cover when the rotor is switched on		GKB014	Choice in minimum to maximum adjustment	
GKB015	Danger of retraction due to rotating parts		GKB	Place a safety piece before entering the danger zone	
HOT	Keep a safe distance from hot surfaces		018417	Required speed	

Location safetystickers

The illustrations below show all the safety stickers and their positions:

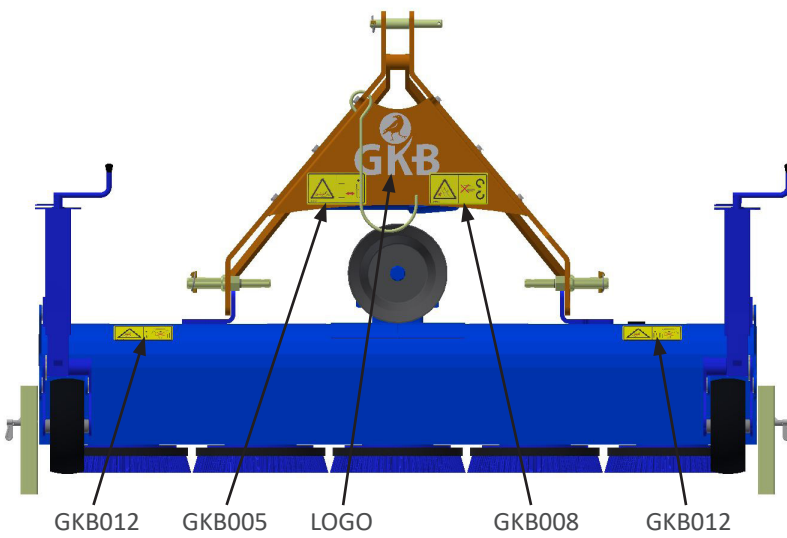
Front view:



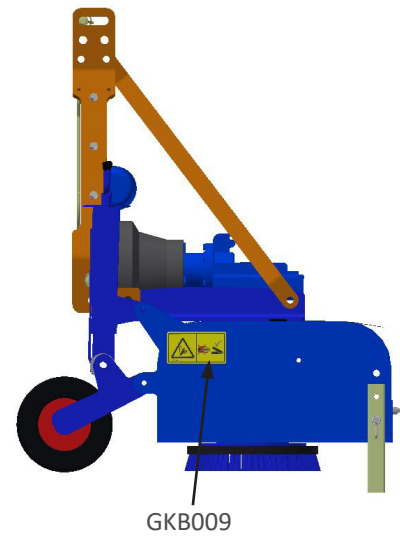
Right view:



Rear view:



Left view:



Top view:

